

# User Guide: Canadian System of Macroeconomic Accounts



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This publication contains nine chapters to reflect the most of the macroeconomic accounts. Some chapters ( 1, 2, 3, 4, 6, 7 and 9) were updated on February 22, 2021 to fix some references. For more information on Satellite accounts and Natural resource accounts, please refer to [Canadian System of Macroeconomic Accounts](#) (13-607-X).

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# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 1 Introduction and overview

The economy is central to the lives and wellbeing of Canadians. Its trends describe the constantly changing work, business and institutional environment within which people live their daily lives and the shifting array of goods and services that are both produced and consumed by them. Its temporary ups and downs over the course of the economic cycle are closely associated with people's hopes and despondencies. Statistics Canada provides detailed information about all aspects of the economy in Canada's national accounts.

As might be expected from its title, this *Guide to the Canadian System of Macroeconomic Accounts* provides a comprehensive description and explanation of the structure and concepts of Canada's macroeconomic accounts. The system has grown and evolved greatly since its development began in the 1920s. It has become a large and sophisticated database of time series information depicting virtually all aspects of Canada's national and provincial/territorial economies. This *Guide* aims both to sketch the wide-ranging framework for these accounts and to clarify the concepts and terminology underpinning them.

**Chapter 2** of the *Guide* offers a short summary of the history of Canada's macroeconomic accounts. That history is well researched and described in a book by Professor Duncan McDowall of Carleton University called *The Sum of the Satisfactions: Canada in the Age of National Accounting* (McGill-Queen's University Press, 2008) and this chapter draws heavily from that source. Canada has always aligned its economic accounts quite closely with the international standard for national accounting and the chapter also connects the Canadian chronicle to the post-war evolution of the international *System of National Accounts*.

**Chapter 3** presents the key concepts constituting the substance of the economic accounts. The vital distinction between stocks—such as Canada's national wealth—and flows—such as quarterly gross domestic product—is emphasized. The decomposition of value aggregates into separate price and volume components is briefly described, with a fuller treatment in Chapter 7. Production, distribution, consumption and accumulation, the four basic types of economic activity that are identified in the accounts, are explained as are the concepts of economic territory and residence.

Classification systems—the skeleton of the economic accounts—are also addressed in Chapter 3. In particular, the classification of institutional units—the agents of economic activity such as households, corporations and governments—gets prime attention. Also discussed are the classifications adopted in the accounts to describe industries (such as motor vehicle manufacturing and telecommunications), products (such as food and education services), financial instruments (such as government bonds and corporate equities) and expenditures by function (such as government expenditures on social protection and non-profit institution expenditures on environmental protection).

Finally, the accounting rules and structure of the accounts are also outlined in Chapter 3. By 'rules' is meant the way in which economic transactions are recorded, how they are valued, the timing of those transactions—typically on an accrual basis—and the manner in which transactions between Canada and other countries are dealt with in the system. In addition, the chapter sketches the cascading sequence of institutional accounts that together make up the international standard system of national accounts. The sequence begins with the production account and continues with accounts for the generation of income, the allocation and secondary distribution of income, the use of disposable income, real and financial investment, revaluation of assets, other changes in the volume of assets and ultimately the national balance sheet accounts. In essence, the purpose is to account for the change in wealth from one period to the next by tracing through from production activity to the income associated with that production, to the distribution of that income to the various players in the economy and ultimately to the use of that income to consume in the current period and save/invest for the future.

**Chapter 4** describes the supply and use accounts—by far the most detailed available depiction of Canada's economic structure. It begins with a discussion of some key concepts embodied in these accounts—output, intermediate consumption, gross value added, compensation of employees, operating surplus of corporations, mixed income of unincorporated businesses, taxes and subsidies on products and production, and basic prices versus purchasers' prices. The chapter also discusses three specific accounts that are derivable from the sequence

of institutional accounts—the goods and services account, the production account by industry and the generation of income account by industry.

The way in which the supply and use accounts are constructed is also explained in Chapter 4. Particular focus is placed on the measurement of output, both in general and for the exceptional cases of wholesale and retail trade, financial services and non-market goods and services. The measurement of intermediate consumption, gross value added and final demand is also considered, as is the process for balancing supply and use in the statistical tables. The decomposition of the supply and use accounts into price and volume components is also described briefly in this chapter, with a fuller treatment in Chapter 7.

The detailed supply and use accounts—which are available separately for each province and territory providing considerable detail by product class, by industry and by final demand category—are produced annually with a lag of just under three years. To meet the need for statistics on production by industry that are released with a shorter time lag, monthly estimates of GDP are produced at the national level with a lag of two months and annual estimates of GDP by province and territory are prepared with a lag of under one year. These more timely estimates are also explained in Chapter 4.

Chapter 4 closes with a discussion of the various ways in which the supply and use accounts are used by Canadians. The main uses include structural analysis and productivity studies, input-output modelling, data confrontation and benchmarking within the system of accounts as a whole. Since 1997 the supply and use accounts have also been used extensively in the federal-provincial revenue allocation formula that is associated with the harmonized sales tax.

**Chapter 5** describes the quarterly income and expenditure accounts, which are derived from the fundamental national accounts identity stating that the total supply of goods and services at market prices must equal the total use of goods and services at market prices. The components of income- and expenditure-based gross domestic product at market prices are defined and explained. In addition, the current and capital account components of the sequence of accounts are discussed for each of the six main institutional sectors—households, non-profit institutions serving households, non-financial corporations, financial corporations, general government and non-residents.

The annual provincial and territorial income and expenditure accounts are also considered. There is a brief discussion in the chapter of the final expenditure estimates at constant prices, although a fuller discussion of deflation and the price-volume decomposition is left for Chapter 7. Also discussed is the relationship between the supply and use accounts, discussed in Chapter 4, and the income and expenditure accounts. Chapter 5 closes with a review of the main uses and users of the quarterly accounts.

**Chapter 6** is focussed on the accumulation accounts—including the capital accounts, the financial accounts, the revaluation of assets accounts and the other changes in the volume of assets accounts. Basic concepts reflected in these accounts are presented and the financial intermediation system is discussed. Together these accounts provide a complete explanation of the difference between the balance sheets at the opening of an accounting period and the corresponding balance sheets at the end of the period. All of the accounts are broken down by institutional sector and together the accounts reveal how the net borrowing of some sectors is effectively the net lending of other sectors.

The various financial instrument categories for which information is provided in these accounts are defined and explained. These include official international reserves, currency and deposits, debt securities, loans, equity and investment funds, life insurance and pensions, and other accounts receivable. The chapter ends with a consideration of some analytical uses of the financial accounts.

The topic of price and volume indexes is the focus of **Chapter 7**. These statistics decompose changes in product-based aggregates measured at current prices into two components, one reflecting the influence of price changes and the other the effect of quantity and quality changes, referred to collectively as volume changes.

The Laspeyres, Paasche and Fisher price and volume index number formulas are explained and contrasted. Also discussed are the topics of index number substitution bias, chained indexes, index additivity and consistency, elementary versus compound price and volume indexes and the calculation of contributions to the change of an index.

The broad application of the three index number formulas in the supply and use accounts and the income and expenditure accounts is examined. Particular focus is centred on the use of index numbers in the estimation of capital stock statistics using the “perpetual inventory model”, on the definition and measurement of real gross domestic income and the terms of trade, and on the use of spatial index numbers to measure “purchasing power parities” that facilitate real income comparisons across countries or other regions.

**Chapter 8** explains Canada’s balance of payments (BOP) and international investment position (IIP) accounts. The former is a statement summarizing all manner of economic transactions between residents of Canada and non-residents during a specified accounting period. It has two main components: (i) the current and capital accounts and (ii) the financial account. The BOP paints a picture of Canada’s economic relationships with non-residents from the perspective of Canadian residents, a picture that is the mirror image of the portrayal of the non-resident sector in the income and expenditure accounts. The IIP is a statistical statement showing, at a point in time, the value and composition of financial assets of residents of Canada’s economy that are claims on non-residents plus liabilities of residents to non-residents. It is a subset of the national balance sheet, discussed in Chapter 6.

The chapter describes the components of the current account. One of these is transactions in goods and services—exports and imports. Another is cross-border primary income flows such as compensation earned by residents of Canada who are employed in another country or earned by non-residents while they are working in Canada. Cross-border interest payments, distributions of income of corporations, reinvested corporate earnings and rent (the latter term referring to income flows for putting natural resources at the disposal of another institutional unit, such as royalties on extracted sub-soil assets or payments for fishing, forestry and grazing rights) are other categories of primary income flows. Finally, the current account also includes cross-border secondary income flows such as taxes, nonlife insurance premiums and claims, development assistance transfers and other international cooperation flows.

The chapter also explains the capital account, which includes capital transfers—such as grants from one country to another that are tied to specific investment projects, or forgiveness of international loan liabilities—and acquisitions net of disposals of non-produced nonfinancial assets such as land sold to embassies and sales of leases and licenses.

Also described in the chapter is the financial account, which displays cross-border financial flows related to direct investment, portfolio investment, financial derivatives including employee stock options, other investment flows and official reserves. Both the net acquisition of financial assets and the net incurrence of liabilities, by financial instrument category, are recorded.

Net cross-border flows in Canada’s current and capital accounts can be positive or negative, indicating either net lending to the rest of the world or net borrowing from the rest of the world. The financial account shows how this net lending or borrowing is reflected in the acquisition and disposal of financial assets and liabilities.

Finally, **Chapter 9** describes the government finance statistics (GFS) program, which records the revenues, expenditures, surplus or deficit, financial assets, liabilities and net financial worth of governments in Canada. These statistics constitute the government sector component of the CSMA and they are compiled from the general ledger accounting records of the governments. Five institutional subsectors are described: the federal government, provincial and territorial governments, local governments, aboriginal governments and social security funds. The provincial and territorial sub-sector is further divided into provincial and territorial governments, education institutions (colleges and universities) and health and social services institutions. The GFS program also records statistics for government business enterprises.

Three GFS accounting statements are described and explained in the chapter: the statement of operations, the statement of other economic flows and the balance sheet. The first of these provides a summary of a sector’s nonfinancial and financial transactions in an accounting period as well as the associated net operating balance and change in net worth due to those transactions. The net operating balance minus the net acquisition of nonfinancial assets is conceptually equal to the net acquisition of financial assets minus the net incurrence of liabilities and is the net lending or borrowing of the sector. The second statement, the statement of other economic flows, records flows that also change a sector’s net worth but are not tied to transactions. They include holding gains or losses—reflecting passive changes in the value of assets and liabilities due to changes in their market values—and other changes in the volume of assets and liabilities—which include recognition and de-recognition of economic assets,



other changes in the quantity or quality of economic assets and changes in classification. Finally, the third statement, the balance sheet, records the value of the stock of assets and liabilities of the government sector and the sector's resulting net worth, by instrument category. This statement is, in effect, the government sector component of the national balance sheet, described in Chapter 6.

The one closely related topic that is not covered in this volume is that of satellite accounts. The 'satellite accounts' idea was introduced in the 1993 version of the international SNA standard with the following words (paragraph 1.41): "However ... flexibility may be taken a stage further by developing satellite accounts that are closely linked to the main system but are not bound to employ exactly the same concepts or restricted to data expressed in monetary terms. Satellite accounts are intended for special purposes such as monitoring the community's health or the state of environment. They may also be used to explore new methodologies and to work out new accounting procedures that, when fully developed and accepted, may become absorbed into the main system in the course of time, in the way that input-output analysis, for example, has been integrated into the system." Such accounts have been developed in Canada, and in several other countries, to provide special focus on the environment, natural resources, tourism, culture, unpaid household work, the pension system and a variety of other topics. They are the means by which the established international economic accounting system can be applied to other areas where there are often no direct market valuation data to be drawn upon or where additional product, industry or geographical detail can be provided without overburdening the main accounts. Separate documentation for each of the available satellite accounts can be found on the Statistics Canada web site.

That is the outline of this guide. The purpose of the volume, as noted, is to explain Canada's now rather large and complex system of macroeconomic accounts. The system continues to move forward over time to keep up with the evolving international standard for national accounts and to meet the changing needs of Canadian society.

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 2 History of Canada's macroeconomic accounts

### What this chapter seeks to do

The chapter offers an historical summary of the evolution of the international System of National Accounts (SNA) since 1947 and of the development of the Canadian System of Macroeconomic Accounts (CSMA) since the early 1900s.

### 2.1 Introduction

The history of the international System of National Accounts extends through the 20<sup>th</sup> century and into the 21<sup>st</sup>, culminating with the release of SNA 2008. Canada's national accounts have emerged, developed and grown over the same period. This chapter tells the story, first, of the evolution of the international SNA standard and then of Canada's progress through time in implementing and contributing to the development of that evolving standard.

The elaboration and improvement of the international standard is marked by the publication of manuals at a number of points in time. At first these manuals were issued by the United Nations and later they were published jointly by several international organizations, including the United Nations. The historical account in this chapter is drawn mostly from those manuals, which are cited at the appropriate points in the narrative.

The history of Canada's efforts to develop and improve its national accounts is well recounted in a book by Professor Duncan McDowall entitled *The Sum of the Satisfactions: Canada in the Age of National Accounting*.<sup>1</sup> The historical account in the present chapter draws heavily from the story in that volume, especially for the earlier years of the chronicle. Readers looking for a fuller treatment of the subject are encouraged to read McDowall's book.<sup>2</sup>

Readers unfamiliar with the national accounts may find this chapter difficult as it uses terminology and refers to concepts not yet explained. For this reason, some may wish to skip over this chapter and come back to it after reading the other chapters.

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### 2.2 The development of the international SNA

The post-war development of the international SNA is summarized in Table 2.1.<sup>3</sup>

**Table 2.1**  
**Historical versions of the System of National Accounts**

Year	System of National Accounts version
1947	The origins of the SNA trace back to the 1947 Report of the Sub-Committee on National Income Statistics of the League of Nations Committee of Statistical Experts under the leadership of Richard Stone. At its first session in 1947, the United Nations Statistical Commission (UNSC) emphasized the need for international statistical standards for the compilation and updating of comparable statistics in support of a large array of policy needs. In view of the emphasis on international statistical standards throughout the history of the Commission, the following national accounts standards were produced
1953	The 1953 SNA was published under the auspices of the UNSC. It consisted of a set of six standard accounts and a set of 12 standard tables presenting detail and alternative classifications of the flows in the economy. The concepts and definitions of the accounts were widely applicable for most countries, including developing countries. Two slightly modified editions of the 1953 SNA were published.
1960	The first revision in 1960 reflected comments on country experience in the implementation of the 1953 SNA.
1964	The second revision in 1964 improved consistency with the International Monetary Fund's Balance of Payments Manual.
1968	The 1968 SNA extended the scope of the national accounts substantially by adding input-output accounts and balance sheets; giving more attention to estimates at constant prices; and making a comprehensive effort to bring the SNA and the Material Product System (MPS) <sup>1</sup> closer together.
1993	The 1993 SNA represents a major advance in national accounting and embodies the result of harmonizing the SNA and other international statistical standards more completely than in previous versions.
2008	The 2008 SNA, which is an update of the 1993 SNA, addresses issues brought about by changes in the economic environment, advances in methodological research and the needs of users.

1. The Material Product System is the alternative to the SNA that was used in the former Soviet Union and Eastern Bloc countries until around 1990 and in China between 1952 and 1992. Its focus is on material goods and in this system the definition of value added excludes many services. There is no private corporations sector, just a 'socialist productive enterprises' sector, a 'households' sector and a 'non-productive sphere'. Today, just a few countries use this system of accounts, notably Cuba and North Korea.

Source: [United Nations](#) web site.

### 2.2.1 The 1947 System of National Accounts

The beginnings of the international standard for national accounting can be traced back to a report<sup>4</sup> published in Geneva in 1947 by the Sub-Committee on National Income Statistics of the League of Nations Committee of Statistical Experts, under the leadership of Richard Stone from the United Kingdom. Claude Isbister from Statistics Canada and Agatha Chapman from the Bank of Canada participated in the discussions as did statisticians from the United Kingdom, Australia, the Netherlands, the United States, Mexico, Norway and Switzerland. The Committee of Statistical Experts had decided to focus on the measurement of national income at a meeting in April 1939, but work had been suspended following the outbreak of war later that year and was not resumed until 1945.

The system put forward in this report was referred to as a 'system of social accounts'. It revolved around transactions conducted by and recorded for five institutional sectors, which were:

- Productive enterprises
- Financial intermediaries
- Insurance and social security agencies
- Final consumers and
- Rest of the world

Institutional units that today are included in the 'general government' and 'non-profit institutions serving households' sectors were spread among the other sectors, although they were located primarily alongside final consumers since a large portion of their expenditures were focused on individual and collective final consumption.

There were nine summary tables in the recommended system with the following titles:

- Personal income and outlay
- Relation between personal income and national income
- National income, net product and expenditure
- Income payments
- Relation between national income and gross national product

- Expenditure classification of the gross national product
- Saving, capital formation and net lending to the rest of the world
- Combined operating account of enterprises of all kinds
- Consolidated account of social security funds and public collective providers

In addition, each institutional sector had its own 'operating', 'appropriation', 'capital' and 'reserve' accounts, wherein receipts were balanced against payments. The tables bear striking similarities to tables in the modern SNA, although there are also many dissimilarities.

Three types of statistical classifications were highlighted, those being:

- Classification of 'branches of economic activity' (agriculture, mining, etcetera)
- Classification of 'products bought' (for consumer expenditure and capital formation)
- Classification of 'public expenditure by purpose' (education, public health, defence, etcetera).

These classifications remain prominent in today's SNA, although of course they have been considerably developed and refined over the past seven decades.

### **2.2.2 The System of National Accounts of 1953, 1960 and 1964**

The first formal revision of the SNA came in 1953<sup>5</sup> and it took advantage of the practical experience gained by countries working to implement the approach recommended in 1947. The revised standard was developed by a group of country experts led again by Richard Stone of the United Kingdom.

The concept of the institutional sectors in this revised standard consisted of four sectors: (i) persons and private non-profit institutions serving households, (ii) enterprises including both incorporated and unincorporated businesses, public enterprises, non-profit institutions serving enterprises, and households in their capacity as landlords renting dwellings to themselves or others, (iii) general government and (iv) non-residents. This sectoring is more similar to the modern one, the most important remaining difference being that unincorporated enterprises were grouped with incorporated ones whereas today unincorporated enterprises are combined with households.<sup>6</sup>

Six basic accounts were identified:

1. Domestic product
2. National income
3. Domestic capital formation
4. Households and private non-profit institutions
5. General government
6. External transactions (rest of the world account)

and twelve standard tables were presented:

1. Expenditure on gross national product
2. Industrial origin of gross domestic product at factor cost
3. National income by type of organization
4. Distribution of national income
5. The finance of gross domestic capital formation
6. Composition of gross domestic capital formation
7. Receipts and expenditures of households and private non-profit institutions
8. Composition of private consumption expenditures
9. General government revenue and expenditure

10. Composition of general government consumption expenditure
11. External transactions
12. Receipts and disbursements of the rural sector.

The last of these tables was intended to be of special relevance to under-developed countries where rural areas are often self-contained with non-monetary transactions playing an important role, but the table was dropped in subsequent SNA revisions.

The system was more clearly set out than its 1947 predecessor, particularly with respect to the accounts for capital formation. The income, outlay and accumulation accounts were well presented. However it continued to be more a 'set of tables' than a complete system since opening and closing balance sheets were not included. In addition, it still did not contain flow of funds or supply and use accounts and there was little discussion of the price-volume decomposition of product aggregates.

The 1953 standard was slightly revised in 1960 and again in 1964.<sup>7</sup>

### 2.2.3 The 1968 System of National Accounts

Once again, Richard Stone chaired the sessions leading up to the release of the 1968 SNA.<sup>8</sup> The 1953 standard and its amended updates in 1960 and 1964 were acknowledged, when they were first released, to be incomplete in a number of respects and the 1968 SNA aimed to complete the accounting standard in these areas.

A major advance in this version of the system was the introduction of opening and closing asset and liability stocks. This completed the system by articulating the flow from opening stocks to production, to consumption and accumulation, to revaluations and finally to closing stock levels. Another major change was the introduction of supply and use accounts to show how production is broken down by industry and product class and supply of products is balanced against their use. The system provided a basis for input-output analysis, including a full chapter on this subject. Also brought into the revised system were rudimentary flow of funds accounts. In addition, a full chapter was devoted to the topic of constant-price statistics with respect to the supply and disposition of goods and services. Regional accounting and integrated research and development statistics were flagged as topics to be addressed in the future.

### 2.2.4 The 1993 System of National Accounts

The development of the SNA from 1947 to 1968 and in the years immediately thereafter was led by the United Nations. However, beginning in the early 1980s responsibility for the leadership of the international SNA was shared by a five-party group of institutions known as the Inter-Secretariat Working Group on National Accounts (ISWGNA). The group included: the United Nations, the International Monetary Fund, the Organization for Economic Co-operation and Development, the World Bank and the Commission of the European Communities (Eurostat). This group organized the international discussions and drafting work leading up to the release of the SNA standard in 1993.<sup>9</sup> It was associated with an Advisory Expert Group (AEG) with representatives from a wide range of countries including Canada<sup>10</sup> that met with ISWGNA for deliberations on numerous occasions in the years leading up to the publication of SNA 1993.

There were a great many improvements to the system in SNA 1993. The document has 814 pages, more than three times the length of SNA 1968. The changes introduced in this revision are well summarized in *Annex I: Changes from the 1968 System of Accounts*,<sup>11</sup> which highlights the modifications under nine headings:

- Revision of the accounting structure and new balancing items
- Further specifications of statistical units, revisions in the sectoring and introduction of multiple sub-sectoring
- Further specifications of the scope of transactions including the production boundary
- Changes in valuation and in the treatment of product taxes
- Distinction between market and other kinds of production and introduction of alternative concepts of consumption and disposable income

- Extension and further specification of the concepts of assets, capital formation and consumption of fixed capital
- Further refinement of the treatment and definition of financial instruments and assets
- Harmonization between concepts and classifications of the 1993 SNA and the fifth edition of the Balance of Payments Manual
- Price and volume measures and introduction of real income measures

Broadly speaking, the revised standard represents continuity with the previous one, SNA 1968. Its focus is primarily on clarification of concepts and harmonization of the system with other international statistical standards. “It more fully integrates production, income, capital and financial accounts and balance sheets ... Furthermore, the new System describes in detail the links between the SNA and the related statistical system on balance of payments prepared by the International Monetary Fund. Particular attention has been given to the delineation of the production boundary with regard to coverage of own-account production of goods and services. Also, more precise criteria have been established for the delineation and coverage of the financial sector and identification and classification of financial instruments in light of the many innovations in this field in recent years due to financial deregulation. The central framework retains input-output tables as an integral part of the System particularly as the basis for balancing supply and demand.”<sup>12</sup> It also introduces some new features, notably the notion of ‘satellite accounts’. Finally, one additional feature to note is that unlike previous editions, SNA 1993 can be used for all types of economies—from developing to developed and from capitalist to communist.

### 2.2.5 The 2008 System of National Accounts

The 2008 SNA<sup>13</sup> was developed under an organizational structure similar to that of the 1993 SNA. It was led by ISWGNA and an Advisory Expert Group.<sup>14</sup> The changes it introduced into the standard were less extensive, on the whole, than those introduced in SNA 1993. At 662 pages, it is a substantial volume, although almost a fifth shorter than its predecessor. This international standard remains in effect today.

Annex 3<sup>15</sup> of the SNA 2008 volume summarizes the changes that were made relative to SNA 1993. The following are the headings from that annex encapsulating the numerous changes:

- Further specifications of statistical units and revisions in institutional sectoring
- Further specifications of the scope of transactions including the production boundary
- Extension and further specification of the concepts of assets, capital formation and consumption of fixed capital
- Further refinement of the treatment and definition of financial instruments and assets
- Further specifications of the scope of transactions concerning government and the public sector
- Harmonization between concepts and classifications of the SNA and the sixth edition of the Balance of Payments Manual

In general terms “... the 2008 SNA introduces treatments for new aspects of economies that have come into prominence, elaborates on aspects that have increasingly become the focus of analytical attention and clarifies guidance on a wide range of issues.”<sup>16</sup> One striking change is that research and development is no longer regarded as intermediate consumption, but rather is treated as gross capital formation within a new ‘intellectual property products’ category. Expenditures on weapons systems are also recognized as produced capital formation. Another change is that the output of non-life insurance companies is to be measured using adjusted claims rather than accrued claims and for extraordinary claims, as may arise from a natural disaster, the claims can be recorded as capital transfers rather than current transfers. For defined benefit pension schemes, the level of the employer’s contribution is to be determined by assessing the increase in the net present value of the pension entitlement the employee has earned, rather than the actual monetary contribution. When goods are sent across borders for processing, imports and exports are to be recorded on a strict change of ownership basis, implying that processing is regarded as a service rather than as a good.

SNA 2008 is a highly developed and quite sophisticated statistical standard. It represents the cumulative experience and contributions of a large number of bright economists and statisticians from many countries stretched over

some 60 years. It is almost universally accepted by governments and their statistical agencies around the world and provides a solid basis for internationally comparable macroeconomic statistics.

## 2.3 The development of Canada's SNA

### 2.3.1 The period up to and including World War I

At the beginning of the 20<sup>th</sup> century there seemed to be no perceived need for a Canadian System of Macroeconomic Accounts. Economists and policy-makers generally believed the macro-economy to be largely self-regulating, so there appeared to be little requirement for government intervention in the economy, or for macroeconomic statistical information to support such intervention. In addition, the refined statistical survey techniques and digital computation methods relied upon so much today did not exist back then. Moreover the international standard for such a system had not begun to develop so if Canada had wanted to create such a statistical system it would have had to conceive it on its own, more or less from the ground up.

Nevertheless Duncan McDowall identifies a key first step in the second decade of the 20<sup>th</sup> century:

“Sensing that the economic structure of Canada was undergoing seismic change, George Foster flexed his authority as trade and commerce minister in the newly elected Conservative government of Robert Borden. In 1912 he appointed a commission to provide a blueprint for a ‘comprehensive system of general statistics adequate to the necessities of the Country.’ Prominent in its membership were [federal government statistician Robert] Coats and Adam Shortt, a Queen’s University political economist addicted to empirical investigation. The commissioners were blunt in their assessment. Although Confederation in 1867 had given Ottawa statistical pre-eminence in the young nation, ‘little or no statistical information exists in a form suitable for practical application.’ Canadians were in the dark about what ‘phenomena in Canada’ required scientific measurement ‘if national development is not to proceed blindly or at a disadvantage.’ Vigorous centralization of statistics, the commission concluded, should be the unbending order of the day. What Canada needed was ‘a central thinking office’ for statistical affairs. Armed with such unequivocal advice, Foster acted. On 1 July 1915 he appointed Coats Dominion statistician and commissioner of the census; a strongly centralized agency would follow.”<sup>17</sup>

Coats’ first major assignment from the minister was to estimate the value of Canada’s national wealth. This he did, arriving at an estimate of \$16,293,500,000 for the year 1915.<sup>18</sup> However, the estimate was very heavily caveated since the statistical system from which it was derived was still in its infancy. Updating the wealth estimates some years later and anticipating the continuing debates about the concepts of income and wealth that were to follow in the decades ahead, he commented that: “The economic concept of national wealth is concrete and purely material, since economics is not able to take cognizance of the immense field of intangible wealth created by churches, schools and other institutions which develop morals, wisdom and character rather than commodities, nor of such things as climate, location, health, etc. which promote individual and national welfare and are often referred to as wealth.”<sup>19</sup>

### 2.3.2 The period between the two World Wars

Back in the 1920s, the prevailing attitude among economists was the ‘classical’ one emphasizing microeconomic supply and demand relationships underpinned by rationality assumptions. Developments in the economy could be understood by applying a combination of economic theory and deductive logic, it was believed. Supporting statistical information was not vital and in any case was mostly unavailable. Adam Smith’s ‘invisible hand’ metaphor was predominant.

There were certainly some statistics, notably on various kinds of goods production. But viewed from the perspective of the 21<sup>st</sup> century they were scattered, incomplete, not very reliable, poorly integrated and not at all timely. There was no single, widely accepted way to define and measure national income. This situation prevailed without much concern through the 1920s while Canada’s economy boomed.

World stock markets crashed in 1929 and the Great Depression began. Final demand plunged and unemployment rose to dire levels. The desperate state of the economy was obvious to all, but its underlying causes were hard to diagnose. The few economic statistics that were available from the then Dominion Bureau of Statistics (DBS)<sup>20</sup> were not of much help in understanding the country-wide economic problem or finding a solution.

Canada was, of course, just one nation among many that were in crisis. In this environment, John Maynard Keynes from the United Kingdom emerged as someone with a strikingly new view of the macro-economy. His book, *The General Theory of Employment, Interest and Money*, published in 1936, provided a macroeconomic theory that justified interventionist policies by government to counter the business cycle. However, the application of these ideas at the time was greatly hindered by a lack of statistical information about the macro-economy. Moreover “Keynes was not alone in his intuition. His colleague at Cambridge, Colin Clark, had been busy since the early 1930s trying to trace the patterns of production, distribution and income within the British economy ... Clark sensed that once an economy had been broken down into its component transactions, it could be rebuilt in its aggregate form in a way that showed the respective contribution of each activity. Clark is generally credited with popularizing the term “gross national product” as a figure that conveyed the value of all final goods and services produced in an economy over a set period.”<sup>21</sup>

In the United States, Simon Kuznets was another leading thinker with somewhat similar ideas. He was deeply involved in the National Bureau of Economic Research’s studies on national income accounts and the measurement of national income.

In Canada, DBS prepared its own statement of national income and its components in 1934, but the estimates and the framework within which they were couched were both rudimentary. “When a Winnipeg grain merchant complained to the Dominion statistician that Manitoba had become a ‘poverty-stricken’ region, Coats replied that ‘accurate statistics of wealth and income of Manitoba would dispel a good deal of confusion and possible wrong thinking’ but that the agency had made only a ‘stab’ at such analysis. ‘I fear we have not accomplished very much’.”<sup>22</sup> There was a growing need not just for reliable national income statistics, but for provincial information as well.<sup>23</sup>

Coats set up a Committee on National Income Statistics in 1939, but the group made only modest progress with the advent of war. By 1941 Sydney Smith, the chief business statistician at DBS, and his team had produced a 149-page volume entitled *The National Income of Canada: 1919-1938*,<sup>24</sup> but its contents were not as promising as its title suggested. John Deutsch, an economist at the Bank of Canada at the time, was particularly damning in his criticism.<sup>25</sup>

### 2.3.3 The birth of Canada’s System of Macroeconomic Accounts

“Canada’s modern System of National Accounts was born on a cold evening in April 1942 ... [at] 295 Manor Avenue ... this address was the home of Clifford Clark, a former University of Queens political economist, who since 1932 had been Canada’s deputy minister of finance ... It had taken two weeks to find a niche in Clark’s crammed schedule for this meeting, and even at that only an evening meeting was possible. The cars pulling into the driveway bore the best and brightest of Ottawa’s wartime bureaucracy ... Graham Towers, the brilliant young governor of the Bank of Canada, John J. Deutsch, [from the] bank’s research department, Robert Bryce, who not only oversaw the Ministry of Finance’s research efforts but also sat as the secretary to the all-powerful Economic Advisory Committee ... the deputy minister of trade, Dana Wilgress, a seasoned expert in Canadian trade, arrived ... Rounding out the arrivals that evening were Fraser Elliott, the lawyer who oversaw the Ministry of National Revenue’s income tax division and Sedley Cudmore, the man who had just taken on Robert Coats’s mantle as Dominion statistician.”<sup>26</sup>

“The deputy minister first put pressure on Elliot of National Revenue. He quickly extracted a promise that more precise and more workable tax data would be released to compilers of national income ... Clark finally turned to [Sedley] Cudmore, the Dominion statistician. Would the DBS be prepared “to set up a special unit ... to organize and carry out this national income work?”<sup>27</sup>

“Bryce nudged Bangs [the assistant to Sydney Smith] into further revelations. ‘I got the impression that a good deal of the Bureau of Statistics work, in his opinion, is of poor quality ... An audit would show up many errors and deficiencies ... The morale of the staff down there is pretty low. There is a good deal of bickering, jealousy and knifing of one another.’ What most consternated Bryce was the news that Smith was so overwhelmed by his work that he was taking data home with him and having his family attempt tabulations of the national income. It did not take much to get the overwrought Bangs to agree that a ‘new man’ was needed to head Canada’s System of National Accounts.”<sup>28</sup>



“The search that had begun two years earlier in a Rockcliffe living room ... ended not far away in the overcrowded and decrepit offices of the Dominion Bureau of Statistics on Green Island ... In the spring of 1944 was the appointment of George Luxton as chief of the DBS’s fledgling research and development staff.”<sup>29</sup>

Luxton did much to get Canada’s new system of macroeconomic accounts project off the ground. He organized a team and set about working on an initial set of income and expenditure accounts. In September 1944, Richard Stone visited him in Ottawa. Stone played a giant’s role in the development of the international standard for national accounting and he was awarded the Nobel Memorial Prize in Economic Sciences for his work in 1984. He and Luxton journeyed to Washington together to participate in the so-called Tripartite Discussions on National Income Measurement with Milton Gilbert from the National Income Unit of the U.S. Department of Commerce.

The framework that emerged from these discussions was one in which incomes and expenditures were both measured, and their separate totals—both being gross national product—were balanced. The Keynesian theoretical model, within which aggregate demand, saving and investment were central, aligned well with this structure. The distinct roles of the three main domestic institutional sectors—businesses, households and governments—were recognized. This was the kind of framework that fiscal and monetary policy makers needed to guide their thinking.<sup>30</sup>

Tragically, Luxton died in January 1945, after accomplishing a lot in his short tenure. Claude Isbister was appointed to take over. He had a staff of nine specialists. Another new statistician to join the group that year was Simon Goldberg, who was to play a very important role in the accounts’ development during the 1950s and 1960s.

Isbister’s first major challenge was to finish the development of balanced income and expenditure accounts time series for the period 1938 to 1945, with breakdowns of wages, salaries and other income by province. These statistics were to be used in a new federal program of fiscal equalization for the provinces which took effect on April 1, 1947. They were also intended to provide vital information in support of the goals set out in a government white paper<sup>31</sup>—to foster high and stable levels of employment and income in the post-war reconstruction period. The new system of macroeconomic accounts was destined to play a vital, trusted role in the post-war federation. The first annual estimates of balanced income and expenditure accounts were published in April 1946.<sup>32</sup> These are reproduced in Table 2.2

**Table 2.2**  
**Income and Expenditure Accounts released in April 1946**

	1938	1939	1940	1941	1942	1943	1944	Preliminary 1945
	millions of dollars							
Salaries, wages and supplementary labour income	2,449	2,540	2,860	3,529	4,233	4,790	4,969	5,037
Military pay and allowances	9	32	193	386	641	910	1,068	1,089
Investment income	692	782	1,110	1,518	1,765	1,809	1,785	1,811
Net income of individual enterprises, agricultural and other	790	867	949	1,081	1,638	1,560	1,863	1,690
Net national income at factor cost	3,940	4,221	5,112	6,514	8,277	9,069	9,685	9,627
Indirect taxes less subsidies	646	743	843	1,062	1,092	1,125	1,125	992
Depreciation allowances and similar business costs	504	528	581	684	771	819	771	750
Residual error of estimate	-15	3	92	75	156	111	190	-10
Gross national product at market prices	5,075	5,495	6,628	8,335	10,296	11,124	11,771	11,359
Government expenditure on goods and services	891	1,090	1,514	2,600	4,323	5,359	5,325	4,393
War	37	210	826	1,952	3,585	4,407	4,542	3,726
Non-war	854	880	688	648	738	952	783	667
Gross private investment at home	450	705	1,004	1,122	793	304	620	746
Net private investment abroad <sup>1</sup>	18	-97	-90	-268	-175	-324	-252	-365
Personal expenditure on consumers’ goods and services	3,700	3,799	4,293	4,956	5,511	5,896	6,268	6,576
Residual error of estimate	16	-2	-93	-75	-156	-111	-190	9
Gross national expenditure at market prices	5,075	5,495	6,628	8,335	10,296	11,124	11,171	11,359

1. These figures do not correspond to the net international balance on current account since a large portion of wartime exports is included in government expenditure

Source: Dominion Bureau of Statistics, National Accounts Income and Expenditure 1938-1945, Ottawa, Edmond Cloutier, Printer to the King’s Most Excellent Majesty, April 1946.

### 2.3.4 The 1950s and 1960s

In 1950, Goldberg became director of the Bureau's Central Research and Development Staff. One of the group's crucial tasks was to calculate gross national product estimates at constant prices, with the effects of price changes removed. This was accomplished and the statistics were first released in 1952. Quarterly estimates were calculated and the accounts estimates were adjusted to remove the effects of seasonality, using a twelve-month moving average method.<sup>33</sup> These seasonally adjusted quarterly estimates of real GNP, first released in the fall of 1953, quickly became one of Canada's most important sub-annual economic barometers.

During this period and subsequently DBS remained closely involved with international efforts to standardize national accounting. When official United Nations guidelines were released in 1953, Canada worked to align its system as closely as possible. " ... There was nothing hollow in Herbert Marshall's boast [Marshall became Dominion Statistician in 1945] to the minister of trade and commerce, C.D. Howe, that Canada's national accountants 'now rank with the best in the world.'"<sup>34</sup>

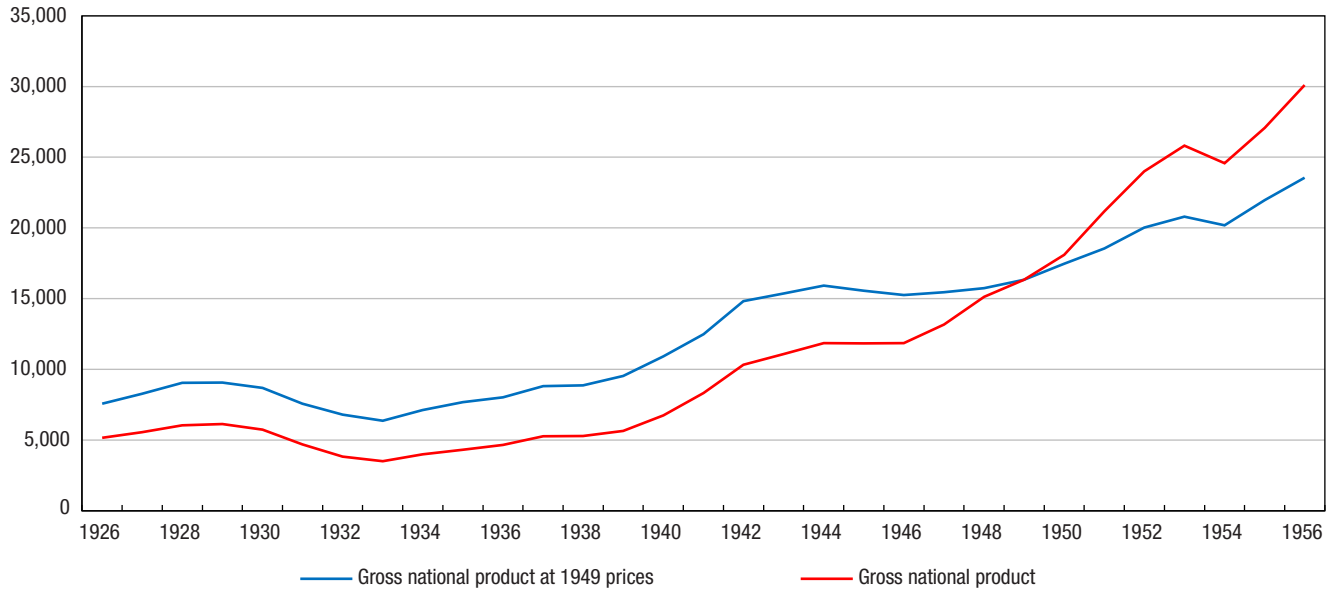
Early work on the measurement of fixed capital formation was done by William Hood and Anthony Scott, in studies for the Royal Commission on Canada's Economic Prospects in the 1950s.<sup>35</sup> They estimated investment in new plant and equipment by industry. Thomas Rymes continued this work as an economist in the Central Research and Development Staff starting in 1958.

Hood also did an exploratory study for the commission on the flow of funds.<sup>36</sup> DBS did further development work on this topic in the 1960s and in 1969 released its first official set of quarterly Financial Flow Accounts (FFAs), extending back to 1962. Later corresponding balance sheet accounts, recording stocks of financial assets and liabilities, were released. Both of these datasets provided detail for 30 institutional sectors and sub-sectors.<sup>37</sup>

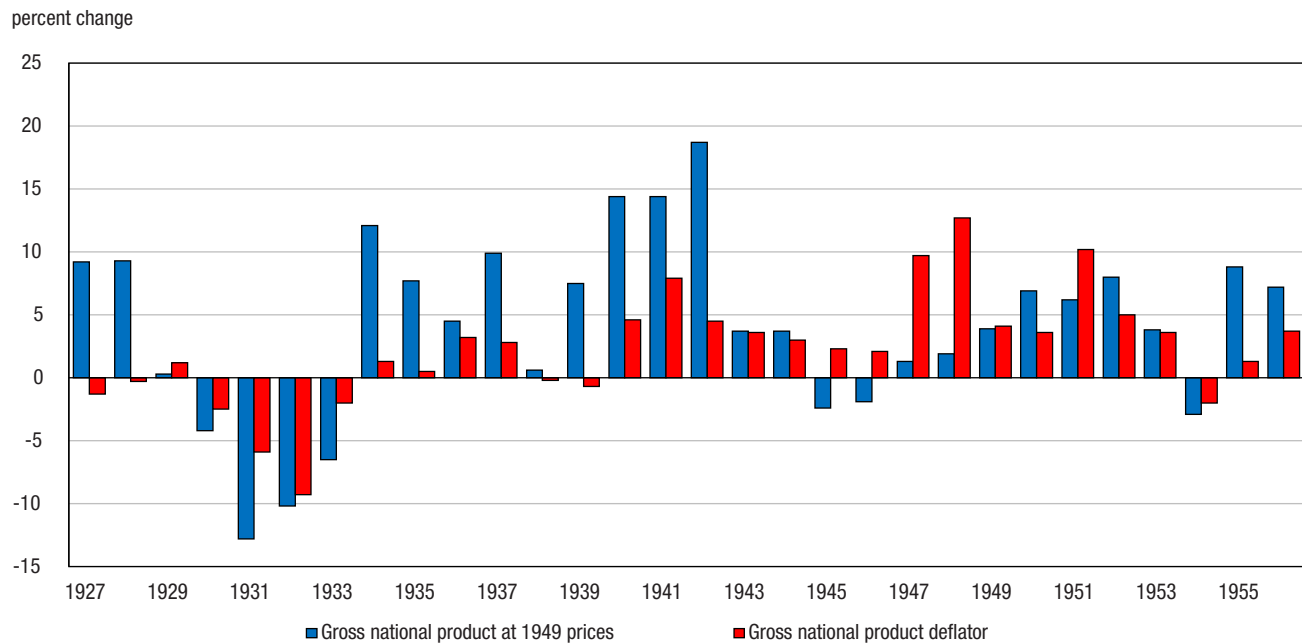
In 1962, the Bureau released an important national accounts publication providing balanced annual income and expenditure tables from 1926 to 1956.<sup>38,39</sup> The tables included personal saving and disposable income, gross domestic product at factor cost, gross national expenditure at the constant prices of 1949 and the associated implicit price indexes, along with sector account tables for the four institutional sectors: persons, governments, businesses and non-residents. Also included in this publication was the industrial distribution of gross domestic product and the distribution of personal income by province and territory. Finally, the publication included a thorough explanation of the conceptual framework for the national accounts. This document became known as the 'Brown Book'. Chart 2.1 and Chart 2.2 show the GNP estimates from that source.

**Chart 2.1**  
**Gross national product from the Brown Book, 1926 to 1956**

millions of dollars



Source: Statistics Canada.

**Chart 2.2****Gross national product from the Brown Book, annual percentage change, 1927 to 1956**

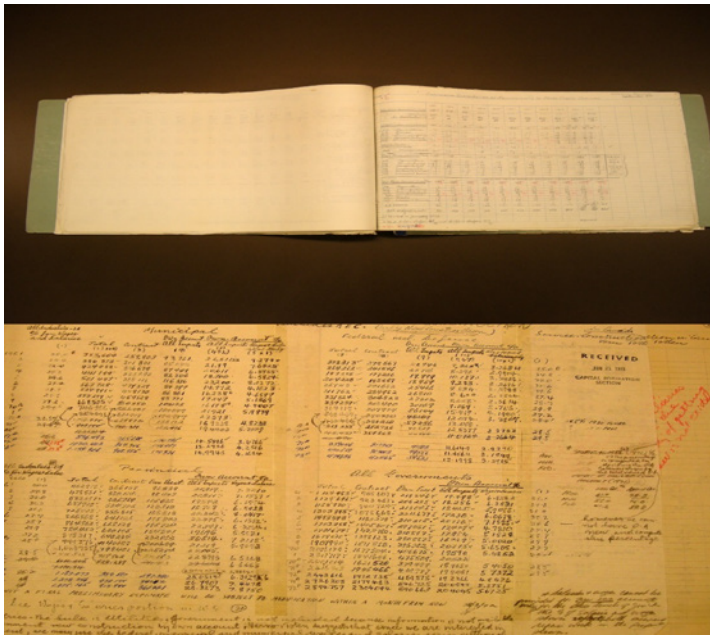
Source: Statistics Canada.

In the early 1960s, Canada's balance of international payments (BOP) statistics were integrated with the income and expenditure accounts. The BOP and its companion statistical system, the international investment position (IIP) estimates, had been developing separately up to that point. The first experimental BOP estimates were calculated quite early in the century.<sup>40</sup> Official statistics were first released in 1939, covering the period from 1926 forward.<sup>41</sup> Herbert Marshall was the leader on BOP statistics around this time. In 1949, a substantial book was published recording the annual balance of payments estimates from 1926 to date and describing the sources of information used and the associated statistical methods.<sup>42</sup> C.D. Blyth played a key role. Quarterly estimates were first released in 1953.<sup>43</sup> Parliamentary approval in 1962 of the Corporations and Labour Unions Returns Act (CALURA), which empowered the Dominion Bureau of Statistics to collect financial and other information on the affairs of corporations and labour unions, was important for the BOP and IIP. Along with other data, it yielded much-needed information about the country of control for large corporations. A key player in the development of Canada's BOP program around this time was Bower Carty.

### 2.3.4.1 The advent of computers

Computers came into DBS in 1960, when an IBM 705 was acquired for use in connection with the 1961 census. Thus began a radical increase in the possibilities for macroeconomic accounting. Without computers, national accounts estimates had to be compiled laboriously by hand, pencilled into giant ledger books. It took some decades for these ledgers to fully disappear from the scene, but their eventual departure was foretold in 1960. Figure 2.1 shows one of the ledgers from those days. In the following decades, as computers became more and more capable at lower and lower cost, the work processes of the macroeconomic accounts were fundamentally redesigned.

**Figure 2.1**  
**An income and expenditure accounts ledger**



Source: Statistics Canada.

One of the new possibilities flowing from the arrival of computers was that of providing users of DBS information with online access to statistics. Canadian macroeconomists were increasingly focussed on building econometric models and for this they required computerized databases. “There was common agreement that the DBS’s income and expenditure national accounts figures should be the linchpin of any database ... At first, the computing procedures were almost glacial; punched data cards were sent daily by bus [from Ottawa] to the University of Montreal for processing on a mainframe, the results printed out, and then bussed back to Ottawa. Out of all this, the Canadian Socio-Economic Information Management System (CANSIM) was born in 1969 as a ‘statistical public utility serving Canadian business, industry and education ... The national accounts had joined the electronic age.’<sup>44</sup>

#### 2.3.4.2 Supply and use accounts

The advent of computers also greatly facilitated the development of supply and use accounts, referred to as input-output (I/O) tables at the time. “Goldberg was, as usual, the first to pick up the scent. I/O analysis had a double appeal to him. It held the promise of bringing the national accounts into more intimate contact with the economy—of unravelling the skein of intermediate transactions that constituted the daily economic pulse of the nation. It also promised to act as a powerful verifier of the consistency of national accounts statistics, every piece of input datum had to match up with its companion on the output side.”<sup>45</sup> In fact, this last function—as a powerful verifier—was relevant for most of the Bureau’s economic statistics, both survey results and national accounts compilations. These accounts required an enormous amount of source data about the output and intermediate consumption of Canadian business establishments and the final consumption expenditures of the institutional sectors. The Bureau’s entire business survey system had to be redesigned in order to collect the required information efficiently and comprehensively and steps to accomplish this have been going on for decades.<sup>46</sup>

A first, experimental I/O table was produced for the year 1949 and was released in 1956. It was broken down into 42 industries. This work was led by Jack Sawyer. Then in the 1960s it was decided to build a new program of annual, rectangular, industry-by-product-class I/O tables. An I/O statistics division was established and among its key economists were Terry Gigantes, Shaila Nijhowne and Kishori Lal each of whom was to play an important role in the accounts in the decades to come. The I/O statistics program was fated to grow ever stronger as the years went by, becoming the backbone of the entire system of balanced macroeconomic accounts.<sup>47, 48</sup>

### **2.3.4.3 Productivity**

The input and output statistics available in the I/O tables were precisely what was needed for another program that emerged in the 1960s—one centred on measuring changes in Canadian productivity.<sup>49</sup> This domain was, and remains, a very challenging one as its focus is on the differential between the growth rates of inputs and outputs. It demands quite precise measurement of both and in addition, the two measurements must be comparable in terms of their definition, coverage, valuation and timing. Initially attention was focused on labour productivity—the ratio of the total output of an industry to the total labour input used by that industry. Later attention would also turn to multifactor productivity—the ratio of the total output of an industry to a weighted average of all the inputs used by that industry (capital, labour, energy, materials, services).

### **2.3.4.4 Historical revision of 1969**

The 1960s ended with the release of an important historical revision to Canada's national accounts.<sup>50</sup> This revision covered the 42-year period 1926-1968 and it implemented conceptual changes agreed to internationally in the 1968 System of National Accounts standard<sup>51</sup> and statistical changes stemming from the exploitation of a number of new and improved data sources. Among other changes, government investment expenditures excluding defence capital-like outlays were recognized as part of gross fixed capital formation as were transfer costs on the sale or purchase of existing capital assets. With the arrival of universal medicare, public hospitals were transferred from the personal sector to the government sector. These and other changes put into effect as part of the revision are summarized in Table 2.3. GNP was raised 6.1% relative to the previous estimates and this alteration to the level was 'wedged' back in the previous years.

**Table 2.3**  
**Changes implemented in the 1969 historical revision<sup>52</sup>**

Change number	Description
1	Gross fixed capital formation was defined to include both government fixed capital (excluding defence outlays) and all transfer costs on the sales and purchases of existing fixed assets. Prior to this all government expenditures and capital goods transfer costs were both regarded as current. Capital formation in inventories was extended to cover changes in surplus war assets and in the inventories of government commodity agencies. The imputed net rent on government-owned buildings was dropped.
2	Public hospitals were transferred from the personal to the government sector, beginning in 1961. Public hospitals had been, irrespective of actual ownership, formerly classified as private non-profit institutions in the personal sector with all final hospital expenditures included under personal expenditure on consumer goods and services.
3	Employer and employee contributions to social insurance and public service pensions were treated as a transfer payment (tax outlay) from persons to government, instead of as a deduction from personal income. The new treatment yielded more appropriate estimates of personal income and conformed to SNA 1968. Personal disposable income was unaffected, with personal income and tax outlays rising equally.
4	Net rental income of persons, formerly classified with interest and miscellaneous investment income, was included with the net income of non-farm unincorporated business.
5	Government investment income was changed to include from 1949 onward, only the remitted profits of government business enterprises, instead of the total profits; the remitted portion was treated as being analogous to dividend distribution of corporate profits, while unremitted profits were left in the saving of the corporate and government business enterprise sector. This treatment conformed to that in SNA 1968. Taxes on government business enterprises were included with corporate direct taxes.
6	Government income from resource royalties was redefined as investment income instead of indirect taxes, starting in 1947.
7	Profits of provincial liquor control boards were reclassified from government investment income to indirect taxes.
8	Withholding taxes were treated as part of the income accruing to non-residents from Canadian production. Withholding taxes thus appeared in the sector accounts, as a transfer payment from non-residents to government.
9	The new sector accounts provided for transfer payments in the non-residents account and therefore permitted an improved treatment of various items, principally government official contributions and pensions paid abroad, and personal remittances both to and from abroad. These items were formerly included in final expenditure and were henceforth shown as inter-sectoral transfers.
10	Bad debts owed by persons to corporations and written off in company books were treated as a transfer payment from corporations to persons, and consequently shifted from miscellaneous valuation adjustments to corporation profits. Bad debts owed by persons to unincorporated business were also shifted, from miscellaneous valuation adjustments to net income of non-farm unincorporated business.
11	The non-productive portion of interest on consumer debt was shown as a transfer payment from persons to corporate business, in order to portray personal outlays more accurately. No change occurred in corporate business saving or personal saving, for the item was previously excluded from both income and outlays in each sector.
12	Municipal waterworks were reclassified from government business enterprises to general government; the reverse treatment, from 1959 onward, was applied to the Canadian Broadcasting Corporation.
13	Investment income of trustee pension plans covering government employees was reclassified to personal investment income.
14	Employer contributions to the pensions of armed forces personnel were reclassified from wages, salaries and supplementary income to military pay and allowances.
15	The former investment income appropriation account was replaced by an income and expenditure account for corporate and government business enterprises. Thus income and expenditure accounts existed for all four sectors – persons (including private non-profit institutions) and unincorporated business, government, corporate and government business enterprises, and non-residents.
16	Apart from the 1961 Census benchmark, a major new source of information pertaining to wages, salaries and supplementary labour income was the full tabulation of wages and salaries, derived from employers' submission of employees' earnings on the 'T4' form, undertaken by the Department of National Revenue with the advent of the Canada Pension Plan.
17	Estimates of capital consumption allowances for corporations were based on company estimates of 'depreciation' instead of 'capital cost allowances'. The latter are affected by government fiscal policies whereas the former are closer to economic depreciation. In addition, government capital cost allowances were calculated on a replacement cost basis.
18	The quantity of new residential construction for 1926 to 1950 was re-estimated using contracts awarded for the period before the Second World War, Census of Construction for the war years and building permits and Central Mortgage and Housing Corporation starts for the post-war period. In previous estimates the basis of measurement was inter-censal changes in housing stock inferred from Census counts and interpolated on the movement of an index of annual disappearance of certain building materials.
19	Productivity and profit margin adjustments were introduced in the deflators for residential and non-residential construction. The unavailability of market price indexes made it necessary to construct these deflators from cost-of-production price indexes. The previously constructed deflators were deficient because they removed from the current dollar estimates not just pure price change, but also changes due to fluctuations in productivity and profit margins.

**Source:** Extracted from Dominion Bureau of Statistics, National Income and Expenditure Accounts 1926-1968, August 1969.

### 2.3.5 The 1970s and 1980s

The 1970s and 1980s were years of consolidation for the macroeconomic accounts. They had become firmly established in Canada and their main elements were already in place. The new challenge was to improve and expand upon what was already a solid and fairly complete system.

#### 2.3.5.1 New documentation

In March 1975 Statistics Canada released a comprehensive, three-volume set of documentation of the national accounts, known informally as the 'Orange Book'. Volume 1 presented a complete record of the annual income and expenditure accounts estimates from 1926 to 1974. Volume 2 displayed the quarterly estimates from 1947 to 1974. Volume 3 contained a thorough explanation of the definitions, concepts, data sources and methods of the income and expenditure accounts, written by the director of the income and expenditure accounts division at the time, Robert Crozier. Volume 3 is available in PDF format on the Statistics Canada website.<sup>53</sup>

#### 2.3.5.2 Doubts about the adequacy of the GNP concept

By the time the 1970s arrived the concept of gross national product was so deeply planted in the workings of Canada's business and government that some were starting to question its growing dominance in national discussions about economic policy. Was it reasonable to consider GNP as a proxy for national welfare, as many people increasingly seemed to be doing? "Is the Government of Canada and the Dominion Bureau of Statistics giving consideration to including in the computation of the Gross National Product the value of the housewife and of household domestic services?" asked Member of Parliament Edward Broadbent in the House of Commons, in 1970.<sup>54</sup> Said Prime Minister Pierre Trudeau in 1974: "Prosperity is the rallying cry of politicians everywhere. But what of happiness? ... How often in our blindness do we reflect on the fact that those computers calculating the magical GNP regard with equal weight the manufacture of a motor vehicle and a fatal automobile accident ... If money is spent, the GNP is enhanced. The economy benefits ... We know in our hearts that this is false."<sup>55</sup>

In the United States, professors James Tobin and William Nordhaus suggested there might be too much focus on the now well-established GNP indicator. In 1972 they developed an alternative welfare indicator they called a "measure of economic welfare" (MEW). Taking GNP as a starting point, they added positive adjustments for the imputed value of leisure time and the services associated with unpaid work while subtracting the imputed value of environmental damage due to production and consumption activity.

#### 2.3.5.3 Imputed value of household work

No MEW estimates as such were developed for Canada during the 1970s, but Statistics Canada did explore the area<sup>56</sup> and developed some experimental estimates of the imputed value of household work. In 1978 Hans Adler and Oli Hawrylyshyn produced estimates for 1961 and 1971 indicating that when appropriately chosen market wage rates were multiplied by the quantity of time spent on household work—information about the latter being obtained from time use surveys—the resulting figures were equivalent to approximately 40% of Canada's GNP. These estimates have been updated on occasion in subsequent years.

#### 2.3.5.4 Environmental statistics

Efforts to develop relevant statistics about the relationship between the economy and the environment also got under way in the 1970s, but progress was slow in Canada as in other countries. A principal problem was that the damaging effects of air, water and land pollution were not being priced in the market and could only be valued indirectly. In addition, Statistics Canada had yet to develop the survey vehicles necessary to gauge private and public expenditures on pollution abatement and other environmentally-relevant activities. Nevertheless, a new publication entitled *Human Activity and the Environment: A Statistical Compendium* was released for the first time in 1978. This volume brought together in one place a wide range of information from Statistics Canada, Environment Canada<sup>57</sup> and a number of other sources that cast light on the relationship between the environment and the economy. The book has been updated and republished many times since then.



### **2.3.5.5 National accounts timeliness**

An important accomplishment in the mid-seventies was the improvement in the time of release of the quarterly income and expenditure accounts and balance of payments estimates. Up to that time the estimates had been made available to the public within 95 to 100 days after the reference quarter. However, other countries had more timely releases and users of the accounts were pressing for a major reduction in the Canadian release lag. The United States, in particular, was releasing preliminary estimates of GNP just two weeks after the reference quarter. A study was conducted by Cyril Hodgins in 1979 to examine the options and trade-offs with respect to more timely income and expenditure accounts.<sup>58</sup> Thereafter with some effort—and some compromises—the release lag for the official estimates was reduced to around 60 days, where it remains to this day.

### **2.3.5.6 Intolerably large revisions in the 1970s**

Statistics Canada's macroeconomic accounts program also experienced a crisis of sorts that built up gradually through the 1970s. The economy grew very rapidly in the first few years of the decade and this growth was accompanied by rising inflation. In this setting, two of the most important surveys underpinning the income and expenditure accounts—the employment survey and the retail trade survey—were persistently and substantially underestimating the growth of nominal income. A rapid expansion in the number of operating businesses was occurring, but at the time the survey system was ill-equipped to catch this dimension of the growing economy. On the income side of the accounts, wages and salaries were substantially underestimated in the preliminary estimates and on the expenditure side this was matched by estimates for household expenditures on goods and services that were also too low. It took quite a while before this underestimation was fully recognized. Eventually the problem was diagnosed and addressed by obtaining very reliable benchmark data for labour income from the T4 database of the then Revenue Canada department. The income and expenditure estimates were revised upward quite substantially. However, Statistics Canada's reputation took quite a blow, especially as the agency was experiencing a number of other acute issues around that time.<sup>59</sup>

To deal with the situation, the government appointed two commissions to investigate the agency, one led by Price-Waterhouse, a consultancy, and the other conducted by Sir Claus Moser, a famous British statistician. In the resulting reports, the main conclusions were that there was a problem with the management of the agency and that more priority needed to be attached to methodological issues with respect to business and national accounts statistics. Some important management changes were made in response to these reports and a new Chief Statistician was appointed from outside the agency in 1981, Martin Wilk.

Wilk took some strong steps to reorient Statistics Canada and he retired in 1985 due to ill health. Ivan Fellegi became the Chief Statistician. "For almost four decades he [Fellegi] had been an observer as the small national accounts group at Tunney's Pasture grew in size and maturity. He had known Simon Goldberg. He understood the data inputs that fed the national accounts from the agency's wide net of surveying. Once established in the chief statistician's office, his genius would lie in providing the national accounts team with a stable organizational base, in keeping the fiscal wolf away from the door and in constantly encouraging new application of the national accounts to the interest of civil society. Under this umbrella, the national accountants at Statistics Canada were left to pursue their creative purposes through the late 1980s and 1990s."<sup>60</sup>

### **2.3.5.7 National Accounts Advisory Committee**

One of the ways in which Statistics Canada sought to rebuild its reputation in the 1980s was to reach out and communicate more frequently and directly with its users and data suppliers. In 1984 a National Accounts Advisory Committee was established with about a dozen highly qualified economists from across Canada having a strong interest in national accounts statistics. Most of the members were university professors and economic researchers. There were also high-level members from Finance Canada and the Bank of Canada. This committee has met twice a year in every year since then and has provided a wealth of good advice to the agency about Canada's System of Macroeconomic Accounts.

### 2.3.5.8 Historical revision of 1986

In 1986, Statistics Canada released an historical revision of the national accounts covering the period 1961 to 1985.<sup>61</sup> GNP was revised up by 1.8% in 1985 and the revision was carried back to the earlier years. The largest single revision was to residential construction expenditure on major alterations and improvements and it was based largely on new information from the 1982 Family Expenditure Survey (FAMEX) which contained questions designed to meet the requirements of the national accounts. See Table 2.4 for a list of the more important changes made in this historical revision.

Prior to this revision the main national accounts aggregates were not constrained to be the same across the entire system. For example, total personal expenditure on consumer goods and services (as it was then called) in the income and expenditure accounts differed from the corresponding aggregate in the supply and use tables, although the two were conceptually the same. From this revision forward such aggregates were constrained to be the same in all parts of the System of Macroeconomic Accounts.

The expenditure estimates at constant prices were rebased to the year 1981 as part of the revision. In addition, on this occasion the accounts adopted an hedonic price index for computers that had been developed jointly by the United States Bureau of Economic Analysis (BEA) and the International Business Machines (IBM) corporation. The index used previously to deflate the computer portion of machinery and equipment investment and imports of computer equipment had only modest adjustments for quality change and had shown gradual increases in prices over time. The new BEA-IBM price index, in contrast, reflected large advances in computer quality over time and featured substantial **decreases** in price. As a result, the estimates at constant prices for machinery and equipment investment expenditure and imports of machinery and equipment were both revised up substantially.

As part of the revision, Statistics Canada adopted gross domestic product (GDP) as its headline national accounts measure, in place of gross national product (although estimates of GNP were and still are produced as well). GDP gauges the income that is earned and the output that is produced within the geographical boundaries of the country regardless of whether those receiving the income are resident or non-resident. GNP, in contrast, measures the income earned by the residents of the country, regardless of whether that income is earned domestically or abroad. In other words, GDP is equal to GNP plus Canadian income earned by non-residents minus foreign income earned by residents. GNP is a better indicator of the income of Canadian residents, but GDP is a superior measure of production within Canada's borders and correlates more closely with other macroeconomic indicators such as employment and inflation. The use of GDP, rather than GNP, as the main income and expenditure accounts aggregate also fits better with the provincial accounts and the industry-based accounts, both of which aggregate to GDP. The GDP aggregate was highlighted in the 1968 United Nations standard for national accounting and most countries now focus their macroeconomic accounting systems on that aggregate.

**Table 2.4**  
**Changes implemented in the 1986 historical revision<sup>62</sup>**

Change number	Description
1	From this revision forward, aggregates such as GNP, personal expenditure on consumer goods and services and total wages, salaries and supplementary labour income were constrained to be the same in all parts of the Canadian System of Macroeconomic Accounts.
2	Residential construction expenditure on major alterations and improvements was revised up substantially based largely on new information from the 1982 Family Expenditure Survey (FAMEX) which contained questions designed to meet the requirements of the national accounts. These revisions had a significant effect on the estimates for residential construction, net rents, personal expenditure on consumer goods and personal saving.
3	Revisions were made to military pay and allowances to include the employer's contributions to medical plans on behalf of military personnel.
4	Corporation profits were revised upward due to the removal of bad debt write-offs of business as a current expense in the calculation of bank profits and the inclusion of withholding taxes paid to foreign governments (shown as transfers to non-residents in the income and outlay accounts).
5	Local government indirect taxes less subsidies were revised down due to the reclassification to sales of goods and services of school fees and Quebec water rates. Local government subsidies to transit systems were included in subsidies. In addition, a portion of interest on investments by governments had been erroneously included with miscellaneous indirect taxes and was thereafter included with investment income.
6	Defence expenditures on goods and services were lowered by the exclusion of grants for defence research, which were henceforth treated as capital assistance.
7	Government capital formation expenditures were reduced by the shifting of capital outlays by the Post Office and private schools from the government sector to the business sector.
8	A major change was made to the calculation of the value of physical change in manufacturing inventories, which was henceforth done by stage of fabrication. This was implemented back to 1961.
9	Exports and imports of services were revised due to the inclusion of withholding taxes paid by residents to foreign governments and of spending on education and health services by residents abroad and non-residents in Canada.
10	The expenditure estimates at constant prices were rebased to the year 1981 as part of the revision.
11	The accounts adopted an hedonic price index for computers that had been developed jointly by the United States Bureau of Economic Analysis (BEA) and the International Business Machines (IBM) corporation. The new price index reflected large advances in computer quality over time and featured substantial decreases in price. As a result, the estimates at constant prices for machinery and equipment investment expenditure and imports of machinery and equipment were both revised up substantially.
12	Statistics Canada adopted gross domestic product (GDP) as its headline national accounts measure, in place of gross national product (although estimates of GNP were and still are produced as well). Although estimates of real GNP were no longer released, the following advice was offered: "The user who wishes to calculate GNP at constant prices may do so by deflating net investment income received from non-residents with the overall GDP implicit price index and adding the result to GDP at constant prices."
13	New tables were added to the System of Macroeconomic Accounts giving more detail on personal expenditure on consumer goods and services and on investment in fixed capital and inventories, at both current and constant 1981 prices. Additional details were also added for labour income and capital consumption allowances by sector. The government revenue and expenditure table was broken down into separate tables for each level of government.
14	Changes were made to the classification of personal expenditures on goods by durability class to accord more closely with the United Nations recommendations.
15	Gross fixed capital formation was defined to include both government fixed capital (excluding defence outlays) and all transfer costs on the sales and purchases of existing fixed assets.
16	Capital formation in inventories was extended to cover changes in surplus war assets and in the inventories of government commodity agencies.
17	The imputed net rent on government-owned buildings was dropped.

**Source:** Extracted from Statistics Canada, *The Canadian Income and Expenditure Accounts: Description of Revisions*, mimeo, Ottawa, July 18, 1986.

Just three years after the historical revision, Statistics Canada published *A User Guide to the Canadian System of National Accounts*,<sup>63</sup> a volume aiming, like the present one, to describe the concepts and structure of the accounts as they existed at the time.

Among the key players in the 1986 historical revision were Stewart Wells, Kishori Lal, Barbara Clift, Albert Meguerditchian and John Randall, who wrote the *User Guide*.

### 2.3.5.9 Improvements to the financial and balance sheet accounts

In 1983-84 the first national balance sheet accounts for Canada were released, covering non-financial assets, financial assets, liabilities and net worth for all sectors of the economy. This included a consolidated national balance sheet which integrated the international investment position. In part this was based on guidance from the *UN Provisional Guidelines on Balance Sheet Accounts and Stock-Flow Reconciliation Account* issued in 1978. Stock-flow reconciliation accounts were also released in 1985.

Credit aggregates were introduced into Canada's financial accounts 1987 as an extension of the national balance sheet accounts, following the seminal work of Benjamin M. Friedman who argued that central banks should be monitoring credit aggregates as opposed to monetary aggregates.<sup>64</sup> These are among the most widely quoted series from the quarterly balance sheet account.

### 2.3.6 The 1990s and 2000s

The further development of Canada's System of Macroeconomic Accounts proceeded in the 1990s and 2000s. Major enhancements included the elaboration of provincial and territorial accounts and the blossoming of several new satellite accounts. Studies were conducted on the possible size of the unmeasured economy, also referred to as the 'underground economy', and the financial accounts were upgraded. The period was characterized by important historical revisions in 1997 and 2012/2015.

#### 2.3.6.1 Provincial and territorial accounts

One of the principal development themes in the macroeconomic accounts during the 1990s was the expansion and improvement of the provincial and territorial economic accounts. First estimates of the income and expenditure accounts for the ten provinces had been produced on an experimental basis in the 1980s. Later these were extended to cover the three northern territories and the price-volume decomposition was applied to these accounts in the early 1990s. The timeliness of their official release was also substantially improved.

Then in 1996, at the initiative of Finance Canada, a five-year "Project to Improve Provincial Economic Statistics" (PIPES) was launched. The goal was to develop a system of annual provincial and territorial supply and use accounts. These were to provide source statistics for a new federal-provincial revenue allocation formula associated with the harmonized sales tax (HST). The tax itself was initiated on April 1, 1997 although the agreement among the participating governments was signed on October 23, 1996. The statistics had to be reliable and to merit the trust of all governments participating in the harmonized tax. At first there were four directly participating governments—Newfoundland and Labrador, Nova Scotia, New Brunswick and the Government of Canada. Quebec also participated, but in a different way. It was expected that other provinces might join the arrangement in the future.

To realize the goals of this project, the survey system had to be greatly expanded and overhauled. Many existing surveys needed to have their sample sizes increased and their sampling strategies redesigned to cover adequately each individual province and territory. Some new surveys had to be launched to fill information gaps. Additional administrative data, especially from the Canada Revenue Agency, had to be acquired, organized and prepared for use in conjunction with the survey data. The business register—a large database containing profile information about all Canadian businesses with annual revenue greater than \$30,000—had to be expanded and improved. All of this and more was necessary in order to furnish the enormous quantity of information required to produce the provincial and territorial supply and use tables.

The end result, when the project was completed successfully in 2001, was that Canada had—and still has—by far the most detailed and comprehensive system of regional accounts of any country in the world.

#### 2.3.6.2 Underground economy

In 1994, Statistics Canada published an important study examining how large the unmeasured economy—also referred to as the underground economy—might be. The study looked at each of the various surveys and administrative data sources used in compiling the estimates of gross domestic product and posed the question: By how much might these data sources be persistently underestimated? Upper bounds on the possible ongoing underestimation error were assigned to each of the main data sources, drawing on the knowledge and judgement of the national accounts experts and business statisticians using and responsible for these data sources. This enabled the calculation of an upper bound estimate of the extent of possible persistent underestimation of GDP. Since

2009 similar studies have been carried out every year. Monitoring the potential size of the underground economy is important to ensure Canada has a comprehensive measure of economic activity. All of the studies done to date have indicated that at a maximum the underground economy in Canada might be equivalent to 2-3% of gross domestic product.

### **2.3.6.3 Financial flow and national balance sheet accounts**

The financial accounts were also improved during this period. A thorough *Guide to the Financial Flow and National Balance Sheet Accounts* was released in 1989.<sup>65</sup>

Between 1992 and 1996, the timeliness of the quarterly financial flow accounts was improved from about 90 days to about 60 days after the end of the reference period to match the timeliness of the other components of the quarterly national accounts. This allowed for the simultaneous analysis of aggregate demand and its components with financial transactions and was a precursor to the integrated sector accounts that were released in 1997.

In 2003 the national balance sheet accounts and the international investment position estimates were increased in frequency from annual to quarterly. In addition, some asset types in these accounts were shifted from a book value basis to a market value basis.

A new pension satellite account was released in 2010, detailing the private- and public-sector components of the Canadian pension system within a dynamic asset-stock/income-and-contribution-flow framework.

In 2012 the direct investment position estimates contained in the international investment position account were converted from an historical cost valuation to market valuation. In addition, unlisted equity assets were valued at market prices for the first time, meaning the entire balance sheet was at market prices.

In 2015 the national balance sheet accounts estimates were expanded to include quarterly estimates of natural resource assets.

### **2.3.6.4 Satellite accounts**

The 1990s also saw the creation of a number of Canadian 'satellite accounts'. These statistical structures are closely related to the standard System of National Accounts, adopting many of its concepts, conventions and classifications, while at the same time departing from the standard in some important ways. This approach adds flexibility to the System of Macroeconomic Accounts, allowing some important issues to be addressed that do not fit naturally within the standard system.

#### **2.3.6.4.1 Environmental and natural resource satellite account**

Environmental and natural resource satellite accounting started in Canada in the early 1990s. In 1991 the government allocated ongoing funding to Statistics Canada for the purpose. In 1994 an important international conference on national accounts and the environment was held in London, England and this stimulated the environmental accounting effort considerably. It took several years for the necessary surveys to be developed and the accounts to be prepared, but today Canada has one of the best environmental satellite accounts in the world. Annual physical flow accounts are now available along with a number of environmental surveys. In addition, Canadian research work has been conducted in the area of the valuation of ecosystems and a land account has been developed. In 2012 the United Nations Statistical Commission adopted the first international standard for this type of accounting called the System of Environmental-Economic Accounting (SEEA).

#### **2.3.6.4.2 Tourism satellite account**

A tourism satellite account was also created in the 1990s, with financial support from the Canadian Tourism Commission. This work began in 1991.<sup>66</sup> The idea here was to combine information about the many different industries selling goods and services to individuals, whether resident or non-resident, who are travelling a substantial distance from their home location. These statistics enable analyses of the output and employment effects of tourism in Canada.

### 2.3.6.4.3 Non-profit institutions and volunteering satellite account

A satellite account of non-profit institutions and volunteering was also developed in 2005 to identify the economic contribution of Canada's non-profit sector and contribute to an increased understanding of its interaction with other sectors of the economy. The account contained a set of economic statistics describing Canada's non-profit sector. It included a set of standard economic accounts and a nonmarket extension to put an economic value on unpaid volunteer labour.

### 2.3.6.4.4 Culture satellite account

In addition, a culture satellite account was developed in 2010. It provided measures of the economic importance of culture (inclusive of the arts and heritage) and sport in Canada in terms of output, gross domestic product and employment.

### 2.3.6.5 Historical revision of 1997

In 1993 a significant upgrade to the international standard for national accounting, referred to as SNA 1993, was released. Around the same time, the International Monetary Fund published the fifth edition of the *Balance of Payments Manual* (BPM5). After the release of these documents Statistics Canada set about modifying Canada's macroeconomic accounts to conform to the new standards as closely as possible. As with previous updates to international standards, Canada strove to line up its accounts with the standards so as to facilitate international comparisons, although it was found expedient to depart from the standards in some areas to better reflect the available data sources and institutional structure of the country. The resulting historical revision of the Canadian accounts was released in November 1997 and covered the period from the first quarter of 1961 forward.<sup>67</sup> Table 2.5 highlights the major changes implemented in this revision.

**Table 2.5**  
**Changes implemented in the 1997 historical revision<sup>68</sup>**

Change number	Description
1	Retirement allowances (severance payments) were included in supplementary labour income, starting in the year 1990 when data from Canada Revenue Agency became available. Formerly they were omitted due to lack of source data.
2	Certain employer payroll taxes were excluded from supplementary labour income on the grounds that there were no directly associated economic benefits to employees. They were reclassified as taxes on production.
3	Hospital and medical expenditures were no longer deducted from the assessment revenue of workers' compensation boards when estimating employer contributions, starting in 1961.
4	The Canada Revenue Agency T4 undercoverage adjustment for tips on meals, accommodation and hairstyling was expanded to include porters and baggage carriers at railway stations and a downward adjustment was made to the estimate of tips on hairstyling and beauty services.
5	Transfer costs on the sale of existing dwellings were expanded to include not just real estate commissions, but also legal fees and all other fees and taxes related to the transfer of used residential assets.
6	Prior to the historical revision, all Department of National Defense spending on equipment and structures was treated as current spending. As part of the revision, consistent with SNA 1993, outlays for structures and equipment used by the military that can also be used for civilian purposes (airfields, docks, roads, hospitals, transport aircraft, etc.) were reclassified as capital spending with an associated imputation for capital consumption in subsequent accounting periods. Purchases of destructive weapons and their supporting systems continued to be treated as current expenditure items.
7	Prior to the historical revision, an upward adjustment was made each year to capital spending on machinery and equipment on the grounds that businesses typically report some smaller capital items as operating rather than capital expenses. As part of the revision, consistent with SNA 1993 and also due to the fact there was little information available upon which to base such a correction, this adjustment was removed.
8	The definition of capitalized mineral exploration expenses was expanded to include general exploration expenditures undertaken by mining companies on their own account, or by mineral exploration companies on contract, as well as geological and geophysical expenses incurred in exploration related to petroleum and natural gas.
9	Progress payments on large capital acquisitions that require several accounting periods for full delivery were reclassified as financial flows, rather than as capital spending, for transactions between residents and non-residents. For transactions between resident units such flows continued to be treated as capital expenditure due to source data limitations.
10	Motor vehicles acquired under financial leases were allocated to the using sector, as recommended by SNA 1993. However all other capital goods acquired under financial leasing arrangements continued to be allocated to the industry of the owner rather than the user, due to source data limitations.

**Table 2.5**  
**Changes implemented in the 1997 historical revision<sup>68</sup>**

Change number	Description
11	The SNA 1993 recommendation that exports and imports of goods be valued f.o.b. at the border of the exporting country was adopted. Previously they were valued at the plant and the associated inland transportation costs to the border were treated as trade in services. However, the supply and use tables continued to record detailed imports c.i.f. including import duties, with an offset of these duties at the aggregate level so the total value of imports was the same as in the balance of payments.
12	As recommended by SNA 1993, all goods imported for processing and then re-exported were deemed to undergo a change of ownership at the border and were treated as trade in goods rather than in services. This change mainly affected imports of uranium and gold.
13	The international travel account was reconfigured as recommended in BPM5 to include a broad range of travellers' purchases of goods and outlays related to travel for educational and medical purposes, to exclude passenger fares (which moved to the transportation account) and to introduce a new distinction between business and personal travel.
14	The SNA 1993 methodology for financial intermediation services indirectly measured (FISIM), which was already applied to banks, was extended to other financial corporations. In addition the FISIM on business transactions of credit unions was shifted from household consumption to intermediate consumption and FISIM was calculated for the first time on government deposits and government borrowing.
15	The split of FISIM output between depositors and borrowers was recalculated based on the value of deposits and loans outstanding and the share attributed to depositors for each sector was based on the sector's share of deposits.
16	The SNA 1993 recommendation to allocate FISIM to exports and imports was adopted in the income and expenditure accounts and the supply and use tables. In the balance of payments no such allocation was made, consistent with the different recommendations of BPM5.
17	The SNA 1993 recommendation to include the investment income from technical reserves in the output of insurance companies was adopted.
18	In accordance with 1993 SNA recommendations, the industry category 'government royalties on natural resources' was eliminated and so was the payment of such royalties out of the intermediate consumption of the industries using these assets.
19	Prior to the historical revision, non-market producers were not shown in the supply and use tables. Their inputs were directly allocated to final consumption. As part of the revision, non-market producers were included in the supply and use tables, as per the SNA 1993 recommendations.
20	Seasonally adjusted financial flow accounts statistics were produced at a level of sector aggregation sufficient to tie in with the seasonally adjusted statistics in the income and expenditure accounts.
21	Prior to the historical revision, gold transactions were treated in a special and unusual way. After the revision, non-monetary gold was treated as a normal commodity and transactions in non-monetary gold were recorded as inventory change. The transformation of gold into a monetary asset by the monetary authorities was recorded in the other changes in assets account and this treatment was extended back to 1968.
22	The SNA 1993 recommendation to include asset-backed securities in the financial flow accounts and the balance sheet accounts was adopted. They were allocated to the category 'securities other than shares'. Most of the securitized assets were allocated to a new institutional sector called 'issuers of asset-backed securities'.
23	Universities were moved from the household sector to become a sub-sector of the provincial and territorial government sector. Non-profit colleges were also placed in this sub-sector. School boards in Newfoundland and Labrador, previously in the household sector, were moved to become a sub-sector of the local government sector. Non-profit hospitals were changed from being a separate sub-sector of the government sector to being a sub-sector of the provincial and territorial government sector. All deposit insurance organizations were also transferred to the government sector; previously some were classified as business enterprises. Provincial and local government housing authorities were moved from the business sector to the government sector. All of these universe changes were carried back to the inception date of the institutional unit or 1961, whichever came later.
24	All refundable tax credits were treated as expenditures. Previously some of these credits were netted against tax revenue.
25	The 1993 SNA recommendation to treat payments by households for some specific licenses and permits, such as motor vehicle licenses, as indirect taxes was adopted. Previously some such payments by households were treated as direct taxes.
26	The 1993 SNA recommendation to treat payments to cover losses on current production as subsidies and those to cover large operating deficits accumulated over two or more years as capital transfers was adopted.
27	Debts forgiven by governments were treated as capital transfers as per the SNA 1993 recommendations. Debts written off by businesses were treated as balance sheet adjustments in the other changes in assets account.
28	Prior to the historical revision, a small portion of the corporate income taxes collected from life insurance corporations was allocated to the household sector. After the revision no such allocation was made. Instead life insurance companies are deemed to pay the entire tax and the income attributed to the household sector is recorded net of that tax.
29	Capital transfers from local governments to their own government business enterprises, to other businesses and to persons were recorded as local government capital transfers. Previously they were unrecorded.
30	Grants in lieu of taxes paid by the federal and provincial governments to local governments were treated as indirect taxes rather than as transfers.
31	A federal government liability was recorded in respect of the allowances for losses against the foreign loan assets of the Export Development Corporation and Canada Wheat Board. Formerly such allowances for losses were deducted from the federal government's assets in these corporations.

**Source:** Extracted from Statistics Canada, The 1997 Historical Revision of the Canadian System of National Accounts: Record of Changes in Classification of Sectors and Transactions, Concepts and Methodology, by Kishori Lal, October 1998.

Four years after the historical revision, another change was put into effect that was recommended in the SNA 1993 standard. This was the move from five-year-linked Laspeyres estimates of product expenditures at constant prices to quarterly-linked Fisher chain estimates. This change was intended both to reduce the ‘substitution bias’ indexation problem and to make Canada’s real GDP estimates comparable to those of the United States and other advanced countries.<sup>69</sup>

Around the same time, pre-packaged and licensed software, plus custom-designed and own-account software expenditures were capitalized in the accounts.<sup>70</sup> This change affected the national balance sheet as well as gross capital formation in the income and expenditure and supply and use accounts. The change brought Canada in line with the United States and some other advanced countries that introduced software into their estimates of investment in previous years. It also aligned Canada with the 1993 SNA recommendation that business and government acquisition of software be treated in national accounts as an investment rather than as a current expense.

The SNA 1993 recommendation that artistic and entertainment originals, net acquisitions of valuables, livestock used in production year after year and trees cultivated in plantations all be capitalized was not adopted due to source data limitations. Also, the recommendation that there be five main domestic institutional sectors—households (including unincorporated business), non-profit institutions serving households (NPISH), non-financial corporations, financial corporations and general government—instead of the three then-existing sectors—persons and unincorporated business (including NPISH), corporations and government business enterprises, and general government—was not adopted at the time, although it was subsequently done as part of the 2012 historical revision. Similarly, the recommendation that a distinction be drawn between final consumption expenditure and actual final consumption was not implemented in 1997, though it is on the priority list for the future as this paper is being written.

#### ***2.3.6.6 Historical revision of 2012 and 2015***

The most recent historical revision was released in two steps—in 2012 and 2015—with one or more instalments still to come. The revision puts into effect many of the changes in SNA 2008 and some from SNA 1993. It applies to the estimates from the first quarter of 1981 forward. The main elements of this historical revision are listed in Table 2.6.



**Table 2.6**  
**Changes implemented in the 2012 and 2015 historical revision<sup>71</sup>**

Change number	Description
1	Expenditures on research and development were reclassified from intermediate consumption to gross capital formation as recommended by SNA 2008. These expenditures along with existing investment statistics for software and mineral exploration, were classified in a new investment category called intellectual property products.
2	Expenditures on military weapons systems, which were formerly treated as current government spending, were reclassified as capital expenditures as recommended by SNA 2008.
3	The methodology for consumption of fixed capital was changed to the replacement cost method using a geometric depreciation model. Previously the estimates for corporations, unincorporated businesses and government business enterprises were based on historical cost and used a linear depreciation method. The replacement cost approach is recommended by SNA 2008.
4	The value of unlisted corporations and intercompany investments was shifted to a market value basis, in line with the valuation of listed corporations and other assets and liabilities on the national balance sheet and in the international investment position.
5	The product and industry classifications used in the CSMA were updated in a manner that provides greater detail for services and service-providing industries, with less detail for goods and goods-producing industries than previously. For household consumption expenditures the international classification of individual consumption according to purpose (COICOP) was adopted.
6	The six institutional sectors recommended by SNA 2008 – households, non-profit institutions serving households, non-financial corporations, financial corporations, general government and non-residents – were adopted. Previously the CSMA worked with four main sectors – persons and unincorporated business (including NPISH), corporations (both non-financial and financial), general government and non-residents. In addition, a new sub-sector was defined within the general government sector - the Aboriginal general governments sub-sector. These institutional units were formerly classified with households.
7	A substantial change was made in the way the income and expenditure accounts are presented. Prior to 2012 Canada still followed the presentation from the 1968 SNA standard. In the historical revision the 2008 SNA standard 'sequence of accounts' format was adopted which resulted in a presentation more aligned with that of other countries.
8	New and improved estimates of government sector statistics were introduced, reflecting a comprehensive effort to adopt the concepts explained in the International Monetary Fund's Government Finance Statistics Manual 2014 and to exploit previously unavailable general ledger data from provincial, territorial and local governments. The new accounting concepts and methods and improved data sources resulted in more accurate measures of government revenue, expenses, operating balances, assets and liabilities.
9	Contributions to defined benefit pension plans were recalculated on an accrual basis, meaning that pension plan receipts are now recorded as income when the associated work is performed. Previously these contributions were treated on a cash basis.
10	Improved source data led to an upward revision of financial services purchased by households for explicit charge (a component of final consumption expenditure) and a corresponding reduction of financial services purchased by businesses for explicit charge (an intermediate consumption expenditure). Investment dealer fees paid by households were also revised up.
11	Natural resource wealth estimates, derived as part of the effort to build an environmental satellite account, were added to the quarterly national balance sheet account.
12	The balance sheet market value estimates for residential real estate were improved by exploiting source data from the Survey of Financial Security and Property Assessment files. Previously these statistics were estimated using the perpetual inventory method.
13	The service lives for various non-residential and machinery and equipment asset types were revised, leading to higher estimates of consumption of fixed capital and lower estimates of the net capital stock.
14	Estimates of investment in residential structures were increased to reflect better information about the value of land improvements transferred by developers to municipalities upon completion of residential subdivisions.
15	Subsidies related to crop insurance provided to farmers were reclassified as subsidies on production rather than as subsidies on products.
16	To better align with international macroeconomic accounting standards, covered bonds, bearer-deposit notes and other securities issued by chartered banks were reclassified from the 'chartered bank deposit liabilities' category in the financial flow accounts to the 'bonds and other short-term securities' category of those accounts.
17	The other changes in assets account, which is the aggregate of the other changes in the volume of assets account and the revaluation account, was introduced into the sequence of accounts, thereby filling the remaining gap in the sequence that determines the difference between the opening balance sheet account in a particular accounting period and the closing balance sheet account for that period. The two component parts of this account – the other changes in the volume of assets account and the revaluation account – were not yet separately identified.
18	The historical revision also provided an opportunity to improve the estimation methods for a number of national accounts components, most notably unincorporated business income, the sectoral distribution of dividend receipts and labour income, the estimates of international trade price indexes, the estimates of travel expenditures, household expenditures on used vehicles and exports and imports of services.

**Source:** Extracted from the article: [A preview of the historical revision of the Canadian System of National Accounts](#) and [Results from the 2015 Comprehensive Revision to the Canadian System of Macroeconomic Accounts](#).

**Text box 2.1****Primary input incomes or expenses****1. The 1946 vintage**

This was the first vintage of the income and expenditure accounts. It contained annual statistics from 1938 to 1945 and was consistent with the international standard that was emerging at the time but had not yet been formalized. For the statistics themselves and other details see Dominion Bureau of Statistics, *National Accounts Income and Expenditure 1938-1945*, Ottawa, Edmond Cloutier, Printer to the King's Excellent Majesty, April 1946.

**2. The 1962 vintage (1953 SNA)**

This vintage presented annual statistics from 1926 to 1956. These statistics were consistent with the 1953 international SNA standard. For the statistics themselves and other details, in print, see Dominion Bureau of Statistics, *National Accounts Income and Expenditure 1926-1956*, Ottawa, Catalogue no. 13-502, 1962.

**3. The 1974 vintage (1968 SNA)**

This vintage presented annual statistics from 1926 to 1974 and quarterly statistics from 1947 to 1974. These statistics were consistent with the 1968 international SNA standard. For the original statistics themselves, in print, see Statistics Canada, *National Income and Expenditure Accounts*, volume 1, *The Annual Estimates* and volume 2, *The Quarterly Estimates*, Catalogue no. 13-549-E, 1975. These statistics were updated up to the year 1997, when they were superseded by new statistics based on the 1993 SNA standard. **The quarterly statistics on this basis from 1947 to 1997 are available in tables 36-10-0136-01 through 36-10-0149-01 inclusive. The annual statistics from 1926 to 1986 are available in tables 36-10-0150-01 through 36-10-0204-01 inclusive.**

**4. The 1997 vintage (1993 SNA)**

This vintage presented annual and quarterly statistics from 1961 to 1997. These statistics were consistent with the 1993 international SNA standard. They were updated to the year 2012, when they were superseded by new statistics based on the 2008 SNA standard. **The quarterly statistics from 1961 to 2012 are available in tables 36-10-0239-01 through 36-10-0253-01 inclusive. The annual statistics from 1961 to 2011 are available in tables 36-10-0254-01 to 36-10-0297-01, 36-10-0100-01, 36-10-0365-01, and 36-10-0367-01.**

**5. The 2012 vintage (2008 SNA)**

This is the current vintage. It includes quarterly statistics from 1981 to date. These statistics are consistent with the 2008 international SNA standard. **The quarterly statistics are available in tables 36-10-0103-01 to 36-10-0112-01, 36-10-0114-01 to 36-10-0118-01, 36-10-0121-01 to 36-10-0127-01, 36-10-0435-01, 36-10-0477-01, and 36-10-0484-01.**

**2.4 Conclusion**

This chapter recounts the story of how the CSMA emerged in the first half of the 20th century and gradually evolved into the wide-ranging, sophisticated and vital statistical database it is today.

As has been described, the growth and improvement of the accounts over the decades has been facilitated by several more or less parallel developments. One was the steady advancement of the conceptual framework for the international System of National Accounts, which is outlined earlier in this chapter. Another was the steady progress of digital computation methods and systems over the period which empowered national accountants and business survey statisticians to build larger and more timely databases with more refined methodologies. The mathematical science of statistical survey-taking also improved greatly, allowing the CSMA to benefit from more reliable, more carefully targeted data gathering. Simultaneously, administrative databases—particularly those from the Canada Revenue Agency and the Canada Border Services Agency—became larger, more detailed and more easily accessible by Statistics Canada as time passed. In addition, the number and educational qualifications of staff working on the accounts, both directly and indirectly, grew substantially. These and other factors combined to enable the development of what is now a remarkably comprehensive and reliable macroeconomic time series database.

Of course, the story is not finished. There is no doubt the CSMA will continue to evolve and improve in future, as the Canadian economy and the needs of Canadians continue to change.

## Notes for chapter 2

1. Duncan McDowall, *The Sum of the Satisfactions: Canada in the Age of National Accounting*, McGill-Queen's University Press, Montreal and Kingston, 2008.
2. In addition to Duncan McDowall's book on the history of Canada's national accounts, two other books discuss the history of the Dominion Bureau of Statistics and Statistics Canada. They are: David A. Worton, *The Dominion Bureau of Statistics: A History of Canada's Central Statistical Office and its Antecedents, 1841-1972*, McGill-Queen's University Press, Montreal and Kingston, 1998; and Sylvie Blais [Project Manager for Statistics Canada's 75th Anniversary], *75 Years and Counting: A History of Statistics Canada*, Statistics Canada, 1993.
3. Copied from the [United Nations](#) web site.
4. *Measurement of National Income and the Construction of Social Accounts*, report of the Sub-Committee on National Income Statistics of the League of Nations Committee of Statistical Experts, *Studies and Reports on Statistical Methods No. 7*, United Nations, Geneva, 1947. (This document was in process when the League of Nations' functions in the field of statistics were taken over by the United Nations.)
5. *A System of National Accounts and Supporting Tables*, report prepared by a group of national income experts appointed by the Secretary-General, *Studies in Methods N° 2*, United Nations, New York, 1953.
6. As explained in subsequent chapters, unincorporated businesses are now grouped with households because, as a practical matter, the financial statements of unincorporated businesses cannot generally be disentangled from those of the household.
7. United Nations, *A System of National Accounts and Supporting Tables*, *Studies in Methods, Series F, N° 2, Rev. 1*, New York, 1960 and *A System of National Accounts and Supporting Tables*, *Studies in Methods, Series F, N° 2, Rev. 2*, New York, 1964.
8. United Nations, *A System of National Accounts*, *Studies in Methods, Series F, N° 2, Rev. 3*, New York, 1968. The volume was 246 pages in length.
9. United Nations, International Monetary Fund, Organization for Economic Co-operation and Development, World Bank and Commission of the European Communities, *System of National Accounts 1993*, Brussels/Luxembourg, New York, Paris, Washington D.C., 1993.
10. Kishori Lal represented Canada in the Advisory Expert Group during this period.
11. Op. cit., pp. 648-669.
12. Op. cit., p. 648.
13. United Nations, International Monetary Fund, Organization for Economic Co-operation and Development, World Bank and Commission of the European Communities, *System of National Accounts 2008*, New York, 2009.
14. Karen Wilson represented Canada in the Advisory Expert Group during this period.
15. Op. cit., pp. 581-601.
16. Op. cit., p. 581.
17. Duncan McDowall, *ibid*, pages 19-20.
18. Today estimates of national wealth are available in the financial and wealth accounts. See Chapter 6.
19. Dominion Bureau of Statistics, *Canada's National Wealth*, published by authority of the Honourable W.D. Euler, M.P., Minister of Trade and Commerce, Ottawa, 1936, p. 1.
20. The Dominion Bureau of Statistics was founded in 1918. The name of the agency was changed to Statistics Canada in 1971.
21. Duncan McDowall, *ibid*, pages 42-43.
22. Duncan McDowall, *ibid*, page 38.

23. See Chapter 5 for information about the national and provincial/territorial income estimates as they exist today.
24. Dominion Bureau of Statistics, *National Income of Canada 1919-1938*, Part 1, published by Authority of the Hon. James A. MacKinnon, M.P., Minister of Trade and Commerce, Ottawa, 1941.
25. Duncan McDowall, *ibid*, page 60.
26. Duncan McDowall, *ibid*, pages 54-55.
27. Duncan McDowall, *ibid*, page 56.
28. Duncan McDowall, *ibid*, page 62.
29. Duncan McDowall, *ibid*, page 83.
30. See Chapter 5 for a description of the income and expenditure accounts as they exist today.
31. Government of Canada, *Employment and Income With Special Reference to the Initial Period of Reconstruction*, Ottawa, April 1945.
32. Dominion Bureau of Statistics, *National Accounts Income and Expenditure 1938-1945*, Ottawa, Edmond Cloutier, Printer to the King's Excellent Majesty, April 1946.
33. In the mid-1950s, Julius Shiskin of the United States Bureau of the Census developed a more sophisticated method for seasonal adjustment that made use of electronic computers. His method was shared with and adopted by Canada later in the decade. The method has been improved and redesigned several times since then and is currently known as X13ARIMA-SEATS.
34. Duncan McDowall, *ibid*, page 119.
35. Anthony Scott and William Hood, *Output, Labour and Capital in the Canadian Economy*, Royal Commission on Canada's Economic Prospects, Ottawa, 1957.
36. William Hood, *Financing of economic Activity in Canada*, Royal Commission on Canada's Economic Prospects, Ottawa, 1958.
37. See Chapter 6 for a description of the financial flow accounts and the national balance sheet accounts as they exist today.
38. Dominion Bureau of Statistics, *National Accounts Income and Expenditure 1926-1956*, Ottawa, Catalogue no. 13-502, 1962.
39. Firestone developed initial estimates of Canadian GNP from 1876 to 1926. See Firestone, O. J., *Canada's Economic Development, 1876-1953, With Special Reference to Changes in the Country's National Product and National Wealth*, Income and Wealth Series VII, Bowes and Bowes, London, 1958. Revised estimates of GNP from 1870 to 1930 were prepared by Morris Altman in "Revised Real Canadian GNP Estimates and Canadian Economic Growth, 1870-1926", *Review of Income and Wealth*, Series 38, Number 4, December 1992. Limited national accounts estimates are also available for years prior to 1926 in the publication *Historical Statistics of Canada*, second edition, F.H. Leacy and K.A.H. Buckley (editors), Statistics Canada, 1983. These pertain to net domestic income by industry, labour income by industry and gross domestic capital formation.
40. See Penelope Hartland, *The Canadian Balance of Payments Since 1868*, National Bureau of Economic Research, 1954 and Jacob Viner, *Canada's Balance of International Indebtedness, 1900-1913*, Harvard University Press, 1924.
41. Dominion Bureau of Statistics, *The Canadian Balance of International Payments, A Study of Methods and Results*, Ottawa, Edmond Cloutier, King's Printer and Controller of Stationery, 1939.
42. Dominion Bureau of Statistics, *The Canadian Balance of International Payments, 1926 to 1948*, Ottawa, Edmond Cloutier, King's Printer and Controller of Stationery, 1949.
43. See Chapter 8 for a description of the BOP and IIP as they exist today.
44. Duncan McDowall, *ibid*, page 141.
45. Duncan McDowall, *ibid*, page 152.

46. The upgrade and improvement of the business survey system is a huge undertaking. Many of the steps taken as part of the Project to Improve Provincial Economic Statistics between 1996 and 2001 were major steps forward in this continuing process.
47. See Chapter 4 for a description of the supply and use accounts as they exist today.
48. For documentation on the evolution of the supply and use tables over the first 40 years of their existence at Statistics Canada see Kishori Lal, "Evolution of the Canadian Input-Output Tables, 1961 to Date," Statistics Canada mimeo, April 2001, available on the [Statistics Canada website](#).
49. See Dominion Bureau of Statistics, *Indexes of Output per Person Employed and per Man-Hour in Canada, Commercial Non-Agricultural Industries, 1947-63*, Ottawa, 1965 and Dominion Bureau of Statistics, *Aggregate Productivity Trends 1946-66*, Ottawa, Catalogue no. 14-201, November 1967.
50. Dominion Bureau of Statistics, *National Income and Expenditure Accounts 1926-1968*, August 1969.
51. United Nations Statistical Office, *A System of National Accounts, Studies in Methods, Series F, No. 2, Rev. 3*, New York, 1968.
52. The information in this table is extracted from Dominion Bureau of Statistics, *National Income and Expenditure Accounts 1926-1968*, August 1969.
53. Statistics Canada, *National Income and Expenditure Accounts*, including volume 1, *The Annual Estimates*; volume 2, *The Quarterly Estimates*; and volume 3, [A Guide to the National Income and Expenditure Accounts](#), Catalogue no. 13-549-E, 1975.
54. Cited in Duncan McDowall, *ibid*, page 166.
55. Cited in Duncan McDowall, *ibid*, page 166.
56. See Statistics Canada, *A review of recent proposals for modifying and extending the measure of GNP*, by Oli Hawrylyshyn, Ottawa, Catalogue no. 13-558, December 1974.
57. Environment Canada was established as a department of the Government of Canada in 1971. At time of writing it is called Environment and Climate Change Canada.
58. Cyril Hodgins, "National Accounts Data Quality and Timeliness: A Review of the Issues in Relation to the Economic Policy Process," Statistics Canada, unpublished mimeo, November 15, 1979. Hodgins makes reference to the fact that in the 1950s and 1960s the Bureau produced a "quickie" estimate of the income and expenditure accounts about 45 days after the reference quarter, but these estimates were considered insufficiently reliable to be officially released.
59. For more information about Statistics Canada's crisis in the 1970s and early 1980s see Duncan McDowall, *ibid*, pp. 191-204.
60. Duncan McDowall, *ibid*, page 216.
61. Statistics Canada, *The Canadian Income and Expenditure Accounts: Description of Revisions*, mimeo, Ottawa, July 18, 1986.
62. The information in this table is extracted from Statistics Canada, *The Canadian Income and Expenditure Accounts: Description of Revisions*, mimeo, Ottawa, July 18, 1986.
63. Statistics Canada, *A User Guide to the Canadian System of National Accounts*, Catalogue no. 13-589E, 1989.
64. See, for example, Benjamin M. Friedman, "Monetary Policy with a Credit Aggregate Target", *Carnegie-Rochester Conference Series on Public Policy*, 02/1983, 18(1) pp. 117-147.
65. Statistics Canada, *Guide to the Financial Flow and National Balance Sheet Accounts*, Ottawa, Catalogue no. 13-585E, February 1989.
66. See Statistics Canada, *A proposal for a satellite account and information system for tourism*, by Jocelyn Lapierre, unpublished discussion paper, May 1991.

67. The unrevised statistics from 1926 forward are still available in 69 tables. Tables 36-10-0136-01 to 36-10-0149-01 are quarterly from 1947 to 1997 and tables 36-10-0150-01 to 36-10-0204-01 are annual, mostly from 1926 to 1986. Unfortunately it is not possible to recalculate these tables all the way back using the SNA 1993 accounting standard.

68. The information in this table is extracted from the Statistics Canada document The 1997 Historical Revision of the Canadian System of National Accounts: Record of Changes in Classification of Sectors and Transactions, Concepts and Methodology, by Kishori Lal, October 1998.

69. The Laspeyres and Fisher estimates at constant prices are discussed in Chapter 7.

70. See Chris Jackson, "Capitalization of Software in the National Accounts," Statistics Canada, Income and Expenditure Accounts Technical Series, 2001.

71. The information in this table is extracted from the article: [A preview of the historical revision of the Canadian System of National Accounts](#) and [Results from the 2015 Comprehensive Revision to the Canadian System of Macroeconomic Accounts](#).

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 3 Key concepts in brief of the Canadian System of Macroeconomic Accounts

### What this chapter seeks to do

The national accounts provide a simplified picture of a very complex economic reality—the economy. This chapter introduces and explains key ideas and categorizations comprising that picture and describes the international standard ‘sequence of accounts’—an accounting framework that holds the picture together. Later chapters expand upon these concepts as the structure of Canada’s System of Macroeconomic Accounts (CSMA) is described and illuminated.

### 3.1 Introduction

The **economy**—we hear about it every day in the news. But what is an economy? It is a wide network of economic agents—households, businesses, governments and non-residents—engaging in production, distribution, consumption, saving and investing activities within a specified geographical region. Canada’s system of macroeconomic accounts aims to describe and quantify the nation’s economy as it changes through time and enables comparisons of the economy with others.

Individuals live in a local or community economy. They purchase goods from local shops and find employment in nearby businesses and governments. That economy in turn is situated within larger economies bounded by municipalities, provinces, nations and indeed the world as a whole. The national accounts, despite the name, can portray economies at all of these levels. In Canada, the national accounts provide an integrated macroeconomic picture of all of the country’s thirteen provinces and territories individually, as well as the nation as a whole. Moreover Canada, like other countries, submits every year its national accounts statistics to the international organizations—the Organization for Economic Cooperation and Development (OECD), the United Nations (UN), the International Monetary Fund (IMF) and the World Bank (WB)<sup>1</sup>—where they are aggregated to produce statistics for the world economy. In other words, the national accounts provide an integrated and comprehensive picture of the world economy in several layers, and Canada’s national accounts supply the pieces of the global economic picture corresponding to this country.

In this chapter, the main concepts and classifications underpinning Canada’s national accounts are identified, explained and discussed. The chapter draws extensively on information contained in the international System of National Accounts standard, referred to here as SNA 2008<sup>2</sup>

### 3.2 Concepts

Modern economies are complicated. They typically involve a great many players—individuals, households, businesses, non-profit organizations, government organizations—interacting day after day, each to achieve their individual objectives. In the national accounts, the players are termed ‘institutional units’ and they are grouped into ‘institutional sectors’ according to their objectives and functions. Their interactions mostly involve **transactions**—one player purchasing and the other selling goods, services or assets—but they also involve unrequited **transfers**.<sup>3</sup> The system facilitates the **production, distribution and consumption** of goods and services and the **accumulation** of assets over time.

#### 3.2.1 Stocks and flows

The economic accounts measure stocks and flows of economic value. A stock measures economic value at a point of time, for example at the end of a year.<sup>4</sup> A value **flow**, in contrast, is a change in economic value over a period of time, for example in a week, a month or a year. Stocks are characterized by the instant at which they are measured, but they do not have a time dimension—they are not measured per month or per year. Flows, however, are defined by their time dimension and are measured per month, or per quarter, or per year. The stock and flow concepts are closely related because the difference between a stock of something at one instant in time and the stock of that

same thing at an earlier instant in time can usually be explained by certain economic flows during the time period extending between those two instants.

Two kinds of flows are identified in the SNA: Transaction flows and other flows. A **transaction flow** in most instances represents dollars exchanged between buyers and sellers during an accounting period. Some transactions, though, are not stated in units of currency, like barter transactions, while other transactions are internal to institutional units as when units produce fixed assets for their own consumption. Transaction flows are generally characterized by quantities and prices of one or more products transacted. Other flows consist of economic changes that are not associated with transactions, such as the reduction in value of a house that has been damaged by a severe storm or the reduction in retail inventory stocks as the result of theft.

**Balancing items** can also appear in a flow account or in a balance sheet. They are accounting constructs. In many instances they are the difference between one transaction flow and another.

### 3.2.1.1 Transactions in goods and services (products)

Transactions in goods and services reveal the origin (domestic output or imports) and use (intermediate consumption, final consumption, capital formation or exports) of goods and services.

Transaction flows are the essential source of data that fuels the national accounts. Whenever two players, a seller and a buyer, agree to exchange a product on a particular date for an agreed sum of money, they are voluntarily assigning a value to that product. National accountants seek to collect comprehensive data on such transactions so as to calculate the overall average and total values assigned to products by Canadians.

Transactions include purchases by consumers in retail outlets, sales of industrial products from one business to another, the sale of labour services to an employer by an employee, the receipt of payments from businesses abroad in exchange for goods and services exported by Canadian enterprises and many other kinds of trades. As discussed further below, each such transaction finds a place in two sets of accounts—those of the seller and buyer—and the national accounts record and aggregate this accounting information.

The SNA also includes distributive transactions by which the value added generated by production is distributed to labour, capital and government (for example, wages are a distribution to households and interest is a distribution to the owners of capital) as well as redistributive transactions (for example, income tax is a type of redistributive transfer to governments, typically from households or businesses).

### 3.2.1.2 Transactions in assets

Just as for goods and services, players in the Canadian economy also purchase and sell **assets** of various kinds. Data from these transactions are of use in compiling the capital accounts, the financial flow accounts and the national balance sheet accounts. Assets are classified as financial and non-financial.

The items referred to here include produced, non-financial (or ‘real’) assets like new and used housing units, commercial, industrial and institutional buildings, engineering developments such as roads, bridges and pipelines, and items of machinery and equipment such as railroad stock, ships, trucks and a wide range of industrial and commercial equipment. This category also includes intellectual property products, such as research and development, software products and mineral rights resulting from exploration (though in Canada, other intellectual property products such as databases and entertainment, literary and artistic originals are not included in the definition at present due to source data limitations).

Assets that are not used in economic activity, or are not subject to ownership rights, are not recognized in the system. Important examples include consumer durable goods,<sup>5</sup> which are excluded because household output lies outside the production boundary,<sup>6</sup> and human capital. Estimates of the implicit value of some of these types of assets have nevertheless been developed for Canada, in occasional studies.

Non-produced assets also fall within the asset boundary of the system and are included in the balance sheets. These include land and natural resources with economic value (such as oil and gas resources, timber rights and wireless spectrum). Certain contracts, leases and licences, purchased goodwill and marketing assets are also included in the SNA 2008 standard definition although they are presently excluded in Canada’s SNA, again for reasons of source data limitations.



The assets category also includes financial assets such as stocks, bonds, bank deposits, mortgages, bank loans and currency. Of course, one player's financial asset corresponds to another player's liability.

Many non-financial assets have very thin resale markets, so there are often few transactions upon which to base market value estimates. For example, a business might purchase some very specialized manufacturing equipment. Assessing the changing market value of that equipment as it ages would be difficult if used equipment of this kind was rarely offered for sale on the market. Sometimes this makes it difficult to assign a current value to the stock of these assets. However, while non-financial asset resale markets are often quite thin, most financial assets have high daily turnover that greatly facilitates the use of transactions data for market valuation purposes.

### 3.2.1.3 Connecting flows to stocks of assets

The national accounts are structured to account for changes in the value of an economy's assets between the start and end of a period. After all, an economy's growth and continuing prosperity depend upon its stocks of assets. Some of the **transaction flows** during the period help explain these changes, such as expenditures on investment goods or the accumulation of inventories (in the case of the non-financial accounts) and the sale of government bonds and the issuing of corporate equity (in the case of the financial accounts). In addition, there are a number of other factors contributing to the explanation of changes in the value of assets between the start and end of a period. As mentioned previously, these are sometimes referred to as **other flows**, and they consist of **other changes in the volume of assets** and **revaluations**. Natural disasters and mineral discoveries fall into the first of these categories and the second is concerned with asset price changes. In effect, the closing (end-of-period) asset value is determined as the opening (start-of-period) asset value, plus relevant transaction flows during the period, plus relevant other flows during the period. This topic is more fully explained in chapter 6, which deals with the national balance sheet accounts.

### 3.2.1.4 A low-level example

An everyday example may be helpful in explaining these concepts. Consider the valuation of a home that is owned by a household. The home has a market value of \$350,000 at the beginning of the year. During the year, the household spends \$50,000 to renovate, building a new addition off the back of the house. Later that same year, an earthquake occurs that puts cracks in the home's foundation. The household decides not to repair the home that year, but determines that the repairs would cost \$35,000. Meanwhile, as the year goes by the housing market slumps and similar houses in the general area decrease in market value by 5 per cent on average. At the end of the year, the home's value will have changed from \$350,000 to \$347,500 as shown in Table 3.1. In this example, the opening and closing asset values are \$350,000 and \$347,500, the transaction flows are \$50,000, the other changes in the volume of assets are -\$35,000 and the revaluation is  $-0.05 \times \$350,000 = -\$17,500$ .

**Table 3.1**  
**Stocks and flows example**

Home value component	Flow	Stock
	dollars	
Home market value, start of year	...	350,000
Home renovation (transaction)	50,000	...
Earthquake value loss (other volume change)	-35,000	...
Housing price change (other revaluation)	-17,500	...
Sub-total	-2,500	...
Home market value, end of year	...	347,500

... not applicable

Source: Statistics Canada.

### 3.2.1.5 A high-level example

For another example, consider a very high-level aggregate stock (asset) series: Canada's national wealth. At the end of a particular time period, the third quarter of 2009, national wealth was estimated at \$7.571 trillion. This huge stock figure is the estimated total, at the end of the day on September 30, 2009, of the values of all non-financial assets in the country—residential and non-residential structures, machinery and equipment, inventories, intellectual property assets, land and net claims of Canadians on the rest of the world. (A broader definition of national wealth would also include an estimate of the value of natural resource wealth.) One quarter previously, at the end of the second quarter of 2009, national wealth was \$7.461 trillion.

What accounts for the difference,  $\$7.571 - \$7.461 = \$0.110$  trillion? The answer is the sum of a number of transaction and other flows during the third quarter of 2009. Some of these flows represent transactions related to new construction of structures, purchases of machinery and equipment and net acquisition of intellectual property assets; others represent the depreciation or 'wearing out' of existing assets during the third quarter; others represent increases or decreases in the level of inventories held by businesses; still others represent price fluctuations, during the third quarter of 2009, affecting the market values of assets that already existed at the end of the second quarter; and finally, the value of national wealth might also have changed due to other kinds of changes in the volume of assets such as the detection of previously undiscovered mineral deposits or the destruction of assets as a result of violent weather or earthquakes.

The economic accounts consist of a great many stocks and flows such as these. Some are high-level aggregates, as in the example just cited, while others are much lower-level aggregates. The interplay between stocks and flows of economic value is a recurring theme throughout this volume.

### 3.2.2 Price and volume changes

The national accounts, like the corporate or government accounting statements from which they are derived, are normally laid out in dollars (that is, in 'value' or 'nominal' terms). This is natural, because revenues, expenditures and other such accounting magnitudes are measured that way in the here and now. However, because prices are constantly in flux, the dollar is an elastic ruler, representing different amounts of purchasing power at different points in time. To address this fact, the national accounts also provide decompositions of some value series into distinct price and volume (or 'quantity', or 'real') components.

The volume and price decomposition accounts are available only for corresponding nominal accounts that focus on expenditures on products, for example the expenditure-based gross domestic product table or the household final consumption expenditure table. It is not feasible to construct volume and price accounts for most income, transfer and financial flow accounts because the component series in these non-product accounts do not have well defined market prices.

The volume and price decomposition accounts are a vital component of the macroeconomic accounts because they 'pull aside the veil of money' to reveal underlying changes in the real economy. They also provide a picture of relative price change by product category, and measures of aggregate price inflation. Nominal GDP may be growing, but is real GDP? The answer to this question has serious implications for employment, unemployment, productivity and living standards.

The nominal-versus-price-and-volume decompositions represent the temporal movement in a given value series,  $V(t)$ , in terms of the temporal movements of the price and quantity components, as follows:

$$(3.1) \quad \frac{V(t)}{V(s)} = \frac{P(t)}{P(s)} \cdot \frac{Q(t)}{Q(s)}$$

where  $t$  and  $s$  are any two time periods. This equation simply says that the relative movement, or growth rate, in a value series between time periods  $s$  and  $t$  is equal to the product of the relative movement in its corresponding price and quantity indexes.

As an example, consider the gross domestic product value aggregate and let  $t$  be the current quarter and  $s$  be the previous quarter. This decomposition states that the nominal quarter-to-quarter growth rate of GDP can be represented as the product of the corresponding growth rates of the price index of GDP and the quantity, or volume, index of GDP (also known as ‘real GDP’ or in some instances as ‘GDP at constant prices’). In numbers, this might be  $1.010 = 1.002 \times 1.008$ , indicating nominal GDP growth of 1%, inflation of 0.2% and real growth of 0.8%.

Equation (3.1) can also be re-written in the form:

$$(3.2) \quad \frac{V(t)}{V(s)} / \frac{P(t)}{P(s)} = \frac{Q(t)}{Q(s)}$$

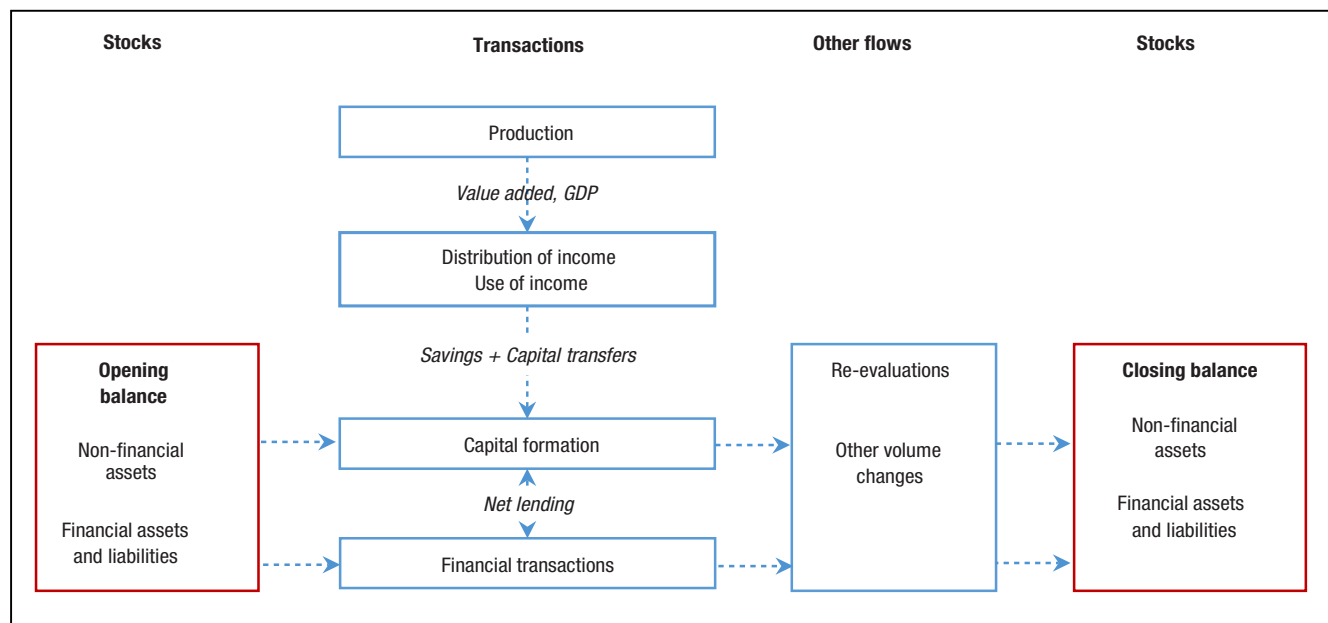
Equation (3.2) says that when we “deflate” the value index between periods  $s$  and  $t$  using an appropriate price index, we calculate a volume or ‘constant price’ index.

There are many possible ways to measure price and volume indexes and these are discussed in chapter 7. This decomposition plays a very important role in national accounting as it provides a way of determining the path of the real, as distinct from the nominal economy.

### 3.2.3 Production, distribution, consumption and accumulation

The raison d’être of the national accounts are to portray the economy as it changes through the course of time and to enable comparisons of one economy with other economies. The key dimensions of the modern economy that the accounts seek to portray are the current accounts, dealing with production, incomes arising from production, distribution of incomes and consumption, and the accumulation accounts, showing changes between the opening and closing balance sheets. In a sense, the system is set up to show how economic activity and other factors change wealth from one period to the next. This framework, which is the focus of greater attention later in this chapter, is depicted in Figure 3.1 below.

**Figure 3.1**  
Framework of Canada's macroeconomic accounts



Source: System of National Accounts 2008.

### 3.2.3.1 Production

First and foremost, the economy is an engine for producing goods and services. The human species has always engaged in production to meet its needs and as the centuries have gone by, the means of production have grown ever more sophisticated. In today's modern economy, production is frequently an exceedingly interrelated and complex activity involving the use of a variety of labour, capital and intermediate goods and services inputs to produce outputs of products.

Production is carried out under the responsibility, control and management of an institutional unit, most often in the business sector but possibly in the government and other resident sectors. This responsible institutional unit either owns the resulting outputs, or is entitled to compensation for the managerial services provided.

What is meant by production? This is the question of the **production boundary**. It is the issue of which activities are to be included, and which excluded from the definition of an economy's production or measure of gross domestic product. The national accounts aim for a broad and non-normative definition of output, focussed primarily but not exclusively on the market economy. Generally speaking, if a product is produced for sale in the marketplace, it falls within the national accounts production boundary. This holds true whether the product is judged positively or negatively by society. Thus, for example, legal tobacco products are included as part of national output even though they are widely viewed as harmful and undesirable. SNA 2008 recommends that illegal products marketed in the 'underground economy', such as narcotic drugs and prostitution, also be included within the production boundary. However, products of this kind are presently excluded from the Canadian production boundary because of measurement difficulties. If a product is not produced for sale in the marketplace, it may or may not fall within the production boundary.

**Financial intermediation services indirectly measured (FISIM)** are a rather unique product category within the production boundary. Banks and other financial intermediaries make it their business to borrow at relatively low interest rates and re-lend at higher rates, using the margin to cover their costs and make a profit. Often no explicit price is charged for their intermediation service, so this product cannot be said to be offered for sale in the marketplace, at least not in the normal sense of that phrase. Nevertheless this service is considered to be within the production boundary.

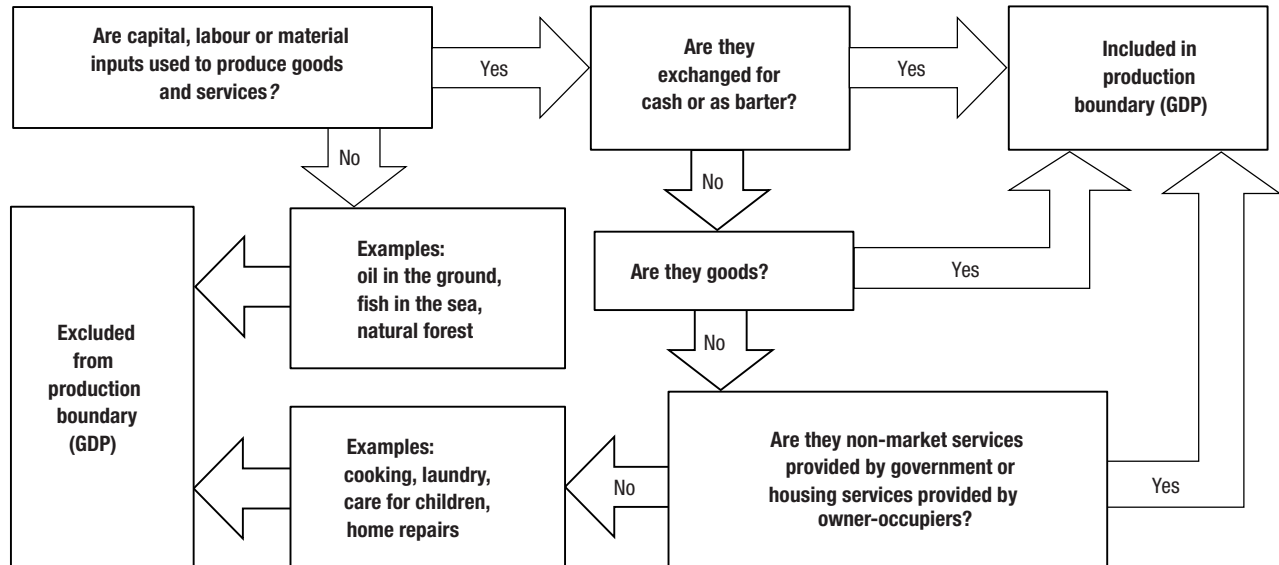
Most household sector outputs for own use are excluded from the production boundary. When members of a household produce meals for one another, or do laundry, the output they produce, while obviously real and important within society, is deemed outside the production boundary because there is no market valuation of these goods and services.<sup>7</sup> In addition, the growth of plants in the wild or the natural breeding and development of fish and animals without human intervention are not considered production for national accounts purposes.

An exception is the services provided by owner-occupied dwellings, for which an imputed rental charge is included in the production boundary. In effect, homeowners are treated as if they were landlords renting their homes to themselves. Again, no market price is observable, so a price is imputed based on the rental prices of rented dwellings that can be observed in the marketplace.<sup>8</sup> Own-account residential construction and major renovations by homeowners are also considered to be within the production boundary, as is agricultural production by farmers for their own personal use.

Most outputs of the government and non-profit sectors are included within the production boundary, even though they typically are distributed free or at economically non-significant prices.<sup>9</sup> In particular, government production of public administration, health, education, security and other services are considered to be within the production boundary. Since these outputs have no observable market values, their value is imputed in the national accounts at cost. The same is true for non-market production by non-profit organizations.

Figure 3.2 highlights how the two sides of the production boundary are determined.

**Figure 3.2**  
**Determining the production boundary<sup>10</sup>**



**Source:** Francois Lequiller and Derek Blades, *Understanding National Accounts*, Organization for Economic Cooperation and Development, 2006.

There are three categories of output in the national accounts:

1. **Market output**, consisting of output intended for sale at economically significant prices. In addition to all the usual kinds of market production—food, clothing, other manufactured goods, services, etc. that are traded in value terms—this includes the value of products that are bartered or used for payments in kind, the value of goods temporarily destined for inventory and margins charged on the supply of goods such as transportation or wholesalers' and retailers' markups.
2. **Output for own final use**, consisting of output retained by the producer for his or her own final consumption or capital formation, often referred to as 'own-account production'. This includes products made by an unincorporated business and consumed within the same household, the value of services to households by paid domestic staff, the value of imputed services from owner-occupied dwellings, the value of fixed assets produced by a business for its own use in future production and the value of changes in inventory intended for any of these uses.
3. **Non-market output**, consisting of products produced by governments or non-profit institutions that are supplied to other institutional units either for free, or at economically non-significant prices. In the accounts, this output less sales to other sectors is shown as acquired by the government and NPISH sectors in the use of income account (as seen later in this chapter). This should not be confused with production for own use (output category 2). The **use** of the individual goods and services produced by governments and NPISH units is by households, and the use of the collective services they produce is by households or other resident institutional units, even though the associated **expenditure** is by governments and non-profit institutions. Thus non-market output (category 3) should not be confused with output for own use (category 2) where the producer unit not only has imputed expenditure on the output, but also actually uses the output.

By products, we mean the full gamut of goods and services that humans create to satisfy their needs. The national accounts organize products into product classes, as discussed later in this chapter and explained in detail in chapter 4.

One of the things making a production process complex is that many different products are often required as inputs in order to produce some other product as an output. Thus, for example, to produce bread output, inputs of flour, yeast, salt and additional ingredients are required as well as labour services, rental charges on the bakery premises and so on. More multifaceted and complex examples of production processes can easily be conceived, such as the manufacturing of automobiles and computers, and the production of medical and telecommunications services.

Some products are used not for final consumption, but for intermediate consumption. In other words, they are used as inputs into the process for producing others goods and services. The concept of **gross value added** brings out this distinction. It refers to the difference between total output and intermediate consumption. This concept refers to the contribution of a producer to total GDP in the economy.

The most aggregate measure of value added in the national accounts is gross domestic product (GDP), which represents the total value added of all parts of the economy and avoids any double-counting of intermediate inputs. Monthly, quarterly and annual measures of GDP are available in the national accounts and these are discussed in chapters 4 and 5.

The concept of **productivity** is about the quantity of output that can be produced from a given quantity of inputs. If the ratio of outputs to inputs increases, productivity is rising and this is universally seen as beneficial to society.

The concept of **value added** is central to production. Returning to the bread example, just discussed, if the baker purchases flour, yeast and salt from other producers for use in making the bread, the value of these inputs is already counted as output of the businesses that produced the flour, yeast and salt. Their value is therefore part of the baker's output but they are not part of the baker's **value added** which, rather, consists solely of the value of the inputs of **factors of production** going into the production of the bread. These consist primarily, if not entirely, of the wages paid to the baker's employees plus the profits earned by the baker by virtue of his having put capital at risk.

### 3.2.3.2 Distribution

How much value is added is one question. How the value added is translated into various incomes is another. The value added is comprised of wages and salaries paid, other taxes (less subsidies) on production (such property taxes and license fees) and operating surplus (comprised of interest paid, capital consumption and net profit).<sup>11</sup> The accounts show how these incomes are allocated to institutional units as recipients of **primary incomes**.

The national accounts portray the distribution of incomes in two major parts, referred to as **the primary and the secondary distributions**. The former involves the allocation of primary incomes to institutional units as a consequence of their involvement in the production process or their ownership of assets used for purposes of production. The secondary distribution shows how an institutional unit's primary income is transformed into its **disposable income** by the receipt and payment of current **transfers**. Transfers have no associated *quid pro quo*. They include transfers of income taxes from households and corporations to government, for example, and transfers of employment insurance benefits, welfare benefits, pensions and other transfers from government mainly to households. The term **disposable income** refers to the income that remains and is available for spending or saving after transfers to and from the institutional unit have been accounted for. These income distribution accounts are discussed later in this chapter.

### 3.2.3.3 Consumption

The term **consumption** refers to the using up of output, either in the production of other goods and services or in the direct satisfaction of human wants and needs. When firms use goods and services as part of the production process, that usage is referred to as **intermediate consumption**. In contrast, when households, in their role as consumers, use goods and services purchased with their disposable incomes to satisfy human wants and needs that usage is referred to as **final consumption expenditure**. Non-profit institutions and governments also engage in final consumption spending,<sup>12</sup> but corporations do not.

There is another, more comprehensive concept of consumption by households which is referred to as **actual individual consumption**. This concept includes, in addition to the consumption that is represented by household expenditures on goods and services, the consumption represented by social transfers in kind from governments and non-profit institutions serving households. In Canada, these transfers include health, education and housing services, among other products. Section 3.4.4 below describes the functional classifications of expenditures, which are central to the measurement of actual individual consumption.

The actual individual consumption concept can be especially useful when comparing living standards across different countries, or even across provinces. This is because services that are delivered by the private sector in some countries or provinces, and are therefore included in final consumption expenditure by households, are delivered fully or partially by the public sector or by non-profit institutions in other countries or provinces, where they are therefore fully or partially excluded from final consumption expenditure by households. An example is health care services which are provided mostly by governments in Canada and mostly through the market in the United States.<sup>13</sup>

Another consumption concept is the **consumption of fixed capital**, also referred to as **economic depreciation**. This refers to the using up of capital assets during a production period as a result of wear and tear, normal obsolescence or normal accidental damage. Note that for purposes of the national accounts, consumption of fixed capital refers to the value of using up the capital assets, which may differ substantially from depreciation of amortized capital as it is measured in historical cost accounting records.

#### 3.2.3.4 Accumulation

If society used up all output as intermediate consumption and final consumption expenditure on goods and services, the stock of capital would gradually decline over time due to the consumption of fixed capital. To avoid this, which would imply a steady downward trend in output capacity, society must set aside some of its output to replenish its capital stock and indeed, to expand that capital stock through time. This is necessary if society is to grow and progress. The process is referred to as the **accumulation of capital**, investment or **gross capital formation**.

Gross investment is the total amount set aside in the economy both to replenish and to grow the capital stock. Net investment, in contrast, is the amount by which capital accumulation exceeds the amount necessary to replenish consumption of fixed capital. If net investment is positive, the capital stock is growing but if net investment is negative, the capital stock is decreasing.

The accounts recognize many kinds of fixed capital, including residential and non-residential buildings, engineering structures such as pipelines, roads and electrical utilities, a wide variety of machinery and equipment, and intellectual property assets.

Accumulation flows account for the difference between the opening and closing national balance sheets, as is discussed in chapter 6. The accumulation accounts include the capital account, the financial account, the other changes in the volume of assets account and the revaluation account. Gross fixed capital formation flows, as just discussed, relate to the production of capital goods. Financial flows, in contrast, involve the accumulation of financial assets and liabilities such as equities, bank deposits and bonds. In addition to these flows, the balance sheet is also influenced by ‘other changes in the volume of assets’, which might be caused by new discoveries of natural assets (positive changes) or by natural disasters (negative changes), and by revaluations associated with asset market price changes.

#### 3.2.4 Residence

The **Balance of Payments and International Investment Position Manual**<sup>14</sup> defines the **residence** of an institutional unit (institutional units are discussed in section 3.3) as “the economic territory with which it has the strongest connection, expressed as its centre of predominant economic interest”. This definition applies whether the accounts are being compiled for a province or territory, or for a country, or for a grouping of countries such as the European Economic Community. The “economic territory” aspect of this definition includes not just the land, water and airspace of the territory, but also its embassies, consulates and military bases that may be located in other territories.

“A household is resident in the economic territory in which household members maintain or intend to maintain a dwelling or succession of dwellings treated and used by members of the household as their principal dwelling.”<sup>15</sup> In practical terms, though, the determination of residence can be a very complicated matter. In Canada, the residence of a household is established on a calendar year basis and Statistics Canada accepts the determinations on this matter that are made by the Canada Revenue Agency. That agency, in turn makes its decisions with guidance from the courts, where a large case law has accumulated. Canada Revenue Agency has the following to say about the determination of residence:

“The most important factor to be considered in determining whether an individual leaving Canada remains resident in Canada for tax purposes is whether the individual maintains residential ties with Canada while abroad.”

“The residential ties of an individual that will almost always be significant residential ties for the purpose of determining residence status are the individual’s: dwelling place (or places); spouse or common-law partner; and dependants.”

“Many of the comments in this chapter apply to determinations of residence status for provincial, as well as federal, tax purposes.”<sup>16</sup>

Under this definition of residence, all members of a given household have the same residence. This means, for example, if a household were to live in a city near a provincial border, and if the place of employment of a member of that household were across that border in another province, that household would still be deemed resident in the province where the household as a whole resided. It also means that if a household had more than one residential property, in different provinces or territories, then only one of those provinces or territories could be designated as the location of residence for national and provincial/territorial accounting purposes.

The definition of residence is intended to ensure that all institutional units reside in one and only one economic territory. For example, within Canada this means that if a household, business or government unit resides in one province for purposes of that province’s economic accounts, then it cannot also reside in another province for purposes of that province’s accounts. Otherwise there would be double counting.

An enterprise is considered resident in an economic territory when it is engaged in a significant amount of production of goods and services from a location in the territory. This can get complicated for businesses that may have production locations spread across multiple provinces or indeed, countries. Canada has many such multi-provincial corporations and the world as a whole has multi-national corporations. Such multi-territorial businesses can usually be broken down into sub-units for each of which the residence is clearly defined. Thus, a multi-provincial enterprise with a head office in one province and plants in other provinces is considered to be one institutional unit, but with several sub-units. This is elaborated in chapter 4.

In some uncommon instances, a multi-territory enterprise may be so tightly integrated that it is not feasible to break it down into separate provincial branches. In such cases, a more artificial division of the company into sub-units may be necessary using, for example, accounts from the business as a whole that are prorated based on sales, employment or some other indicator.

For purposes of the balance sheet accounts, land, buildings and other immovable assets are always deemed to be owned by residents of the territory where those assets are physically located. This is the case regardless of where the legal owners of those assets actually reside and regardless of whether those owners engage in economic activities in the territory where those assets are located. Similarly, extraction of subsoil resources can only be done by resident institutional units. Where no such resident units exist in fact, they are artificially created for purposes of the accounts.

In a situation where a business does not have a location, its residency is determined according to the economic territory under whose laws the enterprise is incorporated or registered.



### 3.3 Sectors

There are many players, or **institutional units** as they are called in the SNA, involved in Canada's economy:

- approximately 2 million businesses, most of them very small but some quite big;
- over 5,000 governments—federal, provincial, territorial, municipal and aboriginal;
- about 35 million residents, living in about 13 million households;
- roughly 100,000 non-profit organizations serving households; and
- an innumerable number of other players residing outside the country but engaging in international transactions with players inside Canada.

The parties just described do many things. But from the national accounts perspective, they are viewed as economic agents that own, produce, distribute and consume goods and services. They also accumulate and own non-financial and financial assets and incur liabilities.

Coping with the enormous number and great variety of players involved in the economy requires a classification system. The international standard, SNA 2008, prescribes such a classification system and Canada has adopted it.<sup>17</sup> The system organizes the players just discussed into five domestic sectors and one international sector, as shown in the Table 3.2 below.

**Table 3.2**  
**Sectors in the Canadian Economy**

Sector code	Sector name
S1	Total Canadian economy
S11	Non-financial corporations
S12	Financial corporations
S13	General government
S14	Households
S15	Non-profit institutions serving households
S2	Rest of the world

Source: Statistics Canada.

Each sector is said to be comprised of institutional units. As defined in SNA 2008, an institutional unit “is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities” (page 61). In principle, each institutional unit must be capable of compiling a complete set of financial accounts, whether or not they actually do compile such accounts.

#### 3.3.1 Non-financial corporations

The non-financial corporations sector is comprised of the main producing agents in the economy. As such, the institutional units in this sector include legal entities<sup>18</sup> whose primary purpose is to produce goods and/or non-financial services for profit. To be an institutional unit in this sector, a unit's existence must be recognized independently of the persons or other institutional units that may own or control them, who in turn enjoy limited liability. Accordingly, most of the units in the sector are corporations. The sector also includes not-for-profit institutional units whose primary purpose is to serve businesses in the non-financial or financial corporations sectors. Examples of such units include Chambers of Commerce and industry associations.

Non-financial corporations are further sub-classified according to how they are controlled. Some are publicly controlled, by government sector entities, and in Canada these are often referred to as Crown corporations or government business enterprises. Others are controlled by private sector entities in Canada, and these form the majority of Canadian corporations. Finally, some resident corporations, while they operate in Canada, are controlled by entities outside Canada. The latter businesses are often called foreign-controlled corporations.<sup>19</sup> All of these units fall into the non-financial corporations sector.

The non-financial corporations sector is a focus of attention in chapters 4, 5 and 6.

### 3.3.2 Financial corporations

The financial corporations sector includes corporations that are primarily engaged in the production of financial services. It also includes non-profit institutions engaged in providing financial services.<sup>20</sup> In this context, the term ‘financial services’ comprises financial intermediation, risk management, liquidity transformation and other like activities including the activities of holding companies. It includes not just banking, but also insurance and pension funding services. The outputs of financial corporations include financial intermediation services indirectly measured (see chapter 4) as well as an array of other services, such as wealth management, brokerage, safe-keeping and insurance for which fees are charged directly.

In the financial flow and national balance sheet accounts, the financial corporations sector is broken down into the sub-sectors shown in Table 3.3. This breakdown is uniquely Canadian and is intended to reflect the current structure of the country’s financial system. The sector is a major focus of attention in chapter 6.

**Table 3.3**  
**Financial sub-sectors in the Canadian economy**

Sector code	Sector name
S12	Financial corporations
S121	Monetary authorities
S122	Chartered banks and quasi-banks
S1221	Chartered banks
S1222	Quasi-banks
S123	Insurance and pension funds
S1231	Insurance business
S1232	Segregated funds of life insurance companies
S1233	Trusteed pension plans
S1234	Property and casualty insurance companies
S124	Other private financial institutions
S1241	Mutual funds
S12411	Money market funds
S12412	Other mutual funds
S1242	Sales finance and consumer loan companies
S1243	Issuers of asset-backed securities
S1244	Other private financial institutions
S125	Financial government business enterprises

Source: Statistics Canada.

### 3.3.3 General government

Institutional units in the government sector assume responsibility for the provision of goods and services to the community as a whole, such as policing, justice, regulation and national defence services, and directly to individual households, such as public housing, education and health care services. They also redistribute income and wealth by means of transfers and engage in non-market production. Government sector institutional units are legal entities with the powers: (i) to raise revenues through taxation and/or to receive revenues as transfers from other government institutional units, (ii) to spend such funds in the pursuit of policy objectives and (iii) to borrow funds on their own account.

In Canada, the government sector consists of the sub-sectors shown in Table 3.4.

**Table 3.4**  
**Government sub-sectors in the Canadian economy**

Sector code	Sector name
S13	Total general government sector
S131	Federal general government
S132	Other levels of general government
S1321	Provincial and territorial general governments
S1322	Local general governments
S1323	Aboriginal general governments
S133	Social security funds

Source: Statistics Canada.

The government sector does not include public corporations and quasi-corporations<sup>21</sup> owned by governments and engaged in production for sale at economically significant prices. These corporations are included in the non-financial or financial business sectors, despite their being government owned and controlled. However, the government sector does include government-funded and controlled non-market non-profit organizations.<sup>22</sup>

Government departments, such as those responsible for financial, judicial, industrial, trade, social or environmental policies, are not themselves considered to be distinct institutional units because they are not generally capable, in their own right, of owning assets, incurring liabilities and engaging in transactions with other entities. Rather, such departments collectively constitute the institutional unit. Occasionally governments create special funds that are focussed on specific policy objectives. Generally these too are considered part of the government institutional unit rather than being distinct units.

The federal, provincial and territorial, and local government sectors are each broken out in considerable detail in the macroeconomic accounts, as is described more fully in chapter 9. In Canada's democracy, each level of government is required to produce audited public accounts statements at least annually and these accounts provide much of the statistical information that is used to compile the government sector accounts. The accounts are produced according to the **Government Finance Statistics**<sup>23</sup> standard, which is consistent with and expands upon the SNA 2008 standard.

In the SNA 2008 international standard, social insurance schemes that have broad coverage, are imposed and controlled by government institutional units, have their assets and liabilities held separately and engage in financial transactions on their own account are considered to be a distinct sub-sector within the general government sector. In Canada this sector includes the Canada and Quebec Pension Plans.

First Nations and other aboriginal government (alternatively Aboriginal general governments) is a relatively new sector in the macroeconomic accounts that was introduced with the historical revision of 2012. Prior to that revision, First Nations and other aboriginal band councils were included within the former "Persons and unincorporated business" (now "Households") sector. The institutional units in the sector consist of the governing entities in the over 600 First Nations and aboriginal bands in various locations across Canada.

The government sector, described here, is not the same as the ‘public sector universe’, which also includes government business enterprises. As mentioned previously, in the SNA these enterprises, when market-oriented and operating for profit, are allocated to the non-financial and financial business sectors.

### 3.3.4 Households

A household is a group of persons who share the same living accommodation, pool some or all of their income and wealth, and consume some goods and services collectively, such as housing and food. Households often coincide with families, though they need not. All members of the household are considered to have the same residence, regardless of their places of employment.

Paid domestic employees living on the same premises as their employer are considered to be part of other separate households, since they have no claim on the collective resources of their employers’ households. However, two or more people sharing an apartment but otherwise unrelated are considered to be one household.

Persons living in institutions, such as long-term hospital patients, residents of retirement homes, members of monasteries and convents, and prisoners serving long sentences in penitentiaries are considered to be members of institutional households. Each hospital, retirement home, etc. is considered a distinct institutional household unit. However, persons spending a short period of time in one of these institutions, normally less than one year, are considered to remain part of their original household rather than to be part of the institutional household.

Households are, of course, consumers of goods and services and suppliers of labour to businesses, governments and non-profit institutions. Indeed, households residing near the border may also be suppliers of labour to non-resident institutional units.

The household sector includes unincorporated businesses operated by households. These market enterprises might be engaged in the production and sale of a wide variety of goods and services, for example, home renovations, farming, apartment rentals. While for some purposes it would be preferable to allocate these enterprises to another sector, this is not generally possible. Usually the fact that these businesses are not incorporated means their financial records are merged with those of the household. In effect, the assets and liabilities of the business are also those of the household and vice versa.

Accordingly the household sector includes not just households, but also unincorporated enterprises. The SNA 2008 standard identifies a particular kind of unincorporated business that acts, to all intents and purposes, as if it were incorporated. These businesses are termed **quasi-corporations** and must each (i) have sufficient information to compile a complete set of financial accounts, (ii) operate like a separate corporation and (iii) have a *de facto* relationship to its owner(s) similar to that of the relationship between a corporation and its shareholder(s). Examples of such enterprises include legal, accounting and architectural partnerships which often have legal status that provides a form of limited liability. Unincorporated enterprises owned by non-resident institutional units are also deemed to be quasi-corporations if they engage in significant production activity within Canada over a long (more than one year) or indefinite period of time. The SNA 2008 standard recommends that quasi-corporations be allocated to the non-financial or financial corporations sector, rather than the household sector, but to date that has not been feasible in Canada.

### 3.3.5 Non-profit institutions serving households

Non-profit institutions (NPIs) are legal entities that have been created to produce services or more rarely, goods, and whose status does not permit them to earn profit for the gain of the units that control or finance them. They may charge an economically significant price for their services, in which case they are called market NPIs, or they may provide their services free or at economically non-significant prices, in which case they are called non-market NPIs. Such organizations may make a profit, but they cannot distribute that profit to their owners.

Some NPIs are allocated to the non-financial and financial business sectors, such as Chambers of Commerce, trade associations, business lobby groups and the like. The subscriptions or fees paid by member businesses to these NPIs typically cover the costs of the services they provide back to those same businesses, so they are classified as market NPIs serving enterprises. Other NPIs are controlled and financed to a large extent by governments, such as some schools, colleges, universities, and hospitals, and these generally non-market NPIs are classified to the government sector.

There remain a large number of NPIs that provide mostly non-market services to households, such as professional associations, trade unions, political parties, churches, and cultural, recreational and sports clubs. In Canada's national accounts this group of NPIs has been broken out as a sector on its own, referred to as the **non-profit institutions serving households (NPISH) sector**. NPISH units provide services to households either free or at economically non-significant prices and these services are mostly considered part of final consumption expenditure. Also included in the NPISH sector are charities, such as the Red Cross, that are created for philanthropic purposes rather than to serve the interests of the members controlling the units. These units provide non-market goods and services to Canadian households in need and to non-residents.

### 3.3.6 Rest of the world

“Rest of the world” is a catch-all sector comprised of all the institutional units residing outside the boundaries of the domestic economy that transact with or have other economic links with institutional units residing within the territory of the economy. It is also known as the “non-resident sector”.

The financial and non-financial transactions that occur between Canadian residents and non-residents are portrayed in great detail in the balance of international payments and the international investment position. These parts of the macroeconomic accounts, which follow closely the international standard set out in the *Balance of Payments and International Investment Position Manual*, are explained in chapter 8.

The process by which individual institutional units are assigned to sectors is pictured in Figure 3.3. This process is described in the sections that follow immediately below.

### 3.3.7 Sectors versus statistical units

Institutional units are not to be confused with **statistical units**. The latter are units of observation or measurement for which data are collected or derived via surveys, administrative data or other sources. Sometimes an institutional unit definition equates quite closely to that of a statistical unit. In other instances, however, there may be no such correspondence.

In business surveys, the principal statistical units are **enterprises, companies, establishments** and **locations**.

The **enterprise** lies at the top of the business hierarchy and is associated with a complete set of financial statements. The enterprise, as a statistical unit, is defined as the organizational unit of a business that directs and controls the allocation of resources relating to its domestic operations, and for which consolidated financial and balance sheet accounts are maintained from which international transactions, an international investment position and a consolidated financial position for the unit can be derived. It corresponds to the non-financial or financial corporation institutional unit as defined for the CSMA.

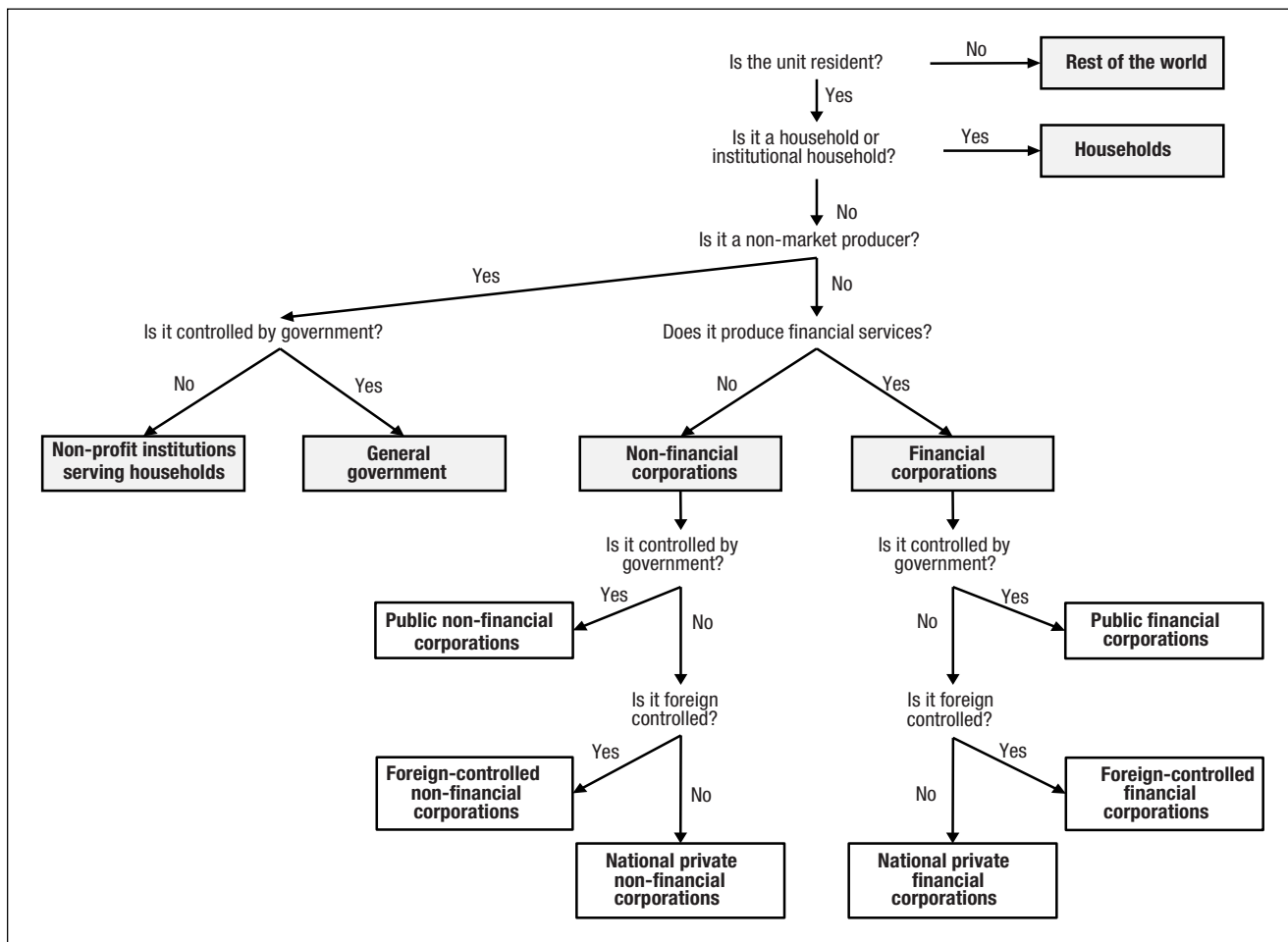
The **company** is the level at which operating profit can be measured. The company, as a statistical unit, is defined as the organizational unit for which income and expenditure accounts and balance sheets are maintained from which operating profit and the rate of return on capital can be derived. An enterprise consists of one or more companies.

The **establishment** is the level at which the accounting data required to measure production are available (principal inputs, revenues, salaries and wages). The establishment, as a statistical unit, is defined as the most homogeneous unit of production for which the business maintains accounting records from which it is possible to assemble all the data elements required to compile the full structure of the gross value of production (total sales or shipments, and inventories), the cost of materials and services, and labour and capital used in production. A company consists of one or more establishments.

Finally, the **location**, at the bottom of the hierarchy, requires only the number of employees for delineation. The location, as a statistical unit, is defined as a producing unit at a single geographical location at which or from which economic activity is conducted and for which, at a minimum, employment data are available. An establishment consists of one or more locations.

A variety of statistical units are also defined for social surveys, including the census family, the dwelling, the economic family, the employed person, the household, the immigrant and the person among others. Of these, the household corresponds fairly closely to the household institutional unit in the CSMA but the others have no corresponding institutional unit.

**Figure 3.3**  
**Process for assigning institutional units to sectors<sup>24</sup>**



Source : System of National Accounts 2008.

### 3.4 Classifications

The various classification systems of the national accounts can be considered the skeleton of the system. By collapsing the enormous detail that makes up the economy, involving millions of households, businesses, products and financial instrument types, into a relatively small number of categories these classifications greatly simplify the system, permitting its key characteristics to be seen.

### 3.4.1 Industry classification

It is an enormous challenge to deal with the great complexity of Canada's national economy. At the end of 2013, Statistics Canada reported there were an estimated 2,685,366 production locations in the country.<sup>25</sup> The vast majority of these locations were businesses, although some of them were government establishments. That is a very big number for a nation like Canada, with just over 35 million residents. Ontario had 990,182 of these locations while at the other end of the size spectrum, Nunavut had just 892. Only 1,200,357 of these locations had employees and the rest were single-person, partnership or family businesses. Of those with employees, 23,146 locations had more than 100 employees each and the remaining 1,177,211 had fewer—in most cases a lot fewer.

Canada's businesses are engaged in a great variety of production activities and they are the focus of much, though not all of the national accounts. The way the national accounts copes with this complexity is by using a classification system. The North American Industry Classification System (NAICS) takes the 2,685,366 production locations just referred to and sorts them into 922 categories, or classes, based on the main kind of production process each business engages in. These classes are further aggregated into 323 industry groups and 20 highest-level industry aggregates.<sup>26</sup> Statistics are then compiled by combining information from all of the businesses within each of these classes.

Table 3.5 shows the distribution of Canadian production locations by NAICS industry.

**Table 3.5**  
**Canadian production locations, by industry, December 2013**

Industry	Number of locations
Agriculture, forestry, fishing, hunting	183,563
Mining, quarrying, oil and gas extraction	22,453
Utilities	3,032
Construction	312,346
Manufacturing	85,366
Wholesale trade	103,751
Retail trade	229,810
Transportation and warehousing	150,834
Information and culture industries	39,903
Finance and insurance	146,726
Real estate, rental, leasing	296,000
Professional, scientific, technical services	359,887
Management of companies and enterprises	86,341
Administrative and support, waste management and remediation services	116,982
Education services	26,246
Health care and social assistance	154,651
Arts, entertainment and recreation	43,339
Accommodation and food services	108,018
Other services except public administration	207,630
Public administration	8,488
<b>Total all industries</b>	<b>2,685,366</b>

Source: Statistics Canada

How does Statistics Canada keep track of all these businesses and how does it know what industry class each should be assigned to? The process is straightforward and involves the use of information collected by the Canada Revenue Agency (CRA) combined with Statistics Canada's own surveys. Whenever a new business is formed, it must open a tax account with CRA and when the business does so, Statistics Canada is notified. The CRA application form for new businesses requires a brief description of the business activities. Sometimes this description alone is sufficient for Statistics Canada to assign an industrial classification code to the business, and in cases when the description is not sufficiently detailed Statistics Canada follows up with an inquiry of its own. For the largest and most complex businesses (only 2,731 have more than 500 employees), which may consist of multiple establishments engaged in different production activities, Statistics Canada sends classification experts to visit the companies periodically, to

collect up-to-date information about their structure and to assign classification codes to each establishment within the structure.

A database, known as the Business Register, is maintained including records for all of the almost 3 million businesses. As time goes by, the businesses file tax records with CRA and information from these records is used by Statistics Canada to gauge the size of each business, in terms of revenue and number of employees. When a new business is formed, it is added to the database and when an existing business ceases operations, it is recorded as inactive. When a large and complex business changes its organization, the new structure is recorded. In short, the Business Register provides an up-to-date portrait of Canada's business population.

The Business Register is Statistics Canada's link between the industry aggregates published in the national accounts and the individual businesses comprising those aggregates. When Statistics Canada conducts a survey of businesses in a particular industry, manufacturing or accommodation and food services for example, it draws a sample of active businesses from the Business Register for that purpose. Similarly, when incorporated businesses file their annual corporate income tax forms, the information from these forms is aggregated by industry using the NAICS codes in the Business Register, to provide estimates of revenues, expenses, operating profits, financial assets and liabilities, and other economic variables for use in compiling the national accounts.

For purposes of aggregations and comparisons across countries, the United Nations maintains a classification similar to, but less detailed than NAICS referred to as the International Standard Industrial Classification of All Economic Activities (ISIC). National accounts statistics compiled in Canada according to NAICS are **concorded**<sup>27</sup> to ISIC when they are submitted to the international organizations.

As is explained in chapter 4 on the production and generation of income accounts, Statistics Canada uses a special NAICS aggregation, called the supply and use industrial classification or aggregation, with 235 industry classes for purposes of the production accounts.<sup>28</sup>

### 3.4.2 Product classification

As just discussed, the structure of the Canadian business sector is complex when viewed by size, by geography and by type of business, but the Business Register makes that complexity manageable. The products produced by those businesses provide another dimension of complexity and that dimension too is addressed by means of a classification system, called the North American Product Classification System (NAPCS). Unfortunately, though, there is no comprehensive product register analogous to the Business Register. Developing and maintaining such a register would be an enormous task because the number of specific goods and services offered in the market is so large and new products keep appearing in the marketplace at a rapid pace.

A casual look in the windows of a few retailers in any Canadian shopping mall quickly reveals the enormous variety of goods and services that are available to consumers. In addition to those products, Canadian businesses and governments, and non-residents purchasing Canadian exported goods, also buy a wide variety of raw materials and other intermediate products as inputs to their production processes, as well as capital goods. Taken all together, there are many millions of different products and brands. To simplify and facilitate analysis of this enormous variety of products, they are grouped into 2,694 categories in the NAPCS classification.

In the national accounts, output is portrayed in four dimensions: time, province or territory, industry and product class. This four-dimensional matrix of information provides an enormously detailed picture of Canadian output, as is discussed in chapter 4. Statistics Canada uses a special NAPCS aggregation, called the supply and use product classification or aggregation, with 473 product classes for purposes of the production accounts.

### 3.4.3 Financial instruments classification

The financial flow and balance sheet accounts are explained in chapter 6. These accounts show how savings are channelled from savers to borrowers through the financial intermediation system. Central to these accounts is the classification of financial instruments, which is shown in Table 3.6 below. This classification is explained more fully in chapter 6.



Essentially, borrowing and lending instruments are summarized in seven broad categories: official international reserves, currency and deposits, debt securities, loans, equity and investment funds, life insurance and pensions, and other accounts receivable.

**Table 3.6**  
**Financial instrument categories**

Category number	Category name
1	Official international reserves
2	Total currency and deposits
3	Canadian currency and deposits
4	Foreign currency and deposits
5	Debt securities
6	Canadian short-term paper
7	Government of Canada short-term paper
8	Other short-term paper
9	Foreign investments: Short-term paper
10	Canadian bonds and debentures
11	Savings bonds
12	Government of Canada bonds
13	Provincial and territorial government bonds
14	Local government bonds
15	Other Canadian bonds
16	Foreign investments: Bonds
17	Loans
18	Consumer credit
19	Non-mortgage loans
20	Mortgages
21	Corporate claims: Loans and advances
22	Government claims: Loans and advances
23	Equity and investment funds
24	Listed shares
25	Unlisted shares
26	Corporate claims: Equity
27	Mutual fund shares (units)
28	Government claims: Equity
29	Foreign investments: Equity
30	Life insurance and pensions
31	Other accounts receivable
32	Trade receivables
33	Other receivables

Source: Statistics Canada.

### 3.4.4 Functional expenditure classifications

Expenditures can be classified in several different ways, depending on the objective. For example, expenditures on goods could be classified according to the principal material used in their manufacture (copper, steel, plastics, wood, etc.). Or if the classification is to be used in international trade, it might be based on the tariffs, quotas and other trade limitations that apply. In the national accounts, an important basis for classification of expenditures is that of **function** or **purpose**. SNA 2008 endorses four United-Nations-developed classification systems for use in the functional analysis of expenditures by sector.<sup>29</sup>

Functional breakdowns of expenditures are vital for the calculation of actual individual consumption, as discussed in section 3.2.3.3 above. They also have great analytical value in a variety of applications.

#### 3.4.4.1 Classification of Individual Consumption According to Purpose (COICOP)

The Classification of Individual Consumption According to Purpose (COICOP) is an aggregation of expenditures aimed at meeting household needs. The first 12 categories in the classification itemize individual consumption expenditures by households, and these classes correspond closely to those used in Canada's national and provincial accounts to articulate household final consumption expenditure. The 13th category refers to individual consumption expenditure of non-profit institutions serving households and the 14th refers to individual consumption expenditure of general government.

COICOP is presented in Table 3.7 below.

**Table 3.7**  
**Classification of Individual Consumption According to Purpose (COICOP)**

Classification code	Classification name
01-12	Individual consumption expenditure of households
01	Food and non-alcoholic beverages
01.1	Food
01.2	Non-alcoholic beverages
02	Alcoholic beverages, tobacco and narcotics
02.1	Alcoholic beverages
02.2	Tobacco
02.3	Narcotics
03	Clothing and footwear
03.1	Clothing
03.2	Footwear
04	Housing, water, electricity, gas and other fuels
04.1	Actual rentals for housing
04.2	Imputed rentals for housing
04.3	Maintenance and repair of the dwelling
04.4	Water supply and miscellaneous services relating to the dwelling
04.5	Electricity, gas and other fuels
05	Furnishings, household equipment and routine household maintenance
05.1	Furniture and furnishings, carpets and other floor coverings
05.2	Household textiles
05.3	Household appliances
05.4	Glassware, tableware and household utensils
05.5	Tools and equipment for house and garden

**Table 3.7**  
**Classification of Individual Consumption According to Purpose (COICOP)**

<b>Classification code</b>	<b>Classification name</b>
05.6	Goods and services for routine household maintenance
06	Health
06.1	Medical products, appliances and equipment
06.2	Outpatient services
06.3	Hospital services
07	Transport
07.1	Purchase of vehicles
07.2	Operation of personal transport equipment
07.3	Transport services
08	Communication
08.1	Postal services
08.2	Telephone and telefax equipment
08.3	Telephone and telefax services
09	Recreation and culture
09.1	Audio-visual, photographic and information processing equipment
09.2	Other major durables for recreation and culture
09.3	Other recreational items and equipment, gardens and pets
09.4	Recreational and cultural services
09.5	Newspapers, books and stationery
09.6	Package holidays
10	Education
10.1	Pre-primary and primary education
10.2	Secondary education
10.3	Post-secondary non-tertiary education
10.4	Tertiary education
10.5	Education not definable by level
11	Restaurants and hotels
11.1	Catering services
11.2	Accommodation services
12	Miscellaneous goods and services
12.1	Personal care
12.2	Prostitution
12.3	Personal effects not elsewhere classified
12.4	Social protection
12.5	Insurance
12.6	Financial services not elsewhere classified
12.7	Other services not elsewhere classified
13	Individual consumption expenditure of non-profit institutions serving households
13.1	Housing

**Table 3.7**  
**Classification of Individual Consumption According to Purpose (COICOP)**

Classification code	Classification name
13.2	Health
13.3	Recreation and culture
13.4	Education
13.5	Social protection
13.6	Other services
14	Individual consumption expenditure of general government
14.1	Housing
14.2	Health
14.3	Recreation and culture
14.4	Education
14.5	Social protection

**Source:** United Nations Statistical Commission.

#### **3.4.4.2 Classification of the Purposes of Non-Profit Institutions Serving Households (COPNI)**

The Classification of the Purposes of Non-Profit Institutions Serving Households (COPNI) casts light on how NPISH institutional units allocate their expenditures. It also permits the isolation of NPISH expenditures that benefit individual households, for use in the calculation of actual expenditures. These classes of government expenditures are recorded in division 13 of COICOP as well as in COPNI. In Canada, no breakdown of NPISH expenditures on the basis of COPNI is presently available.

**Table 3.8**  
**Classification of the Purposes of Non-profit Institutions Serving Households (COPNI)**

<b>Classification code</b>	<b>Classification name</b>
01	Housing
01.0	Housing
02	Health
02.1	Medical products, appliances and equipment
02.2	Outpatient services
02.3	Hospital services
02.4	Public health services
02.5	Research and development health
02.6	Other health services
03	Recreation and culture
03.1	Recreational and sporting services
03.2	Cultural services
04	Education
04.1	Pre-primary and primary education
04.2	Secondary education
04.3	Post-secondary non-tertiary education
04.4	Tertiary education
04.5	Education not definable by level
04.6	Research and development education
04.7	Other educational services
05	Social protection
05.1	Social protection services
05.2	Research and development social protection
06	Religion
06.0	Religion
07	Political parties, labour and professional organizations
07.1	Services of political parties
07.2	Services of labour organizations
07.3	Services of professional organizations
08	Environmental protection
08.1	Environmental protection services
08.2	Research and development environmental protection
09	Services not elsewhere classified
09.1	Services not elsewhere classified
09.2	Research and development services not elsewhere classified

**Source:** United Nations Statistical Commission.

### 3.4.4.3 Classification of the Functions of Government (COFOG)

The Classification of Functions of Government (COFOG) facilitates the analysis of trends in government spending for particular purposes through time. It also permits the isolation of government expenditures that benefit individual households, for use in the calculation of actual individual consumption. These classes of government expenditures are recorded in division 14 of COICOP as well as in COFOG. Canadian government statistics broken down on this basis are available and is discussed in chapter 9.

**Table 3.9**  
**Classification of the Functions of Government (COFOG)**

Classification code	Classification name
01	General public services
01.1	Executive and legislative organs, financial and fiscal affairs, external affairs
01.2	Foreign economic aid
01.3	General services
01.4	Basic research
01.5	Research and development general public services
01.6	General public services not elsewhere classified
01.7	Public debt transactions
01.8	Transfers of a general character between different levels of government
02	Defence
02.1	Military defence
02.2	Civil defence
02.3	Foreign military aid
02.4	Research and development defence
02.5	Defence not elsewhere classified
03	Public order and safety
03.1	Police services
03.2	Fire-protection services
03.3	Law courts
03.4	Prisons
03.5	Research and development public order and safety
03.6	Public order and safety not elsewhere classified
04	Economic affairs
04.1	General economic, commercial and labour affairs
04.2	Agriculture, forestry, fishing and hunting
04.3	Fuel and energy
04.4	Mining, manufacturing and construction
04.5	Transport
04.6	Communication
04.7	Other industries
04.8	Research and development economic affairs
04.9	Economic affairs not elsewhere classified
05	Environmental protection

**Table 3.9**  
**Classification of the Functions of Government (COFOG)**

<b>Classification code</b>	<b>Classification name</b>
05.1	Waste management
05.2	Waste water management
05.3	Pollution abatement
05.4	Protection of biodiversity and landscape
05.5	Research and development environmental protection
05.6	Environmental protection not elsewhere classified
06	Housing and community amenities
06.1	Housing development
06.2	Community development
06.3	Water supply
06.4	Street lighting
06.5	Research and development housing and community amenities
06.6	Housing and community amenities not elsewhere classified
07	Health
07.1	Medical products, appliances and equipment
07.2	Outpatient services
07.3	Hospital services
07.4	Public health services
07.5	Research and development health
07.6	Health not elsewhere classified
08	Recreation, culture and religion
08.1	Recreational and sporting services
08.2	Cultural services
08.3	Broadcasting and publishing services
08.4	Religious and other community services
08.5	Research and development recreation, culture and religion
08.6	Recreation, culture and religion not elsewhere classified
09	Education
09.1	Pre-primary and primary education
09.2	Secondary education
09.3	Post-secondary non-tertiary education
09.4	Tertiary education
09.5	Education not definable by level
09.6	Subsidiary services to education
09.7	Research and development education
09.8	Education not elsewhere classified
10	Social protection
10.1	Sickness and disability
10.2	Old age

**Table 3.9**  
**Classification of the Functions of Government (COFOG)**

Classification code	Classification name
10.3	Survivors
10.4	Family and children
10.5	Unemployment
10.6	Housing
10.7	Social exclusion not elsewhere classified
10.8	Research and development social protection
10.9	Social protection not elsewhere classified

**Source:** United Nations Statistical Commission.

#### **3.4.4.4 Classification of Outlays of Producers by Purpose (COPP)**

The Classification of Outlays of Producers by Purpose (COPP), shown in Table 3.10, provides a structured breakdown of expenditures by businesses. As can be seen, it offers analytical insight on the ways in which businesses allocate their current and capital expenditures. Statistics classified on this basis can be particularly useful in growth studies and environmental impact assessments, for example. Unfortunately this kind of information is not readily available in business accounting records, or in other existing data sources, and its collection through surveys would be quite burdensome, so the Canadian national accounts do not contain this kind of information at the present time.



**Table 3.10**  
**Classification of outlays of producers by purpose (COPP)**

Classification code	Classification name
01	Outlays on infrastructure
01.1	Outlays on road and land construction and improvement
01.2	Outlays on engineering and related technological work
01.3	Outlays on information management
02	Outlays on research and development
02.1	Outlays on research and experimental development on natural sciences and engineering
02.2	Outlays on research and experimental development on social sciences and humanities
03	Outlays on environmental protection
03.1	Outlays on protection of ambient air and climate
03.2	Outlays on waste water management
03.3	Outlays on waste management
03.4	Outlays on protection of soil and groundwater
03.5	Outlays on noise and vibration abatement
03.6	Outlays on protection of biodiversity and landscape
03.7	Outlays on environmental protection not elsewhere classified
04	Outlays on marketing
04.1	Outlays on direct sales efforts
04.2	Outlays on advertising
04.3	Outlays on marketing not elsewhere classified
05	Outlays on human resource development
05.1	Outlays on education and training
05.2	Outlays on health
05.3	Outlays on social services
06	Outlays on current production programs, administration and management
06.1	Outlays on current production programmes
06.2	Outlays on external transportation
06.3	Outlays on safety and security
06.4	Outlays on management and administration

**Source:** United Nations Statistical Commission.

### 3.4.5 Other classifications

The Canadian SNA makes use of a number of additional classifications where needed. For example, SNA 2008 prescribes classifications of transactions in products, transactions in non-produced assets and distributive transactions.<sup>30</sup> These come up repeatedly in the chapters ahead. As another example, in the environment satellite accounts, special geographical classifications for watersheds and ecozones are employed. These other classification systems are introduced and explained as they arise in the chapters to come.

## 3.5 Accounting rules

Accounting involves the measurement, processing and communication of financial information about the economic activities of an institutional unit. Modern accounting practice is central to the smooth functioning of the market economy as it provides vital information to managers, investors, creditors, regulators—and national accounts

statisticians. The comparability of the accounting information across institutional units is assured by accounting standards (referred to as “Generally Accepted Accounting Principles”, or GAAP)<sup>31</sup> and the reliability of the information is guaranteed by financial auditing.

From the perspective of an institutional unit, modern accounting takes the form of double-entry bookkeeping. In this system, all accounting entries must ensure the continuing validity of the identity:  $\text{Assets} = \text{Liabilities} + \text{Equity}$ . Thus, if a particular transaction leads to an increase in assets, there must be a corresponding increase in liabilities or equity, or possibly an offsetting decrease in assets, so the identity continues to hold. Put another way, each transaction recorded in the financial books must include a credit and an offsetting debit, the credit referring to the source of funds, or resource, or inflow, and the debit to the use of funds, or outflow. So, for example, if firm A drew funds from its bank account to purchase supplies from firm B, the accounts of firm A would show a credit for the funds drawn out of the bank account and a debit for the increase in inventories due to the purchased supplies.

This system is called double-entry bookkeeping for the simple reason that each transaction is recorded twice. In national accounting, however, the situation is different because the statistician has information about both sides of the transaction. Thus a single transaction between two parties gives rise to four entries. In the example just cited, the statistician would have information about the transaction from firm B’s perspective as well as firm A’s. This means the national accounts can operate with a system of quadruple-entry bookkeeping, leading to consistent recording of one transaction by both parties.

The macroeconomic accounts are best thought of as an aggregation of the individual current and capital accounts of the various institutional units in the economy, with adjustments made where necessary to ensure the accounts being aggregated are comprehensive and consistent in terms of value measurement, time of recording and classification. Each unit, whether a business, a government, a household or a non-profit organization, does its own double-entry bookkeeping and the macroeconomic accounts bring all these accounts together in a coherent manner to paint a picture of the macro economy.

The accounting can be done over any period of time. In Canada, a few accounts are produced monthly, others quarterly and still others annually. The most detailed economic picture emerges in the annual accounts. For this reason, the provincial economic accounts and the supply and use accounts are available only at an annual frequency. This reflects the fact that the most detailed and reliable data sources used in compiling the accounts are typically annual—notably government public accounts and business annual regulatory reports and tax filings.

### 3.5.1 Valuation of transactions

As noted, when purchases and sales are recorded in the accounts of two different institutional units it is important for purposes of the national accounts that they have the same basis of valuation. That valuation, generally speaking, is at **market prices**. The prices must be determined at arm’s length, with normal commercial considerations being the only significant driving factor. When this principle is violated, as it might be for example when two branches of the same enterprise engage in a transaction,<sup>32</sup> adjustments are needed. Market prices should include the impact of any taxes, subsidies, rebates, discounts or other such add-ons that may apply.

A problem can arise when valuing barter transactions, for example when product X is traded for product Y. Since no money changes hands, there is no obvious value to assign to the transaction. Each unit may place a different value on the item bartered. Since the accounting rule of the SNA requires that a single value to be recorded for both parties, a simple average of different valuations may be taken as the value of the transaction.

Another problem arises when products are not sold in the marketplace at economically significant prices. This is true for much of government sector output, for example. It is also true for business production for own account. Government sector output is generally valued at cost, since there are often no good market equivalents to use in estimating market prices. Business own-account production is valued at average market prices where possible and at cost where market prices cannot be estimated. Market prices are sometimes estimated by calculating the costs and adding an average markup for net operating surplus.

When it comes to the valuation of physical assets, business accounting rules often use the ‘book value’ or ‘historical cost’ approach. Moreover, for tax reasons those asset values are often depreciated in a way that differs from what would be obtained if normal estimates of wear and tear, obsolescence, etc. were calculated. National accounting requires a net present market valuation method for assets and a consumption of fixed capital approach for

depreciation. This means that national accounts estimates of the capital stock cannot be calculated by simply adding up the estimates of depreciated capital found in corporate accounting statements. Instead, as described later in this volume, the national accounts use a ‘perpetual inventory’ method to estimate depreciation and thereby the changing market value of corporate assets. A similar approach is applied when calculating government, household and NPISH fixed asset values and the gradual consumption of those fixed assets.

As discussed more fully in chapter 4, the production accounts make an important distinction among three bases of valuation:<sup>33</sup>

- **Basic prices** are defined as “the amount receivable by the producer from the purchaser for a unit of good or service produced as output minus any tax payable and plus any subsidy receivable on the product as a consequence of its production or sale. It excludes any transport charges invoiced separately by the producer.” This is the basis of valuation for gross output in the supply and use accounts and it records the value of the product when it is produced.
- **Producer prices** are defined as “the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any value added tax (VAT), or similar deductible tax, invoiced to the purchaser. It also excludes any transport charges invoiced separately by the producer.” This basis of valuation is used when it is not possible to calculate basic prices.
- **Purchaser prices** are defined as the amount payable by the purchaser, excluding any deductible VAT or similar deductible tax, in order to take delivery of a unit of a good or service at the time and place required by the purchaser. The purchaser’s price of a good includes any transport charges paid separately by the purchaser to take delivery at the required time and place.” This is the basis of valuation for a product used for intermediate consumption or for final consumption by the purchaser.

### 3.5.2 Timing of transactions

A market transaction is often spread out over time. It may begin with the signing of a contract, after which a delivery may occur following the passage of some time. An invoice may be provided to the seller when the contract is signed or when the products are delivered and the purchaser may delay payment for some period of time. In such a situation, which is by no means uncommon, to what accounting period should the transaction be assigned?

There are many possible answers to this question. Transactions could be timed based on when the associated cash flows, or when it is due, for example. However, the core principle for national accounting is that transactions should be timed according to the **accrual** concept.

SNA 2008 defines this concept as follows:

“Accrual accounting records flows at the time economic value is created, transformed, exchanged, transferred or extinguished. This means that flows that imply a change of ownership are entered when the change occurs, services are recorded when provided, output at the time products are created and intermediate consumption when materials and supplies are being used.”<sup>34</sup>

Most transactions are recorded on an accruals basis from the very start. In some circumstances this is not so, however, and when such cases are significant they require national accounts timing adjustments.

For goods, the transaction is generally deemed to occur when the economic ownership changes hands. For services, it occurs when they are delivered. For incomes such as wages and salaries, interest or rent the transaction takes place in the accounting period when the amounts payable are accumulated, whether or not money flows actually occur in that accounting period. Dividends are recorded in the accounting period when the associated shares are quoted as ‘ex dividend’. Transactions in financial assets are recorded when the change of ownership occurs.

Production is recorded in the accounts as additions to work-in-progress inventories<sup>35</sup> accumulate. When production is completed, the work-in-progress inventories accumulated up to that point are transformed into stocks of finished product inventories. When companies record their inventories using last-in-first-out (LIFO) or first-in-first-out (FIFO) accounting conventions, adjustments are required to put the values on a national accounts basis. This matter, and the related one involving the timing of consumption of fixed capital assets, are discussed further in chapters 5 and 7.

### 3.5.3 Transactions with the rest of the world

International transactions in goods and services are recorded at border values, during the accounting period when the products cross the border. More specifically, exports and imports of goods are valued **free-on-board** (FOB), which is to say at the exporter's customs frontier. Putting this principle into practise is not always straightforward, for a number of reasons. This topic is discussed further in chapters 4, 5 and 8.

### 3.6 The sequence of accounts in SNA 2008

At the total economy level, the essence of the national accounts is found in four tables: one recording gross domestic product at market prices based on the final expenditures approach, another showing GDP at market prices based on the primary input expenses approach, a third displaying GDP at basic prices based on the gross value added by industry approach and a final one recording the national balance sheet account. These four tables are fully explained and discussed in chapters 4, 5 and 6. They represent a consolidation of a more detailed set of tables recording income, expenditure and transfer flows among the different institutional sectors of the economy. These more detailed tables are known in SNA 2008 as the **sequence of accounts**.

The sequence of accounts extends from the production accounts through to the balance sheet accounts. SNA 2008 presents the sequence as 14 distinct accounts, each of which can be broken out separately for individual institutional units, the 6 high-level institutional sectors (households, non-profit institutions serving households, non-financial corporations, financial corporations, general government and the non-resident sector) and the total economy.<sup>36</sup> Each account closes with a balancing item that becomes the opening item in the next account. In this way, the accounts provide a cascading representation of the overall economy, broken out by institutional sector, showing the interrelationships of production, the generation of income, the allocation and redistribution of income, the final expenditure of income and the resulting saving, investment in capital assets, borrowing and lending, financial portfolio adjustments and ultimately changes in balance sheets.

The sequence of accounts can be presented as a series of high-level summary ledger sheets or 'T-accounts'.<sup>37</sup> 'Resources' are shown, by convention, on the right-hand side and 'uses' on the left-hand side. In the current accounts, 'resources' are transactions that add to the amount of economic value of an institutional unit or sector. For example, income tax receipts of a government unit are a 'resource' for that unit. 'Uses', in contrast, are transactions that subtract from the amount of economic value of a unit. Thus, income tax payments by a household are a 'use' for that unit. In the ledger sheets for the accumulation accounts, 'resources' refer to changes in liabilities and net worth, while 'uses' refer to changes in assets.<sup>38</sup>

In this section the 14 accounts are each described. In chapter 5 it is explained how these accounts are presented in the Canadian context, not just at the total economy level but also by institutional sector, and not just conceptually but also empirically. Text box 3.1 provides a list of the 14 accounts with their corresponding balancing items.

**Text box 3.1**  
**Sequence of accounts summary**

<b>Account</b>	<b>Balancing item</b>
<b>Current accounts</b>	
Production account	Value added
Generation of income account	Operating surplus/Mixed income
Allocation of primary income account	Balance of primary income
Entrepreneurial income account	Entrepreneurial income
Allocation of other primary income account	Balance of primary income
Secondary distribution of income account	Disposable income
Use of disposable income account	Saving
Redistribution of income in kind account	Adjusted disposable income
Use of adjusted disposable income account	Saving
<b>Accumulation accounts</b>	
Capital account	Net borrowing or lending
Financial account	Net borrowing or lending
Other changes in the volume of assets account	
Revaluation account	
<b>Balance sheet account</b>	<b>Net worth</b>

### 3.6.1 Production account

Chapter 4 presents the **production account**, the first in the sequence of accounts, in great detail. It is presented there with an establishment/industry breakdown, but it can also be presented with a breakdown by institutional sector, although Canada does not currently release production account estimates on that basis.<sup>39</sup> The account's structure is reproduced in Table 3.11, without any numbers. The balancing item is gross value added. Net value added could also be shown, as the difference between gross value added and consumption of fixed capital, but this element is omitted for brevity. This abbreviated presentation is used for greater simplicity in the remainder of this section to explain the structure of the sequence of accounts. Keep in mind that all of the 'gross' balancing items recorded in these accounts—gross value added, gross saving, gross fixed capital formation—can also be reported on a 'net' basis by subtracting consumption of fixed capital.

**Table 3.11**  
**Production account**

<b>Uses</b>	<b>Resources</b>
	Output
Intermediate consumption	
Gross value added	

**Source:** System of National Accounts 2008.

In the production account, output is the only 'resource' and intermediate consumption is a 'use'. The balancing item gross value added, the difference between output and intermediate consumption, appears as the other 'use' in the account.

This account can be displayed separately for all resident institutional units and sectors. The non-resident sector, by SNA 2008 definition, produces no output. Most output is produced in the non-financial and financial corporations sectors. In the case of the household sector, gross output is largely the production of unincorporated businesses. In the NPISH and government sectors output is typically distributed without charge or at economically insignificant prices, so it is measured at cost. The aggregate of gross value added over all resident sectors (or over all industries) is **gross domestic product** (see Text box 3.2).

### 3.6.2 Generation of income account

The second account in the sequence is the **generation of income account**, shown in Table 3.12. This account is also discussed in chapter 4. It focuses on resident institutional sectors in their capacity as producers whose activities generate primary incomes. The account shows how the primary income resulting from participation in production processes is distributed, initially, among institutional units. In this context, ‘participation in production processes’ entails not just direct involvement by supplying labour or entrepreneurial effort, but also supplying owned assets that are needed for production.

The balancing item on the ‘uses’ side of the production account, gross value added, is the opening item on the ‘resources’ side of the generation of income account. Opposite this ‘resource’ on the ‘uses’ side of the account are the various kinds of primary income that are discussed in chapter 4. The residual primary income share, gross operating surplus plus gross mixed income, is the account’s balancing item.

**Table 3.12**  
**Generation of income account**

Uses	Resources
	Gross value added
Compensation of employees	
Taxes on production and imports	
Less: Subsidies	
Gross operating surplus plus gross mixed income	

**Source:** System of National Accounts 2008.

SNA 2008 defines **primary incomes** as “incomes that accrue to institutional units as a consequence of their involvement in processes of production or [economic] ownership of assets that may be needed for purposes of production” (page 131).

It is important to recognize that the primary incomes recorded as ‘uses’ in this account are those **originating** in the institutional sector the account is describing. For example, in the generation of income account for the household sector, compensation of employees consists of the wages and salaries originating in the sector only, paid to employees by unincorporated businesses and paid to domestic staff (which are included in the sector), **not** the wages and salaries received by households from other sectors.<sup>40</sup>

For an individual business, it matters whether capital resources are owned or rented since for that business, rental of capital resources implies higher intermediate consumption offset by lower gross operating surplus or gross mixed income compared to the case in which capital resources are owned. For the total economy, however, gross operating surplus and gross mixed income are both invariant as to whether the capital resources used in production are owned or rented by a particular enterprise and if they are owned, whether they are financed out of own funds or out of borrowed funds.

Like the production account, the generation of income account can be displayed for all resident institutional units and sectors and it can also be compiled for establishments and industries.

**Text box 3.2****Major total-economy aggregates in the sequence of accounts**

**Gross and net domestic product (GDP and NDP)** – The aggregate of gross or net value added over all resident institutional units in the production account

**Gross and net national income (GNI and NNI)** – The aggregate of the balance of primary incomes over all resident institutional units in the allocation of primary income account

**National disposable income** – The aggregate of disposable income over all resident institutional units in the secondary distribution of income account

**Gross and net national saving** – The aggregate of saving over all resident institutional units in the use of adjusted disposable income account

**National wealth** – The aggregate of non-financial assets and net claims on the rest of the world over all resident institutional units in the balance sheet account

**3.6.3 Allocation of primary income account**

The **allocation of primary income account** focuses on institutional units in their capacity not as producers, but as **recipients** of primary incomes. It reveals where the types of income shown in the generation of income account are receivable. It also indicates the amounts of property income payable and receivable by sectors. The account is depicted in Table 3.13.

**Table 3.13****Allocation of primary income account**

Uses	Resources
	Gross operating surplus and gross mixed income
	Compensation of employees
	Taxes on production and imports
	Less: Subsidies
Property income	Property income
Gross balance of primary incomes or gross national income	

Source: System of National Accounts 2008.

In this account and the ones that follow, the listed ‘resources’ and ‘uses’ are not meant to apply necessarily or in the same way to each of the institutional sectors. Rather, some of the line items shown may apply to some sectors and others to other sectors. For example, the non-financial corporations sector records no compensation of employees income as receivable (a ‘resource’) in its allocation of primary income account (although it does show compensation of employees as a ‘use’ in its generation of income account). However income of that kind is shown as a ‘resource’ of the household sector in its allocation of primary income account.

Property income is “that part of primary incomes that accrues by lending or renting financial or natural resources, including land, to other units for use in production” (SNA 2008, page 131). It includes interest payments, distributed income of corporations (dividends and withdrawals of income of quasi-corporations), reinvested earnings of direct foreign investment,<sup>41</sup> property income attributed to insurance policy holders<sup>42</sup> and rent.

For example, a household might lend money to a non-financial corporation by purchasing its bonds. The interest paid on those bonds by the corporation to the household would be recorded as property income flows in the allocation of primary income accounts of households (a ‘resource’) and non-financial corporations (a ‘use’). Similarly if a household borrowed funds from a financial corporation in order to buy a home, the mortgage payments made by that household would also be recorded as property income flows, in this instance in the allocation of primary income accounts of households (a ‘use’) and financial corporations (a ‘resource’).

The production account and the generation of income account apply to resident institutional units and sectors only. There is no production or generation of primary income in the non-resident sector. However, the allocation of primary income account and the other accounts that follow apply to the non-resident sector as well as the other sectors. Non-resident institutional units can both pay and receive investment income to/from resident institutional units. Resident businesses might also pay compensation to non-resident employees who live in a foreign country while working in Canada, or in the reverse circumstance employees might reside in Canada while being employed by a non-resident institutional unit.<sup>43</sup>

Unlike the production account and the generation of income account, the allocation of primary income account cannot be compiled for establishments and industries. It can only be compiled for institutional units and sectors, and for the economy as a whole.<sup>44</sup> When compiled for a particular institutional unit or sector, the account's balancing item is the gross balance of primary incomes received by the unit or sector. When compiled for the total economy, the balancing item is **gross national income** (or **net national income** if consumption of fixed capital is deducted).

In other words, gross national income is the sum of the balances of primary incomes of resident institutional units. This can be compared with gross domestic product, which is output less intermediate consumption of resident institutional units. The difference between the two is the difference between the total primary incomes receivable by residents from non-residents and the total primary incomes payable by residents to non-residents. Gross national income is arguably a better measure of the standard of living of a country than gross domestic product because it gauges the income actually received by its residents after taking account of income flows to and from non-residents.

### 3.6.4 Entrepreneurial income account

The concept of 'profit' is central to the theory of the firm and the measurement of the health of the business sector. The gross and net operating surpluses are indicators of profit, as are the gross and net balances of primary incomes received by corporate institutional units. An additional, more refined measure of profit can also be obtained by partitioning the allocation of primary income accounts of the non-financial and financial corporations sectors into sub-accounts: the **entrepreneurial income account** and the allocation of other primary income account. The purpose is to identify entrepreneurial income, an additional balancing item which is useful for market producers as it is closer to the concept of current profit before tax that is familiar in business accounting.

Entrepreneurial income is measured **before** the payment of dividends, withdrawals of income from quasi-corporations and reinvested earnings. It shows the profit earned by the enterprise before it distributes any of that income to shareholders. The concept applies only to corporate institutional units, not to other kinds of institutional units and not to establishments.

Table 3.14 displays the entrepreneurial income account. The account's 'resources' include all of the sources of income received by a business—its gross operating surplus or gross mixed income plus its property income (interest, dividends and so on). Its 'uses' are the property income disbursements it is legally obligated to make (which exclude dividends and reinvested earnings on foreign direct investments), plus the balancing item, **gross entrepreneurial income**.



**Table 3.14**  
**Entrepreneurial income account**

Uses	Resources
	Gross operating surplus and gross mixed income
	Property income
	Interest
	Distributed income of corporations
	Reinvested earnings of foreign direct investment
	Investment income disbursements
	Rent
Property income	
Interest	
Investment income disbursements	
Rent	
Gross entrepreneurial income	

**Source:** System of National Accounts 2008.

Thus, gross entrepreneurial income is equal to gross operating surplus plus all the property income earned by the institutional unit minus all the property income contractually required to be paid out by the institutional unit.

### 3.6.5 Allocation of other primary income account

The **allocation of other primary income account** is the counterpart to the entrepreneurial income account (see Table 3.15). The two accounts together represent a decomposition of the allocation of primary income account for the non-financial and financial corporations sectors. The balancing item from the first of the two accounts, gross entrepreneurial income, is carried down as a 'resource' in the allocation of other primary income account. The balancing item for the latter account, gross balance of primary incomes or gross national income, is the same as the balancing item for the allocation of primary income account.

In other words, if one is tracing through the sequence of accounts one can go directly to the gross balance of primary incomes (or gross national income) from the generation of primary incomes account via the allocation of primary income account, or alternatively one can take a slightly more circuitous route via the entrepreneurial income account and the allocation of other primary income account. Either way, the destination is the same: the gross balance of primary incomes (or gross national income).

**Table 3.15**  
**Allocation of other primary income account**

Uses	Resources
	Gross entrepreneurial income
	Compensation of employees
	Taxes on production and imports
	Less: Subsidies
	Property income
	Interest
	Reinvested earnings of foreign direct investment
	Rent
Property income	
Interest	
Reinvested earnings of foreign direct investment	
Rent	
Gross balance of primary incomes or gross national income	

Source: System of National Accounts 2008.

### 3.6.6 Secondary distribution of income account

The next account in the sequence is the **secondary distribution of income account**, shown in Table 3.16. Starting from the gross balance of primary incomes 'resource', which is the balancing item of the allocation of primary income account, this account records current transfers received as additional 'resources' and current transfers paid as 'uses'. The account's balancing item is gross disposable income. This account can be compiled for all of the institutional units and sectors.

**Table 3.16**  
**Secondary distribution of income account**

Uses	Resources
	Gross balance of primary incomes
	Current taxes on income and wealth
	Net social contributions
	Social benefits other than social transfers in kind
	Other current transfers
Current taxes on income and wealth	
Net social contributions	
Social benefits other than social transfers in kind	
Other current transfers	
Gross disposable income or national disposable income	

Source: System of National Accounts 2008.

Whereas the receipts and payments recorded in the allocation of primary income account are all **required** current transactions, those in the secondary distribution of income account are **unrequired** transfers.<sup>45</sup> This is the fundamental difference between the two accounts.

Transfers can be in cash or in kind. Both types of transfer exist in Canada. Social transfers in cash include payments under the Old Age Security program or under provincial welfare programs, for example. Income taxes are another form of unrequited social cash transfer. Social transfers in kind include health, education and social housing, among others. They can include both non-market production of individual services by government and NPISH units and the purchase by government and NPISH units of market goods and services for transfer to households free or at prices that are not economically significant. The secondary distribution of income account refers only to current transfers in cash. Social transfers in kind appear later in the sequence of accounts, in the **redistribution of income in kind account**.

Current transfers are to be distinguished from capital transfers. The latter refer to cash or in-kind transfers intended to help an institutional unit acquire or dispose of a capital asset. The secondary distribution of income account includes only current transfers. Capital transfers appear later in the sequence of accounts as a line entry in the capital account.

As shown in Table 3.16, current transfers in cash are classified in four categories:

- current taxes on income and wealth;
- net social contributions;
- social benefits other than social transfers in kind; and
- other current transfers.

Current taxes on income and wealth (for example, personal income taxes) and net social contributions (for example, Employment Insurance contributions) generally constitute transfers from the non-government sectors to the government sector, whereas social benefits other than social transfers in kind (for example, Old Age Security benefits) and other current transfers (for example, cash assistance to victims of a natural disaster) generally are transfers from governments to the non-government sectors.

The balancing item in the secondary distribution of income account is gross disposable income in the case of an individual institutional unit or sector or **national disposable income** for the economy as a whole.

### 3.6.7 Use of disposable income account

The **use of disposable income account** (see Table 3.17) is the link between the current accounts and the accumulation accounts. Its balancing item, gross saving, is brought down to become the main 'resource' of the capital account.

There are two 'resources' in the use of disposable income account as it is presented in SNA 2008: gross disposable income, brought down from the balancing item in the secondary distribution of income account, and the adjustment for the change in pension entitlements which is explained later in this section. Its 'uses' are final consumption expenditure, the adjustment for changes in pension entitlements and gross saving, the account's balancing item. Final consumption has two main components, individual and collective consumption expenditure, and it is possible to provide far more product detail on both if desired. Gross saving can, in principle, be either positive or negative for a given institutional unit or sector.

**Table 3.17**  
**Use of disposable income account**

Uses	Resources
	Gross disposable income
	Adjustment for change in pension entitlements
Final consumption expenditure	
Individual consumption expenditure	
Collective consumption expenditure	
Adjustment for change in pension entitlements	
Gross saving	

Source: System of National Accounts 2008.

The distinction between individual and collective consumption expenditure was introduced in SNA 1993. **Individual consumption expenditure** is the amount spent by an institutional unit during an accounting period to purchase consumption goods and services for the benefit of a specific individual or group of individuals that could, in principle, be identified. **Collective consumption expenditure** is the amount spent by an institutional unit during an accounting period to purchase consumption goods and services for the benefit of the collectivity living within or visiting a local community, or a city, or a province, or the country as a whole.

Individual consumption expenditure includes both purchases of goods and services by households for their own use and the provision of goods and services to specific households or groups of households by government and NPISH units. The former includes purchases of food, clothing, transportation and a wide range of other consumer products by households. The latter includes, for example, the provision of elementary and secondary schooling to children and the provision of health care services.

Collective consumption expenditure, in contrast, corresponds to the economic concept of the ‘public good’—products that an individual cannot be effectively excluded from using and for which one individual’s consumption does not significantly reduce the availability of the good or service for others. Examples of collective consumption expenditures include spending on policing, defence services, Parliament and general public administration.

The use of disposable income account also contains an **adjustment for changes in pension entitlements**. The secondary distribution of income account determines gross disposable income. In doing so, it excludes the contributions of employers and employees to pension funds since these contributions, once made, reduce the amount of income that is ‘disposable’. However, in SNA 2008 these contributions are considered to be additions to the financial assets of the household sector and to the liabilities of the financial corporations and government sectors. They are therefore a form of gross saving, adding to households’ equity in the pension funds. In addition, there can be other adjustments to households’ net equity in these pension funds as, for example, when pension managers deduct fees from the account balance. If gross saving were determined simply by deducting final consumption expenditure from gross disposable income, which excludes these contributions and other changes in entitlements, gross saving would be misstated. Accordingly, the additional ‘resource’ (for the household sector) and ‘use’ (for the financial corporations and government sectors) known as the ‘adjustment for changes in pension entitlements’ is added to the use of disposable income account. This brings gross saving back to its proper level. SNA 2008 describes the adjustment as follows:

“It is equal to: the total value of the actual and imputed social contributions payable into pension schemes, **plus** the total value of contribution supplements payable out of the property income attributed to pension fund beneficiaries, **minus** the value of the associated service charges, **minus** the total value of the pensions paid out as social insurance benefits by pensions schemes.” (p. 182)

Accordingly, the household sector’s use of disposable income account includes gross disposable income and the adjustment for changes in pension entitlements as its ‘resources’ and final consumption expenditure and the balancing item, gross saving, as its ‘uses’. The use of disposable income accounts for the government and NPISH sectors also include gross disposable income as their sole ‘resource’ and potentially include both individual consumption expenditure and collective consumption expenditure as well as the adjustment for changes in pension entitlements and gross saving as their ‘uses’. There are no entries in the use of disposable income account for non-financial corporations, other than gross disposable income and gross saving which are equal since the sector does not make final consumption expenditures. Finally, the account for the financial corporations sector, and possibly also for the non-resident sector, includes as ‘uses’, in addition to gross saving, the adjustment for changes in pension entitlements which is the counterpart entry for the adjustment in the households account.

### 3.6.8 Redistribution of income in kind account

As explained, gross disposable income is the balancing item in the secondary distribution of income account. For a household, it is the maximum amount that can be spent on consumption goods and services during the accounting period without having to accommodate its expenditures by reducing its financial or non-financial assets or increasing its liabilities. But a household’s disposable income does not, in fact, show the full limit of its final consumption possibilities during the accounting period because it may also benefit from individual consumption expenditure by government or NPISH units on its behalf.

Thus, for example, a government wanting to assist homeless people could either transfer cash to them in the form of social welfare payments (money transfers) or construct social housing and provide the housing to them either without rental charges or at economically insignificant rental charges (in-kind transfers).

By taking social transfers in kind into account as well, the **redistribution of income in kind account** (see Table 3.18) yields an alternative definition of gross disposable income, known as **gross adjusted disposable income**. The account's 'resources' are gross disposable income and social transfers in kind (for institutional units receiving such transfers), while its 'uses' are social transfers in kind (for institutional units making such transfers to other units) and the balancing item gross adjusted disposable income. Thus, the alternative disposable income concept is equal to gross disposable income plus the value of any social transfers in kind received minus the value of any social transfers in kind paid.

Social transfers in kind are payable only by government or NPISH institutional units and are receivable only by households. Thus, the gross adjusted disposable incomes of government and NPISH institutional units are necessarily equal to or lower than their gross disposable incomes, while the gross adjusted disposable income of the household sector is necessarily greater than or equal to its gross disposable income. Gross adjusted disposable income and gross disposable income are necessarily equal for the economy as a whole, since the increase for the household sector due to social transfers in kind received is fully offset by the decrease for the government and NPISH sectors due to social transfers in kind paid.

**Table 3.18**  
**Redistribution of income in kind account**

Uses	Resources
	Gross disposable income
	Social transfers in kind
Social transfers in kind	
Gross adjusted disposable income	

Source: System of National Accounts 2008.

### 3.6.9 Use of adjusted disposable income account

The **use of adjusted disposable income account** (see Table 3.19) is the counterpart to the use of disposable income account. It records gross adjusted disposable income as its sole 'resource' and **actual final consumption** plus the balancing item, gross saving, as its 'uses'. The purpose of the account is to portray a more complete picture of income and consumption in the household, government and NPISH sectors, as compared to the cash-transaction orientation that is portrayed in the use of disposable income account.

The concept of **actual final consumption** refers to the sum of final consumption expenditure by an institutional unit plus or minus social transfers in kind received or paid by that unit.

For the household sector, the 'resources' in this account are greater than those in the use of disposable income account by the amount of social transfers in kind. Actual final consumption is greater than final consumption expenditure by the same amount, so the balancing item, gross saving, is the same in this account as in the use of disposable income account.

For the government and NPISH sectors, the 'resources' in this account are lower than those in the use of disposable income account by the amount of social transfers in kind. Actual final consumption is lower than final consumption expenditure by the same amount, so the balancing item, gross saving, is the same in this account as in the use of disposable income account.

**Table 3.19**  
**Use of adjusted disposable income account**

Uses	Resources
	Gross adjusted disposable income
	Adjustment for change in pension entitlements
Actual final consumption	
Actual individual consumption	
Actual collective consumption	
Adjustment for change in pension entitlements	
Gross saving	

Source: System of National Accounts 2008.

### 3.6.10 Capital account

The capital account is the first in a series of four accounts, known collectively as the **accumulation accounts**, recording changes in the values of assets held by institutional units. The other three, following in the sequence of accounts, are the **financial account**, the **other changes in the volume of assets account** and the **revaluation account**. Together these accounts decompose and thereby explain the change in net worth during an accounting period for an institutional unit. The impact of the four accounts is brought together in the **balance sheet accounts** which record, for each institutional unit or sector, the beginning- and end-of-period stocks of assets, liabilities and net worth.

Table 3.20 provides a simple depiction of the **capital account**. In this account, as in the other three accumulation accounts, ‘resources’ are defined as changes in liabilities and net worth. ‘Uses’ are defined as changes in assets.

**Table 3.20**  
**Capital account**

Uses = Changes in assets	Resources = Changes in liabilities and net worth
	Gross saving
	Current external balance
	Capital transfers receivable
	Less: Capital transfers payable
Gross capital formation	
Less: Consumption of fixed capital	
Equals: Net capital formation	
Net acquisition of non-produced, non-financial assets	
Net lending (+) or borrowing (-)	

Source: System of National Accounts 2008.

The first of the account’s resources is gross saving, which is the balancing item from the use of disposable income account (and the use of adjusted disposable income account). The current external balance, representing saving made available to the economy by the non-resident sector, is the second line entry. Capital transfers receivable net of capital transfers payable is the final ‘resource’ category.

The account’s ‘uses’ include gross capital formation, plus the net acquisition of non-produced, non-financial assets and the account’s balancing item, net lending (+) or borrowing (-).

In effect, the capital account sums up the sources of funds (other than borrowed funds) that are available to an institutional unit for investment purposes—that is, savings and capital transfers. From the total of these sources it deducts the uses of these funds for capital investment purposes, either for purchasing capital goods (housing, plant and equipment, inventories, intellectual property, etc.) or for acquiring other non-financial assets that are not produced (land, mineral resources, non-cultivated biological resources, etc.). If some of the available funds are not used for gross capital formation purposes or for the net acquisition of non-produced, non-financial assets, they are available for lending to other institutional units. Alternatively, if the institutional unit's gross capital formation plus net acquisition of non-produced, non-financial assets exceeds the available sources of funds, the unit must borrow the difference from other units. Accordingly, the account's balancing item is referred to as net lending (+) or borrowing (-).

Note that the first 'use' in the account is gross capital formation. Some of this capital formation is, in effect, a replacement for capital consumed in production during the accounting period while the remaining capital formation is net new investment.

### 3.6.11 Financial account

The **financial account**, depicted in Table 3.21, reveals how an institutional unit's net lending (+) or borrowing (-) is reflected in its net acquisition of financial assets and liabilities. The account's 'resources' include the net lending (+) or borrowing (-), plus or minus any additional funds raised or disposed of by acquiring new or liquidating old liabilities. (Acquiring a new liability means gaining access to additional financial 'resources'.) The account's 'uses' show the unit's net acquisition of financial assets during the accounting period.

**Table 3.21**  
**Financial account**

Uses = Changes in assets	Resources = Changes in liabilities and net worth
	Net lending (+) or borrowing (-)
	Net acquisition of liabilities
Net acquisition of financial assets	

Source: System of National Accounts 2008.

Net lending/borrowing is shown as a 'resource' and not as a balancing item in this account. This is because, in the sequence of accounts, net lending/borrowing has already been determined as the balancing item in the capital account. However, in the practical application of the sequence of accounts it should be recognized that, assuming good estimates are available for net acquisition of financial assets and liabilities, the capital account and the financial account yield two essentially independent estimates of net lending/borrowing that are very unlikely to be identical. That is, there is a statistical discrepancy.

This account is fully explained in chapter 6.

### 3.6.12 Other changes in the volume of assets account

Table 3.22 is a simplified portrayal of the other changes in the volume of assets account. In essence, the account records positive and negative changes in the assets, liabilities and net worth of an institutional unit, during an accounting period, that cannot be accounted for by economic transactions. An example of a positive change of this kind is the discovery of mineral deposits not previously known to exist. A negative change can be exemplified by the catastrophic destruction of housing and municipal infrastructure assets as a result of an earthquake. The balancing item in this account is a 'resource' and is changes in net worth due to other changes in the volume of assets.

**Table 3.22**  
**Other changes in the volume of assets account**

<b>Uses = Changes in assets</b>	<b>Resources = Changes in liabilities and net worth</b>
	Other changes in volume not elsewhere classified
	Changes in classification
Economic appearance of assets	
Natural resources	
Contracts, leases and licences	
Goodwill and marketing assets	
Economic disappearance of assets	
Natural assets	
Contracts, leases and licences	
Goodwill and marketing assets	
Catastrophic losses	
Uncompensated seizures	
Other changes in volume not elsewhere classified	
Changes in classification	
	Changes in net worth due to other changes in the volume of assets

**Source:** System of National Accounts 2008.

This account is fully explained in chapter 6.

### 3.6.13 Revaluation account

Table 3.23 shows the basic structure of the revaluation account. This account records changes in the value of the assets, liabilities and net worth of an institutional unit, during an accounting period, accruing to owners of those assets and liabilities simply from changes in the market prices of those assets and liabilities. An example of a positive change of this kind affecting non-financial assets is the rise in the value of housing assets held by the household sector as a result of rising housing prices during the accounting period. A change affecting liabilities is exemplified by the reduction in the market value of a corporate bond as a result of rising interest rates during the accounting period.



**Table 3.23**  
**Revaluation account**

<b>Uses = Changes in assets</b>	<b>Resources = Changes in liabilities and net worth</b>
	Nominal holding gains and losses
	Liabilities
Nominal holding gains and losses	
Non-financial assets	
Financial assets	
	Changes in net worth due to nominal holding gains and losses
	Neutral holding gains
	Liabilities
Neutral holding gains	
Non-financial assets	
Financial assets	
	Changes in net worth due to neutral holding gains
	Real holding gains
	Liabilities
Real holding gains	
Non-financial assets	
Financial assets	
	Changes in net worth due to real holding gains and losses

Source: System of National Accounts 2008.

The balancing item in the revaluation account is described as changes in net worth due to nominal holding gains or losses. The holding gains and losses are divided into neutral holding gains and losses and real holding gains and losses. The neutral holding gains and losses on an asset over a given period of time are equal to the value of the asset at the beginning of the period multiplied by the proportionate change in some price index selected to measure change in the general price index (a measure of inflation or deflation). Real holding gains are the difference between the nominal and neutral holding gains on that asset.

As can be seen in Table 3.23, this account shows three balancing items that are ‘resources’, one for nominal holding gains and losses, another for neutral holding gains and a third for real holding gains and losses.

This account also is fully explained in chapter 6.

### 3.6.14 Balance sheets

A balance sheet is a statement, drawn up at a particular point in time, of the value of assets owned and liabilities owed by an institutional unit or group of units.

In the SNA, the **balance sheet accounts** are the destination that the sequence of accounts ultimately leads to. For any institutional unit in any given accounting period, the sequence starts with production; it shows how primary incomes are generated from production; primary incomes are channelled from producers to the recipients of primary income; disposable incomes are derived from primary, property and transfer incomes; gross saving is calculated after deducting final consumption from incomes; gross capital formation is financed in part by gross saving and capital transfers and in part by borrowing and lending; the acquisition of financial assets and liabilities allows lenders with excess gross saving to direct their left-over funds to borrowers with deficient gross saving; and other changes in the value of non-financial and financial assets and liabilities are accounted for by events other than economic transactions and by revaluations due to price changes. The balance sheet accounts show the opening and closing stocks of non-financial and financial assets and liabilities and they are, in fact, unique among the 14 accounts in having their values shown in the account as stocks rather than flows.

The balance sheet accounts are actually three closely interrelated sub-accounts. The first is the **opening balance sheet account** which shows, for an institutional unit, the stock levels for non-financial and financial assets and liabilities at the beginning of the accounting period. The second account is, unlike its two sister accounts, a flow account showing the total of all changes to the levels of the stocks of non-financial and financial assets and liabilities during the accounting period. This account is, in effect, a combination of the four accumulation accounts previously discussed. Finally, the third account is the **closing balance sheet account** recording the stock levels for non-financial and financial assets and liabilities at the end of the accounting period. The closing balance sheet values are, of course, equal to the corresponding opening balance sheet values plus the corresponding changes that are recorded in the accumulation accounts.

**Table 3.24**  
**Balance sheets account**

<b>Uses = Assets</b>	<b>Resources = Liabilities and net worth</b>
	Opening balance sheet
	Liabilities
Opening balance sheet	
Non-financial assets	
Financial assets	
	Net worth
	Total changes in liabilities and net worth
	Liabilities
Total changes in assets	
Non-financial assets	
Financial assets	
	Changes in net worth
	Closing balance sheet
	Liabilities
Closing balance sheet	
Non-financial assets	
Financial assets	
	Net worth

Source: System of National Accounts 2008.

This account also is fully explained in chapter 6.

## Notes for chapter 3

1. These four organizations are referred to collectively as “the international organizations” in this volume. There is a fifth international organization that compiles aggregate national accounts information, the European Commission, but its focus is confined to the countries of the European Economic Community.
2. *System of National Accounts 2008*, published by the European Commission, the International Monetary Fund, the Organization for Economic Cooperation and Development, the United Nations and the World Bank, 2009. This updated international standard for national accounting was developed by a team of national accounts experts from around the world, including a Canadian representative, Ms. Karen Wilson, over a period of several years leading up to 2008. The volume, which is about 700 pages long, is available without charge on the United Nations Internet site. In places, this chapter and others also refer to two other, closely related international manuals published by the International Monetary Fund: *Balance of Payments and International Investment Position Manual*, 6th edition, 2009 (referenced as BPM6) and *Government Finance Statistics Manual*, pre-publication draft, 2014. These manuals are available without charge on the IMF Internet site.
3. In the national accounts, a transfer is a transaction in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as a direct counterpart. Transfers are separated into current transfers and capital transfers, and are discussed in chapter 5.
4. In the international investment position accounts, stocks are often referred to as **positions**.
5. Since consumer durable goods (motor vehicles, major appliances, furniture, etc.) are not included within the asset boundary, expenditures on these goods by households are not considered to be gross fixed capital formation. Nevertheless, the estimated value of the stock of consumer durable goods is included in the non-financial assets component of the national balance sheet accounts. See chapter 6.
6. The production boundary is explained in section 3.2.3.1. It distinguishes between what is and is not considered to be ‘production’ in the national accounts. For example, the serving of meals in a restaurant is deemed to be within the production boundary whereas the making of meals within a private household is not.
7. This is sometimes viewed as controversial. Statistics Canada has done occasional special studies that impute a value to household work.
8. An important advantage of this treatment is that market-produced output does not swing up or down solely due to changes in household preferences for rental versus owner-occupied housing.
9. According to *SNA 2008*, “Economically significant prices are prices that have a significant effect on the amounts that producers are willing to supply and on the amounts purchasers wish to buy. These prices normally result when: (a) The producer has an incentive to adjust supply either with the goal of making a profit in the long run or, at a minimum, covering capital and other costs; and (b) Consumers have the freedom to purchase or not purchase and make the choice on the basis of the prices charged.”
10. Figure 3.2 is borrowed from François Lequiller and Derek Blades, *Understanding National Accounts*, Organization for Economic Cooperation and Development, Paris, 2006, p. 100.
11. As is explained in chapter 4, this is **gross value added at basic prices**.
12. For example, governments spend on health and education services, which are a form of final consumption expenditure.
13. Canadian estimates of actual individual consumption are calculated in connection with the International Comparison Project and are published in Statistics Canada Table 36-10-0367-01. This is discussed further in chapters 5 and 7. No estimates of actual individual consumption are presently available at the provincial and territorial level.
14. International Monetary Fund, *Balance of Payments and International Investment Position Manual*, 6th edition, 2009. This volume is available without charge at the IMF site on the Internet.
15. See *SNA 2008*, p. 487.

16. Excerpts from the Canada Revenue Agency web site, S5-F1-C1: *Determining an Individual's Residence Status*. See also CRA Form NR73, Determination of Residency Status (Leaving Canada) and CRA Form NR74, Determination of Residency Status (Entering Canada).

17. See *SNA 2008*, Annex 1, Part B.1.

18. According to *SNA 2008*, "A legal or social entity is one whose existence is recognized by law or society independently of the persons, or other entities, that may own or control it. Such units are responsible and accountable for the economic decisions or actions they take, although their autonomy may be constrained to some extent by other institutional units; for example, corporations are ultimately controlled by their shareholders." (p. 61)

19. It should be noted that control is not always the same as ownership, although the two are closely related. In some cases all of the equity or shares of a corporation may be held by a single institutional unit such as another corporation, a household, a government unit or a non-resident unit, and in these cases ownership and control are both present. However, ownership of a listed corporation is generally diffused among several, and possibly a great many institutional units. In such a case, effective control may exist where ownership is partial.

20. An example is the Canadian Bankers Association.

21. Quasi-corporations are explained in section 3.3.4.

22. Examples include most universities and hospitals.

23. See International Monetary Fund, *Government Finance Statistics Manual*, pre-publication draft, 2014, available without charge on the IMF Internet site.

24. This figure is borrowed from *SNA 2008*, page 64.

25. See Statistics Canada Table 33-10-0029-01.

26. In NAICS these highest-level industry classes are called 'sectors'. However, in the national accounts the word sector is used to represent something quite different, so this usage of the word in the context of industry classification is only used in quotation marks here to help avoid confusion.

27. Two classifications are **concorded** to one another by preparing a table showing which category or categories in one of the classifications correspond to which category or categories in the other. The resulting table is called a **concordance table**.

28. Also referred to as the supply and use accounts, or the industry accounts.

29. These four classifications were approved by the United Nations through its Statistical Commission at the 30th session of the Commission in March 1999.

30. See *SNA 2008*, Annex 1, Part B.2.

31. The world appears to be converging on a new set of International Financial Reporting Standards (IFRS) that was established by the International Accounting Standards Board. Canada moved to IFRS in 2009. For more information, see the Chartered Professional Accounts Canada web site.

32. This phenomenon is called 'transfer pricing'. It is an important concern for tax authorities. A multi-national enterprise might, for example, sell products from one of its companies in country A to another of its companies in country B. If corporate tax rates are higher in country A than in country B, the enterprise might under-charge for the products, thereby lowering the profits of its company in the high-tax country and raising them for its company in the low-tax country. This would raise the enterprise's world-level after-tax profits. Most countries have taxation agreements with other countries that are designed, among other aims, to counteract transfer pricing. Multi-national enterprises are required to charge market price equivalents when their companies engage in transactions with affiliated entities. However, there is often a lot of wiggle room around the 'market price equivalent' concept. Transfer pricing can also be a problem in a federation like Canada's where corporate taxes apply at different rates in different provinces.

33. The three quotations are from *SNA 2008*, page 53.

34. *System of National Accounts 2008*, page 55.

35. *SNA 2008* explains work-in-progress inventories as follows (p. 106): “The output of most goods or services is usually recorded when their production is completed. However, when it takes a long time to produce a unit of output, it becomes necessary to recognize that output is being produced continuously and to record it as “work-in-progress”. For example, the production of certain agricultural goods or large durable goods such as ships or buildings may take months or years to complete. In such cases, it would distort economic reality to treat the output as if it were all produced at the moment of time when the process of production happens to terminate. Whenever a process of production extends over two or more accounting periods, it is necessary to calculate the work-in-progress completed within each of the periods in order to be able to measure how much output is produced in each period.”
36. See *SNA 2008*, Annex 2, p. 561.
37. The word ‘T-account’ comes from the world of business accounting. It refers to a basic accounting structure with a shape similar to the letter ‘T’ and having credit items on one side and debit items on the other.
38. See *SNA 2008*, p. 20.
39. The SNA recommends a cross-classification of industries and institutional sectors.
40. Most unincorporated businesses in the household sector generate primary incomes in the form of mixed income although some also generate compensation of employees. Owner-occupiers and unincorporated dwelling-lessors in the household sector, in particular, generate primary incomes as mixed income. Domestic staff working in households generate primary incomes in the form of compensation of employees.
41. In the national accounts, institutional units resident in one country and directly investing in another are treated as if they received, as an international investment income flow, their share of any retained earnings attributable to that investment and then reinvested those funds in the foreign enterprise. This is discussed further in chapter 8.
42. Insurance companies and pension funds hold financial assets on behalf of their policy holders and earn investment income on these funds. In the national accounts this income is treated as property income of the policy holders, who are the ultimate beneficiaries of the funds, and the income is deemed to be reinvested in the funds.
43. This might occur for institutional units located near the Canada-US border, in Windsor and Detroit for example. While uncommon in Canada, this kind of cross-border employment situation occurs more frequently in Europe.
44. Since investment income is paid or earned by corporations, and cannot be associated with individual establishments, it is impossible to allocate primary incomes to industries.
45. The Merriam-Webster dictionary defines the verb **to requite** as “to give or do something in return for something that another person has given or done”.

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 4 Supply and use accounts

### What this chapter seeks to do

The purpose of this chapter is to explain the supply and use accounts (SUA) in terms of their internal structure, their relationship to the rest of the Canadian system of macroeconomic accounts and how these accounts are used to interpret economic developments. The core of the SUA consists of 'supply' and 'use' tables. The SUA also include symmetric 'input-output tables' derived from the supply and use tables.<sup>1</sup>

The supply table shows the supply of products sourced from domestic production and imports.<sup>2</sup> The use table shows the utilization of products by domestic industries (intermediate consumption) and final users (final consumption by households, NPISH and general government, capital formation and exports). In addition, the use table displays the value added by industries.

This chapter links to *System of National Accounts 2008* (SNA 2008) chapters 14, 15 and 28.

### 4.1 Introduction

The previous chapter outlined the dimensions of Canada's system of macroeconomic accounts. Those basic dimensions included most importantly the institutional sectors, whose activities include the production and consumption of output, and the classification systems that organize and make sense of the millions of products and producers in the economy.

Before all else, the national accounts are about the production of output and its consumption. This chapter is about output and consumption—what the terms mean, what kinds of output are produced and consumed and what classes of firms produce what kinds of output. Output has value, volume and price dimensions. The chapter focuses on the first of these initially and the second and third will get attention later in the chapter.

The chapter begins with a review of some key concepts, the understanding of which is critical. It then turns to the goods and services account, reflecting the fundamental identity of the national accounts. The production account and the generation of income account, which are the first and second in the sequence of accounts (the rest of the sequence is discussed in chapters 5 and 6), are also presented. From there the chapter moves on to explain the supply and use tables, the former including both domestic output and imports and the latter including both intermediate consumption and final demand. The decomposition of these tables into volume and price components is explained. Then the discussion turns from the supply and use accounts themselves, which are produced with a lag of almost three years, to more timely estimates of real gross value added by industry that are based on statistics in the supply and use tables. The chapter ends with a discussion of how the supply and use accounts are employed to better understand the workings of the Canadian economy.

### 4.2 Key concepts related to supply and use accounts

This chapter is mostly about the goods and services account and the supply and use accounts. They will be explained shortly. First though, a number of key concepts are reviewed.

#### 4.2.1 Output, intermediate consumption and related concepts

The first concept is **output**. In the previous chapter, the notion of the production boundary was introduced to circumscribe what is and is not considered to be output in the SNA. As will be explained more fully later in this chapter, the supply and use accounts provide a very detailed, multi-dimensional picture of the output of the Canadian economy.

The value of a firm's output is essentially its sales and service revenue, although there are some exceptional cases— notably wholesaling and retailing, financial intermediation services, insurance, government services and situations where inventory change adjusts sales to production. These will be discussed in section 4.4.1.

As a simple example of the output concept, consider a power utility that buys natural gas from another producer for \$100,000, burns the natural gas in a generator to produce electricity, pays \$50,000 in wages to employees and sells the electricity for \$260,000. The output of the power utility is \$260,000. It is the total value of goods and services produced during the accounting period. Table 4.1 summarizes this and the rest of the example that follows.<sup>3</sup>

Output is a gross concept and the term 'gross' essentially means 'before deductions'. In effect, output includes some double-counting. In the example just cited, as far as the power utility is concerned its electricity output value is \$260,000 because that is what the utility sells its power for. Similarly, the natural gas producer sees its output as including the \$100,000 worth of gas sold to the power utility. However, the \$100,000 is implicitly part of the value of the power utility's output as well, since it is part of the cost of producing that power output.

The products that an industry uses to produce an output are referred to as **intermediate consumption**. These products may come from domestic production or imports. The difference between the value of output and intermediate consumption is a balancing item<sup>4</sup> called **gross value added** which is, in effect, the contribution of the producer to the value of output and to the economy.

In the power utility example, the intermediate consumption is the \$100,000 spent by the utility to purchase natural gas from another producer. The remaining portion of output, equal to \$160,000, is gross value added.

Gross value added is a very important concept in the national accounts. It is a measure of output with double-counting removed.

Gross value added is the part of output that is used to pay the suppliers of labour and capital services. In the SNA, wages, salaries and employers' social contributions are referred to as **compensation of employees**. The compensation of the suppliers of capital services is the residual portion of output, a balancing item, and is called **gross mixed income** or **gross operating surplus**. The latter term is used if the producer is incorporated, while the former term is used if the producer is unincorporated.<sup>5</sup> Keep in mind in this example, taxes and subsidies on products and production are ignored.

In the example, assuming the utility company is incorporated, compensation of employees is \$50,000 and the remaining part of gross value added, \$110,000, is gross operating surplus.

#### Text box 4.1

##### Primary input incomes or expenses

In the context of the supply and use accounts, gross value added by industry at basic prices consists of the incomes of four **primary input expense** categories. These are:

- Compensation of employees
- Gross operating surplus
- Gross mixed income
- Other taxes less subsidies on production and on imports

Gross operating surplus (or gross mixed income) can be further divided into two portions. One compensates for the depreciation of capital assets as a result of the passage of time and the wearing out of buildings, equipment and intellectual assets. This part is called **consumption of fixed capital**. The remaining portion, which is a balancing item, is called **net operating surplus**. The term 'net' essentially means 'after deductions'. When consumption of fixed capital is deducted from gross value added, the result is another balancing item, **net value added**.

For the power utility, suppose the consumption of fixed capital is \$70,000. Then, net operating surplus is \$40,000. Net value added is \$90,000 and is comprised of \$50,000 in compensation of employees and \$40,000 of net operating surplus.

**Table 4.1**  
**Power utility example**

Concept	Value dollars
<b>Output</b>	260,000
Of which:	
Intermediate consumption	100,000
Gross value added	160,000
<b>Gross value added</b>	160,000
Of which:	
Compensation of employees	50,000
Gross operating surplus	110,000
<b>Gross operating surplus</b>	110,000
Of which:	
Consumption of fixed capital	70,000
Net operating surplus	40,000
<b>Gross value added</b>	160,000
Of which:	
Consumption of fixed capital	70,000
Net value added	90,000

Source: Statistics Canada.

## 4.2.2 Products, establishments and industries

Output spans a wide variety of **goods and services**, also referred to as **products**.<sup>6</sup> In the supply and use accounts, as will be discussed later in this chapter, output by class of product for Canada and the individual provinces and territories is articulated using the Supply and Use Product Classification, a special aggregation of the North American Product Classification with 470 product classes at the most detailed level.<sup>7</sup>

Output is produced under the responsibility and control of institutional units—chiefly non-financial and financial business enterprises but also governments, non-profit institutions serving households (NPISHs) and households themselves. One institutional unit—a large business enterprise, for example—might be engaged in many different production processes at the same time, possibly spread over more than one province and territory. For this reason, it is useful to break large institutional units down into smaller units, called **establishments**.<sup>8</sup> Output and intermediate consumption for a given province or territory can then be calculated by adding up the output and intermediate consumption of all the establishments within that geographical area. In addition, establishments can be classified according to their principal kind of production activity—these kinds of production activity are referred to as **industries**<sup>9</sup>—using the supply and use industry classification system. It is then possible to analyze production activity not just by geographical location (province or territory), but also by industry. Canada’s supply and use accounts include estimates of output and intermediate consumption for 233 distinct industries, defined by the Supply and Use Industry Classification (a special aggregation of the North American Industry Classification System).<sup>10</sup>

Sometimes there is a one-to-one relationship between an industry and the product classes of output it produces. More commonly, an industry will produce more than one class of products (as mentioned, there are 470 product classes but only 233 industry classes in the supply and use accounts). Also, a single class of products can be produced by more than one industry, so the relationship between industries and product classes is, in general, “many to many”.

## 4.2.3 Taxes and subsidies on products and imports and other taxes and subsidies on production

Viewed from the perspective of those who buy it, output ultimately serves two purposes. One is intermediate consumption, as already discussed. The other is to satisfy **final demand**, which is comprised of three essential components: final consumption expenditure by households, NPISHs and governments, gross capital formation and exports of goods and services. The valuation of output, intermediate consumption and final demand is affected by a variety of taxes and subsidies which are discussed below.



### 4.2.3.1 Taxes on products and imports and other taxes on production

The SNA distinguishes between, on the one hand, taxes on income and wealth and on the other hand, taxes on products and imports and other taxes on production. **Taxes on income and wealth** are paid by institutional units to governments as a result of their receiving income or possessing wealth. These taxes have the effect of transferring income or wealth from the institutional units that are paying the taxes—typically households and corporations—to the governments that collect them. The governments then use the funds to provide public services. Examples include the personal income tax and the corporate income tax. **Taxes on products and imports and other taxes on production** are also collected to pay for the provision of public services, but they are different in that their effect is to influence the valuation of output. Taxes on income and wealth will not be further discussed in this chapter, instead being a focus of attention in chapter 5. Taxes on products and imports and other taxes on production, however, are an important focal point in this chapter.

**Taxes on products and imports** are collected from producers<sup>11</sup> or importers as a percentage of the price of the product when traded, or as a specific dollar amount per physical unit of the product traded. Examples of taxes on products and imports include the goods and services tax and harmonized sales tax, the provincial sales taxes charged by some provinces, import duties, export taxes, amusement taxes, air transportation taxes, municipal sales taxes, various environmental levies that can be directly associated with a unit of output and specific taxes such as those on tobacco, alcohol and gasoline. Typically these taxes are collected on behalf of a government and remitted to the government by the producer when the product is sold. If no products are sold in a given accounting period, for example due to a temporary plant closure, no taxes accrue.

**Other taxes on production** are collected from producers in a way that is not directly linked to product sales. Examples include land or property taxes levied on business premises, taxes on other assets or on labour employed in production, licence fees to carry on a business or a profession and taxes on pollution emissions that cannot be directly associated with a unit of output. These are taxes that must be paid regardless of whether the business enterprise is profitable or not and regardless of the level of its sales. Since these taxes are not payable per unit of output, they cannot be deducted from the producer's price. They are recorded as payable out of the producer's gross value added in the generation of income account.<sup>12</sup>

In sum, taxes on products and imports are regarded as part of the product price, since they are tied directly to sales of the product. Other taxes on production are part of production cost and as such they may influence the product price, but are not directly linked to it.

### 4.2.3.2 Subsidies on products and other subsidies on production

**Subsidies** are also important in the valuation of output. These payments are made by governments to enterprises based on their production activities or the quantities or values of the products they produce, sell, buy as inputs or import (see *SNA 2008*, page 148).<sup>13</sup> In other words, subsidies may be paid to businesses either with respect to their output or with respect to their intermediate consumption. The intent is generally to influence the effective price of the product, or the quantity produced, or the mix of factors of production, or the pollution externalities of production or the remuneration of the institutional units involved in production.

As with taxes, there are both **subsidies on products**, paid by the government to the producer based on the level of sales or output, and **other subsidies on production**, paid without regard to sales or output. Similar but opposite to taxes on products, subsidies on products are paid to the producer based on how much product is sold.<sup>14</sup> Other subsidies on production serve to compensate for some production costs, but have no direct or easily measured effect on any particular product's price. They might, for example, be subsidies on payroll or subsidies to reduce pollution.

### 4.2.4 Basic prices and purchasers' prices

SNA 2008 recommends that output be valued at **basic prices**. This means it is valued at the amount actually received by the producer from the purchaser for each unit of the good or service produced as output, before any taxes levied on products have been added and before any subsidies received on products have been subtracted. It also excludes any transportation or other margins that are invoiced separately by the producer. Basic prices are sometimes referred to as **factory gate prices**.<sup>15, 16</sup>

The SNA 2008 standard also recommends that intermediate consumption and final demand be measured at **purchasers' prices**, which are the actual costs incurred by users of the product. Purchasers' prices are measured after any taxes paid on products have been added<sup>17</sup> and after any subsidies on products have been deducted. They include any transportation or other margins paid separately by the purchaser to take delivery of the product.

**Text box 4.2**  
**Basic prices versus purchasers' prices**  
 (see SNA 2008, p. 276)

**Basic prices**

**minus** subsidies on products resulting from production

**plus** taxes on products resulting from production excluding invoiced GST

**plus** non-deductible GST

**plus** transportation charges invoiced separately (transport margins)

**plus** wholesale and retail distribution margins (trade margins)

**equals purchasers' prices**

Many factors can make the effective price of a product received by its producer different from the effective price paid by a purchaser to obtain it. Taxes at different stages along the distribution chain may serve to raise the price while subsidies have the effect of lowering it. Wholesalers and retailers will add their margins. Transportation and storage costs may be incurred, influencing the effective purchase price. Accordingly, the difference between the basic price valuation for the producer and the purchasers' price valuation can be quite substantial.

**Text box 4.3**  
**An example of basic prices and purchasers' prices: Household final consumption of passenger cars**  
 (millions of dollars in 2009)

<b>Household final consumption of passenger cars at basic prices</b>	<b>12,107</b>
Minus: subsidies on products	0
Plus: Gas margins	0
Plus: Wholesale margins	950
Plus: Retail margins	2,490
Plus: Gas pipeline margins	0
Plus: Oil pipeline margins	0
Plus: Storage margins	0
Plus: Transport margins	123
Plus: Tax margins	1,908
<b>Equals: Household final consumption of passenger cars at purchasers' prices</b>	<b>17,578</b>

Canada's system of macroeconomic accounts includes estimates of output, by product class by industry, at basic prices only. However, the estimates of inputs, by product class by industry, and final demands, by product class by final demand category, are available both at basic prices and at purchasers' prices. A full breakdown of the various margins, as illustrated in Text box 4.3, is available to reconcile the estimates at basic prices with those at purchasers' prices.

#### 4.2.5 Example with taxes and subsidies

In section 4.2.1 some of the basic concepts that are central to the supply and use accounts are explained with the aid of a simple power utility example. In that example, there are no taxes or subsidies on products and no other taxes or subsidies on production. In this section that example is expanded to include taxes and subsidies on products and on production.

The expanded example is set out in Table 4.2. The power utility produces and sells 2,600,000 kilowatt hours (kWh) of electricity at a price to the purchaser ('purchaser price') of \$0.10 per kWh. Within this price is a federal government tax of \$0.02 per kWh and a provincial government subsidy of \$0.01 per kWh. Netting out this tax and subsidy from the purchaser price, the basic price is \$0.09 per kWh. In addition, the power utility faces a local government tax on production of \$10,000 and a provincial government subsidy of \$5,000.

**Table 4.2**  
**Power utility example with taxes and subsidies**

Concept	Quantity	Price	Value
	kilowatt-hours	dollars per kilowatt-hour	dollars
Purchaser price	...	0.10	...
Output in kwh	2,600,000	...	...
Output value at purchaser price	...	...	260,000
Purchaser price includes federal tax of	...	0.02	...
Purchaser price includes provincial subsidy of	...	0.01	...
Basic price	...	0.09	...
Local tax on production	...	...	10,000
Provincial subsidy on production	...	...	5,000
Output at basic price	...	...	234,000
Of which:			
Intermediate consumption at purchasers' prices	...	...	100,000
Gross value added at basic price	...	...	134,000
Gross value added at basic price	...	...	134,000
Of which:			
Compensation of employees	...	...	50,000
Other taxes on production (local tax on production)	...	...	10,000
Less: Provincial other subsidy on production	...	...	-5,000
Gross operating surplus at basic price	...	...	79,000
Gross operating surplus at basic price	...	...	79,000
Of which:			
Consumption of fixed capital	...	...	70,000
Net operating surplus at basic price	...	...	9,000
Gross value added at basic price	...	...	134,000
Of which:			
Consumption of fixed capital	...	...	70,000
Net value added at basic price	...	...	64,000

... not applicable

Source: Statistics Canada.

In this expanded example, output and gross value added are measured explicitly at basic price, which is the convention adopted in the supply and use accounts. Gross operating surplus differs from the previous example partly because gross value added is measured at basic price, but also because the local government tax on production and the provincial government subsidy on production are additional claims against gross value added. Note that net operating surplus and net value added are also measured at basic price.

## 4.2.6 Valuation of exports and imports

When goods are exported from one country to another, a question arises as to how the costs of Customs clearance, shipping and insurance are borne. Typically they are paid in part by the exporter and in part by the importer.

In the supply and use accounts, the value of exported goods is measured **free on board** (FOB) port of exit,<sup>18</sup> including all domestic freight and other costs incurred up until the moment the goods are placed on board an international carrier for export. FOB values exclude international insurance and transport costs.

For example, a Canadian exporter in Montreal might sell goods to an importer in London. If the price charged by the exporter covered all transportation and other costs up to the point where the goods left Montreal by ship or by air, the price would be described as FOB Montreal. The valuation of exports as FOB port of exit from Canada is comparable to the valuation of other final expenditures at purchasers' prices.

In the supply and use accounts, imports are valued CIF, at the Canadian border. The import valuation includes costs of freight and insurance in bringing the goods to Canada from the point of direct shipment. *SNA 2008* interprets this approach as equivalent to valuing imports at domestic basic prices.<sup>19</sup> In this respect, the supply and use accounts value imports differently from the Balance of International Payments (see chapter 8), which value them FOB the border of the country of direct shipment to Canada and include freight and insurance as part of imports of services.

## 4.3 Three accounts derivable from the supply and use accounts

### 4.3.1 Goods and services account

There is a fundamental identity in the national accounts stating that for a given accounting period, the total value of all goods and services **supplied** in the economy, at purchasers' prices, must be equal to the total purchasers' value of all goods and services **used**. The **total supplied** is equal to the economy's output, plus imports, plus taxes less subsidies on products. The **total used** is intermediate consumption, plus final consumption (represented by household, NPISH and government expenditures), plus capital formation, plus exports.

(4.1)

Total goods and services supplied (at purchasers' prices) = Total goods and services used (at purchasers' prices)

Output + imports + taxes less subsidies on products = Intermediate consumption + final consumption + capital formation + exports

The identity holds true whether output is regarded as a single aggregate class encompassing all goods and services available in the economy, or as a multitude of different product classes reflecting the diversity of output in the real world. In the latter case separate fundamental identities can be formulated for each individual product class.

The most important element of total supply is without a doubt the economy's output of goods and services. It is the result of the activities of producers throughout the economy and will be a primary focus of attention in the rest of this chapter. It is measured at **basic prices**, which is to say at prices charged by producers before any taxes have been levied on products and including any applicable subsidies. Imported products, the second component of total supply, reflect the fact that a substantial portion of supplied goods and services come from other countries. They are measured CIF, at the Canadian border which is equivalent to basic prices. Finally, taxes on goods and services are a part of total supply because these elements, which are layered on top of the value of output and imports at basic prices, are reflected in the prices that purchasers pay for the goods and services supplied.<sup>20</sup>

The economy's total use of goods and services begins with intermediate consumption, representing the utilization of some of the goods and services supplied as inputs to the production of other goods and services in the current accounting period. Three other elements account for the remaining usage of total supply. One is final purchases of goods and services by household, NPISH and government institutional units for consumption. This element represents the ultimate purpose of economic activity. The second is capital formation, representing the use of some of the supplied goods and services to add to the economy's capital stock (including inventories), thereby increasing potential supply in future accounting periods. The final use element is exports of goods and services to other countries.

The 'supply = use' equation just described can also be reshuffled in the following form (including in parentheses the corresponding symbols often used in macroeconomics textbooks):

(4.2)

Output (Y) – intermediate consumption (IC) + taxes less subsidies on products (T) =

Final consumption (C + G) + fixed capital formation (I) + inventory change ( $\Delta V$ ) + exports (X) – imports (M)

This rearranged version of the fundamental identity states that gross value added plus taxes on products is equal to final domestic demand<sup>21</sup> plus inventory change plus exports less imports. The equation provides the basis for two of the three ways of arriving at **gross domestic product at market prices**, the best known aggregate of the national accounts. The left hand side of the identity shows the production approach to calculating gross domestic product (GDP) by adding up the output of all producers in the economy exclusive of double-counting—while the right hand side shows the final expenditure approach—adding up all of the final expenditures on goods and services within the economy and deducting imports.<sup>22</sup>

The fundamental relationship as presented in equation (4.1) constitutes what is known in SNA 2008 as the **goods and services account**. The account can also be portrayed in the form of a T-account, as in Table 4.3 below.

**Table 4.3 Goods and services account, at 2009 purchasers' prices**

Uses	Resources		
	millions of dollars	millions of dollars	
Intermediate consumption	1,431,863	Output	2,887,918
Final consumption	1,248,239	Imports of goods and services	468,702
Gross capital formation	341,778	Taxes less subsidies on products	110,952
Exports of goods and services	445,692		
Total uses	3,467,572	Total resources	3,467,572

Source: Statistics Canada.

#### Text box 4.4 'Resources' and 'uses' in a T-account

(SNA 2008, p. 20)

"The SNA utilizes the term **resources** for transactions which add to the amount of economic value of a unit or a sector. For example, wages and salaries are a resource for the unit or sector receiving them. Resources are by convention shown on the right-hand side of the current accounts. The left-hand side of the accounts, which includes transactions that reduce the amount of economic value of a unit or sector, is termed **uses**. To continue the example, wages and salaries are a use for the unit or sector that must pay them."

Table 4.3 shows that total Canadian output, in 2009, was \$2,887,918 million. To the total output of goods and services was added \$468,702 million of imports. Both these figures are measured at basic prices, which mean they exclude taxes less subsidies on products. To calculate total resources (supply) at purchasers' prices, which is \$3,467,572 million, taxes less subsidies on products of \$110,952 million are added.

On the 'uses' side of Table 4.3, intermediate consumption is \$1,431,863 million. This is the value of goods and services, at purchasers' prices, that is used by producers in creating their output. Final consumption is \$1,248,239 million, representing expenditures by households, NPISH and governments on goods and services. Gross capital formation is \$341,778 million, which is total investment outlays for new construction, machinery and equipment, intellectual property and changes in inventories. Finally, exports are \$445,692 million. The sum of all these items, each measured at purchasers' prices, is the total use (sometimes referred to as 'absorption') of goods and services, \$3,467,572 million.

While the discussion thus far has been about **total** supply and use, it is important to recognize that the fundamental national accounts identity also holds true individually for every class of products available in the economy. Thus, for example, if one considers a product class such as ‘motor vehicles’ it must be true, within any given accounting period, that total supply of that product class—output plus imports—is equal to total use of that product class—intermediate consumption plus final consumption plus gross capital formation plus exports. Canada’s supply and use accounts make powerful and extensive use of “supply = use by product class” identity to validate the accuracy of the myriad kinds of source data that are used to compile the accounts.

Before leaving this topic, here is a notable quotation from SNA 2008 on the subject:<sup>23</sup>

“The goods and services account is one of the most basic, if not the most basic, identity in the SNA. It captures the idea that all output from within the production boundary, plus imports, must be accounted for in one of the other two basic activities of the SNA, consumption of goods and services or accumulation of goods and services. Without the goods and services account, a supply and use table would not be fully articulated and exhaust all products available within the economy. The whole sequence of accounts can be viewed as built around the goods and services account by adding transactions relating to the generation, distribution and redistribution of income and saving. When these transactions are aggregated across all sectors and the rest of the world, total resources are equal to total uses. If these were to be ‘consolidated’ out of the sequence of accounts, only the goods and services account would be left.”

The ‘sequence of accounts’ referred to in this quotation is central to SNA 2008. It begins with the **production account** and the **generation of income account**, which are explained in the immediately following sections, and then continues with 12 additional accounts. The 14 sequential accounts can be presented separately for each of the institutional sectors as well as, in the case of the first two accounts only, for each industry. The sequence of accounts is explained in chapters 3, 5 and 6.

### 4.3.2 Production account

The production account is the first in the sequence of accounts. Table 4.4 shows the production account for the Canadian economy as a whole for the year 2009. Similar accounts could be displayed for the production accounts of each of the institutional sectors (households, NPISH, financial and non-financial corporations and governments) individually.<sup>24</sup> The account shows output (the result of production) as a ‘resource’ on the right-hand side and intermediate consumption (the using up of goods and services during production) as a ‘use’ on the left-hand side. Gross value added is the account’s balancing item and is another ‘use’.

**Table 4.4 Production account, at 2009 basic prices**

Uses	millions of dollars	Resources	
			millions of dollars
		Output	2,887,918
Intermediate consumption	1,407,936		
Gross value added	1,479,982		
Minus: Consumption of fixed capital	274,639		
Equals: Net value added	1,205,343		

**Source:** Statistics Canada.

Intermediate consumption does not include consumption of fixed capital, which is more difficult to measure than many other variables in the SNA largely since it is not associated with any market transactions. However, given an estimate of consumption of fixed capital, it can be deducted from gross value added to obtain net value added.

Note the similarity between the production account for the economy as a whole and the accounting data for the power utility example in the first panel of Table 4.1. The supply and use statistics for Canada, discussed in section 4.4, are estimated by collecting this kind of accounting data from statistical samples of Canadian establishments.

### 4.3.3 Generation of income account

The generation of income account is the second in the sequence of accounts. Table 4.5 shows the account for the Canadian economy for the year 2009. As with the production account, generation of income accounts can also be displayed for each of the institutional sectors individually. The account shows gross value added, the balancing item from the production account, as the sole 'resource' on the right-hand side and compensation of employees and other taxes less subsidies on production and imports as 'uses' on the left-hand side. Gross operating surplus plus gross mixed income is the account's balancing item and final 'use'.

**Table 4.5 Generation of income account, at 2009 basic prices**

Uses	Resources	
	millions of dollars	millions of dollars
		Gross value added 1,479,982
Compensation of employees	812,983	
Other taxes less subsidies on production and imports	76,398	
Gross operating surplus plus gross mixed income	590,601	

Source: Statistics Canada.

Again, note the similarity between the generation of income account for the economy as a whole and the accounting data for the power utility example in Tables 4.1 and 4.2.

## 4.4 Canada's supply and use accounts

The CSMA basically compiles two kinds of tables: Supply (output) tables and use (disposition) tables. As noted, the supply and use tables can be used as a tool to check the consistency of statistics on the flow of goods and services, focussing on the principle that total supply of any product is equal to total use of that product.

In Canada, the use table embeds imports as a negative final demand category. Consequently, the supply table includes only domestic production of classes of products at basic prices plus all margins to transform domestic production to purchasers' prices.<sup>25</sup> An illustrative example of a small supply table with hypothetical numbers and imports shown as a negative use is shown in Annex 4.1.

Canadian users are presented on the Statistics Canada web site with a set of three large tables that fit together nicely to produce one even larger table.<sup>26</sup> One of these tables, called the output table at basic prices, shows the output of each industry in the columns, broken down by the classes of products produced in the rows. The second table, called the inputs table at basic prices, shows the intermediate consumption of each industry in the columns, broken down in the rows by the same classes of products that are displayed in the output table. Appended to the bottom of the inputs table are the primary input expenses of each industry. Finally the third table at basic prices, called the final demand table, shows the use of output by final demand categories in the columns, broken down in the rows by the same classes of products that are displayed in the output and inputs tables. When the three tables are lined up one after the other—which can be done because the product class row headings are the same for all three tables—the larger table thereby constructed is referred to as the supply and use table.

A key feature of the supply and use accounts is that when they are compiled the estimates must satisfy two important identities. One of these, the **industry balance identity**, states that the value of total industry output must be equal to intermediate consumption plus value added by that industry. This must be true for each industry individually as well as for the economy as a whole. The other, the **product balance identity**, states that for the total economy (as discussed in section 4.3.1) output plus imports plus taxes less subsidies on products is equal to intermediate consumption plus final demand. For individual classes of products after adding transportation, trade and tax margins to the value of output, the supply of each product class must be equal to the use of, or demand for, each product class. See an example of use tables (following the hypothetical supply table example mentioned above) at basic prices in Annex 4.1.

The supply and use tables compiled in Statistics Canada are said to be **rectangular** because the number of product rows (470 product classes) is different from the number of industry columns (233 industries). For some analytical purposes it is desirable that the tables be square, with equal numbers of rows and columns. **Symmetric** tables can

be produced either product-by-product or industry-by-industry by making certain assumptions about secondary products produced by industries.

The next three sections discuss the three components of Canada's supply and use accounts in detail and provide examples of the rows and columns in these tables. In addition, Annex 4.1 provides a miniature example of supply and use tables to better illustrate the interrelationships within the tables. Supply and use accounts have been produced at the national level for more than a half century and are available from 1961 to date. The tables from 1997 onward are based on SNA 2008, while those for prior years are consistent with SNA 1993. Distinct sub-national supply and use accounts, aggregating to the national supply and use accounts, have been produced for each of the provinces and territories for every year since 1997. The latter tables also include estimates of inter-provincial trade flows by product class.

#### 4.4.1 Measuring output

##### 4.4.1.1 The meaning of output

SNA 2008 describes the term 'output' in the following way:

"Output is defined as the goods and services produced by an establishment,

- a. excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production; and
  - b. excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation (fixed capital or changes in inventories) or own final consumption."
- (page 106)

The point of the first exclusion is that if the establishment assumes no risk of using the products in production then it is effectively producing a service rather than a good and the materials to which the service are being applied should not be included as part of its output. For example, if a transportation establishment moves goods from point A to point B, the value of the goods transported are not considered to be part of that establishment's output. The second exclusion applies when an establishment is producing goods and services that are used as its own intermediate consumption. If this exclusion did not apply, the output of an establishment could become ridiculously large as each stage in the production process would be counted multiple times. For example, if the production of widgets involved three steps in which widgets were produced in a mold, then painted and then packaged, all within the same establishment, the value of output would be the value of the molded, painted and packaged widgets, not the value of the molded widgets plus the value of the molded and painted widgets plus the value of the molded, painted and packaged widgets. Note there is some dependency here on how detailed the industrial classification is and on how individual enterprises organize themselves.

Output is produced by institutional units. All of the main types of institutional units produce some Canadian output, with the exception of non-residents<sup>27</sup> which by definition do not produce Canadian output.<sup>28</sup> Most of Canada's output is produced by corporations, although governments also produce a substantial amount. Aside from imputed rents on owner-occupied dwellings,<sup>29</sup> households and non-profit organizations serving households produce only small amounts of output in comparison with corporations and governments. SNA 2008 recommends a cross classification of output by industry and institutional sectors, although this is not available for Canada at time of writing.

Output for a particular reference period is normally equal to sales plus the change in inventories during that period. Work in progress but not completed during that period is included as well as net additions of finished goods to inventory. Also included in output is the own account production of businesses for capital formation purposes. Agricultural production by farmers for own final consumption and imputed rents on owner-occupied dwellings are also considered part of total output, although there are no corresponding 'sales' transactions.

##### 4.4.1.2 Special case no.1: Wholesale and retail trade

Wholesalers and retailers (distributors) purchase goods from suppliers and resell them to purchasers. They are considered to be providing a service to those purchasers by making the goods conveniently available to be bought. The output of wholesalers and retailers is considered to be the trade margins realized on the goods they buy for resale. These margins are defined as follows (SNA 2008, page 113):



“A trade margin is defined as the difference between the actual or imputed price realized on a good purchased for resale and the price that would have to be paid by the distributor to replace the good at the time it is sold or otherwise disposed of.”

The value of output produced by wholesalers and retailers is defined as:

Value of output = value of sales + value of goods purchased for resale and used for intermediate consumption, compensation of employees (as remuneration in kind) or other such purposes—the value of goods purchased for resale + the value of net change to inventories of goods for resale—the value of recurrent losses due to normal wastage, theft and accidental damage.

Note that transport charges related to the goods purchased for resale, if invoiced separately, are treated as intermediate consumption by the wholesalers or retailers.

#### 4.4.1.3 Special case no.2: Financial services

Some financial services are priced in the normal way and the output by producers of these services is simply the sales revenues generated. For example, if a bank charges a rental fee of \$100 per year for the use of a safety deposit box, the output of that service would be the total revenue received by the bank from such charges.

Banks also provide financial intermediation services. Some customers have funds they wish to invest and the bank accepts these funds as deposits, paying interest at a specified rate. Other customers wish to borrow funds and the bank makes loans to them, charging another, higher, rate of interest. In effect, the bank is intermediating between the depositors and the borrowers. The latter two players, of course, have the option of arranging things directly between themselves. If they did so, the lender (that is, the customer who would otherwise be the depositor) could bargain for a higher interest rate than the bank is offering. Likewise the borrower could bargain to pay a lower interest rate for the loan than the bank is charging. The two could settle on an interest rate lying somewhere between the rate paid by the bank to the depositor and the higher rate charged to the borrower. However, there are costs involved in making such bilateral arrangements and as a result many transactors prefer to deal through a financial intermediary.

Financial intermediation services of this kind are provided without explicit charge. The net revenues of the bank are the interest it receives on loans minus the interest it pays on deposits. Some of these revenues represent an implicit service charge to depositors and the remainder are, in effect, a service charge to borrowers. These revenues are a financial services output referred to as financial intermediation services indirectly measured (FISIM).

The division of total FISIM between services to depositors and services to borrowers requires knowledge of the in-between rate of interest that lenders and borrowers would settle on in the absence of financial intermediation. This is referred to as the **reference rate** and it should contain no service element while properly reflecting the risk and maturity characteristics of the loan. Interest charges calculated using the reference rate are referred to as **SNA interest** while interest charges calculated with the bank’s actual rates are referred to as **bank interest**.

One other category of financial services involves the purchase and sale of bonds, equities or currencies as a ‘market maker’. The markets for financial assets of these kinds typically operate with the market maker offering assets for sale at an ‘ask’ price and offering to buy assets at a ‘bid’ price. The ‘ask’ and ‘bid’ prices are moved up or down in response to excess demand or supply. To calculate the output of the market maker, a ‘mid’ price is calculated as the average of the ‘ask’ and ‘bid’ prices. When assets are sold by the market maker at the ‘ask’ price, the output is the resulting revenues minus the revenues that would have resulted if the assets were sold at the ‘mid’ price. Similarly, when assets are bought by the market maker at the ‘bid’ price, the resulting revenues are calculated as the revenues it would earn by reselling at the ‘mid’ price minus the amount paid for the assets at the ‘bid’ price. For this category, the total financial services margins are considered to be the output.

#### 4.4.1.4 Special case no. 3: Non-market goods and services

Non-market output is produced by government and NPISH institutional units and supplied free, or at prices that are not economically significant, to other institutional units (such as households) or to the community as a whole. Examples include defence and law enforcement services, public education, public health care and many services and some goods provided by charitable organizations. Clearly the value of such output cannot be valued by sales so instead, by convention, it is valued at production cost. These costs include intermediate consumption, compensation of employees, consumption of fixed capital and taxes less subsidies on production other than taxes or subsidies on

products. No imputed net return to capital is included in the value of non-market production. Similarly, production for own final use by non-market producers is also valued at cost.

**4.4.1.5 Structure of the supply or output table**

The supply table includes estimates of the value of output during the reference year, broken down by product class (in the rows of the supply table) and by industry (in the columns). The estimates are obtained largely from surveys in which establishments are asked, in most cases, for the value of sales and inventory change, at basic prices, by type of product produced.

Figure 4.1 provides a schematic for the supply table. As can be seen, the full table is large with 470 rows and 233 columns. Since it is produced for each province and territory as well as for Canada as a whole, the supply table includes approximately 1.5 million cells (470 by 233 by 14)<sup>30</sup>, many of which are zero. It is possible to work with smaller versions of the table in which rows and/or columns are aggregated into a reduced number of more aggregate classes.

The rows of the table show output for each of the 470 product classes, broken down by the industries that produce them. Products are classified according to the Supply and Use Product Classification (SUPC) which is a special aggregation of the North American Product Classification (NAPCS) highlighting the product classes important to the supply and use accounts. Any particular class of products might be produced by one, two or more industries. The total output of each product class appears in the last column of the table.

**Figure 4.1**  
**Supply table schematic**

			Supply and Use Industry Classification					Total
			Industry 1	Industry 2	Industry 3	...	Industry 233	
Supply and Use Product Classification	Goods and services	Product 1	470 x 233					Output by product at basic prices
		Product 2						
		Product 3						
		...						
		Product 470						
Total		Output by industry at basic prices					Total output at basic prices	

Source: Statistics Canada.

The columns show output from the entire economy, classified into the 233 industry classes that produce it, using the Supply and Use Industry Classification (SUIC) which is a special aggregation of the North American Industry Classification System (NAICS). Each column shows the values of the output of the different classes of products for a particular industry. As noted earlier, a typical industry might produce several different classes of products. At the bottom of each column is the total output for that particular industry. The grand total over all industry classes, or equivalently over all product classes, is total output for the economy as a whole.

When working with the most detailed version of the supply table, users will find that the reported row and column totals are sometimes greater than the actual row and column totals. This is attributable to data suppressions due to confidentiality restrictions. Sometimes a small number of producing establishments in a particular industry are dominant in the production of a particular commodity class. If the actual output number for such a cell was published, it might be possible to infer, either exactly or to a close approximation, the production of particular establishments. Statistics Canada is prohibited under the Statistics Act from releasing information about particular businesses. To deal with such cases, confidential data are suppressed by replacing the correct number with a zero.

To illustrate the contents of the supply table, a single row and column will be examined for reference year 2009. The row selected for this purpose is for the product class “vehicle seats and seat parts; interior trim for motor vehicles”. The chosen column is for the “motor vehicle seating and interior trim manufacturing” industry.

The total output of “vehicle seats and seat parts; interior trim for motor vehicles” in 2009 was \$3,317 million. This is shown in the supply table for product class MPG336360. Of this amount, \$2,699 million was attributable to the motor vehicle seating and interior trim manufacturing industry and \$260 million to the rubber products manufacturing industry. The remainder, \$358 million, is not shown as being attributed to any industry because this amount corresponds to one or more cells that have been suppressed due to confidentiality restrictions.

The motor vehicle seating and interior trim manufacturing industry is shown in the supply table with industry code BS336360. The output of establishments in this industry in 2009 was \$2,888 million. Of this amount, the majority, \$2,699 million or 93%, consisted of output of “vehicle seats and seat parts, plus interior trim for motor vehicles” as discussed in the previous paragraph. The other non-zero components of the industry’s output are shown in Table 4.6.

**Table 4.6**  
**Outputs of the motor vehicle seating and interior trim manufacturing industry, 2009**

Supply and use product classes	Output value millions of dollars
Vehicle seats and seat parts; interior trim for motor vehicles	2,699
Head office services (imputed)	63
Own-account research and development (except software development)	19
Custom work, other manufacturing production services	17
Own-account software design and development services	3
Other industry-specific machinery	1
Rooming and boarding services	1
Other products, unspecified due to confidentiality restrictions	85
<b>Total output</b>	<b>2,888</b>

Source: Statistics Canada.

#### 4.4.2 Measuring intermediate consumption and gross value added

As seen previously, businesses have two kinds of inputs to their production processes. One is intermediate consumption, consisting of the use of products purchased from other producers. The other is gross value added, consisting of the primary input expenses employee compensation, gross mixed income (for unincorporated businesses), gross operating surplus (for incorporated businesses) and other taxes and subsidies on production. The last of these components is also considered to be part of primary input expenses in this context because taxes and subsidies on production are part of the value of output at basic prices. When output is measured at market prices, taxes less subsidies on products are also included, but it is not possible to calculate industry gross value added at market prices since the taxes on products paid by final consumers cannot be allocated back to industries.

The intermediate consumption part of the use table, depicted in Figure 4.2, shows for each industry (in the columns) what product inputs are used to produce output (in the rows). Intermediate consumption is broken down into the same 470 product classes that are presented in the output table. Thereafter the primary inputs are shown. Total inputs for each industry, which is equal to the sum of intermediate consumption and primary input expenses, is displayed in the last row of the table. The total of all inputs in each industry is identical to the total output for that industry in the supply table, discussed in the previous section.

Since the use table, like the supply table, is produced for each province and territory as well as for Canada as a whole, the use table also includes approximately 1.5 million cells (478 by 233 by 14), many of which are zero. It is possible to work with smaller versions of the table in which rows and/or columns are aggregated into a reduced number of larger classes.

**Figure 4.2**  
**Intermediate consumption part of the use table schematic**

		Supply and Use Industry Classification						
		Industry 1	Industry 2	Industry 3	...	Industry 233		
Supply and Use Product Classification for goods and Services	Product 1	<b>Intermediate consumption (470 x 233)</b>					Total intermediate consumption by product	
	Product 2							
	Product 3							
	...							
	Product 470							
		Total intermediate consumption by industry						
Supply and Use Industry Classification for primary input expenses	Taxes on products	<b>Primary inputs (8 x 233)</b>					Total primary inputs	Gross domestic product at market prices
	Subsidies on products							
	Subsidies on production							
	Taxes on production							
	Wages and salaries							
	Employers' social contributions							
	Mixed income							
	Surplus							
		Gross value added by industry / Gross domestic product by industry						
		Total inputs by industry						
							Gross domestic product at basic prices	

Source: Statistics Canada.

The use table (intermediate and final demand) can also be used to calculate gross value added, or gross domestic product, by industry, since this is the sum of the primary input expense categories. In fact, as shown in Figure 4.2, the table allows total GDP to be calculated with the two alternative valuations: GDP at basic prices, being the sum of the primary inputs but excluding taxes less subsidies on products; and GDP at market prices, being GDP at basic prices plus taxes less subsidies on products. As noted earlier, GDP at market prices cannot be broken down by industry because it is not possible to allocate taxes less subsidies on products back to industries.

As an example, consider again the “vehicle seats and seat parts; interior trim for motor vehicles” product class, shown in the use table. The line in the input table for this product class shows these products are used by the industries shown in Table 4.7. Total intermediate consumption of this product class is \$3,920 million.

**Table 4.7**  
**Intermediate consumption of the “vehicle seats and seat parts; interior trim for motor vehicles” product class by industry, 2009**

Supply and use industries	Intermediate consumption value
	millions of dollars
Automobile and light-duty motor vehicle manufacturing	2,317
Motor vehicle seating and trim manufacturing	921
Repair and maintenance	556
Motor vehicle body and trailer manufacturing	29
Truck transportation	25
Travel, meetings and conventions	15
Non-conventional oil extraction	6
Urban transit systems	5
Agricultural, construction and mining machinery manufacturing	3
Conventional oil and gas extraction	2
Other transit and ground passenger transportation and scenic and sightseeing transportation	1
Support activities for forestry	1
Other industries, unspecified due to confidentiality restrictions	39
<b>Total intermediate consumption</b>	<b>3,920</b>

Source: Statistics Canada.

Not surprisingly, most of the output of this product (59%) is used in the automobile and light-duty motor vehicle manufacturing industry. An additional 23% of the output of this product is used by the motor vehicle seating and trim manufacturing industry. The repair and maintenance industry accounts for most of the remainder of the output of vehicle seats and seat parts, plus interior trim for motor vehicles.

The industry “motor vehicle seating and interior trim manufacturing” is also shown in the use table. For this industry, the intermediate and primary inputs are shown in Table 4.8. This table, in effect, shows a snapshot view of the production function for this industry—the intermediate consumption and primary input expenses that were used by the industry to produce its output in 2009 and the relative importance of each in dollar terms.

Vehicle seats and seats parts, plus interior trim for motor vehicles constituted 32% of total inputs to the motor vehicle seating and interior trim manufacturing industry in that year. A wide range of other purchased inputs also contributed, each less substantially, to the industry’s output. Wages, salaries and employers’ social contributions accounted for 24% of the inputs to the industry, while gross operating surplus was equivalent to just 2% of total output. Accordingly, the industry’s gross value added at basic prices was 26% of its total output.

Note how in this table taxes and subsidies on production are isolated and shown in the gross value added segment of the table. Likewise, trade and transport margins are isolated from within intermediate consumption and shown in separate rows.

**Table 4.8**  
**Inputs to the motor vehicle seating and interior trim manufacturing industry, at basic prices, 2009**

Input product class	Value millions of dollars
<b>Goods</b>	
Vehicle seats and seat parts, interior trim for motor vehicles	921
Motor vehicle plastic parts	106
Threaded metal fasteners and other turned metal products	91
Hardware	88
Other textile products	37
Rolled and drawn steel products including wire	24
Iron and steel basic shapes and ferro-alloy products	21
Electricity	14
Motor vehicle metal stamping	12
Natural gas	4
Paperboard containers	4
Commercial and industrial machinery and equipment	4
Office supplies	3
Wood containers and pallets	1
Operating supplies	1
<b>Services</b>	
Wholesale margins	161
Rights to non-financial intangible assets	82
Head office services – imputed	36
Transportation margins	35
Repair and maintenance	33
Holding company serv. and other financial investment and rel. services	31
Freight transportation arrangement and customs brokering services	22
Deposit intermediation services indirectly measured	16
Holding company services – imputed	13
Security brokerage and securities dealing services	9
Architectural, engineering and related services	7
Facilities and other support services	7
Rental of non-residential real estate	6
Business support services	6
Office administrative services	5
Employment services	5
Travel, meetings and conventions	5
Coating, engraving, heat treating and similar metal processing services	4
Computer systems design and related services	4
Wired telephone services	4
Repair construction services	3

**Table 4.8**  
**Inputs to the motor vehicle seating and interior trim manufacturing industry, at basic prices, 2009**

Input product class	Value millions of dollars
Custom work, other manufacturing production services	3
Motor vehicle rental and leasing services	3
Investment banking services	3
Banking and other depository credit intermed. serv. – explicit charges	2
Non-depository credit intermediation services – explicit charges	2
Other loan intermediation services indirectly measured	2
Legal services	2
Management, scientific and technical consulting services	2
Other professional, scientific and technical services	1
Natural gas distribution	1
Wholesale trade commissions	1
Rail freight transportation services	1
General freight truck transportation services	1
Specialized freight truck transportation services	1
Transportation of natural gas by pipeline	1
Postal, courier, parcels and messenger delivery services	1
Data processing, hosting and related services	1
Portfolio management services	1
Property insurance services	1
Liability and other property and casualty insurance services	1
Accounting and related services	1
Sales of other government services	1
<b>Gross value added = Primary input expenses</b>	
Wages and salaries	472
Employers' social contributions	220
Gross mixed income	0
Gross operating surplus	59
Taxes on production	10
Less: Subsidies on production	0
<b>Totals</b>	
Total inputs = output	2,886
Total intermediate consumption	2,125
Gross value added, at basic prices	761

Source: Statistics Canada.

Together the supply and use tables show, by product class, both the outputs and the full set of inputs of all industries in the Canadian economy. The picture of the economy they portray is detailed and comprehensive, revealing which industries are the largest and which are relatively small, as well as the combination of inputs that each industry requires. This articulation of the complete structure of the economy is extremely useful for a wide range of policy and other analytical purposes.

#### 4.4.3 Measuring final demand within the use table

As has been seen, the supply table presents the **goods and services produced**, by product class at basic prices, by each industry in the economy. The use table, using the same breakdown of product classes and industries, shows the **usage** of each class of products for intermediate consumption by each industry, along with the usage of primary inputs. But what about the other uses of output beyond intermediate consumption? This is where the third table comes into play, the **final demand** table.

Figure 4.3 provides a schematic for this table. Its rows are the same as those in the use table, showing the 470 product classes and the eight primary input categories. However, while the columns of the supply and use tables were the industry classes, showing the value of output produced and used as inputs by establishments at basic prices, the columns of the final demand table show the components of final expenditure by institutional sector at purchasers' prices. These components are as follows:

#### Final consumption expenditure

- Household final consumption expenditure (PEC), broken down into functional categories
- Non-profit institutions serving households' final consumption expenditure (CEN)
- Government final consumption expenditure (CEG) broken down by level of government and with categories for education and health services

#### Gross fixed capital formation

- Residential structures expenditure (COH)
- Construction of business non-residential structures (COB) broken down into industry groups
- Construction of non-residential structures by non-profit institutions serving households (CON)
- Construction of non-residential structures (COG) by level of government and with categories for education and health services
- Machinery and equipment business expenditures (MEB) broken down into industry groups
- Used cars and equipment and scrap expenditures (MEU)
- Machinery and equipment expenditures by non-profit institutions serving households (MEN)
- Machinery and equipment expenditures (MEG) by level of government also with categories for education and health services
- Intellectual property products business expenditure (IPB) broken down into industry groups
- Sales of intellectual property assets by business (IPU)
- Intellectual property products expenditure by non-profit institutions serving households (IPN)
- Intellectual property products expenditure (IPG) by level of government also with categories for education and health services

#### Inventory investment

- Inventory additions of finished goods and goods in process (INVAF)
- Inventory withdrawals of finished goods and goods in process (INVWF)
- Inventory additions of raw materials and goods purchased for resale (INVAR)
- Inventory withdrawals of raw materials and goods purchased for resale (INVWR)

Exports and imports

- International exports (INTEX)
- International re-exports (INTRX)<sup>31</sup>
- International imports (INTIM), recorded as negative values

**Figure 4.3**  
Final demand table schematic

		Supply and Use Final Demand Classification							Total
		Household expenditure	Machinery and equipment	Construction	Inventories	Non-profit institutions serving households	Gross national expenditure	Exports	
Supply and Use Product Classification for goods and services	Product 1	<b>Final use of goods and services at purchasers' prices (470 x 280)</b>							Final use of goods and services by product
	Product 2								
	Product 3								
	...								
	Product 470								
		Final use of goods and services by final demand component							
Supply and Use Product Classification for primary inputs	Taxes on products	<b>Final use of taxes on products (all other primary inputs are zero) (1 x 280)</b>							Indirect taxes on products by final demand component
	Subsidies on products								
	Subsidies on production								
	Taxes on production								
	Wages and salaries								
	Employers' social contributions								
	Mixed income								
	Surplus								
		<b>Gross domestic product at market prices</b>							

Source: Statistics Canada.

The final demand categories are those of the usual macroeconomics textbook. They can be readily aggregated to the five major components of that relationship—consumption by households and non-profit organizations serving households (C), business investment (I), government expenditure (G), exports to (X) and imports from (M) non-residents—which are the final demands of the institutional sectors.

The last eight rows of the table, showing the primary input expenses, are mostly zeros because by definition primary inputs are purchased by industries, not final demand categories. However, two kinds of taxes on products are exceptions. While most taxes on products appear as margins in the industry columns of the input table and are zero in the final demand columns, the land transfer tax (which is assigned to the construction final demand categories) and import duties (which are assigned to the imports column) nevertheless appear in the final demand table. These tax categories appear here for historical, technical reasons. At some point in the future they will be treated in the same manner as other taxes on products, in the input table.

The final demand table is also produced for each province and territory as well as for Canada as a whole, so it also includes approximately 1.5 million cells (470 × 280 × 14), many of which are zero.<sup>32</sup> As with the output and input tables, it is possible to work with smaller versions of the final demand table in which rows and/or columns are aggregated into a reduced number of classes.

As an example of a final demand category distributed by product class, consider the final demand component for “clothing materials, other articles of clothing and clothing accessories” (PEC031A0). This includes the product classes shown in Table 4.9.



**Table 4.9****Product classes in the final demand category “clothing, materials, other articles of clothing and clothing accessories”, 2009**

Supply and use product class	Value
	millions of dollars
Clothing accessories	1,847
Fabrics	902
Fiber, yarn and thread	140
Artificial and synthetic fibers and filaments	138
Other miscellaneous goods	113
Infant and baby clothing	89
Total	3,228

Source: Statistics Canada.

As an example of a product class (row) distributed by final demand categories (columns), consider the product class “infant and baby clothing” (MPG31B0002). This product class is included in the final demand categories shown in Table 4.10.

**Table 4.10****Final demand categories that include the product class “infant and baby clothing”, 2009**

Supply and use product class	Value
	millions of dollars
Garments	1,350
Clothing materials, other articles of clothing and clothing accessories	89
Expenditure by Canadians abroad	86
Expenditure by non-residents in Canada	-40
Inventory additions, finished goods and goods in process	3
Inventory withdrawals, raw materials and goods purchased	-36
International exports	51
International re-exports	5
International imports	-517
Total	990

Source: Statistics Canada.

The final demand category “garments” is the largest, accounting for most of the final use of the product class “infant and baby clothing”. Table 4.10 also includes three negative final demand entries. Expenditures on this product class by non-residents visiting Canada are a negative item here in order to subtract these expenditures from the other final demand categories in this table. Inventory withdrawals are a negative final demand category since they do not reflect production in the current accounting period. Finally international imports of infant and baby clothing are also recorded as a negative item in this table since they are not part of Canadian output.

**4.4.4 Balancing the tables**

As pointed out earlier, the supply, use and final demand tables together can also be thought of as a single, much larger table.

Looked at in this combined way, the industry balance and supply-use identities, referred to at the beginning of this section, are readily apparent. For each industry, total output of all product classes at basic prices must equal intermediate consumption plus primary input expenses at basic prices. Supply of each product class must also equal use of that product class, that is, intermediate consumption plus final demand. Note again that for the supply-use identity to be valid, supply and use must be expressed at the same valuation, either at basic prices or at purchasers’ prices.

The supply and use accounts are estimated each year using a wide range of data sources. However, when the large table is first compiled from the raw source data, the accounting identities just mentioned inevitably do not hold, for many reasons—differences in timing or valuation, classification differences, coverage differences, sampling errors, etc. In order to produce a set of tables wherein these identities do hold, they must be **balanced**. The balancing of supply and use is done at purchasers’ prices. In other words, for any product class, supply (output including margins plus imports) must equal use (intermediate consumption plus final use).

The balancing is done through an iterative process. Adjustments are made based on a thorough analysis of the underlying source data combined with general economic intelligence.

## 4.5 Supply and use tables at constant prices

**Chapter 3** mentioned that the national accounts provide a decomposition of the product value series into distinct price and volume (or 'quantity' or 'real' or 'constant price') components. The fact that product prices are in continual flux complicates the interpretation of national accounts, so these decompositions help considerably with the interpretation of value time series. Indeed, perhaps the single most important time series aggregate in the national accounts, real gross domestic product, is the result of the price-volume decomposition.

The volume estimates of supply, use and final demand reveal the pace of 'real' growth in the production and use of products, as well as the volume growth of the industries that produce value added. The industry output and gross value added estimates are instrumental in the calculation of labour and multifactor productivity. In addition, as explained later in this chapter, the volume estimates are the benchmark for the monthly estimates of real GDP by industry at the Canada level, as well as the annual estimates of real GDP by province and territory.

Much of the earlier discussion has been about three tables: the supply, use and final demand tables. For a given time period, each table displays nominal value statistics in two dimensions, one of which is the 'product class' dimension that is common to all three tables. The nominal value of products is a reflection of the prices and volumes of those products and it is this fact that opens the door to the price-volume decomposition.

**Chapter 7** provides a fuller discussion of the price-volume decomposition.<sup>33</sup>

The elements of the output, input and final demand tables discussed in section 4.4 are decomposed each year into price and volume components by deflation, using various price indexes produced by Statistics Canada, and these deflated elements are then aggregated using the chain Laspeyres, Paasche and Fisher index number formulas. The deflation process is rather complex because (i) there are many product classes to deal with, (ii) distinct product price indexes are required, but not always available in practice, for output, imports, exports, intermediate consumption and the components of final domestic demand, (iii) the balancing constraints of the supply and use system must be respected and (iv) price indexes for the outputs of the industries that typically distribute their products free of charge or at economically insignificant prices (such as public administration and most NPISH-related industries) are not available. The deflation process and methodology is quite complex and will not be discussed here in detail.<sup>34</sup> Rather, they will be only briefly described using the tables for 2010 as an example.

The 2010 supply and use accounts record values at current prices, by product class, for outputs, inputs and final demands in that year. These values can be readily compared to the corresponding values in the 2009 tables, yielding annual percentage changes, however it is important for analytical reasons to decompose these changes into price and volume components.

To address this question, a large set of price indexes is first assembled, mostly from the Producer Price Indexes, the Services Producer Price Indexes, the Consumer Price Indexes and the International Trade Price Indexes.<sup>35</sup> There are 470 product classes and for each one, price indexes are required for output, inputs, imports, exports and final domestic demand. The 'supply = use' identity implies that one or some combination of these can be determined residually.

Given the set of price indexes, a price-volume decomposition can be accomplished for all 470 product classes by dividing the corresponding nominal value relative change for the year by the price index relative change for the year to derive the corresponding volume component of the decomposition. For example, if the nominal value change for output of a particular product class in 2010 compared to 2009 was 10.0% and the change in the corresponding price index was 3.0%, then the associated volume change would be  $(100.0 \times 110.0 \div 103.0) - 100 = 6.8\%$ . These price and volume components can then be aggregated to higher-level series using the chain Laspeyres, Paasche and Fisher formulas as explained in chapter 7. Industry gross value added, for which there are no directly applicable price indexes, is deflated by the **double deflation method**, also explained in chapter 7.

For the non-business industries, price indexes are generally unavailable for output so the double deflation method cannot be used. Instead, the volume of each primary input is estimated using a related volume indicator and price indexes are calculated implicitly thereafter. For compensation of employees, employee hours worked are used as the volume indicator. The volume of gross operating surplus and consumption of fixed capital is projected via estimates

of the capital stock at constant prices. Taxes on products and production at constant prices are calculated by applying tax rates from the (base) prior year.

Deflation is done at basic prices. Since the outputs of the margin product classes (retailing, wholesaling, transportation) are also deflated, estimates at purchasers' prices can also be calculated: the volume estimates at purchasers' prices are equal to the volume estimates at basic prices plus the volume estimates for the margin product classes. The price estimates at purchasers' prices are calculated as implicit indexes by dividing the value change by the volume change.

Finally, once the price-volume decompositions have been done using the Laspeyres, Paasche and Fisher formulas for all elements in the output, input and final demand tables, the remaining step is to link those decompositions to the corresponding ones for previous years by compounding them, producing chained Laspeyres, Paasche and Fisher price and volume index time series.

## 4.6 More timely estimates of real GDP by industry

So far this chapter has explained how the concepts of output, intermediate consumption and gross value added are defined and measured. It has also discussed how the statistical estimates at current prices are deflated to reveal the distinct contributions of price and volume changes.

All of the statistics discussed in this chapter so far are annual in frequency and are produced with a lag of up to 3 years after the reference year. It takes this much time to assemble the large and detailed database that is used to compile the supply and use tables.<sup>36</sup> Public accounts, tax data, annual survey statistics and other data series all involve lengthy processes to prepare. Once available, further time is required to bring together and balance the supply and use estimates in current prices and then to deflate them.

However, while it is unavoidable that the full supply and use tables are available only after a three-year time lag, estimates of gross value added at constant basic prices are released on a monthly basis, just two months after the reference month. In addition, annual estimates of real GDP by industry by province are released just 4 and, with revisions, 10-11 months after the reference year.

### 4.6.1 Monthly real GDP by industry

**Monthly gross domestic product by industry at basic prices in chained dollars from a specified base year**, or more simply **monthly real GDP** by industry, provides a timely and quite detailed picture of economic growth by industry in Canada. These statistics are an indispensable short-term indicator of the overall development of and relative industrial trends within the Canadian economy. The estimates are released in Statistics Canada Table 36-10-0434-01. There are 273 industry aggregates and sub-aggregates within the table.

The estimates represent a blend of information from, on the one hand, a diverse collection of monthly output volume indicators and, on the other hand, the annual Fisher chain volume estimates of gross value added from the supply and use accounts.

For each lowest-level industry, a related monthly output volume indicator is selected. The indicators are chosen based on their close annual correlation and theoretical relationship with gross value added at constant prices in the industry in question.<sup>37</sup> Thereafter, the monthly estimates of real GDP by industry are calculated in two parts: the first being the set of years for which annual supply and use estimates of gross value added are available ('the benchmark years') and the second being the years that follow, up to and including the current year ('the projection years').

In the benchmark years, for each industry a set of Laspeyres output volume time series are calculated from the corresponding monthly output indicator. Each of the series is twelve months in length and uses current dollar gross value added weights from the preceding year. These Laspeyres indexes are then linked together to form a chain Laspeyres output volume index spanning all of the benchmark years, for that industry.

The next step in the methodology is to adjust the monthly industry output volume indexes just calculated so that their corresponding annual values are equal to the annual Fisher chain volume estimates of gross value added by industry in the supply and use accounts. This adjustment process is called **benchmarking**. The resulting industry

series thus represent a distribution of the annual supply and use gross value added volume estimates over the twelve months of each year.

The **benchmarking** is accomplished in a manner that ensures the corresponding annual values of the derived monthly series are equal to those from the annual chained Fisher volume supply and use estimates of gross value added, while the month-to-month movements of the derived series correspond as closely as possible to those of the chain Laspeyres output volume indexes. Essentially this involves creating a new monthly series by minimizing the sum of squared deviations of its month-to-month changes from those of the chain Laspeyres series, subject to the constraint that the annual values of the newly created series are equal to those of the annual chained Fisher volume supply and use estimates. In other words, while the estimated monthly series is made to follow as closely as possible the movements of the chain Laspeyres monthly series, it is also benchmarked to the corresponding annual supply and use series using a **quadratic minimization** method.<sup>38</sup>

The benchmarking process is done independently for each industry aggregate and sub-aggregate. Accordingly, the resulting series are not consistent in aggregation, though they may be considered approximately so.<sup>39</sup>

As a final step, each of the calculated series is scaled to equal gross value added at current prices in the base year 2007.

Next the monthly series so derived for each industry are extended forward into the projection years based on the movement of the corresponding monthly output volume indicators in those years. These projected monthly gross-value-added-by-industry volume series are aggregated to higher levels, including the total economy level, using a Laspeyres fixed-weight averaging approach. The fixed gross value added weights for the projection years are taken from the last available annual supply and use accounts.

To recap, the monthly real GDP by industry estimates are based on the intertemporal movement of related monthly output volume series and are calculated in two parts. The first of these parts is for the years up to and including the last year for which supply and use estimates are available. The estimates for this part are calculated by **interpolating** the annual supply and use estimates over the twelve months of the year based on movement of the related series. The second of the two parts is for the years beyond those for which supply and use estimates are available. In this case the estimates are calculated by **projecting** the monthly series forward based on the movement of the related series and aggregating the results using a fixed-weight (not chain) Laspeyres index.

For example, consider the reference month May 2014 when it was released at the end of July 2014. At that time, supply and use accounts were available for the period up to and including 2010. In this instance, the monthly real GDP by industry estimates for the period 1997 to 2010, when time-aggregated to annual, were equal to the corresponding Fisher annually chained volume estimates of gross value added from the supply and use accounts. The monthly movements of the chained Fisher were approximated by those of the associated monthly production volume indicators. Continuing with the period January 2011, the lowest-level industry estimates were projected forward based on the growth of the related indicators. These projected estimates were then aggregated by annually chaining fixed-weight Laspeyres volume indexes to the December 2010 estimates. In other words, the weights for aggregating the 2011 monthly estimates were from the 2010 supply and use accounts, the weights for aggregating the 2012 monthly estimates were from the 2011 annual estimates, the weights for aggregating the 2013 monthly estimates were 2012 annual estimates and the weights for aggregating the 2014 monthly estimates were 2013 annual estimates. All of the monthly estimates, from 1997 to date, are scaled to equal gross value added in 2007, the reference year.

The final step in the production of the monthly real GDP by industry estimates is their ongoing reconciliation with the quarterly estimates of real GDP coming from the income and expenditure accounts.<sup>40</sup> The two are quite different since the former measures gross value added based on the industry that produces it while the latter gauges gross value added by adding up final expenditures on goods and services by the institutional sectors.<sup>41,42</sup> The full reconciliation of these two bodies of statistics is not possible until the supply and use estimates are available 2-3 years later. However, the two sub-annual GDP series are always compared and reconciled on an ongoing basis, to the extent possible.

The comparison is most direct at the level of total GDP, where quarterly movements of the two series should be closely aligned. If a divergence is observed at this level when the estimates are being compiled,<sup>43</sup> the analysts from the two programs investigate and take steps jointly to bring the two series into alignment. Some of the component

series within the two programs can be fairly easily compared. For example, the estimates of residential construction work-put-in-place are fully reconciled between the two programs. Another good example is some consumer services, where the production and final expenditure estimates should, in principle, be very similar.

There is an important limitation underlying the monthly real GDP by industry methodology. Since gross value added is being projected forward, beyond the years for which supply and use accounts are available, using indicators of output, there is an implicit assumption that gross value added and output are proportional—or equivalently, that the outputs to inputs ratio remains constant. While this may be a good approximation over relatively short periods of time, production technologies often change as the years go by and with them the relationship between output and gross value added can shift. It would clearly be preferable to use direct indicators of gross value added instead of output indicators, but no such direct indicators are available.

#### 4.6.2 Annual real GDP by industry by province and territory

Timely estimates of real GDP at basic prices by industry are also produced for each province and territory, although these estimates are available only at the annual frequency. The statistics are compiled in a manner that is similar, in some ways, to that of the monthly real-GDP-by-industry national estimates. However, the methodology for the provincial and territorial estimates is also quite different from that of the monthly estimates in a number of respects.<sup>44</sup> The statistics are built up from provincial and territorial supply and use estimates of output and gross value added by industry at current prices and are projected forward to the most recent reference year using related indicators.

The first step in the calculation of these estimates is to deflate output-by-product-class in the provincial and territorial supply and use accounts. Since provincial and territorial product price indexes are not generally available, this deflation is done using the national price indexes. This is considered a reasonable approximation since markets are generally competitive in Canada and for many product classes annual price trends are similar across the country.

Constant dollar output-by-product-class is calculated using prices of the preceding year, starting from the base year 2007 forward. Real output-by-product-class calculated in this manner is then aggregated by industry within each province and territory. These real industry-output-by-province estimates are then linked for successive years and scaled by nominal gross value added in 2007 to produce estimates of chained GDP at 2007 basic prices for each lowest-level industry. This embodies the assumption that real output and real gross value added are proportional. The chained lowest-level real GDP-by-industry-by-province is then balanced to the national equivalents and summed to produce the various provincial and territorial industry aggregates. These estimates are produced for all years for which supply and use accounts are available.

As noted, estimates of gross value added at constant prices are calculated by assuming a fixed proportional relationship between real gross value added and real output. More specifically, the ratio of nominal gross value added to nominal output in an arbitrary base year, 2007 at time of writing, is assumed to apply to the corresponding real series for all periods moving forward. In effect, this means the yearly growth in real gross value added is assumed equal to that of real output. Since estimates of real output are available as described in the previous paragraph, this proportionality relationship allows estimates of real gross value added to be calculated for all lowest-level industries. All of the provincial and territorial estimates are then adjusted on a **pro rata** basis (a process referred to as **normalization**) to ensure they aggregate to the same national totals of real gross value added.

With provincial and territorial estimates of real output and real gross value added having been produced for each industry in the years for which supply and use accounts are available, the next step is to project these estimates forward, beyond the last year for which supply and use accounts are available, using related industry output indicators. Separate indicators are selected for nominal and real output, within each province and territory.

Once real output has been projected, the fixed ratios referred to in a previous paragraph are applied to calculate estimates of lowest-level real gross value added. These estimates in turn are aggregated to produce higher-level aggregate estimates of real gross value added (in other words, GDP) by industry by province and territory. The weights in this aggregation process are the projected estimates of nominal output. Finally, the projected provincial and territorial estimates of real GDP by industry are adjusted so they sum to the corresponding annual national estimates from the monthly GDP by industry program.

In effect, price indexes and volume measures (constant dollar GDP) are calculated which share a common base year, 2007 at time of writing. These two series are used to derive estimates of current dollar GDP and subsequently Paasche and Laspeyres GDP measures for all lowest-level industries. All aggregates are calculated using series with common base years before chaining and deriving the Fisher measure. The Fisher GDP measure is calculated from the chained Paasche and chained Laspeyres GDP estimates for each industry and aggregate individually.

For the supply and use years, current dollar GDP is obtained from the supply and use tables. The volume measure is the constant dollar GDP on base year 2007 derived as described above by deflating the gross output by product class and summing to the lowest-level detail then applying a GDP-to-output ratio in the base year to yield a constant dollar GDP series.

For the post-supply and use years, estimates of current dollar GDP are derived using the constant dollar GDP and the estimates of GDP prices indexes both based on the same 2007 base year. The estimates of current dollar GDP are used in the Fisher method to weight the contribution of each working level industry in any given aggregate.

The industry real GDP estimates for each province and territory are evaluated analytically before they are released, by identifying important trends in the estimates and comparing the picture they portray with regional information from a variety of sources. The estimates are also compared with the picture emerging in the estimates of the provincial and territorial income and expenditure accounts. Adjustments are made when they are judged to be necessary.

For example, consider the reference year 2013 when it was released in November 2014. At that time, supply and use accounts were available for the period up to and including 2011. In this instance, the annual real GDP by industry estimates for the period 1997 to 2011 were equal, at the national level, to the corresponding Fisher annually chained volume estimates of gross value added from the supply and use accounts. Beginning with the period 2012, the estimates were projected forward by chaining quasi-Fisher volume indexes to the 2011 estimates. All of the chained estimates, from 1997 to 2011, were scaled to equal gross value added in 2007, the reference year.

## 4.7 Uses of the supply and use accounts

As seen in the previous sections, the supply and use accounts provide a very detailed picture of the Canadian economy and its provincial and territorial sub-economies. The supply and use tables are recompiled every year, in all their product, industry, final demand category and regional detail, revealing how that picture changes incrementally over time. These accounts play a central role in Canada's statistical system. This section will explain the principal uses of the supply and use accounts.

### 4.7.1 Structural analysis and productivity studies

The supply and use accounts are used for all manner of structural economic studies. These include, for example, analyses of the likely effects of economic policy options (changes in tax policy, external and internal trade liberalization, monetary policy, industrial policy, social policy, environmental policy) on industries and/or regions of the country or the impact of specific economic events, such as commodity price shocks, natural disasters or international financial crises. Long-term economic projections are done using the supply and use accounts as a framework to ensure consistency and coherence of the projections.

The supply and use accounts are especially useful in relation to productivity studies. The estimates of outputs, inputs and gross value added at constant prices, by industry, that the accounts provide are vital to these studies, which also make use of labour market and capital stock statistics from other sources.

### 4.7.2 Supply and use modelling

#### 4.7.2.1 Overview

Closely related to their use in structural analyses, the supply and use accounts are also used in a dynamic economic modelling context.

The year-to-year changes in the supply and use tables can be thought of as being of two types. On the one hand, the economy as a whole grows and contracts, affecting the output of all industries, products and regions. Changes of this kind are variations in scale and they can occur, in principle, without there being any changes in the **structure** of the tables. By the term 'structure' is meant the shares of the different inputs required to produce a given output, the

market shares of different product outputs in total output and the interprovincial and international trade shares. On the other hand, the supply and use accounts can also vary from year to year as a result of changes in the structure itself. Actual year-to-year differences are always a combination of the two types of change.

The year-to-year evolution of the structure of the supply and use accounts reveals how technologies are changing within the economy. For example, some industries in some regions use relatively more of some inputs and relatively less of other inputs.<sup>45</sup> The tables also show how the different components of final demand are changing, as households, non-profit organizations, businesses, governments and non-residents buy relatively more of some products while reducing their demands for other products.<sup>46</sup> The interprovincial supply and use accounts also show how the role of interprovincial trade in products varies from year to year.

Supply and use models are characterized by assumptions about the future evolution of the structure of the tables. They allow the analyst to explore “what if?” questions at a fairly detailed level, exploring the impact of exogenous changes in final demand on output while taking account of the interdependencies between different industries and regions of the economy and the leakages to imports and taxes. For example, such models might be used to study the question: If Canadian oil and gas exports doubled, what industries would be most affected and in which provinces? The use of a supply and use model to address such a question would permit the indirect, and possibly also some of the induced effects of a demand shock of this nature to be estimated and the corresponding **multipliers**<sup>47</sup> to be calculated.

Supply and use models were originally developed in the 1930s by Wassily Leontief,<sup>48</sup> a Russian-American who earned the Nobel Prize in Economics for this work in 1973.<sup>49</sup> His models were inspired by earlier studies by François Quesnay on the “*Tableau économique*” in 1758 and Léon Walras on general equilibrium theory in 1874. Leontief’s models simplified earlier formulations by assuming that the proportions of industry inputs to industry outputs are fixed in the short-term, with no substitutability among any of the intermediate or factor inputs.

The supply and use model begins with the fundamental national accounts identity, discussed in section 4.3, stating that total supply of a class of products equals total use of that product class. The model brings together all of the individual product class identities (recall there are 470 of them in the most detailed supply and use account) in matrix notation. Substitutions are made, reflecting the assumptions that input proportions are fixed, trade shares are also fixed and final demand is exogenous. The final step is to manipulate the resulting matrix equation, solving alternatively for the vector of product outputs or the vector of industry outputs.<sup>50</sup>

It is also possible to expand upon the basic supply and use model in a number of ways. In Canada, there are two basic versions of the model, a national version for Canada as a whole that ignores regional variations and an interprovincial version that combines the 14 provincial and territorial supply and use accounts in a way that allows interprovincial trade flows to be taken into account. In addition to the direct and indirect effects of a demand shock that are captured in the most basic model, induced effects can also be tracked by assuming some fixed proportion of any incremental income paid (presently measured by wages alone) are reflected in increased final demand by households. The employment effects of a demand shock can also be included in the model by assuming a direct relationship between person-years of employment and output by industry. The effects of a demand shock on energy use and greenhouse gas emissions can be simulated in a similar manner.

Finally, it must be recognized that supply and use models, like all models, have their limitations. No relative price changes and associated behavioural responses are generally allowed for in such models. The effects of economies of scale and technological change are generally ignored. Recognizing these and other weaknesses, the models have nevertheless been found very useful the world over. The Canadian supply and use models can be accessed and utilized by contacting the Industry Accounts Division at Statistics Canada.<sup>51</sup>

### 4.7.2.2 An example

A wide variety of analyses can be done with supply and use models. However, the characteristics of any particular analysis, or ‘shock’, are constrained by the amount of detail that can be provided by the analyst. Here are some broad categories of question that can be addressed, all relating to the effect of the specified exogenous change of some kind on GDP and other economic variables:

- What happens if the output of one or more industries changes?
- What happens if the output of one or more product classes changes?
- What happens if households or governments change their spending on one or more final demand categories?
- What happens if exports of one or more product classes change?
- What happens if the cost structure of one or more industries changes?
- What happens if a particular investment expenditure is made?

Results from a shock are grouped under three headings:

- **Direct impacts**, being the effects directly attributable to the shock.
- **Indirect impacts**, being the inter-industry economic activities associated with supplying intermediate inputs to the directly and indirectly affected industries.
- **Induced impacts**, being an estimate of the production and imports associated with spending of incremental wages flowing from the direct and indirect impacts on consumer goods and services.

The sum of direct and indirect impacts is referred to as the **open model** total impact, while the sum of all three impacts is called the **closed model** total impact.

To illustrate how the supply and use simulation model can be used, consider a simple infrastructure investment shock. The shock assumes a \$1 billion exogenous expenditure by the government sector in the product class “Highways, roads, streets, bridges and overpasses”. Table 4.11 summarizes the results of this shock.

**Table 4.11**  
**Impact on GDP of a \$1 billion infrastructure shock**

GDP components	Total impact, open model	Induced	Total impact, closed model
	thousands of dollars		
<b>Expenditure-based GDP</b>			
<b>GDP at market prices</b>	<b>823,314</b>	<b>308,494</b>	<b>1,131,808</b>
Final domestic expenditures	1,000,000	389,947	1,389,947
Exports	0	0	0
Imports, final expenditures	0	-47,704	-47,704
Imports, intermediate inputs	-176,686	-33,749	-210,435
<b>Income-based GDP</b>			
<b>GDP at market prices</b>	<b>823,314</b>	<b>308,494</b>	<b>1,131,808</b>
Taxes on products (final expenditures)	4,842	33,414	38,256
Taxes on products (intermediate inputs)	19,788	4,546	24,334
Taxes on products (import duties)	397	1,088	1,485
Subsidies on products (intermediate inputs)	-5,925	-4,537	-10,463
<b>GDP at basic prices</b>	<b>804,212</b>	<b>273,983</b>	<b>1,078,195</b>
Subsidies on production	-906	-589	-1,496
Taxes on production	21,650	21,255	42,905
Wages and salaries	445,304	105,898	551,202
Employers' social contributions	50,129	14,482	64,611
Labour income of unincorporated sector	51,204	10,532	61,736
Gross operating surplus	236,832	122,405	359,237

Source: Statistics Canada.



As shown in the first line of the table, the impact on GDP estimated in the open model is an increase of \$823,314 thousand, which is somewhat less than the \$1 billion shock. The difference is accounted for by imports of \$176,686 thousand that are required in support of the infrastructure investment. The closed model shows the total impact to be greater than the shock, at \$1,131,808 thousand, reflecting an additional \$389,947 thousand of induced final domestic expenditures net of \$81,453 thousand of induced imported goods and services. The remainder of the table shows how the impacts on GDP at market prices differ from those on GDP at basic prices.

Users of the supply and use simulation model receive a detailed report showing the effects of the specified shock on output and intermediate consumption by industry and by product class. The estimated impacts on employment, emissions and energy use are also reported. Multipliers are also recorded for output, GDP and compensation of employees.

### 4.7.3 Harmonized sales tax revenue allocation

In April 1997 the Government of Canada and participating provinces introduced the Harmonized Sales Tax (HST) as a replacement for the Goods and Services Tax (GST) and provincial retail sales taxes (RSTs). The Canada Revenue Agency collects the HST and distributes the resulting revenue among the participating governments. This collection arrangement is less expensive than the alternative of having each government collect its own sales tax. It is also less burdensome on the wholesalers and retailers who must apply the tax when sales are made to purchasers, since they have just one government collection authority to deal with. However, calculating the appropriate shares to which the individual governments are entitled is by no means a simple matter, because of the multi-stage nature of the tax.

The HST, like the GST, is a value added tax. Businesses must pay the tax on their intermediate consumption and households must also pay the tax when they purchase consumer goods and services. In most instances businesses are entitled to rebates of the tax they pay, which can be deducted from the tax they themselves collect on behalf of the governments when they are selling their output. In almost all instances households are not entitled to rebates.<sup>52</sup>

The HST applies to most goods and services, although some specific product classes are 'exempt' and others are 'zero rated'. Sellers of exempt products (health services, child care services, educational services and several other classes of products) charge **no** HST and also **are not** entitled to rebates of the HST they pay on their intermediate consumption. In contrast, sellers of zero-rated products (basic groceries, prescription drugs, exports and some other classes of products) also charge **no** HST, but **are** entitled to rebates of the HST they pay on their intermediate consumption.

When the HST was designed in 1996 the participating governments took the decision to base the revenue allocations on a formula that is driven primarily by statistics from the supply and use accounts. The accounts are ideal for this purpose because of the considerable product-class and tax detail they provide, the breakdown they make available between intermediate consumption and final demand, and their general reliability. At the time, the supply and use accounts were only produced at the national level, so additional funding was provided to Statistics Canada to implement a full provincial and territorial supply and use statistics program. As a result, a wide range of Statistics Canada survey programs were expanded to yield improved provincial and territorial breakdowns. Since 1997 the provincial and territorial supply and use accounts have been estimated on an annual basis.

### 4.7.4 Data confrontation

Canada's statistical system assembles a wide range of information using an equally wide range of collection vehicles. Those vehicles include numerous monthly, quarterly, annual, biennial and quinquennial surveys conducted by Statistics Canada, using common classification systems and statistical methods. They also include surveys conducted by other agencies including federal and provincial government departments and various private sector organizations, public accounts records released by all levels of government, detailed international trade data from the Canada Border Services Agency, income and taxation data from the Canada Revenue Agency and various other administrative data sources. Each of these collection vehicles has its own *raison d'être* and methodology. They vary greatly in terms of concepts, coverage (regional, industrial, demographic, etc.), valuation and timing. Statistical information collected by these different vehicles needs to be carefully compared and reconciled.

Perhaps the most fundamental role of the supply and use accounts is to confront the data collected by these various vehicles, to check for coherence and to take steps to resolve inconsistencies when they are found. In this respect, the ‘supply = use’ identity is a key asset. Recall that supply includes output and imports while use includes intermediate consumption, final domestic demand and exports. In compiling the supply and use statistics, data from production surveys, wholesale and retail trade surveys, international trade records and other sources are lined up against one another to assess how well the identity holds, for a wide range of product classes. Where conflicts are detected, the supply and use statisticians assess the sources of discrepancy and make appropriate adjustments to align the supply and use statistics. In short, the supply and use accounts bring coherence to the wide range of economic statistics that are available to Canadians.

#### 4.7.5 Benchmarking

The development of national accounts estimates involves trade-offs between timeliness and statistical accuracy. Early estimates are often (though not always) produced using sub-annual (monthly and quarterly) sources of information and these tend to be derived from relatively small statistical samples. They usually offer relatively little detail, whether by product class, by industry or by geographical region. Their advantage is that they can be made available to users with a comparatively short lag relative to the reference period. With the passage of time, however, better sources of information typically become available. In some cases these sources are annual statistical surveys, with larger samples and a lot more subject matter detail. In others they are administrative data, such as public accounts or taxation statistics, and these tend to have census coverage. These annual sources tend to be both more accurate and more detailed than the early data sources, although they are available only with a longer lag.

The process of **benchmarking** is the means by which early sub-annual estimates—or in some cases preliminary annual estimates—are improved by making use of more accurate annual sources of information that become available with a longer lag. The process most often aims to produce revised, or ‘benchmarked’ sub-annual estimates that, when time-aggregated to the annual frequency, correspond to the latest available (and more accurate) annual estimates while retaining, as much as possible, the sub-annual pattern of change that is evident in the early estimates.

Benchmarking is important for the monthly national estimates of real GDP by industry, the quarterly income and expenditure accounts estimates, the annual provincial and territorial estimates of real GDP by industry and the productivity statistics program. These programs are built from the ground up using supply and use statistics.

So the supply and use accounts are truly the anchor of the macroeconomic accounts, tying them together as a coherent set and providing the ‘full information’ estimates upon which they are based.

#### Annex 4.1 Supply and use tables example

In this annex a hypothetical example of supply and use tables is presented. The goal is to help the reader understand the basic structure of the tables and the relationships among their different parts.

Table A.4.1 shows the ‘make’ (or ‘production’ or ‘output’) table. In this simple example, there are seven industries and eight product classes. All of the industries, with one exception, produce just one class of products. The exception is the transportation industry that produces two product classes: transportation of people and transportation of freight. Total industry output is, for each industry, the sum of the outputs of all product classes produced by that industry. Total output, or domestic supply, for the economy as a whole is 3,095 at basic prices.

The right-hand side of the table, labelled ‘valuation margins’, shows how total domestic supply at basic prices is converted to total domestic supply at purchasers’ prices. This is done by distributing the output of the margin industries (trade services and transportation services in this example) across the other product classes according to where those margins are earned and adding in as well all taxes less subsidies on products. Thus, for example, while output of agriculture products at basic prices is 335 in the example, output of this product class at purchasers’ prices is 365, reflecting the addition of 50 in trade margins and 30 in transportation margins and the deduction of 50 in subsidies. Total supply at purchasers’ prices is 3,180 which is 85 more than total supply at basic prices, reflecting the inclusion of taxes less subsidies on products (140 minus 55).

Note that imports do not appear as a source of supply in Table A.4.1. Rather, as will be seen shortly, they appear in Table A.4.2 as a negative source of final demand. Imports could be shown, in an alternative presentation, as an added column in the supply table, thereby shifting the total in that table from ‘domestic supply’ to ‘total supply’. Imports would then not be included in Table A.4.2.

Table A.4.2 shows the use table at purchasers' prices. The industries and product classes are the same ones that are in the supply table. The left-hand part of the table shows the industries' uses of the different products, which is to say their intermediate consumption measured at purchasers' prices. It also shows, in the rows immediately following, the primary input expenses of the industries: compensation of employees, other taxes less subsidies on production and mixed income/other operating surplus. At the bottom is total industry output at basic prices, copied from Table A.4.1. Subtracting total intermediate consumption from total industry output at basic prices yields gross value added at basic prices. Observe that gross value added at basic prices can also be calculated by summing the three primary input expense categories.

**Table A.4.1**  
**Supply table at purchasers' prices**

Product classes	Industries							Total domestic supply at basic prices
	Agriculture	Manufacturing	Utilities	Trade	Transportation	Other services	Public administration	
	billions of dollars							
<b>Agriculture goods</b>	335	...	...	...	...	...	...	335
Manufacturing goods	...	1,200	...	...	...	...	...	1,200
Utilities	...	...	200	...	...	...	...	200
Trade services	...	...	...	300	...	...	...	300
Transportation of people	...	...	...	...	400	...	...	400
Transportation of freight	...	...	...	...	110	...	...	110
Other services	...	...	...	...	...	300	...	300
Public administration	...	...	...	...	...	...	250	250
<b>Total</b>	<b>335</b>	<b>1,200</b>	<b>200</b>	<b>300</b>	<b>510</b>	<b>300</b>	<b>250</b>	<b>3,095</b>

Product classes	Valuation margins				Total domestic supply at purchasers' process
	Total margins	Transportation margins	Taxes on products	Subsidies on products	
	billions of dollars				
<b>Agriculture goods</b>	50	30	...	-50	365
Manufacturing goods	250	80	120	...	1,650
Utilities	...	...	...	...	200
Trade services	-300	...	...	...	...
Transportation of people	...	...	...	-5	395
Transportation of freight	...	-110	...	...	...
Other services	...	...	20	...	320
Public administration	...	...	...	...	250
<b>Total</b>	<b>0</b>	<b>0</b>	<b>140</b>	<b>-55</b>	<b>3,180</b>

... not applicable

Source: Statistics Canada

**Table A.4.2**  
**Use table at purchasers' prices in billions of dollars**

	Industries' uses at purchasers' prices							Total
	Agriculture	Manufacturing	Utilities	Trade	Transportation	Other services	Public administration	
	billions of dollars							
<b>Product classes</b>								
Agriculture goods	12	80	...	...	...	...	...	92
Manufactured goods	40	493	18	10	110	60	40	771
Utilities	10	45	5	30	20	15	25	150
Trade services	...	...	...	...	...	...	...	...
Transportation of people	8	7	6	10	5	10	30	76
Transportation of freight	...	...	...	...	...	...	...	...
Other services	20	60	44	30	40	65	28	287
Public administration	...	5	7	...	...	...	...	12
Total	90	690	80	80	175	150	123	1,388
<b>Primary input expenses</b>								
Compensation of employees	105	400	100	60	220	130	120	1,135
Other taxes less subsidies on production	10	30	10	20	15	5	2	92
Mixed income/gross operating surplus	130	80	10	140	100	15	5	480
Gross value added at basic prices	245	510	120	220	335	150	127	1,707
Total industry output at basic prices	335	1,200	200	300	510	300	250	3,095

	Final uses at purchasers' prices							Total use
	Household consumption	Government consumption	Fixed capital formation	Changes in inventories	Exports (FOB)	Imports (CIF)	Total final use	
	billions of dollars							
<b>Product classes</b>								
Agriculture goods	112	...	...	5	156	...	273	365
Manufactured goods	538	...	350	-9	800	-800	879	1,650
Utilities	50	...	...	...	...	...	50	200
Trade services	...	...	...	...	...	...	...	...
Transportation of people	254	...	...	...	115	-50	319	395
Transportation of freight	...	...	...	...	...	...	...	...
Other services	50	...	...	...	3	-20	33	320
Public administration	...	238	...	...	...	...	238	250
Total	1,004	238	350	-4	1,074	-870	1,792	3,180
<b>Primary input expenses</b>								
Compensation of employees	...	...	...	...	...	...	...	...
Other taxes less subsidies on production	...	...	...	...	...	...	...	...
Mixed income/gross operating surplus	...	...	...	...	...	...	...	...
Gross value added at basic prices	...	...	...	...	...	...	...	...
Total industry output at basic prices	...	...	...	...	...	...	...	...

... not applicable

**Note:** GDP at market prices = Value added at basic prices (1,707) + taxes on products (140) – subsidies on products (-55) = 1,792.

**Source:** Statistics Canada

**Table A.4.3**  
**Use table at basic prices**

	Industries' uses at basic prices							Total
	Agriculture	Manufacturing	Utilities	Trade	Transportation	Other services	Public administration	
	billions of dollars							
<b>Product classes</b>								
Agriculture goods	11	75	...	...	...	...	...	86
Manufacturing goods	35	437	13	9	91	47	35	667
Utilities	10	45	5	30	20	15	25	150
Trade services	3	40	2	...	10	10	4	69
Transportation of people	8	7	6	10	5	10	30	76
Transportation of freight	3	11	1	1	5	3	1	25
Other services	20	56	41	28	38	61	26	270
Public administration	...	5	7	...	...	...	...	12
Taxes less subsidies on products	...	14	5	2	6	4	2	33
<b>Total</b>	<b>90</b>	<b>690</b>	<b>80</b>	<b>80</b>	<b>175</b>	<b>150</b>	<b>123</b>	<b>1,388</b>
<b>Primary input expenses</b>								
Compensation of employees	105	400	100	60	220	130	120	1,135
Other taxes less subsidies on production	10	30	10	20	15	5	2	92
Mixed income/gross operating surplus	130	80	10	140	100	15	5	480
Gross value added at basic prices	245	510	120	220	335	150	127	1,707
<b>Total industry output at basic prices</b>	<b>335</b>	<b>1,200</b>	<b>200</b>	<b>300</b>	<b>510</b>	<b>300</b>	<b>250</b>	<b>3,095</b>

	Final uses at basic prices							Total use
	Household consumption	Government consumption	Fixed capital formation	Changes in inventories	Exports (FOB)	Imports (CIF)	Total final use	
	billions of dollars							
<b>Product classes</b>								
Agriculture goods	86	...	...	5	158	...	249	335
Manufacturing goods	369	...	275	-9	698	-800	533	1,200
Utilities	50	...	...	...	...	...	50	200
Trade services	111	...	30	...	90	...	231	300
Transportation of people	259	...	...	...	115	-50	324	400
Transportation of freight	37	...	15	...	33	...	85	110
Other services	47	...	...	...	3	-20	30	300
Public administration	...	238	...	...	...	...	238	250
Taxes less subsidies on products	45	...	30	...	-23	...	52	85
<b>Total</b>	<b>1,004</b>	<b>238</b>	<b>350</b>	<b>-4</b>	<b>1,074</b>	<b>-870</b>	<b>1,792</b>	<b>3,180</b>
<b>Primary input expenses</b>								
Compensation of employees	...	...	...	...	...	...	...	...
Other taxes less subsidies on production	...	...	...	...	...	...	...	...
Mixed income/gross operating surplus	...	...	...	...	...	...	...	...
Gross value added at basic prices	...	...	...	...	...	...	...	...
<b>Total industry output at basic prices</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>	<b>...</b>

... not applicable

**Note:** GDP at market prices = Value added at basic prices (1,707) + taxes on products (140) – subsidies on products (-55) = 1,792.

**Source:** Statistics Canada

The right-hand side of Table A.4.2 shows the other component of the use table which is final uses at purchasers' prices. In this simple example there are six final uses: household consumption, government consumption, fixed capital formation, changes in inventories, exports and imports (a negative entry). The second-to-last column shows total final use at purchasers' prices, which is equal to gross domestic product at market prices. The final column is total use at purchasers' prices, which is the sum of total intermediate consumption at purchasers' prices and total final use at purchasers' prices.

Observe that gross domestic product at market prices (or equivalently, total final use at purchasers' prices) is equal to total value added by industries at basic prices plus taxes less subsidies on products (the latter are shown in Table A.4.1).

The remaining table, Table A.4.3, is the use table at basic prices. Thus Table A.4.3 is similar to Table A.4.2 except that the valuation is in basic rather than purchasers' prices. This means the margin industries—trade services and transportation of freight in this example—are broken out separately from the other product classes. Total intermediate consumption by industries (1,388) and total final uses (3,180) are the same in Table A.4.3 as in Table A.4.2.

## Annex 4.2 The calculation of output at basic prices

In Canada output is measured in a manner that deviates slightly from the *SNA 2008* standard. It is valued before any taxes levied on products have been added **but after any subsidies received on products have been subtracted**. In effect, subsidies are recorded not as a component of the producer's revenue, but as a negative input cost entry for the producer.<sup>53</sup> Gross value added is unaffected and is defined in basic prices as per the *SNA 2008* standard. The rationale for this deviation from the standard is essentially that were the recommended basic prices to be used, with subsidies being added back, the resulting prices would not correspond to any observable transactions and would be difficult to deflate properly.<sup>54</sup> In addition, when this valuation approach is adopted and the use table is transformed to a uniform valuation basis (section 4.4), there is no need to allocate product subsidies to each user.

The electrical utility example discussed in section 4.2.5 assumed that the \$260,000 of electricity sales revenue was the result of a price of \$0.10 per kilowatt hour (kWh) and sales of 2,600,000 kWh. The price included the impact of a federal government specific tax of \$0.02 per kWh and a provincial government specific subsidy of \$0.01 per kWh. The valuation of output as per the international standard is:

$$\text{Output at basic prices} = (\$0.10 - \$0.02 + \$0.01) \times 2,600,000 = \$234,000,$$

and the valuation as calculated in the Canadian System of Macroeconomic Accounts is:

$$\text{Output at modified basic prices} = (\$0.10 - \$0.02) \times 2,600,000 = \$208,000.$$

In practice, the difference between output valued at basic prices and output valued at modified basic prices is typically small in Canada, since subsidies on most products are comparatively small in this country, with negligible effect in most industries.<sup>55</sup> Elsewhere in this volume, when the term 'output at basic prices' is used it should be understood to mean output at basic prices as modified in the manner described here.

## Annex 4.3 Fictive products and industries

The most detailed, publicly available supply and use accounts for Canada and the provinces record information for 470 product classes and 233 industry groups, as well as for 8 primary input categories and 280 final demand categories. Of the 470 product classes, six are characterized as 'fictive'. Similarly, six of the 233 industry classes are also 'fictive'. These six product and industry classes correspond one-to-one and have the same names, as shown in Table A.4.4.

**Table A.4.4**  
**Fictive product and industry classes**

Product class code	Name	Industry class code
FIC110000	Repair and maintenance	FC110000
FIC120000	Operating supplies	FC120000
FIC130000	Office supplies	FC130000
FIC210000	Advertising, promotion, meals and entertainment	FC210000
FIC220000	Travel, meetings and conventions	FC220000
FIC300000	Transportation margins	FC300000

Source: Statistics Canada.

This annex explains the nature of these fictive product and industry classes. Fundamentally, the use of these classes is a technique for routing groups of heterogeneous products, used in a relatively minor way as inputs, into industries when the precise product content is not known.

Establishments are asked to report their product inputs on Statistics Canada questionnaires, by product class. The product classes are designed to be as homogeneous as possible. However, some of the products that establishments use are diverse and minor in nature, in terms of the total amount expended on them as a proportion of total establishment intermediate consumption. It would be burdensome on establishments to require that they report expenditures on each of these products individually, and it would also be of little practical value analytically, so instead they are grouped together as baskets of diverse products. The products in these baskets are already represented in other product classes, but it would be too much to ask of establishments that they break them out separately in these various product classes.

Consider, for example, the fictive product class 'operating supplies'. This basket of products includes such items as tires, batteries, cleaning and scouring powders, paints and a variety of other such products. All of these products belong to other product classes. For example, tires belong in the product class MPG326201, called 'tires', and batteries are found in the product class MPG335901, called 'batteries'. In view of the fact that only minor quantities of these products are used by most industries, in such instances establishments are asked to report them instead as a basket total for all such minor products, as 'operating supplies'.

It is important to recognize, though, that establishments which use any of these products more intensively in their production process are expected to report their use separately. Thus, for example, the 'automobile and light-duty motor vehicle manufacturing' industry uses a substantial quantity of tires in its production process and accordingly is asked to report them separately in the 'tires' product class rather than in the 'operating supplies' class. Even then, to the extent the automobile industry also uses tires as 'operating supplies' to keep its own vehicles moving, it might also, at its option, report that comparatively minor portion of its usage of tires in that fictive category, while reporting most of its usage of tires as 'tires'.

Fictive industries are defined as those producing the output of the fictive products. Thus, for example, the 'operating supplies' fictive industry is defined as that producing the total output of 'operating supplies' used by all other industries. There is no need to estimate the product composition of output within each of the fictive product classes. However, it is still necessary to estimate the composition of product inputs of each of the fictive industries. This is accomplished by routing appropriate values of the relevant product classes (tires, batteries and so on) to the fictive industries.

There are no primary inputs in the fictive industries and accordingly these industries do not account for any part of gross domestic product. Moreover, the fictive product classes are not purchased by final demand categories. Rather, returning to the 'operating supplies' example used previously, any tires, batteries and so on that are acquired by final demand sectors are purchased from the corresponding non-fictive product classes.

## Notes for chapter 4

1. In the past, in Canada, the term ‘input-output accounts’ was used interchangeably with the term ‘supply and use accounts’. However, in SNA 2008 and elsewhere the term ‘input-output tables’ refers to a squared transformation of the use table where either the rows and columns are both industries, or are both product classes. See SNA 2008, pages 512 to 518.
2. The domestic supply table excludes imports, whereas the total supply table includes imports.
3. The example assumes no taxes or subsidies on electricity. Later in this chapter the example will be extended to include taxes and subsidies.
4. ‘Balancing items’ are determined residually rather than being measured directly. The term is explained more fully in chapter 5.
5. When a business is incorporated, the distinction between compensation of employees and gross operating surplus is clear. However, for an unincorporated business the distinction between the labour services provided by the owner and the entrepreneurial or capital services also provided by him or her is arbitrary. Accordingly, the owner’s compensation as an employee and his/her gross operating surplus are merged as one form of income called **gross mixed income**.
6. In the past, the term ‘commodities’, was generally used as the alternative to ‘goods and services’. However, SNA 2008 uses the term ‘products’ instead of ‘commodities’, citing this as being more reflective of recent usage (see page 271), and this is also the practice in this volume.
7. Supply and use product statistics are also available in time series from 1997 to date for 466 product classes, and in time series from 1961 to date for 246 product classes. They are also available in a more highly aggregated summary table with 74 product classes.
8. SNA 2008 defines an establishment as “an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added” (page 89). Recall from chapter 3 that the defining characteristics of an institutional unit are that it can own goods and assets, can incur liabilities and can engage in economic activities and transactions with other units in its own right. An establishment, therefore, may or may not be an institutional unit. Establishments can be thought of as factories, plants, office buildings, stores, clinics or other such units.
9. SNA 2008 states that “An industry consists of a group of establishments engaged in the same, or similar, kinds of activity” (page 87).
10. Supply and use industry statistics are also available in time series from 1997 to date for 187 industry aggregates, and in time series from 1961 to date for 111 industry aggregates. They are also available in a more highly aggregated summary table with 35 industry aggregates.
11. They are collected from producers in the sense that it is they who are responsible for securing and paying the tax to the government. The way in which the producer and the purchaser share the burden of these taxes is an analytical question that is not easily answered. It involves the comparison of the real world outcome where the tax exists with a hypothetical situation in which there is no tax. The national accounts do not directly address questions of **tax incidence** such as this.
12. See SNA 2008, pages 143 and 144. The generation of income account is explained in section 4.3.3.
13. Note that government grants to enterprises to assist in the financing of capital formation or to compensate for damage to capital assets are not considered to be subsidies. Assistance payments of this kind are referred to as **capital transfers**. They will be discussed in chapter 5.
14. Again, the incidence of subsidies on producers and purchasers—the extent to which they result in lower prices paid by purchasers compared to the hypothetical situation in which there are no subsidies—is not what is being referred to here.



15. SNA 2008 also uses the term **producers' prices**, but the Canadian SNA generally avoids use of this phrase. "The preferred method of valuation of output is at basic prices, although producers' prices may be used when valuation at basic prices is not feasible. The distinction is related to the treatment of taxes and subsidies on products. Basic prices are prices before taxes on products are added and subsidies on products are subtracted. Producers' prices include, in addition to basic prices, taxes less subsidies on products other than value added type taxes." See *SNA 2008*, page 22. In earlier versions of the SNA an additional valuation, referred to as 'factor cost', was also employed. This valued a product based on the cost of its factors of production without regard to taxes on production, taxes on products and subsidies.

16. Canada adheres to the SNA 2008 concept of value added at basic prices. However, for convenience this concept is modified slightly in the valuation of output, although the derived value added is at basic prices. For an explanation, see Annex 4.1.

17. If the purchaser is another producer, acquiring the product for purposes of intermediate consumption, the deductible portion of GST and HST is excluded from the purchasers' price since that part of these taxes, while paid initially, is fully compensated subsequently.

18. Sometimes FOB stands for "freight on board" rather than "free on board". The two terms mean the same thing. The alternative to FOB valuation is referred to as "cost, insurance, freight" (CIF) which means that the value of the traded goods includes insurance, freight and other costs for delivering the goods to the border of the importing country.

19. SNA 2008, page 279.

20. In this portrayal of the fundamental identity, margins for transportation, wholesaling, retailing and the like are included in output as production from the corresponding margin industries.

21. **Final domestic demand** is equal to final consumption expenditures by households, NPISHs and governments plus gross fixed capital formation expenditures. Note that the term 'capital formation' includes changes in inventories whereas the term 'fixed capital formation' excludes changes in inventories.

22. In the final expenditure approach, expenditures by households, governments, businesses and non-residents on goods and services actually involves expenditure on imported goods and services as well as domestically produced ones, since these are embedded within the measured expenditures. Since the imported goods and services are not part of Canadian production, they are subtracted in aggregate.

23. See paragraph 14.11, page 272. "Consolidation may cover various accounting procedures. In general, it refers to the elimination from both uses and resources of transactions which occur between units that are grouped together and to the elimination of financial assets and the counterpart liabilities." SNA 2008, page 22.

24. There is no production account for the non-resident sector because it is a non-producing sector from Canada's perspective. At time of writing, the production accounts for the Canadian institutional sectors had not yet been developed, although this is planned.

25. The traditional supply table shows imports as a positive source of supply and includes all the margins to allow the valuation of supply at purchasers' prices.

26. Each of the three tables contains over 1.5 million cells and the three tables combined contain about 5 million cells, many with zero values.

27. As mentioned in chapter 3, non-residents are institutional units residing outside the boundaries of the domestic economy that transact with or have other economic links with institutional units residing within the territory of the economy.

28. Although establishments located in Canada may be owned by non-residents, their output is considered to be domestic Canadian output, **not** non-resident output.

29. Imputed rents on owner-occupied dwellings are discussed in chapter 5.

30. There are 14 regions in the domestic economy: 10 provinces, 3 territories and "outside Canada". The latter is a small region encompassing embassies and military bases abroad.

31. Re-exports consist of the export of goods that were previously imported.
32. Supply and use final demand statistics are also available in time series from 1997 to date for 261 final demand categories, and in time series from 1961 to date for 145 final demand categories. They are also available in a more highly aggregated summary table with 25 final demand categories.
33. An excellent reference book on the subject of price and volume indexes, available free online, is *Consumer Price Index Manual: Theory and Practice*, published jointly by the International Labour Organization, the International Monetary Fund, the Organization for Economic Cooperation and Development, Eurostat, the United Nations and the World Bank in 2004.
34. A manual explaining this methodology was published in 2001 and is available without charge on the Statistics Canada Internet site. See *A Guide to Deflating the Input-Output Accounts: Sources and Methods*, catalogue number 15F0077G.
35. The machinery and equipment price indexes, the housing price indexes and the farm input price indexes are also used. Average weekly earnings are used to deflate some service products for which price indexes are unavailable. In a few cases, physical quantity projectors are used to estimate the volume component and the price change component is calculated residually.
36. Recall that the supply, use and final demand tables each have over 1.5 million cells to estimate.
37. For example, in the case of manufacturing industries, output as measured by the Monthly Survey of Manufacturing is deflated by the corresponding producer price index and this volume series is used as the gross value added projector. For many government services industries hours worked by employees are the projector. For more information see ***Gross Domestic Product by Industry: Sources and Methods with Industry Details***, 2006, catalogue number 15-548-XIE.
38. For further discussion of benchmarking methods see Bloem, Adriaan, J. Dippelsman and N. Maehle, *Quarterly National Accounts Manual: Concepts, Data Sources and Compilation*, International Monetary Fund, Washington D.C., 2001, chapter VI.
39. This lack of consistency in aggregation is true for all chain indexes.
40. The income and expenditure accounts are explained in chapter 5.
41. Real GDP by industry is calculated at basic prices while real GDP derived from final expenditures by the institutional sectors is calculated at market prices. This difference in valuation affects the dollar levels of the two GDP series but typically has a negligible impact on the difference in quarterly growth rates of the two series.
42. The quarterly income-based estimates of GDP at market prices have an industry dimension like that of the real GDP by industry estimates, but the former are not available at constant prices. See chapter 5.
43. That is to say, when the real GDP by industry estimates for the third month of a quarter are being prepared.
44. Perhaps the most important difference between the methodology of the annual provincial and territorial estimates and that of the monthly national estimates is that while the latter uses fixed weights from the most recent supply and use benchmark year to aggregate the contribution of any lowest-level industry to any higher-level industry at constant prices, the former produces estimates of gross value added at current prices for each lowest-level industry for the years following the most recent supply and use benchmark year and uses these estimates to weight the contributions of those industries to higher-level aggregates at constant prices using the Fisher index number formula. The two approaches sometimes yield very different national results, before benchmarking.
45. For example, by looking at the year-to-year changes in the shares of energy-related inputs in the total inputs of industries, after allowing for relative price changes, it is possible to draw conclusions about the extent to which energy-efficiency is improving over time.
46. An example in this case is the rise and fall of the shares of consumer-discretionary products in total consumer demand over the course of the business cycle.

47. A multiplier measures how much an endogenous variable changes in response to a change in an exogenous variable. If exports of oil and gas were treated as exogenous and they increased by \$1.0 billion, while as a result the output of oil and gas in the domestic economy increased by \$1.5 billion, then the multiplier would be  $1.5/1.0 = 1.5$ . See Statistics Canada, *National and Provincial Multipliers*, catalogue number 15F0046X.
48. Leontief spent most of his life (1906-1999) working on this general topic. See, in particular, his publication *Input-Output Economics*, 2nd edition, New York: Oxford University Press, 1986.
49. Leontief was evidently a great teacher as well since three of his doctoral students have also been awarded the prize: Paul Samuelson in 1970, Robert Solow in 1987 and Vernon Smith in 2002.
50. The structure of the basic Canadian supply and use model is explained in detail in Ziad Ghanem, "The Canadian and Inter-Provincial Input-Output Models: The Mathematical Framework," Statistics Canada, April 2010. See also "User's Guide to the Canadian Input-Output Model," Statistics Canada, June 2009.
51. A paper entitled "The guide to using the input-output simulation model" is available free of charge upon request. Both the national and the interprovincial models can be obtained on electronic media for a fee. See *Input-Output Model Simulations (National Model)*, catalogue number 15F0004X and *Input-Output Model Simulations (Interprovincial Model)*, catalogue number 15F0009X.
52. Low-income households are entitled to HST tax credits, but these are not related to household expenditures and accordingly are not called 'rebates'. Rebates of HST paid on the purchase of new residential housing can also be claimed under some circumstances, which vary by province.
53. For a full explanation of the 'modified basic prices' concept and a discussion of the pros and cons of this approach, see Y.M. Siddiqi and M. Salem, "[Implementing the 1993-SNA Recommendation on Valuation in Canadian Input-Output Accounts](#)," paper presented at the 12th International Conference on Input-Output Techniques, May 18-22, 1998, New York, N.Y. This paper is available on the Internet at [www.iioa.org/conferences/12th/pdf/siddsale.pdf](http://www.iioa.org/conferences/12th/pdf/siddsale.pdf).
54. Around the world, most countries do not deflate their supply and use tables. For them, this complication is not relevant and there is no need to modify the way basic prices are defined.
55. The reader is cautioned, though, that this is not true in all cases. Notable exceptions are some food items produced by the agriculture industry.

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 5 Income and expenditure accounts

### What this chapter seeks to do

The purpose of this chapter is to explain Canada's **income and expenditure accounts**. The income and expenditure accounts are essentially the middle part of *SNA 2008*'s **sequence of accounts** that is described in chapter 3 (the beginning and end of the sequence are explained in depth in chapter 4 and chapter 6). The chapter focuses on the internal structure of the income and expenditure accounts, their relationship to the rest of the Canadian system of macroeconomic accounts and how these accounts are used to interpret economic developments.

This chapter links primarily to *SNA 2008* chapters 7, 8, 9 and 10.

### 5.1 Introduction

Income and expenditure accounts statistics have been produced in Canada since the late 1940s. They are available on an annual basis from 1926 forward and on a quarterly basis from 1947 to date.<sup>1</sup> The statistical estimates are released about 60 days after the reference quarter and are revised in subsequent periods as additional source data become available.<sup>2</sup>

The accounts include the two top-level GDP-by-income-and-expenditure tables that are familiar to most users of the national accounts. In addition, they include a number of statistical tables elaborating the allocation and redistribution of income among the institutional sectors, the spending of income by the institutional sectors and the resulting amounts saved and invested in gross capital formation by each of the institutional sectors. Each of these tables has a **balancing item** that becomes the starting point in the next account. These latter tables are referred to as the **sequence of accounts** and the way they are structured in *SNA 2008* is explained in chapter 3.

#### Text box 5.1 Balancing items

A **balancing item** is, in the case of transaction flows, the difference between the sum of one set of market transactions and that of another set of transactions, or in the case of stocks, the difference between one aggregate of stocks and another. A balancing item is an accounting construct and is not, in itself, an observable transaction or stock, although it is derived from transactions or stocks. Some examples of balancing items are gross value added, gross saving and net worth

The income and expenditure accounts are a key tool for understanding Canada's macro-economy. The most widely known and utilized aggregate from the accounts, real gross domestic product at market prices, summarizes how the economy is performing over time, revealing the growth trend and informing about recessions when the country's total output is in decline. The accounts show how GDP, when viewed from the income perspective, is shared between labour and capital and they also record how GDP is spent on final consumption of goods and services, gross capital formation and exports to, net of imports from the rest of the world. Period-to-period changes in nominal GDP are also decomposed into distinct 'volume' and 'price' components, thereby providing estimates of 'real' economic growth or decline and the rate of inflation or deflation.

This chapter begins by explaining the two top-level tables of Canada's system of macroeconomic accounts that present income- and expenditure-based gross domestic product at market prices. These two tables are directly related to material discussed in the previous chapter. The chapter then proceeds to discuss Canada's current and capital institutional accounts, showing how the components of these accounts fit into the *SNA 2008* sequence and discussing their characteristics and structure. Then the chapter moves on to review the provincial and territorial breakdown of the income and expenditure accounts. This is followed by a brief explanation of the decomposition of the CSMA's various time series for final expenditure on goods and services into separate volume and price components (a fuller discussion of this topic is in chapter 7). The chapter ends with two small concluding sections,

one on how the income and expenditure accounts compare to the supply and use accounts (discussed in chapter 4) and the other on the uses of the income and expenditure accounts and the role they play in Canada's business, government and social structure.

## 5.2 Estimates of income- and expenditure-based GDP at market prices

At their highest and most visible level, Canada's income and expenditure accounts consist of two tables. One determines income-based gross domestic product at market prices and the other expenditure-based GDP. The tables consolidate the six institutional sectors and they originate from the fundamental national accounts identity that is presented in chapter 4. That identity states that the total value of all goods and services **supplied** in the economy—by means of domestic production and importing products from other countries—must equal the total value of all goods and services **used**:

(5.1)

Total supply at market prices = Total use at market prices

which means that:

(5.2)

Output + imports + taxes less subsidies on products =  
Intermediate consumption + final consumption  
+ fixed capital formation + inventory change + exports

Rearranging terms we have:

(5.3)

Output – intermediate consumption + taxes less subsidies  
on products = Final consumption + fixed capital  
formation + inventory change + exports – imports

Recognizing that the left-hand side of equation (5.3) is gross value added at market prices, we have:

(5.4)

Output – intermediate consumption + taxes less subsidies =  
Compensation of employees + gross operating surplus +  
gross mixed income + taxes less subsidies on production, products and imports

Finally, substituting from equation (5.4) into equation (5.3) we have the equation forming the basis for the two high-level tables:

(5.5)

Compensation of employees + gross operating surplus + gross mixed  
income + taxes less subsidies on production, products and  
imports = Final consumption expenditure + gross fixed capital  
formation + investment in inventories + exports – imports

The left-hand side of the equation corresponds to the income-based GDP table and the right-hand side to the expenditure-based GDP table.

The fundamental equation indicates that the main aggregates in the two tables—income-based GDP and expenditure-based GDP—are equal. It should not be surprising, though, that when the components of the two tables are measured using surveys and other real-world data sources their bottom lines seldom if ever turn out to be exactly equal. Nevertheless it is desirable for the accounts to provide a single, coherent measure of GDP rather than two similar but unequal ones. In Canada, the long-established practice is to calculate the difference between the two GDP estimates and assign half of this difference to the smaller estimate and subtract half from the other so as to make the two adjusted GDP estimates identical. This is equivalent to averaging the two measures. The amount added to one estimate and subtracted from the other is called the **statistical discrepancy**. Every country that compiles national accounts faces this issue and it can be dealt with in a number of different ways.<sup>3</sup> Equation (5.6) shows the modified version of equation (5.5) that is obtained by including the statistical discrepancy:

(5.6)

Compensation of employees + gross operating surplus + gross mixed income + taxes less subsidies on production, products and imports + **statistical discrepancy** = Final consumption expenditure + gross fixed capital formation + investment in inventories + exports – imports – **statistical discrepancy**

### 5.2.1 Income-based GDP at market prices

Table 5.1 displays the first of the two top-level tables, for the year 2009 as an example. It shows GDP at market prices as the sum of compensation of employees, gross operating surplus, gross mixed income, taxes less subsidies on production, products and imports, and the statistical discrepancy.

**Table 5.1**  
**Gross domestic product, income-based, 2009**

Components of gross domestic product at market prices	2009 millions of dollars
Compensation of employees	812,073
Wages and salaries	705,172
Employers' social contributions	106,901
Gross operating surplus	395,390
Net operating surplus: corporations	173,580
Consumption of fixed capital: corporations	171,755
Consumption of fixed capital: general governments and NPISHs	50,055
Gross mixed income	187,181
Net mixed income	140,702
Consumption of fixed capital: unincorporated businesses	46,479
Taxes less subsidies on production	69,652
Taxes less subsidies on products and imports	102,216
Statistical discrepancy	853
Gross domestic product at market prices	1,567,365

Source: Statistics Canada, table 36-10-0103-01.

#### 5.2.1.1 Compensation of employees

SNA 2008 defines **compensation of employees** as “the total remuneration, in cash or in kind, payable by an enterprise to an employee in return for work done by the latter during the accounting period” (page 131). The word ‘total’ deserves emphasis. Compensation of employees includes not just regular paycheques, but also cost of living allowances, overtime pay, hazard pay, expatriation allowances, holiday pay, tips, commissions, bonuses, retroactive pay, stock options, directors’ fees, compensation in kind such as automobile allowances, board and

lodging and gifts, pension benefits, health insurance benefits, other insurance benefits and various other types of compensation.<sup>4</sup> It is the largest component of income-based GDP, accounting for over half.<sup>5</sup>

In broad terms compensation of employees consists of two components. One is **wages and salaries** by which is meant, essentially, the paycheques and all other forms of direct compensation of employees. The other is **employers' social contributions** which refers to the actual or imputed contributions that employers make on behalf of their employees to both government-sponsored social security schemes—in Canada, these include the Employment Insurance program, the Canada and Quebec Pension Plans and provincial and territorial government workers' compensation plans—and employer-sponsored health and disability insurance, pensions, maternity, dental, life insurance and other benefit schemes.

A major difference between the two components is that wages and salaries provide employees with income that can be spent on goods and services, transferred to other institutional units or saved at their discretion, whereas employers' social contributions give employees particular benefits under specific circumstances (sickness, retirement, etcetera) over which they have little or no discretion. The benefits accrue over time as the employee works and there are no actual payments directly to the employee unless and until the specific circumstances arise.

Employers' social contributions, like wages and salaries, are defined on an accrual basis, rather than a cash basis, and typically they must be partially or entirely **imputed**. To understand this point, consider a newly established enterprise that is providing its employees with a defined pension benefit and is administering the benefit scheme itself. The pension benefit the employees will ultimately receive on retirement is tied to their years of service in the enterprise. In any given accounting period the employees accrue a larger benefit than they were entitled to at the end of the previous accounting period and the implied cost to the employer, when the employees retire, is also correspondingly larger. However, the increase in the employer's ultimate cost might not result in any cash requirement during the given accounting period, since in the example no employees would yet have retired. For this reason the cost is implicit rather than explicit and would have to be imputed. This imputation would not likely be required if the employer contracted with a trustee to administer the pension scheme on its behalf since in that case regular (explicit) contributions would typically be made to the trustee in order to fund the ultimate pension benefits.

Compensation of employees includes the remuneration of all persons working for resident Canadian businesses, whether those persons are citizens, immigrants or temporary foreign workers. Canadian military personnel and government employees working outside the country are also included since military bases, embassies and consulates abroad are deemed to be Canadian territory.<sup>6</sup> However, the remuneration of Canadians working for companies located outside the economic territory of Canada is excluded from compensation of employees.

### 5.2.1.2 Gross operating surplus and gross mixed income

The *SNA 2008* definition of **gross operating surplus plus gross mixed income** is “the surplus or deficit accruing from production before taking account of any interest, rent or similar charges payable on financial assets or natural resources borrowed or rented by the enterprise, or any interest, rent or similar receipts receivable on financial assets or natural resources owned by the enterprise” (page 132).

The enterprise referred to can be either incorporated or unincorporated. If incorporated, the surplus (or deficit) is referred to as **gross operating surplus**. If unincorporated, it is called **gross mixed income**. The reason for the distinction is that corporate entities are legally separate from their owners, whereas this is not true for unincorporated businesses. The implication is that while the compensation of employees paid out by a corporation to its employees can be readily separated from the corporate operating surplus, there is no clear separation between the two for an unincorporated business in the case of owner-employees. The owners of the latter kind of business can pay out money from the business to themselves either as wages and salaries or as dividends, with the choice of withdrawal format being arbitrary.

The concepts of gross operating surplus and gross mixed income are similar, in some ways, to the concept of ‘profit’ in common usage. However they differ from that concept in a number of ways, one of the most important of which is that gross operating surplus and gross mixed income take no account of investment income (interest, dividends) received or paid out by the business. As such, they are best thought of as the return to the capital **used** by the business, as distinct from the return to the owners of the business. The latter concept is addressed later in the sequence of accounts and is called the balance of primary incomes.

Note that gross operating surplus and gross mixed income are balancing items, derived as residuals after compensation of employees and taxes less subsidies on production, products and imports are deducted from gross value added (that is, GDP). This is explained further in chapter 4.

Gross operating surplus and gross mixed income are both ‘gross’ in the sense that no deduction is made for the cost of replacing capital that is consumed as a result of the production process.<sup>7</sup> The corresponding net concepts, which do make the deduction, are better measures of the sustainable return to the capital employed by the business. This latter return represents the reward to those who risk the capital by using it in production.

Gross operating surplus is invariant, at the aggregate total-economy level, whether the capital is owned by the corporations themselves or by some other sector. The capital could be owned by resident or non-resident entities and the fixed capital including land and natural resources could be owned, leased or licensed. The capital income accrues to the user of the capital, not the owner, for purposes of the operating surplus concept. In addition, operating surplus is invariant, whether own-account funds or borrowed funds are deployed to finance the capital used. In the allocation of primary income account, the property income flows show the reallocation of income earned from production by the users of the capital to the ultimate owners of the capital.

In Canada’s income and expenditure accounts, gross mixed income has three major components: farm income, non-farm income excluding rent and rental income.

Gross mixed farm income comprises gross proceeds from the sale of agricultural products by unincorporated farmers, including payments made to farmers under government programs, plus the imputed value of farm output consumed by farming households, plus the value of investment in farm-held inventories, less farm operating expenses (excluding depreciation).

Non-farm mixed income excluding rent consists of the net earnings of unincorporated proprietors from their own businesses in all industries except agriculture. It includes the gross mixed income of unincorporated private consultants, accountants, lawyers, doctors and other independent professionals.

Finally, the rental portion of gross mixed income of non-farm unincorporated business includes all gross mixed rental income of individuals in their capacity as owners, including the implicit income they generate by inhabiting a dwelling they own. The latter component is included because, in national accounting, households who own the dwellings in which they live are treated as owning unincorporated enterprises that produce housing services that are consumed by the households of which the owners are members. This imputation is made partly to ensure the measure of production will not vary when shifts occur between owner-occupancy and the renting of residential dwellings.

Gross operating surplus and gross mixed income are more cyclically volatile than the other items in the table. In the year shown, 2009, they account for 37% of GDP at market prices. Not quite half is attributable to consumption of fixed capital and on a net basis operating surplus and mixed income account for just 20% of GDP. Note that consumption of fixed capital of general governments and NPISH units is included as a part of gross operating surplus.<sup>8</sup>

### 5.2.1.3 Taxes less subsidies on production, products and imports

SNA 2008 defines **taxes less subsidies on production, products and imports** as “taxes payable or subsidies receivable on goods or services produced as outputs and other taxes or subsidies on production, such as those payable on the labour, machinery, buildings or other assets used in production” (page 131).

As explained in chapter 4, taxes net of subsidies on production, products and imports must be included in the income-based GDP table because GDP is measured at market prices, which includes the direct impact of these taxes and subsidies. If the measurement was at basic prices, only taxes net of subsidies on production would be included.

### 5.2.2 Expenditure-based GDP at market prices

The other top-level table, displaying expenditure-based GDP at market prices, is shown in Table 5.2. Using 2009 as an example, the table shows GDP at market prices as the sum of final consumption expenditure, gross fixed capital formation, investment in inventories, exports of goods and services, imports of goods and services (a negative item) and the statistical discrepancy. The table includes an additional aggregate called **final domestic**



**demand**, which is the sum of final consumption expenditure and gross fixed capital formation. This aggregate reveals the strength of domestic spending in the economy by excluding investment in inventories and exports of goods and services, and by not subtracting imports of goods and services.

**Table 5.2**  
**Gross domestic product, expenditure-based, 2009**

Components of gross domestic product at market prices	2009 millions of dollars
Final consumption expenditure	1,246,307
Household final consumption expenditure	878,202
Goods	394,542
Durable goods	109,741
Semi-durable goods	66,118
Non-durable goods	218,683
Services	483,660
NPISH final consumption expenditure	22,968
General governments final consumption expenditure	345,137
Gross fixed capital formation	350,517
Business gross fixed capital formation	276,216
Residential structures	101,253
Non-residential structures, machinery and equipment	143,602
Non-residential structures	76,308
Machinery and equipment	67,294
Intellectual property products	31,361
NPISH gross fixed capital formation	2,224
General governments gross fixed capital formation	72,077
Investment in inventories	-5,460
Of which: business investment in inventories	-5,423
Non-farm	-4,744
Farm	-679
Exports of goods and services	445,692
Exports of goods	367,211
Exports of services	78,481
Less: imports of goods and services	468,838
Imports of goods	373,985
Imports of services	94,853
Statistical discrepancy	-853
Gross domestic product at market prices	1,567,365
Final domestic demand	1,596,824

Source: Statistics Canada, table 36-10-0104-01.

### 5.2.2.1 Final consumption expenditure

Final consumption expenditure is, in a sense, the ultimate purpose of the economy as it is portrayed in the national accounts. The other GDP expenditure components—gross fixed capital formation, investment in inventories and exports net of imports—contribute only indirectly, not directly, to national well-being. So this component warrants special attention.

Final consumption expenditure has three major sub-components as shown in Table 5.2, one for households, one for NPISH institutional units and one for general governments. Households are the only consuming institutional sector, but the other two sectors also produce or purchase consumer goods and services for consumption by households. The breakdown in the table shows how total consumption is paid for across the three institutional sectors.<sup>9</sup>

**Household final consumption expenditure** consists of consumer spending by household institutional units on their own behalf.<sup>10</sup> It includes all the goods and services that consumers normally purchase to satisfy their needs and wants: food, clothing, transportation, shelter, and so on. The table shows this aggregate broken down into four principal product-class sub-aggregates: durable goods, semi-durable goods, non-durable goods and services. Canada's national accounts also provide considerable additional product-class detail for household final consumption expenditure, broken down according to purpose using the international standard Classification of Individual Consumption According to Purpose (COICOP).<sup>11</sup> In 2009, the year shown in Table 5.2, household final

consumption expenditure accounted for 71% of total final consumption expenditure, 56% of GDP and 56% of final domestic demand, so it is in many respects the most important component of expenditure-based GDP.

**NPISH final consumption expenditure**, in contrast, is quite small and accounted for just 2% of total final consumption expenditure in 2009. This component consists of expenditures made by non-profit institutions on behalf of households.

**General governments final consumption expenditures** were equivalent to 26% of total final consumption in 2009, or 21% of GDP. As with NPISH final consumption expenditures, general government final expenditures are made for the benefit of households.

General government and NPISH final consumption expenditure are similar in that they include both **collective consumption expenditure** (outlays by governments and NPISH units for the benefit of the community as a whole) and **individual consumption expenditure** (spending by governments and NPISH units for the benefit of specific households or identifiable groups of households). The former expenditures include government spending on national defence, law enforcement, justice and public administration among others. They also include expenditures by political parties, advocacy groups, some charities and other NPISH units with the aim of benefiting the community as a whole. Individual consumption expenditures by governments and NPISH units, in contrast, are undertaken in order to make social transfers in kind. These can include purchases of goods and services from market producers by governments and NPISH units that are then provided to households either without charge or at prices that are not economically significant. An example is food distributed to needy households via food banks. They also include non-market production by governments and NPISH units for the benefit of households. Leading examples of such expenditures are outlays for education and health care, in the case of governments, and NPISH spending to deliver religious and sport-related services to participating households.

Table 5.2 records final consumption expenditures based on the sector that made the expenditures: households, NPISH units or governments. In this presentation, all household consumption expenditures are ‘individual’ while NPISH and government expenditures are split between ‘individual’ and ‘collective’ as described in the previous paragraph. There is an alternative presentation of these statistics, mentioned again later in this chapter, wherein final consumption expenditures are recorded not based on the sector that made the expenditures, but instead based on the sector that benefits from the expenditures. In this presentation the ‘individual’ expenditures by NPISH units and governments are recorded as part of the **actual individual final consumption expenditures** of the household sector, in addition to the expenditures by the households themselves. The remaining portions of NPISH and government expenditures are recorded as **actual collective final consumption expenditures** of the NPISH and government sectors.

### 5.2.2.2 Gross fixed capital formation

Gross fixed capital formation expenditures (also referred to as fixed investment expenditures) are distinguished from final consumption expenditures by their characteristic that the goods purchased under this category are expected to yield a stream of production benefits over a period of time exceeding one year.<sup>12</sup>

As seen in Table 5.2, gross fixed capital formation can be broken out by the type of institutional sector making the expenditure and by the type of capital product involved in the expenditure. In this context the ‘business sector’ refers to a composite from the corporation and household sectors—the universe of incorporated and unincorporated enterprises—and normally accounts for the bulk of gross fixed capital formation.<sup>13</sup> Governments also account for a significant share and NPISH units typically represent a very small portion of the total. Gross fixed capital formation expenditures in the household sector consist of residential construction for owner-occupation and other investments by unincorporated businesses. As noted previously, home-owner-occupiers are treated as unincorporated businesses that invest in residential housing and rent the housing units back to themselves. The non-resident sector, as it is defined in the SNA, never makes gross fixed capital formation expenditures.<sup>14</sup>

Four broad classes of gross fixed capital expenditure are identified in Table 5.2:<sup>15</sup>

- Residential structures
- Non-residential structures
- Machinery and equipment
- Intellectual property products

The **residential structures** category consists of new construction of single- and multi-family homes, renovations to existing homes and ownership transfer costs associated with the purchase and sale of new and existing homes. **New construction expenditures** are estimated according to the work-put-in-place concept, which means that the total market value of a new home typically enters the accounts over a span of several quarterly accounting periods. The **renovations** component includes expenditures for major renovations, such as the installation of a new roof or heating system, and excludes normal upkeep and maintenance such as painting and minor repairs (which are treated as intermediate consumption expenditures in the production process for imputed rent).

Finally, the **ownership transfer costs** component of residential structures investment includes real estate commissions and legal costs associated with buying or selling homes.

The **non-residential structures** component of gross fixed capital formation includes non-residential buildings (factories, stores, malls, office towers, warehouses, schools, hospitals, etcetera) and engineering structures (power and communication networks, hydroelectric dams, nuclear reactors, pipelines, ports, railroads, airports, highways, etcetera). As with residential construction, non-residential construction is measured according to the work-put-in-place concept.

The measurement of both residential and non-residential construction investment excludes the value of the land that is usually implicit within the market price of the structures.<sup>16</sup> This is because land is considered to be a non-produced asset in the national accounts and as such its value does not contribute to the market value of investment expenditures on structures. However, activities aimed at improving land (or preventing its deterioration) such as land clearance or the building of dykes or irrigation systems are considered to be fixed capital investment and are included with non-residential construction.

The **machinery and equipment** category includes a wide range of capital goods. The main sub-categories are industrial machinery and equipment, computers and computer peripheral equipment, communications and audio and video equipment, other electrical and electronic machinery and equipment, furniture, fixtures and prefabricated structures, passenger cars used for production purposes, trucks, buses and other motor vehicles, and aircraft and other transportation equipment.

Finally, the **intellectual property products** category is comprised of three major sub-components which are mineral exploration and evaluation, research and development, and software. *SNA 2008* also includes entertainment, literary or artistic originals as a component of intellectual property assets, but these are not included in Canada's system of macroeconomic accounts at present due to source data limitations. Similarly, while databases are also included in the intellectual property products category, these are also absent in Canada's accounts because they are not considered to be material in this country.

*SNA 2008* recognizes two other categories of gross fixed capital formation that are not recognized by Canada due to source data limitations.

One of these is **cultivated live assets** such as orchards or cattle herds. Productive assets of this kind can certainly be used over a lengthy period of time to produce other products. However, these assets are not capitalized in Canada's system of macroeconomic accounts at present. Rather, they are treated as investment in inventories.

The other missing category is **valuables**.

“Valuables are expensive durable goods that do not deteriorate over time, are not used up in consumption or production, and are acquired primarily as stores of value. They consist mainly of works of art, precious stones and metals and jewellery fashioned out of such stones and metals. Valuables are held in the expectation that their prices, relative to those of other goods and services, will tend to increase over time, or at least not decline. Although the owners of valuables may derive satisfaction from possessing them, they

are not used up in the way that consumption goods, including consumer durables, are used up over time.” (SNA 2008, p. 186)

Canada’s system of macroeconomic accounts does not presently distinguish expenditures on valuables as a type of gross fixed capital formation due to lack of source data. Instead they are included implicitly in final consumption expenditure when acquired by households, NPISH units or government units. Some artwork and other valuables are also included implicitly in the intermediate consumption of corporations.

### 5.2.2.3 Investment in inventories

The production of an institutional unit in a given accounting period consists not only of its production of products in that period for sale during that period, but also its production in that period for sale in subsequent accounting periods. The latter item is referred to as production for inventory and it is another form of gross capital formation.

While an institutional unit can add to inventories, it can also draw down inventories during an accounting period. It is the net addition (positive) or withdrawal (negative) that is referred to as **investment in inventories**. For the economy as a whole, the change in inventories is effectively the gap between aggregate production plus imports and final demand during the accounting period.

SNA 2008 distinguishes five categories of inventories which are:

- Materials and supplies
- Work-in-progress
- Finished goods
- Military inventories
- Goods for resale

The first category, inventories of **materials and supplies**, consists of products acquired by a business for intermediate consumption in some future period. A wide variety of products can be in this category such as office supplies, agricultural and industrial raw materials, fuels, packaging materials and so on. However, natural resource assets ‘in the ground’—forests and minerals, for example—while they are recognized as non-financial, non-produced assets in the balance sheet accounts, are not counted as inventories.

**Work-in-progress** inventories consist of output that is partially completed by a business during the accounting period. This would include a partially completed ship or airplane, for example. However, in Canada work-put-in-place on uncompleted structures, such as new residential or non-residential buildings, is treated as gross fixed capital formation immediately, rather than as work-in-progress inventories.

**Finished goods** are the outputs of a business that are completed but remain unsold at the end of the accounting period.

**Military inventories** consist of single-use military items such as ammunition, missiles and bombs held for possible use in future periods.

Finally, **goods for resale** inventories are products that have been acquired by a company for the purpose of reselling to their customers. Wholesalers and retailers are the main holders of goods for resale inventories.

In Canada, statistics on inventories are compiled according to the following breakdown:<sup>17</sup>

- Business investment in inventories
  - Non-farm inventories
    - ▶ Manufacturing inventories
      - ▶ Durable goods
      - ▶ Non-durable goods

- ▶ Trade
  - ▶ Retail inventories
    - ▶ Durable goods
      - ▶ Of which: motor vehicles
    - ▶ Non-durable goods
  - ▶ Wholesale inventories
    - ▶ Durable goods
    - ▶ Non-durable goods
- ▶ Non-monetary gold inventories
- ▶ Other non-farm inventories
- Farm inventories
  - ▶ Grain inventories
  - ▶ Other farm-held inventories
    - ▶ Livestock
    - ▶ Other crops
  - ▶ Grain in commercial channels
- NPISH investment in inventories
- General government investment in inventories

Farm inventories figure prominently in Canada's national accounts. Grain stocks, in particular, can be quite volatile depending on weather and the irregular pattern of export shipments. Other farm-held inventories also fluctuate a lot, but generally less than grain inventories.

The measurement of inventories for national accounts purposes is complicated by the fact that the valuation of stocks held in inventory can change over time. An item is entered into inventory at the prevailing market price, but when it is withdrawn from inventory in a subsequent period the price may have changed, implying a capital gain or loss for the institutional unit holding the inventory. Such capital gains and losses are excluded from the calculation of gross value added and are instead recorded in the revaluation account (see chapter 6). Thus, the value of the change in inventories is calculated by first converting inventory stocks to constant price valuation, then calculating the change at constant prices and finally converting the change at constant prices to the market price valuation of the accounting period.

Inventory change is considered to be among the most difficult components to measure in the national accounts. Unlike other items in the income and expenditure accounts, investment in inventories is not formally reconciled with the estimates of inventory change in the supply and use accounts.

The investment in inventories component of GDP can sometimes have a large influence on the growth of GDP. For example, when the economy experiences a sharp and unexpected downturn in demand, businesses often produce more goods than the market can absorb, causing a spike in their inventories. In subsequent periods, as businesses reduce those stocks by cutting production, there will be a decline in inventories. Swings in inventories, as in this example, can amplify the business cycle considerably.

There can also be significant trend influences on investment in inventories. Of particular importance in recent years is the fact that businesses have made remarkable progress in using information technology to manage inventory levels more effectively, with the goal of keeping them as low as possible. Holding inventories entails significant costs and the steps to reduce average inventory levels have led to significant cost savings in some industries, while also reducing their volatility.

#### 5.2.2.4 Exports of goods and services

Canada is a trading nation and exports of goods and services comprise a significant share of GDP. In 2009 that share was 29%. The United States remains the number one destination for Canadian exports by a wide margin. However, exports are sold to countries all over the world and indeed, efforts have been made in recent decades to broaden the access of Canadian businesses to global markets through a variety of ‘free trade agreements’.

The level of exports is sensitive to economic cycles outside Canada and also responds flexibly to movements in the international value of the Canadian currency and in commodity and other prices.

Statistics on exports of goods are estimated from Customs data collected by the Canada Border Services Agency (CBSA). They are very detailed, both by product class and by country of destination.<sup>18</sup> Among the more significant product classes are energy products, farming and fishing products, metal ores and non-metallic minerals and associated products, basic industrial products such as chemicals and plastics, forestry products and building materials, industrial, electronic and electrical machinery and equipment, motor vehicles and parts, aircraft and other transportation equipment and parts, and a variety of consumer goods.

While Customs data are the source of the information, the conceptual basis for the measurement of exports (and imports) is the set of conventions that have been developed for purposes of Canada’s balance of international payments statistics (discussed in more depth in chapter 8). These statistics are consistent with *SNA 2008* and with the International Monetary Fund’s *Balance of Payments Manual*, sixth edition. Numerous balance of payments adjustments are applied to the Customs data to correct problems related to coverage, timing, valuation for inland freight, other valuation issues and residence. These adjustments are discussed in more detail in chapter 8.

Statistics on exports of services are more difficult to estimate because unlike flows of goods, flows of services crossing the border are ‘invisible’. For this reason services exports cannot generally be detected by CBSA and must be measured by surveys or other means.

Services accounted for 17% of total exports in 2009. They include travel (accommodation, food and other services for visitors to Canada), transportation (air, shipping and trucking), commercial (financial services including FISIM, insurance, legal services, management services, computer and information technology services, engineering and other technology services) and general government services (largely expenditures in Canada by foreign governments and by their staff recruited abroad, as well as overheads to administer official assistance to other countries).

The world economy has become increasingly integrated in recent decades, due in substantial part to new and improved transportation and communication technologies. In this rapidly changing environment it has become more and more common for enterprises to ship goods from one country to another for additional processing, after which they are returned to the original country. Traditionally the export and import of such goods for processing has been measured on a gross basis, which serves to inflate the magnitude of both exports and imports and also requires the imputation of associated financial transactions that, in fact, do not take place. In a situation where there is no change in ownership of the goods being shipped, processed and returned, a more accurate depiction of the circumstance is one in which a goods processing service is being traded, rather than the export and import of two goods, one prior to the processing and the other after processing. *SNA 2008* recommends a change from the traditional gross treatment of goods being shipped, processed and returned to the just-described goods-for-processing approach and Canada is aiming to do this in a few years’ time. When this change is eventually made there will be important implications for the magnitude and interpretation of merchandise and non-merchandise trade flows, for the supply and use accounts and for the financial accounts.

#### 5.2.2.5 Imports of goods and services

As a trading nation, Canada imports as well as exports goods and services. Sometimes imports exceed exports, implying a trade deficit, and sometimes they are less than exports, indicating a trade surplus.

Imports are embedded implicitly within the other lines of Table 5.2—final consumption expenditures, gross fixed capital formation, investment in inventories and exports of goods and services. For example, when households purchase food and clothing (final consumption expenditures) or a business invests in a new piece of machinery (gross fixed capital formation), those products might have been imported into Canada. Imports are deducted in Table 5.2 to net out these imports so the table’s grand total—gross domestic product at market prices—measures only Canadian gross value added.

Imports of goods, like exports of goods, are recorded at the border by CBSA and this permits them to be tabulated in considerable detail by product class and country of origin.<sup>19</sup> They are then adjusted to a balance of payments basis in a manner similar to that for exports. The types of products imported give greater weight to industrial, electronic and electrical machinery and equipment, motor vehicles and consumer goods. As for exports, imports of services are available in less detail, with a breakdown into the same four categories: travel, transportation, commercial and general government services.

### 5.3 Canada's current and capital institutional accounts

This section explains the middle portion of the *SNA 2008* sequence of accounts that was described in chapter 3, as those accounts are released in Canada. The accounts are shown separately for each of the six top-level sectors: households, non-profit institutions serving households, non-financial corporations, financial corporations, governments and non-residents.

The first two accounts of the full sequence, the production account and the generation of primary incomes account, are not presently available in Canada by sector, although as discussed in chapter 4 they are available by industry. In addition, the entrepreneurial income account, the allocation of other primary income account, the redistribution of income in kind account and the use of adjusted disposable income account have not yet been developed. Estimates for the elements in these six accounts will be released in the future.

Finally, the last four accounts of the sequence, the financial account, the other changes in the volume of assets account, the revaluation account and the balance sheet account, are explained in chapter 6 and will not be further discussed here.

Accordingly this section focuses on the following four accounts, which are central to the full sequence of accounts: the allocation of primary income account, the secondary distribution of income account, the use of disposable income account and the capital account. For each of the six institutional sectors, these four accounts are combined into a single table.

While reviewing these tables in the sub-sections that follow, take note of the fact that the “payment to” elements in one table correspond exactly to “receipt from” elements in other tables. Thus, for example, payments of interest by non-financial corporations to non-residents in the allocation of primary income account of the non-financial corporations sector are, not surprisingly, matched by receipts of interest by non-residents from non-financial corporations in the allocation of primary income account of the non-residents sector. Similarly, current transfers paid by households to general governments in the form of personal income tax as shown in the secondary distribution of income account of the household sector are exactly matched by current transfers received by general governments from households in the form of personal income tax as shown in the secondary distribution of income account of the general governments sector.

#### 5.3.1 Households sector

Table 5.3 shows the four accounts for the households sector. The first 11 lines of the table are the allocation of primary income account for the sector, with the balancing item being primary household income (that is, the gross balance of primary incomes of households, in strict *SNA 2008* terminology). The next 18 lines show the secondary distribution of income account with household disposable income as the balancing item. The use of disposable income account is in the next five lines with household net saving as the balancing item. Finally, the capital account is in the remaining lines with net lending or borrowing as the balancing item.

Recall that the allocation of primary income account focuses on households in their capacity as recipients of primary income. The table shows that in 2009 they received just over \$1 trillion, of which most was in the form of compensation of employees. Although the vast majority of the employee compensation was paid by resident entities, over \$1 billion was also paid by non-resident institutional units. Mixed income accounted for 13% of household primary income, with rental income (including imputed rental income on owner-occupied dwellings) being the largest contributor. Property income received was \$152 billion and property income paid (the only ‘use’ in the account) was \$56 billion. The property income inflows include interest and dividends received by households, mainly from banks, other corporations and governments, while the outflows include mortgage, credit card and other interest paid on loans to households, again mainly from banks, other corporations and governments.

**Table 5.3**  
**Current and capital accounts, households, 2009**

Components of the current and capital accounts	2009
	millions of dollars
Compensation of employees	810,556
Paid to residents by resident entities	809,195
Paid to residents by non-resident entities	1,361
Plus: net mixed income	140,702
Non-farm	61,254
Farm	3,084
Rental income of households	76,364
Plus: net property income	96,547
Property income received	152,106
Less: property income paid	55,559
Equals: primary household income	1,047,805
Primary household income	1,047,805
Plus: current transfers received	218,275
From non-profit institutions serving households	3,668
From corporations	58,697
From general governments	153,753
Employment insurance benefits	18,822
Social security benefits	47,877
Other benefits	87,054
From non-residents	2,157
Less: current transfers paid	385,266
To non-profit institutions serving households	13,291
To corporations	96,754
To general governments	270,642
Personal income tax	184,925
Other current transfers	85,717
Of which: contributions to social insurance plans	75,390
To non-residents	4,579
Equals: household disposable income	880,814
Household disposable income	880,814
Less: household final consumption expenditure	878,202
Plus: change in pension entitlements	38,057
Equals: household net saving	40,669
Household saving rate (percent)	4.6
Household net saving	40,669
Plus: consumption of fixed capital at replacement cost	46,479
Plus: net capital transfers received	-961
From non-profit institutions serving households	-1,281
From corporations	0
From general governments	324
From non-residents	-4
Equals: gross saving and capital transfers	86,187
Less: non-financial capital acquisitions	123,226
Fixed capital	123,571
New assets	111,840
Existing assets	11,731
Inventories	-345
Equals: net lending or net borrowing	-37,039

Source: Statistics Canada, table 36-10-0112-01.

The payment of wages and salaries by an employer to an employee is a type of transaction that is partly **rerouted** in the SNA. In the real world there are typically two transactions involved, one of which is the payment of wages and salaries directly by the employer to the employee and the other of which is the payment by the employer to the government of personal income taxes accruing on those wages and salaries. The second of these two transactions is the legally mandated withholding tax that is payable by the employer. In the SNA, however, the second of these two transactions is rerouted through the household sector, which means it is treated as if the employer paid the entire amount—the wages and salaries and the tax payment—to the employee and the latter, in turn, paid the taxes to the government. This rerouting provides a more economically useful depiction of the transactions involved since it ultimately the employee, not the employer, who is responsible for paying the accrued income tax.



The financial asset reserves held by life insurance companies and pension funds also give rise to rerouted transactions. These reserves are regarded as the property of the insurance policy holders and the pension asset holders. In the national accounts, property income earned on these reserve assets is deemed to be paid out to households and then paid back as insurance premium or pension contribution supplements, although in actuality the property income is retained by the insurance companies and pension fund administrators. As a result, the saving of households includes the amount of the rerouted property income while the saving of insurance enterprises and pension funds does not.

The secondary distribution of income account shows how primary household income is transformed into household disposable income. Current transfers received by households are added, \$218 billion in 2009, while current transfers paid are subtracted, \$385 billion. A relatively small amount of transfers are received from NPISH units and non-residents with the vast majority of transfers coming from general governments. The latter include Employment Insurance benefits, Old Age Security benefits, welfare benefits and a range of other federal, provincial and local government transfers to households. Current transfers paid to other sectors include most importantly \$185 billion of personal income taxes, as well as \$75 billion of contributions to social insurance plans and a variety of other current transfer payments to governments, NPISH units and non-residents.

The use of disposable income account shows household final expenditure of \$878 billion being deducted from household disposable income of \$881 billion, plus an adjustment for pension entitlements of \$38 billion, yielding the balancing item, household net saving, of \$41 billion and a saving rate of 4.6%. The saving rate is simply net saving expressed as a percentage of disposable income.

Finally, in the capital account the household net saving 'resource' is augmented by \$46 billion of consumption of fixed capital (at replacement cost) and net capital transfers of -\$1 billion implying total 'resources' of \$86 billion. 'Uses' consist of non-financial capital acquisitions of \$123 billion, most of which is residential construction investment, home renovations and transfer costs associated with sales of existing real estate assets, implying net borrowing by the sector in the amount of \$37 billion.

### 5.3.2 Non-profit institutions serving households sector

The accounts for the NPISH sector, for the example year 2009, are shown in Table 5.4. As is the case for the households sector and the other sectors still to come, the table displays the allocation of primary income account, the secondary distribution of income account, the use of disposable income account and the capital account.

**Table 5.4**  
**Current and capital accounts, non-profit institutions serving households, 2009**

Components of the current and capital accounts	2009 millions of dollars
Net property income	1,092
Property income received	2,468
Less: property income paid	1,376
Equals: primary NPISH income	1,092
Primary NPISH income	1,092
Plus: current transfers received	32,775
From households	13,291
From corporations	1,993
From general governments	17,163
From non-residents	328
Less: current transfers paid	9,384
To households	3,668
To corporations	0
To general governments	3,359
To non-residents	2,357
Equals: NPISH disposable income	24,483
NPISH disposable income	24,483
Less: net NPISH final consumption expenditures	22,968
Equals: NPISH net saving	1,515
NPISH net saving	1,515
Plus: consumption of fixed capital at replacement cost	860
Plus: net capital transfers received	1,781
From households	1,281
From corporations	0
From general governments	500
From non-residents	0
Equals: gross saving and capital transfers	4,156
Less: non-financial capital acquisitions	2,240
Fixed capital	2,224
New capital	2,224
Existing capital	0
Inventories	16
Equals: net lending or net borrowing	1,916

Source: Statistics Canada, table 36-10-0115-01.

In 2009 primary NPISH income consisted entirely of net property income allocations, since NPISH units did not receive income in the other forms of primary income (compensation of employees, gross operating surplus, gross mixed income and revenue from taxes less subsidies on production and imports).

In the year shown in the table, the disposable income of the NPISH sector greatly exceeded its primary income because it received positive net current transfers from both the household sector (for example, contributions to political parties) and the government sector (for example, government grants to charitable institutions). The corporate sector also provided smaller net transfers to the sector. The non-resident sector, in contrast, received net transfers from the sector rather than contributing to it on a net basis. This reflects the fact that some NPISH units are specifically focussed on providing assistance to non-residents who are in need abroad (for example, the International Red Cross and Doctors Without Borders Canada).

NPISH net saving was positive in 2009 as the sector's final consumption expenditures were less than its disposable income by 6%. (Recall that the sector's final consumption expenditures are made on behalf of the household sector and contribute to the actual consumption of the latter.) Net saving in the NPISH sector has often fluctuated between positive and negative values over time.

The sector's estimated gross saving was positive at \$2,375 million, because its consumption of fixed capital at replacement cost was \$860 million and its net saving was \$1,515 million. It also received positive net capital transfers from the household sector in the amount of \$1,281 million (for example, these transfers might include donations to building funds for new churches or recreational facilities) and \$500 million from the government sector, so gross saving and capital transfers in total were \$4,156 million.

Non-financial capital acquisitions by the NPISH sector were \$2,240 million in 2009, consisting of \$2,224 million in new capital investment expenditures plus \$16 million of investment in inventories. This amount was less than gross saving and capital transfers, so the sector engaged in net lending of \$1,916 million.

### **5.3.3 Non-financial corporations sector**

The capital and current accounts for the non-financial corporations sector have the same basic structure as those just examined for the household and NPISH sectors, but the salient elements in the accounts are quite different. In particular, net operating surplus is present as a component of primary income (for the non-corporate sectors it is not) while compensation of employees is, of course, absent, property income flows are much larger and current transfers in both directions are, with the exception of corporate income tax payments, far less significant. The statistics for 2009 are displayed in Table 5.5.

**Table 5.5**  
**Current and capital accounts, non-financial corporations, 2009**

Components of the current and capital accounts	2009 millions of dollars
Net operating surplus	155,702
Plus: net property income	-101,344
Property income received	44,557
Interest received from residents	14,533
Interest received from non-residents	2,243
Dividends received from residents	19,647
Dividends received from non-residents	8,134
Other receipts	0
Less: property income paid	145,901
Interest paid to residents	30,830
Interest paid to non-residents	19,620
Dividends paid to residents	53,733
Dividends paid to non-residents	23,639
Remitted profits of government business enterprises to government	3,133
Other payments	14,946
Equals: primary income	54,358
Primary income	54,358
Plus: current transfers received	892
From households	0
From non-profit institutions serving households	0
From financial corporations to non-financial corporations	0
From non-residents	892
Less: current transfers paid	39,881
To households	0
To non-profit institutions serving households	1,235
To financial corporations from non-financial corporations	0
To general governments	38,235
Of which: taxes on income (corporate income tax)	38,235
To non-residents	411
Equals: disposable income	15,369
Disposable income	15,369
Equals: net saving	15,369
Net saving	15,369
Plus: consumption of fixed capital at replacement cost	154,894
Plus: net capital transfers received	3,189
From households	0
From non-profit institutions serving households	0
By non-financial corporations from financial corporations	0
From general governments	3,664
From non-residents	-475
Equals: gross saving and capital transfers	173,452
Less: capital acquisitions	137,760
Fixed capital	145,095
New capital	155,230
Existing capital	-10,135
Inventories	-7,335
Equals: net lending or net borrowing	35,692

Source: Statistics Canada, table 36-10-0116-01.

The largest element determining primary income of the non-financial corporations sector is the net operating surplus. To this, property income received is added and property income paid is subtracted. Corporations generally pay a lot more property income to the other sectors than they receive from those sectors. Interest and dividends are received from resident sectors as well as, to a lesser extent, non-residents. Payments of property income by non-financial corporations take a wide variety of forms including bank and bond interest, dividends, remitted profits of government business enterprises to governments and some others. In 2009, the balance of primary incomes of the sector, comprised of \$156 billion net operating surplus and -\$101 net property income received, was \$54 billion.

In the secondary distribution of income account, current transfers received from other sectors are typically relatively modest (just \$892 million in 2009) while most current transfers paid to other sectors are accounted for by taxes paid to governments. The only other current transfers paid out consist of charitable contributions to NPISH units of \$1,235 and current transfers to non-residents of \$411 million. The sector's disposable income was \$15 billion in 2009 as compared to its primary income of \$54 billion, with most of the difference accounted for by taxes paid to governments.

In the capital account, consumption of fixed capital was large at \$155 billion in 2009, compared to other sectors. This reflects the fact that most of Canada's capital stock is held by non-financial corporations. Net capital transfers received by the sector were \$3,189 million. Since the sector incurs no final consumption expenditure, gross saving and capital transfers were \$173 billion for the sector.

In the capital account in 2009, new fixed capital acquisitions were \$155 billion, net acquisitions of existing fixed capital were -\$10 billion (this means non-financial corporations sold \$10 billion of existing capital assets to other sectors, on a net basis) and inventory investment was -\$7 billion. Adding these up yields total capital acquisitions of \$138 billion which, when subtracted from gross saving plus capital transfers, gives net lending for the sector of \$36 billion.

### 5.3.4 Financial corporations sector

For the financial corporations sector, the main component of primary income is net operating surplus (see Table 5.6). Net property income is typically small, being the difference between estimates for property income received and paid that are both quite large, reflecting the financial intermediation role of this sector. The comparatively large size of these property income flows reflects the nature of the business that financial corporations are in—borrowing funds at relatively low rates of interest and relending those funds for a higher rate of return.

**Table 5.6**  
**Current and capital accounts, financial corporations, 2009**

Components of the current and capital accounts	2009
	millions of dollars
Net operating surplus	17,878
Plus: net property income	-4,466
Property income received	184,433
Interest received from residents	109,036
Interest received from non-residents	6,642
Dividends received from residents	62,668
Dividends received from non-residents	6,087
Other receipts	0
Less: property income paid	188,899
Interest paid to residents	98,587
Interest paid to non-residents	10,482
Dividends paid to residents	73,574
Dividends paid to non-residents	3,247
Remitted profits of government business enterprises to government	3,009
Other payments	0
Equals: primary income	13,412
Primary income	13,412
Plus: current transfers received	97,010
From households	96,754
From non-profit institutions serving households	0
From financial corporations to non-financial corporations	0
From non-residents	256
Less: current transfers paid	75,125
To households	58,697
To non-profit institutions serving households	758
To non-financial corporations from non-financial corporations	0
To general governments	15,084
Of which: taxes on income (corporate income tax)	15,084
To non-residents	586
Equals: disposable income	35,297
Disposable income	35,297
Less: change in pension entitlements	38,057
Equals: net saving	-2,760
Net saving	-2,760
Plus: consumption of fixed capital at replacement cost	16,861
Plus: net capital transfers received	-77
From households	0
From non-profit institutions serving households	0
By non-financial corporations from financial corporations	0
From general governments	-77
From non-residents	0
Equals: gross saving and capital transfers	14,024
Less: capital acquisitions	9,810
Fixed capital	7,553
New capital	9,146
Existing capital	-1,593
Inventories	2,257
Equals: net lending or net borrowing	4,214

Source: Statistics Canada, table 36-10-0116-01.

All told, net operating surplus was \$18 billion, primary income was \$13 billion and disposable income was \$35 billion. Consumption of fixed capital was an estimated \$17 billion and net capital transfers received were negative and very small. New fixed capital acquisitions were \$9 billion and existing capital was divested in the amount of \$2 billion. Accordingly, in 2009 the sector was a net lender of \$4 billion to other sectors.

### 5.3.5 Government sector

The government sector is quite unlike other sectors. As seen in Table 5.7, its primary income comes mainly from taxes on production, products and imports (net of subsidies). These totalled \$172 billion in 2009. Net property income for the sector was negative (-\$17 billion) reflecting substantial amounts of interest on public debt paid by some Canadian governments.

**Table 5.7**  
**Current and capital accounts, general governments, 2009**

Components of the current and capital accounts	2009
	millions of dollars
Taxes on production, products and imports (net of subsidies)	171,868
Taxes on products and imports	112,629
Less: subsidies on products and imports	10,413
Taxes on production	75,340
Less: subsidies on production	5,688
Plus: net property income	-17,368
Property income received	40,553
Less: property income paid (including interest on debt)	57,921
Equals: primary general governments income	154,500
Primary general governments income	154,500
Plus: current transfers received	332,739
From households	270,642
Personal income tax	184,925
Other current transfers from households	85,717
Of which: contributions to social insurance plans	75,390
From non-profit institutions serving households	3,359
From corporations	53,319
From non-residents	5,419
Withholding taxes	4,998
Other current transfers from non-residents	421
Less: current transfers paid	175,517
To households	153,753
To non-profit institutions serving households	17,163
To non-residents	4,601
Equals: general governments disposable income	311,722
General governments disposable income	311,722
Less: net general governments final consumption expenditure	345,137
Equals: net general governments saving	-33,415
Net general governments saving	-33,415
Plus: consumption of fixed capital	49,195
Plus: net capital transfers received	-4,748
From households	-324
From non-profit institutions serving households	-500
From corporations	-3,587
From non-residents	-337
Equals: general governments gross saving and capital transfers	11,032
Less: general governments non-financial capital acquisitions	72,021
Fixed capital	72,074
New capital	72,077
Existing capital	-3
Inventories	-53
Equals: net lending or net borrowing	-60,989

Source: Statistics Canada, table 36-10-0118-01.

Current transfers received by governments were \$333 billion in 2009, reflecting mostly personal and corporate income taxes and contributions to social insurance plans. These transfers are a positive contributor to government sector disposable income and an equal but negative contributor to household and corporate sector disposable incomes. Current transfers paid by governments in 2009 included \$154 billion to households (Old Age Security, Guaranteed Income Supplement, welfare, etcetera), \$17 billion to NPISHs and \$5 billion to non-residents (mainly official development assistance). In 2009, disposable income of governments was \$312 billion, about double the level of primary income. It should be noted there are also a number of large inter-governmental transfers for health, education, welfare, equalization and other purposes, but these cancel out when, as here, the focus is on the total government sector.

In the use of disposable income account, government sector net final consumption expenditures, for both individual and collective consumption, are quite large. In 2009 they were \$345 billion, so net government sector saving was -\$33 billion. Consumption of fixed capital by governments was \$49 billion, so gross saving was an estimated \$16 billion. Net capital transfers received by governments were -\$5 billion, so gross saving and net capital transfers together were \$11 billion. Since new capital acquisitions by governments were \$72 billion in 2009, the sector had net borrowing from other sectors of \$61 billion that year. A major factor explaining this outcome was that 2009, the example year, was a recessionary period and some large Canadian governments adopted stimulative fiscal policies that involved infrastructure and public works projects.

### 5.3.6 Non-resident sector

The primary income of the non-resident sector, shown in Table 5.8, is made up of three components. Keep in mind that the non-resident sector is defined from the perspective of the non-resident, implying that imports are a 'resource' and exports are a 'use'.

The first is the external balance of trade in goods and services as viewed from the perspective of non-residents (imports minus exports), which was a surplus of \$23 billion in 2009. This shows the net revenue received by non-residents resulting from Canadian imports of products from other countries less Canadian sales in the form of exports to other countries.

The second component, net property income, is the property income (interest and dividends) received by non-residents from Canadian resident institutional units less the property income paid by non-residents to Canadians. In 2009, property income received by non-residents from Canadians was \$65 billion while property income paid by non-residents to Canadians was \$39 billion. The positive net property income of non-residents in 2009 reflects, in part, the fact that Canada's liabilities to the rest of the world exceeded its assets abroad in that year. As shown in the international investment position (discussed in chapter 8) and in the national balance sheet accounts (discussed in chapter 6), the non-resident sector had assets of \$2,214 billion in Canada at the end of 2009 while Canadians had assets abroad of just \$2,010 billion.

The third and smallest component of non-resident sector primary income is net compensation of employees. In 2009, non-residents working but not residing in Canada were paid \$3 billion while Canadians working but not residing abroad received compensation of \$1 billion.



**Table 5.8**  
**Current and capital accounts, non-residents, 2009**

Components of the current and capital accounts	2009 millions of dollars
External balance of goods and services	23,146
Sales of goods (imports)	373,985
Sales of services (imports)	94,853
Less: purchases of goods (exports)	367,211
Less: purchases of services (exports)	78,481
Plus: net property income	25,539
Property income received	64,902
Interest from corporations	30,102
Interest from non-financial corporations	19,620
Interest from financial corporations	10,482
Interest from other sectors	7,914
Dividends from Canadians	26,886
Dividends from non-financial corporations	23,639
Dividends from financial corporations	3,247
Less: property income paid	39,363
Interest paid to corporations	8,885
Interest paid to non-financial corporations	2,243
Interest paid to financial corporations	6,642
Interest paid to other sectors	4,795
Dividends paid to Canadians	25,683
Dividends to non-financial corporations	8,134
Dividends to financial corporations	6,087
Dividends paid to other sectors	11,462
Plus: net compensation of employees	1,517
Compensation of employees, non-residents working in Canada	2,878
Less: compensation of employees, Canadians working abroad	1,361
Equals: primary non-resident income	50,202
Primary non-resident income	50,202
Plus: current transfers received	12,534
Less: current transfers paid	9,052
Equals: non-residents disposable income	53,684
Non-resident disposable income	53,684
Equals: non-resident net saving	53,684
Plus: net reinvested earnings on direct investment	-7,494
Equals: balance of payments surplus (-) or deficit (+) on current account	46,190
Non-resident net saving	53,684
Plus: net capital transfers received	816
From households	4
From non-profit institutions serving households	0
From corporations	475
From general governments	337
Equals: gross saving and capital transfers	54,500
Less: non-resident fixed capital acquisition	0
Equals: net lending	54,500

Source: Statistics Canada, table 36-10-0121-01.

The disposable income of the non-resident sector is equal to the sector's primary income plus the current transfers it receives from Canada net of the current transfers it pays to Canadians. These transfer flows between the five resident sectors and the non-resident sector were discussed in the previous sections. To recap, non-residents receive personal remittances from Canadian households, pensions from Canadian pension funds and foreign assistance transfers from the NPISH and government sectors. Non-residents also send personal remittances and pensions to Canadian households.

In the case of the non-resident sector, net saving is the same as disposable income since, according to *SNA 2008* concepts, the non-resident sector does not make final consumption expenditures. Disposable income and net saving were both \$54 billion in 2009.

Consumption of fixed capital is always zero in the non-resident sector since, consistent with *SNA 2008* concepts, non-residents cannot hold non-financial assets in Canada. Capital transfers between the non-resident sector and the five resident sectors are typically quite small, as discussed in the previous sections. Accordingly, gross saving and capital transfers of non-residents were \$55 billion in 2009 and this was also the sector's net lending.

### 5.3.7 Total economy

Table 5.9 provides a summary of the key totals shown for the six sectors in Table 5.3 through Table 5.8. Several observations are worth noting.

The first is that total primary income over the six sectors is equal to total disposable income. This reflects the fact that the current transfers accounting for the difference between primary and disposable income net out to zero (for every dollar received as a transfer in one sector there is a matching dollar paid as a transfer by another sector). The sectors that gained from transfers in 2009, on net basis, were the NPISH, financial corporations, general government and non-resident sectors, while the other two sectors had disposable incomes that were lower than their primary incomes.

**Table 5.9**  
**Current and capital accounts summary, all sectors, 2009**

Sector or aggregate	Primary income	Disposable income	Gross saving and capital transfers	Non-financial capital acquisitions	Net lending (+) or borrowing (-)
	millions of dollars				
Households	1,047,805	880,814	86,187	123,226	-37,039
Non-profit institutions serving households	1,092	24,483	4,156	2,240	1,916
Non-financial corporations	54,358	15,369	173,452	137,760	35,692
Financial corporations	13,412	35,297	14,024	9,810	4,214
General governments	154,500	311,722	11,032	72,021	-60,989
Non-residents	50,202	53,684	54,500	0	54,500
Statistical discrepancy	...	...	1,706	...	1,706
Total	1,321,369	1,321,369	345,057	345,057	0
Gross national income	1,271,167	...	...	...	...
Gross national disposable income	...	1,267,685	...	...	...
Gross national saving	...	...	290,557	...	...
Gross national investment	...	...	...	345,057	...

... not applicable

Source: Statistics Canada.

Another fact emerging in Table 5.9 is that total gross saving and capital transfers is equal to non-financial capital acquisitions. However, this equality only holds when the total statistical discrepancy is included as a source of saving. This discrepancy, the total difference between income-based GDP and expenditure-based GDP, represents a source of gross saving that was measured but could not be allocated by sector.

This can be seen by returning to equation (5.6) and rearranging terms as follows:

(5.7)

Gross fixed capital formation + investment in inventories = Compensation of employees + taxes less subsidies on production, products and imports + gross operating surplus + gross mixed income + (imports – exports) – final consumption expenditure + 2×statistical discrepancy

The left-hand side of the equation shows non-financial capital acquisitions and the right-hand side includes the gross saving of the households, NPISHs, governments, corporations and non-residents sectors, with current and capital transfers and property income allocations consolidated out.

Table 5.9 also shows that total net lending or borrowing over all sectors, including the statistical discrepancy, is zero. This reflects the fact that all lending must necessarily be matched by an equal amount of borrowing.

The last four lines of Table 5.9 show the national gross totals, aggregated over the five resident sectors. Gross national income is the sum of primary incomes of those sectors. Gross national disposable income was somewhat smaller than gross national income in 2009 and is the sum of the disposable incomes of the resident sectors. Gross national saving is the sum of gross saving by each of the resident sectors. Finally, gross national investment exceeds gross national saving in 2009 and is also the total over the five resident sectors. The difference between investment and saving is the amount that Canada borrowed from non-residents or in other words the net lending of the non-resident sector.

#### 5.4 Provincial and territorial income and expenditure accounts

Canada's income and expenditure accounts are not just available for the nation as a whole. They are also released on an annual basis for each of the provinces and territories individually. In fact, the national estimates are broken down into 14 regional sub-components: ten for the provinces, three for the territories and one for 'outside Canada', which consists of Canada's embassies and military bases (or 'territorial enclaves') abroad.<sup>20</sup>

The provincial and territorial estimates are released about 11 months after the reference year. They are revised in subsequent years to incorporate additional source data and to ensure they are consistent with the national estimates, which are first released about 60 days after the end of the reference year and are themselves revised in subsequent periods. The preliminary provincial and territorial estimates have a longer release lag than the preliminary national estimates because, in part, whereas the latter are based on monthly and quarterly survey and administrative data, the former rely to a greater extent on annual survey and administrative data that have a longer release lag.

The income- and expenditure-based GDP at market prices tables for the provinces and territories are similar to Table 5.1 and Table 5.2 for Canada. The only difference is the addition of inter-provincial-and-territorial exports and imports to the second table (accompanying international exports and imports). The balancing items in these tables, gross operating surplus and gross mixed income, can be calculated using establishment statistics, as was discussed in chapter 4.

While the income- and expenditure-based GDP tables are estimated for the provinces and territories, it is not possible to estimate the full sequence of accounts for them. The reason is the conceptual and practical difficulties that are posed by the existence of multi-provincial corporations, NPISHs and governments. While the vast majority of corporations, NPISHs and governments have a one-province-only residency status, there are some very large and important ones that do not. In the case of corporations, one thinks, for example, of the big chartered banks and insurance companies, major retailers and transportation companies that operate nation-wide.<sup>21</sup> For NPISHs, consider some national charitable organizations. In the case of governments the prominent case is, of course, the Government of Canada.

A producing institutional unit (for example, a corporation) can have many establishments, some resident in one province or territory and some in others. Production and the generation of primary incomes can be associated with establishments but other transaction types, such as property income allocations and transfers, cannot.

A corporation, NPISH or government will have a head office as well, located in one of the provinces or territories, but it would be unreasonable to assign the entire institutional unit's property income, current transfers, financial flows and assets and liabilities solely to the province or territory where the head office is located. Yet any other allocation of property incomes, current transfers, financial flows and assets and liabilities to provinces and territories would be arbitrary.<sup>22</sup>

So the problem is that the existence of multi-provincial institutional units makes it difficult to assign provinces or territories of origin and destination with respect to the allocation of property incomes, the distribution of current transfers or for that matter transactions in financial assets and liabilities. One cannot, in the absence of arbitrary regional assignments, calculate provincial and territorial breakdowns for the balance of primary income, disposable income, saving, net borrowing/lending or net worth for corporations, NPISHs and the Government of Canada. Quite simply, some institutional units are national in scope and have no well-defined regional residence.<sup>23</sup>

Households are an exception to the point just made. For this type of institutional unit the province or territory of residence is always well defined. This means it is possible to estimate the provincial and territorial sequence of accounts for the household sector even though it is not so for the counterpart sectors that households transact with. The current account for the household sector is available in table 36-10-0224-01.

Statistics Canada also releases provincial and territorial breakdowns for the Government of Canada, despite the issues mentioned above. These are based on arbitrary allocations for the federal government components and for this reason should be considered illustrative rather than definitive or unique. For example, interest paid on the federal public debt is allocated to provinces and territories on a per capita basis, although alternative allocations are also reasonable such as per household or per dollar of provincial/territorial GDP.

## 5.5 Final expenditure accounts at constant prices

The discussion of the income and expenditure accounts so far has focused on the estimates **at current prices**. In the case of the expenditure-based GDP accounts, these estimates change, between one period and another, because the associated prices and underlying volumes are both likely to change. For example, if household expenditure on men's shirts increased 5% between 2008 and 2009, some of that change would be due to higher or lower prices for shirts and the rest of the change would be attributable to households purchasing more or fewer shirts. To provide valuable analytical understanding, all of the expenditure-based GDP estimates at current prices are decomposed into separate price and volume components. This applies to the provincial and territorial estimates as well as the national ones.

The decomposition of expenditure-based GDP into price and volume components is based on the fact that most of the final expenditure components, which were discussed in Section 5.2.2, are comprised of products that are bought and sold on competitive markets at observable prices. For most expenditure product classes it is possible to construct a price index time series indicating the average change through time in the prices of products within that class. For example, the Consumer Price Index does precisely that for various classes of consumer products. The estimates at current prices for a particular expenditure time series (for example, expenditure by households on men's shirts) can then be divided by the corresponding price index time series—a process known as **deflation**—to derive the resultant volume, or 'real', time series. Finally, the price indexes and the resulting volume indexes for the full range of expenditure classes making up expenditure-based GDP can be aggregated, yielding a price-volume decomposition for GDP and its major components.

In Canada, the aggregation of the various price and volume indexes comprising expenditure-based GDP is done using the well-known chain Fisher index number formula, as is recommended by *SNA 2008*.<sup>24</sup> This aggregation process is explained in chapter 7 of the current volume. Alternative price and volume estimates using the Laspeyres fixed-basket formula are also made available, both at the national level and for each province and territory.

No such decomposition is provided for most of the income-based GDP estimates, however, because these estimates cannot easily be interpreted as the product of distinct and measurable price and volume components. This is perhaps most obvious for gross operating surplus and gross mixed income, which are balancing items. But it is also true for compensation of employees and taxes less subsidies on production, products and imports, the other two major components of income-based GDP. One might argue that compensation of employees is, in fact, the product of the price and volume of 'labour' employed, and so should also be decomposed similarly. However, labour services are far from homogeneous and the 'prices' that employers pay for these services are generally complex and

multi-faceted so no such decomposition is presently attempted.<sup>25</sup> In the case of property income receipts and payments or current and capital transfers as recorded in the sequence of accounts there is no underlying ‘product’ of any kind with which to associate prices and volumes. Accordingly the estimates for gross and net national income, national disposable income and gross national saving also are not decomposed into price and volume components.

However, a few other measures of ‘real’ income are available in Canada’s system of macroeconomic accounts: **real gross domestic income (GDI), real gross national income (GNI), and real personal disposable income (PDI)**.<sup>26</sup> The first of these gauges the purchasing power of the total incomes generated by domestic production. This purchasing power can change, from one period to the next, when the **terms of trade** change—that is, when export prices rise or fall relative to import prices. *SNA 2008* defines **the trading gain or loss from changes in the terms of trade** as the difference between real GDI and real GDP.<sup>27</sup> Real gross national income differs from real GDI by adding real primary incomes receivable from abroad net of real primary incomes payable abroad. Finally, real personal disposable income is equal to household sector disposable income deflated by the price index for final household consumption expenditure.

## 5.6 The income and expenditure accounts compared to the supply and use tables

The income and expenditure accounts are similar and closely related to the supply and use tables that are described in chapter 4. Both focus on the key aggregate gross domestic product and its main components as depicted in the fundamental national accounts identity. The two sets of accounts are fully integrated with each other, both in terms of the concepts they employ and the statistical estimates they embody. Each of the two sets of accounts has its own uses.

One big advantage of the income and expenditure accounts as compared with the supply and use tables is that they are quite timely, being released on a quarterly basis within 60 days of the reference quarter. In comparison, the supply and use tables are released annually within about 35 months of the reference year. One offset to this timeliness advantage, however, is that in order to achieve greater timeliness the initial estimates of the income and expenditure accounts are less accurate and must be revised in subsequent periods as more source data become available. The other main offset is that the income and expenditure accounts are considerably less detailed than the supply and use tables.

Another key aspect of the income and expenditure accounts is that they are centred on institutional units—households, NPISHs, corporations, governments and non-residents. They articulate the flows of primary income and expenditure, property income, transfers, saving and investment among these sectors and they illuminate the types of economic behaviour exhibited by the different institutional sectors. The supply and use tables, in contrast, are based primarily on establishments rather than institutional units and focus on production relationships by industry.

Both sets of accounts include price-volume decompositions for the various expenditure series they contain and both have adopted the chain Fisher formula for purposes of aggregating the price and volume indexes.

## 5.7 How the income and expenditure accounts are used

Because of their comparative timeliness and comprehensive scope, as well as their focus on the economic behaviour of the institutional sectors, the income and expenditure accounts are central to most macroeconomic analyses done in Canada.

The time series database the accounts provide is used by the finance ministries of the federal, provincial and territorial governments to monitor and analyze economic developments, to formulate fiscal policies and to develop regular forecasts of future economic trends. The various types of tax and expenditure programs those governments are responsible for can be linked, through statistical regression modelling and other techniques, to the main economic factors that drive them, many of which are captured in the accounts. For example, the revenues governments receive from the personal income tax and the harmonized sales tax are closely associated with household primary incomes and household final consumption expenditures on goods and services as measured in the accounts. Business cycles, which governments typically aim to moderate through variations in taxation and expenditure policies, are evident in and can be analyzed using national accounts estimates of business investment spending, inventory accumulation and household durable goods expenditures. Indeed, the origin of national accounts in the 1940s

is closely associated with the aggregate-demand-oriented model of business cycles attributed to John Maynard Keynes.<sup>28</sup>

The Bank of Canada also uses the income and expenditure accounts as a framework for analyzing the impact of monetary policy on the macro economy. The price-volume decomposition of aggregate demand that is provided by the accounts is especially valuable in this regard since the Bank closely follows growth of nominal and real GDP as well as the aggregate measure of inflation provided by the accounts and the breakdown of that measure in terms of the different components of aggregate demand.

The accounts provide an ideal framework for global economic analysis by the major international institutions: the European Commission (EC), the International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), the United Nations (UN) and the World Bank (WB). By providing a common standard for the compilation of economic statistics, SNA 2008 makes it possible for these institutions to collect and assemble national accounts estimates from all of their member countries and aggregate them in various ways. The EC, for example, compiles estimates of GDP and its components for the 28 member states of the European Union. It uses these statistics for a range of budgeting purposes. The OECD combines the national accounts estimates of its 34 member countries to estimate GDP for the non-contiguous region comprised by its members. Its database of national accounts statistics for member countries is invaluable for the types of analysis the organization conducts. The IMF, UN and WB use the national accounts to compile regular estimates of global GDP. In addition, these five international institutions use their member countries' national accounts statistics as the basis for a wide range of analytical studies, forecasts and member country assessments.

The income and expenditure accounts are also used in connection with a number of international and national payment formulas. International institutions generally tie the annual contributions made by their members, in part, to the level of their GDPs. In Canada, some federal-provincial transfer formulas—notably the Equalization program and the Territorial Formula Financing program—are based partly on the income and expenditure components of GDP. As mentioned in chapter 4, the harmonized sales tax revenue allocation formula relies on national accounts estimates including statistics from the income and expenditure accounts.

In Canada, private and public sector economists use the income and expenditure accounts for economic modelling and related analyses. The estimates are valuable, for example, in studies of economic policy proposals (for example, the impact of alternative tax reduction ideas), significant events (for example, the impact of holding the Olympic Games in Canada) and 'shocks' of various kinds (for example, the impact of a sudden large decrease in the international price of crude petroleum or of a weather-related natural disaster). In this regard, the accounts have been found especially useful by some analysts because of their origin in and close relationship to standard business and government accounting frameworks. Their consistent structure also makes them useful for inter-provincial comparisons.

Finally it should also be recognized that, like the supply and use tables, the income and expenditure accounts provide valuable checks within Statistics Canada on the quality and coherence of the survey- and administrative-data-based statistics the agency is responsible for. In the course of compiling the national income and expenditure estimates every quarter and the provincial and territorial income and expenditure accounts every year, Statistics Canada analysts frequently encounter apparent inconsistencies or contradictions within the source data the accounts are based upon. They follow up on these indications and attempt to resolve them, thereby leading to improvements not just in the national accounts estimates themselves, but also in the underlying survey and administrative source data.

## Notes for chapter 5

1. Estimates for the Canadian GDP by income and by expenditure categories consistent with *SNA 2008* are available from 1981 onward. Although the accounts started in 1926, a number of historical revisions in which different concepts were adopted created a first break in the series in 1947 and then in 1961 and most recently in 1981. Users can still access some of the earlier estimates but have to use them with caution as they were not calculated using the same methods and concepts as those from 1981 to date. Chapter 2 provides information about the historical revisions.
2. Estimates for each quarter are revised when those for subsequent quarters of the same year are published. Annual revisions are generally made back three to four years and released with the first quarter estimates. From time to time Statistics Canada will revise the GDP by income and by expenditure accounts more than four years, in order to incorporate conceptual or methodological changes. These types of changes are announced well in advance of their release. Statistical revisions incorporate the most recent information such as quarterly and annual survey results, taxation statistics, public accounts, censuses and the annual benchmarking results from the supply and use accounts.
3. For example, in the United States the expenditure-based estimate of GDP is assumed to be accurate and the statistical discrepancy is allocated entirely to income-based GDP.
4. Compensation of employees does not include incomes of self-employed individuals such as consultants, lawyers and dentists, farmers and working owners of unincorporated businesses. The income of these individuals is included in gross operating surplus if the individuals are incorporated or in gross mixed income if they are unincorporated.
5. Quarterly estimates of compensation of employees are available by province and territory from 1981 to date in table 36-10-0114-01. Monthly compensation of employees' estimates by industry are available in table 36-10-0205-01 from 1997 to date.
6. Locally engaged residents of other countries who work on military bases or in embassies are not included in Canada's compensation of employees.
7. The *SNA 2008* concept 'consumption of fixed capital' refers to normal patterns of depreciation. In audited corporate financial accounts, in contrast, consumption of fixed capital may be recognized either more or less rapidly for tax or other reasons.
8. The output of the government and NPISH sectors is largely non-market output and as such is imputed at cost. The imputation includes an allowance for the consumption of fixed capital, but by *SNA 2008* convention includes no allowance for a return to compensate for risking capital in the production process.
9. As they are defined in the *SNA*, the corporation and non-resident sectors (unlike the NPISH and government sectors) never make expenditures in direct support of consumption by households. All consumption by corporations is intermediate consumption.
10. In principle, household final consumption expenditure also includes the imputed value of consumption-related barter transactions and goods (not services) that are both produced and consumed by a household. These are considerably more difficult to measure than monetary, market-based consumption-related transactions and they are considered negligible in Canada.
11. See table 36-10-0124-01. On COICOP (Classification of Individual Consumption According to Purpose), see chapter 3.
12. Some categories of final consumption expenditure also yield a stream of benefits that extends beyond a year, but these are treated as consumption rather than production benefits and for this reason are not considered gross fixed capital formation. Examples are purchases of new automobiles, furniture and major appliances. New housing expenditures are considered to be a special case, since the normal period of time over which they yield consumption benefits is lengthy (typically 50 years or more). They are treated differently from expenditures on other consumer durable goods. Consistent with *SNA 2008*, Canada's system of macroeconomic accounts considers them to be a form of gross fixed capital formation rather than a type of final consumption expenditure.
13. *SNA 2008* does not define a 'business sector' in this way.

14. When a non-resident unit does make an investment expenditure in Canada, a Canadian-resident unit is deemed to be created to make the resulting investment and the non-resident unit is deemed to hold the shares in the Canadian-resident investing unit.

15. Detailed breakdowns for gross fixed capital formation are available in table 36-10-0108-01.

16. This poses little practical problem when the investment expenditure is measured at cost, since the land element of the cost can simply be ignored. However, excluding land from the value of new residential structures is more challenging since the valuation is typically based on market prices that include the value of the land. In this case, estimates of the implicit value of the associated land are made and these are deducted from the market price.

17. See table 36-10-0109-01.

18. See table 12-10-0134-01.

19. The imports statistics are also in table 12-10-0134-01, along with the exports.

20. The provincial and territorial income-based GDP table is available in table 36-10-0221-01 and the expenditure-based GDP table is in 36-10-0222-01.

21. A similar situation exists in the national accounts with respect to multi-national corporations. However, Canada's corporate tax laws require that corporations operating in Canada have well-defined income statements and balance sheets for the parts of their operations that are within Canada's borders, even if those corporations have closely connected operations abroad. There is no comparable requirement for multi-provincial corporations.

22. For example, one might allocate a corporation's assets and property income according to where its employees or its non-financial assets are located. Or it might be based on where its sales revenues originate.

23. SNA 2008 suggests these difficulties could be dealt with by creating an extra 'region' in the accounts to hold the transactions of the central government and possibly some large corporations: "Consequently, a reasonable solution is to introduce a kind of national 'quasi-region', not allocated as such between the regions and being treated as an extra region. This national 'quasi-region' may include the head offices of enterprises that have establishments located in, and assigned to, the regions." (SNA 2008, p. 400). This approach is not followed in Canada.

24. See SNA 2008, chapter 15.

25. Nor does SNA 2008 recommend such a decomposition.

26. See table 36-10-0105-01.

27. SNA 2008, p. 316.

28. Keynes book, *The General Theory of Employment, Interest and Money*, was published in 1936. It argued that in the 'short run'—viewed as a variable period of time, usually just a few years—output is more strongly influenced by aggregate demand than by aggregate supply capacity. The book argued that during recessions—periods when output declines and economic pessimism sets in—governments should intervene to support aggregate demand. See chapter 2 for information about the history of the national accounts.



# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 6 Financial and wealth accounts

### What this chapter seeks to do

The purpose of this chapter is to explain the financial flow accounts, the other changes in assets accounts and the national balance sheet accounts in terms of their internal structure, their relationship to the rest of the Canadian system of macroeconomic accounts and how these accounts are used to interpret economic developments. These accounts record transactions and other changes related to the accumulation of assets and provide the stock dimension of the national accounts.

This chapter links to *SNA 2008* chapters 10, 11, 12 and 13.

### 6.1 Introduction

#### 6.1.1 Financial flow accounts

##### 6.1.1.1 Basic concepts and structure

The **financial flow accounts**<sup>1</sup> are both the financial counterpart of and an extension to the income and expenditure accounts that are discussed in chapter 5. They display net transactions in financial assets and liabilities by instrument (deposits, bank loans, bonds, etcetera—the financial instrument categories are discussed in section 6.5) for each of the institutional sectors of the economy, with added emphasis on the transactions of financial institutions. The objective is to record financial activity in the economy. The financial transactions that underlie economic activity in the various institutional sectors are shown, including the associated financial intermediation activity, which is to say the flow of funds through financial institutions. The accounts also allow for the analysis of financial activity by instrument or market segment.

Canada is one of the few countries that produce a full set of financial flow accounts combining the capital account with the financial account of *SNA 2008*. As discussed in earlier chapters, the overall structure includes a set of integrated sector accounts recording income flows, transfers, expenditures, saving, investment, borrowing/lending, non-financial assets and financial asset/liability positions. The financial flow accounts are a key component of the sequence of sector account transactions.

##### 6.1.1.2 The fundamentals of financial transactions

An increase in the financial assets of one institutional unit is always offset by a decrease in the assets or an increase in the liabilities of another. The transactions recorded in the financial flow accounts may reflect the financing of current or capital expenditures—current consumption, new capital formation, transactions in existing non-financial assets—or they can be purely financial transactions. For example, they can be portfolio adjustments (exchanging one financial instrument for another) or financial investments (for example, borrowing funds to contribute to a Registered Retirement Savings Plan). The financial transactions recorded in these accounts do not precisely reveal what combinations of these factors are associated with each recorded financial flow, though some links are straightforward<sup>2</sup>

Financial transactions, by instrument, are recorded on a net basis. For example, transactions related to government borrowing in the form of bonds are shown as new issues less retirements. In this sense, the ‘net’ transaction is new funds raised in the bond market. Similarly, a pension fund might choose to sell equities of the petroleum industry and purchase equities of the banking industry. The difference in the value of the two financial transactions is net investment or divestment in corporate equities for that pension fund.

**Text box 6.1**  
**An example of net transactions**

Suppose a household receives \$10,000 in cash for labour services and pays \$8,000 in cash to purchase goods and services over the course of an accounting period, depositing the remaining \$2,000 in a bank account. The gross flows 'in' are \$10,000 and the gross flows 'out' are \$8,000. The net flow—which is recorded in the financial flow accounts—is \$2,000.

The financial flow accounts are explained in detail in section 6.2 below.

### 6.1.2 Other changes in assets accounts

While the financial flow accounts record changes in financial assets and liabilities between opening and closing balance sheets that are associated with transactions during the accounting period, the value of assets and liabilities held by an institutional unit can also change for other reasons. These other types of changes, referred to as **other flows**, are recorded in the **other changes in assets account**.

There are two main components to this account. One is the **other changes in the volume of assets account**. This account includes changes in non-financial and financial assets and liabilities relating to the economic appearance and disappearance of assets, the effects of external events such as wars or catastrophes on the value of assets and changes in the classification and structure of assets. The other main component is the **revaluation account**, showing holding gains or losses accruing to the owners of non-financial and financial assets and liabilities during the accounting period as a result of changes in market price valuations.

The other changes in assets accounts are explained in greater detail in section 6.3 below. These accounts are a recent addition to Canada's system of macroeconomic accounts and they are available in table 36-10-0448-01.

### 6.1.3 National balance sheet accounts

#### 6.1.3.1 Basic concepts and structure

The **national balance sheet accounts** provide a statistical picture of the major stocks in the economy, both 'real'<sup>13</sup> and financial. As such, they provide a stock dimension to the sequence of national accounts. The components of the balance sheet accounts are directly related to the financial flow accounts since the changes in a balance sheet's elements during a period of time are partly determined by the corresponding capital and financial transactions in that period of time. They are also related to the other changes in assets accounts.

The stocks include a variety of types of non-financial and financial assets, liabilities and the corresponding estimates of net worth by institutional sector of the economy. The accounts display the financial position of the sectors of the economy, the ownership of non-financial and financial assets and the related debt associated with those assets. In addition, they underline the important role the financial system plays in holding financial assets and facilitating the incurrence of liabilities associated with the accumulated savings of the institutional sectors.

The sector balance sheets of households, non-profit institutions serving households, corporations and governments can be aggregated to the **national balance sheet**—the balance sheet for the nation. This aggregate can be consolidated by subtracting national liabilities from national financial assets, which yields Canada's net investment position with non-residents. The **consolidated national balance sheet** is a statement of **national wealth** in the form of economy-wide non-financial assets. It is also a statement of **national net worth**, which is defined as economy-wide non-financial assets plus Canada's international asset-liability balance. The impact of Canada's net investment position with non-residents on **national net worth** depends on whether it is a net asset position or a net foreign debt position. National net worth can also be derived as the sum of the net worth of each of the Canadian institutional sectors.

### 6.1.3.2 The fundamentals of asset positions

Balance sheet statistics dovetail with the concept of net financial transactions for asset-liability instruments (for example, total new borrowing less repayment in any given period) and non-financial asset acquisitions less depreciation. The statistics present the outstanding amount of non-financial and financial assets and liabilities at the end of any given accounting period.

In principle, non-financial and financial assets and liabilities should be valued at current market prices. To accomplish this, certain assets such as loans are shown net of any impairment (that is, allowance for doubtful accounts). This adjusts the asset value for credit risk, aiming at its estimated realizable value. Financial assets denominated in foreign currency are also converted to a current domestic currency value using prevailing exchange rates. Some other financial assets, such as tradable securities, are adjusted for market price variations to bring them to current market value. Lastly, current value estimates of non-financial assets are constructed using a variety of methods aimed at approximating their current market values.

The balance sheet accounts are explained in section 6.4 below.

### 6.1.4 Outline of this chapter

The government sector components of the Financial and wealth accounts are similar to certain constituents of the government finance statistics, discussed in chapter 9, and the non-resident sector financial flow accounts and balance sheet accounts mirror the financial accounts of the balance of international payments and international investment position, discussed in chapter 8. The financial flows for the remaining sectors—households, non-profit institutions serving households, non-financial corporations and financial corporations—are discussed only in this chapter.

The remainder of this chapter is organized in five more sections. Section 6.2 describes the financial flow accounts, including the financial intermediation system. In section 6.3, the other changes in assets accounts are fully explained. The national balance sheet accounts are reviewed in section 6.4. The topic of section 6.5 is the financial instrument categories that are used in both the financial flow accounts and the national balance sheet accounts—more specifically, what types of instruments each category includes. Finally, section 6.6 provides an illustration of the ways in which the Financial and wealth accounts can be used to analyze current financial developments and trends in Canada's economy.

## 6.2 Financial flow accounts

### 6.2.1 What are the financial flow accounts?

The income and expenditure accounts, discussed in chapter 5, could equally well be called the 'real' accounts. They record such flows as the payment of wages by an employer to one of her employees or the purchase of consumer products by a household from a retailer. They also combine the saving estimates with non-financial capital acquisitions on the capital account (for example, the building of a new factory). The **financial flow accounts** incorporate the **capital account** and provide the financial counterparts to these non-financial flows.

For the payment of wages, the immediate financial counterpart might be an increase in the bank deposit assets of a household and a corresponding decrease in the deposit assets of a corporation. In the case of the purchase of consumer products, the counterpart might be a decrease in the currency assets of the household and a corresponding increase in the currency assets of the retailer. With respect to the construction of a new factory, a corporation might issue shares to finance its construction, resulting in an increase in corporate equity as well as an increase in the holdings of corporate stocks by domestic or non-resident institutional investors who acquire these securities.

But the financial flow accounts are really much more than this. Many of the financial transactions they record have no direct counterpart in the non-financial accounts. In the example of the payment of wages just mentioned, once the household receives the funds in its bank account it might choose to use some of the money to purchase a Government of Canada bond. As a result, there would be a financial flow out of the household's bank account and another flow into its securities account. Accompanying these financial asset flows would be corresponding liability flows. The bank would see a corresponding decrease in its deposit liabilities and the government would experience an increase in its bond liabilities. When the government deposited the funds it gained by selling the bond, it would see an increase in its deposit assets and its bank would see a corresponding increase in its deposit liabilities. This

process of financial intermediation can get very complicated as assets get traded for other types of assets or get liquidated in order to reduce some type of liabilities, and new liabilities get created in order to generate funds that ultimately raise bank deposits or some other type of assets and so on. The financial flows provide a comprehensive account of the workings of the **financial intermediation system** across the institutional sectors, according to the various categories of financial instrument (see section 6.5) and through time.

It is also important to recognize what the financial flows do **not** record.

- Changes in corporate net worth due to retained earnings are not included directly in the financial flows. Rather, retained earnings are part of saving in the non-financial flows. However, they will affect the financial flows indirectly as corporations use those earnings to purchase financial assets or reduce liabilities.
- Brokerage charges and similar margins as well as the income arising from them are excluded from the valuation of financial flows as well, since they belong in the production accounts, although again since these charges have an effect on saving in the brokerage industry they also may influence indirectly their transactions in financial assets and liabilities.
- Likewise the financial flow accounts do not register changes in the value of existing non-financial and financial assets or liabilities that are not involved in transactions, but nevertheless observe changes in their market prices. This is true as well for price changes associated with foreign currency fluctuations. These changes are recorded in the other changes in assets account.
- Nor do the financial flows record changes in the value of non-financial and financial assets or liabilities for a particular sector as a result of reclassifications of institutional units from one sector to another. These changes are recorded in the other changes in assets account.
- Destruction of non-financial assets due to catastrophes, weather events and wars also do not get reflected in the flows, nor do new discoveries of natural resources. These changes are recorded in the other changes in assets account.
- The writing off of corporate or government financial assets likewise is not considered to be financial flows. These changes are recorded in the other changes in assets account.

In short, the financial flows are all about changes in net holdings of financial assets and liabilities by the institutional sectors as a result of transactions in financial instruments.

## 6.2.2 The financial intermediation system

As mentioned briefly in chapter 3, the financial intermediation sector has the following sub-sectors in Canada's macroeconomic accounts:

Code	Subsector
S12	Total financial sector
S121	Monetary authorities
S122	Chartered banks and quasi-banks
S1221	Chartered banks
S1222	Quasi-banks
S123	Insurance and pension funds
S1231	Insurance business
S1232	Segregated funds of life insurance companies
S1233	Trusted pension plans
S1234	Property and casualty insurance companies.
S124	Total other private financial institutions
S1241	Mutual funds
S12411	Money market funds
S12412	Other mutual funds
S1242	Sales finance and consumer loan companies
S1243	Issuers of asset-backed securities
S1244	Other private financial institutions
S125	Financial government business enterprises

The classification is used in both the financial flow accounts and the national balance sheet accounts. In this classification:

- **The monetary authorities** include the Bank of Canada and the Exchange Fund Account, the latter representing the largest component of Canada's official international reserves.
- **Chartered banks** are financial institutions that are federally licensed, under the terms of the Bank Act, to accept deposits and lend out the funds so obtained. They are regulated by the Office of the Superintendent of Financial Institutions.
- **Quasi-banks** are credit unions and Caisses Populaires, which are similar to banks but operate as non-profit institutions for the benefit of their members and are mostly regulated by provincial governments, plus trust and loan companies.
- **Insurance business** refers to direct individual and group life and health (accident and sickness) insurance companies, plus life and health reinsurance carriers.
- **Segregated funds of life insurance companies** are investment vehicles offered by insurance companies that are similar to mutual funds in some respects, but which typically offer a degree of protection against investment losses plus a death benefit.
- **Property and casualty insurance companies** provide direct property insurance, automobile insurance, liability insurance, a small amount of accident and sickness insurance and reinsurance in these same four categories.

- **Trusted pension plans** are pension schemes that are managed by independent trustees who collect contributions from employees and employers, invest the proceeds and pay pension benefits according to the terms of the plans.
- **Money market funds** are widely-held pools of capital that are invested in short-term securities such as Treasury bills and commercial paper.<sup>4</sup>
- **Other mutual funds** are widely-held pools of funds that are invested in stocks, bonds or other financial instruments.
- **Sales finance and consumer loan companies** consist of credit-card-issuing companies, sales finance companies<sup>5</sup> and consumer lending companies.
- **Issuers of asset-backed securities** are trusts that pool together various types of assets, sell securities related to the pool and pay out the income that flows from these assets to holders of the securities. The assets in the pool are said to be securitized and the securities are said to be collateralized.
- **Other private financial institutions** include investment banks, securities dealers, securities brokerage firms, commodity contracts dealers and brokers, mortgage and other loan brokers, financial transactions processing and clearing house operators, securities and commodities exchanges, closed-end funds, portfolio managers, investment advisors, insurance agencies and brokers, claims adjusters, as well as holding companies, head offices of business enterprises and other miscellaneous intermediation and financial investment companies.
- **Financial government business enterprises** include direct, public automobile insurance agencies plus all government business enterprises identified with financial activities such as Export Development Canada, the Canada Mortgage and Housing Corporation, the Alberta Treasury Branches and any other organizations similar to these.

The details of this classification of financial units are unique to Canada and reflect the country’s distinctive institutional structure.<sup>6</sup> A large portion of the funds moving through the Canadian economy at any time are routed through the financial institutions.<sup>7</sup> As a result, the financial asset and liability flows for the financial corporations sector tend to be very large. However, the **net** lending/borrowing of the sector is often rather small compared to that of the households, non-financial corporations, governments and non-resident sectors.

Any single financial intermediation transaction is associated with four entries in the financial flows matrix and this is sometimes referred to as the four-transaction rule. A transaction often involves two sectors, and within each there are both source and use of funds entries. For example, consider the sale of new equity by a non-financial corporation to a household for \$1000. The first entry records the purchase by the investor, the households sector—an increase in equity assets. The second records the offsetting sale by the non-financial corporations’ sector—an increase in equity liabilities. The third shows the source of funds for the investing sector’s purchase, such as a bank account, and a corresponding reduction in financial assets there. The final entry records the non-financial corporation’s use of the funds raised by the sale, such as an increase in its bank deposit assets. Figure 6.1 shows these transactions in a T-account format.

**Figure 6.1**  
**Illustration of the four-sector rule using T-accounts**

Dollars			
Non-financial corporation		Household	
Assets	Liabilities	Assets	Liabilities
1,000	1,000	1,000	-1,000

### 6.2.3 A sectoral perspective on the financial flows

The financial flow accounts can also be viewed from an institutional sector perspective. As seen in chapter 5, the balancing item in each sector's use of income account is net saving, which is carried down into the **capital account**. This net saving, plus the allowance for consumption of fixed capital and any net capital transfers, can be used by the sector to accumulate non-financial assets. If the sector does not use all of these funds in this way, it lends any remaining funds to other sectors and this amount is referred to as net lending. If the sector accumulates more non-financial assets than the sum of its gross saving plus capital transfers, then the difference is borrowed from other sectors and is called net borrowing. This net lending or net borrowing is carried forward to the sector's financial account in the **financial flow accounts**, a key purpose of which is to explain how the sector's net lending or borrowing is realized through net transactions in financial assets and liabilities.

In effect, the **financial flow accounts** yield two independent estimates of net lending or borrowing for each sector. One originates from the 'real' accounts and represents the difference between income and expenditure (both current and capital), while the other comes from the financial accounts and is the difference between net financial asset acquisition and net liability incurrence. This identity—that net lending/borrowing as calculated in the 'real' accounts must equal net financial investment as calculated in the financial accounts—is a potent tool for assessing the overall consistency of the estimates for the full sequence of accounts of each sector. For each institutional sector, the net lending/borrowing estimate from the 'real' accounts is reconciled to net financial investment from the financial flow accounts. The difference between these two items is recorded as a statistical discrepancy.

Another key identity in the financial flow accounts is that net lending and borrowing for the system as a whole must be zero, since the system is defined to include the rest of the world as well as the domestic economy. Expressed a bit differently, the system as a whole is a closed one, so a sector cannot borrow funds unless another sector is willing to lend funds, and likewise a sector cannot lend funds unless another sector is willing to borrow funds. The net borrowing of all the borrowing sectors together must be exactly offset by the net lending of the other sectors. This means, for example, that if the households, NPISH, corporations and government sectors were all net borrowing sectors overall, then the non-resident sector would necessarily be a net lending sector overall. Similarly, in the capital accounts saving equals investment across all sectors (including the non-resident sector).

For the financial account, this identity holds true not just for the total of all financial assets/liabilities, but also for each financial instrument individually. This is because every dollar of financial assets is, by definition, mirrored by a corresponding dollar of liabilities. Thus, for example, if in a particular period the households sector was a net borrower with respect to the 'mortgages' financial instrument category, the other sectors collectively would of necessity be a net lender with respect to mortgages.<sup>8</sup> In other words, the total change in financial assets for any financial instrument category must equal the total change in liabilities for that same category.<sup>9</sup> The identity is helpful to national accountants since it provides an automatic check of consistency for the borrowing and lending statistics in each financial instrument category. Moreover, when no useful source data are available for the lending or borrowing of a particular sector with respect to a particular financial instrument, the identity can be used to calculate the missing information residually (assuming reasonably good statistics are available for the lending and borrowing of the other sectors).<sup>10</sup>

To summarize, there are two sets of identities constraining the financial flow matrix. They are as follows:

1. Net lending or borrowing, determined in the income and expenditure accounts, must be equal to net transactions in financial assets, minus net transactions in financial liabilities, plus the discrepancy. This identity must hold true for each sector individually. A large discrepancy signals an important statistical incoherence.
2. Total net transactions in financial assets (national plus non-resident) must equal total net transactions in financial liabilities. This identity must hold for each financial instrument category individually.

A central point is that most transactions recorded in the current and capital accounts have counterpart transactions in the financial account. Just as each sector's net lending or borrowing during an accounting period can be calculated by tallying all of its sources of income and deducting all of its expenditures, as explained in chapter 5, so can that net lending or borrowing be calculated by adding up all of the financial asset transactions and deducting all the financial liability transactions by that sector during the period. In principle, the two ways of calculating net borrowing

or lending must yield the same answer, although in practice they are likely to be different because of imperfections in the source data underlying the macroeconomic statistical system.

### 6.2.4 The full financial flows dataset: an example

The financial flows dataset can be thought of as a matrix with three dimensions. The first is institutional sectors, of which the Canadian system of macroeconomic accounts has 36 (counting both sectors and sub-sectors);<sup>11</sup> the second is financial instrument categories, of which the CSMA includes 83 (counting both categories and sub-categories); and the third is time, which is measured in quarters from the first quarter of 1990 to date.<sup>12</sup>

The 36 sectors displayed in the matrix are discussed in chapter 3. While the non-financial sectors are the centre of attention in chapter 5, the financial sector and its sub-sectors come into greater focus in this chapter. The instrument categories are discussed in detail in section 6.5.

Table 6.1 provides a grouped view of the financial flow matrix, in which the sectors and instrument categories have each been combined into a smaller number of aggregates and the statistics are shown for calendar year 2009 as an example.<sup>13</sup>

**Table 6.1**  
**Financial flows matrix, summary presentation, 2009**

	Sector							Non-residents
	Total, all sectors	National financial accounts	Households and non-profit institutions serving households	Non-financial corporations	Financial corporations	Governments	Statistical discrepancy	
	millions of dollars							
Net saving	75,062	21,378	42,184	15,369	-2,760	-33,415	0	53,684
Consumption of fixed capital at replacement cost	268,289	268,289	47,339	154,894	16,861	49,195	0	0
Net capital transfers	0	-816	820	3,189	-77	-4,748	0	816
Discrepancy, income side	853	853	0	0	0	0	853	0
Equals: gross saving and capital transfers	344,204	289,704	90,343	173,452	14,024	11,032	853	54,500
Less: Non-financial capital acquisition	344,204	344,204	125,466	137,760	9,810	72,021	-853	0
New capital	350,517	350,517	114,064	155,230	9,146	72,077	0	0
Existing capital	0	0	11,731	-10,135	-1,593	-3	0	0
Inventories	-5,460	-5,460	-329	-7,335	2,257	-53	0	0
Discrepancy, expenditure side	-853	-853	0	0	0	0	-853	0
Net lending or borrowing	0	-54,500	-35,123	35,692	4,214	-60,989	1,706	54,500
Net financial investment	0	-55,057	-34,878	35,582	5,297	-61,058	0	55,057
Net transactions in financial assets	515,160	377,469	70,946	33,426	193,542	79,555	0	137,691
Official international reserves	11,617	11,617	0	0	11,617	0	0	0
Total currency and deposits	95,784	106,071	68,430	17,979	37,092	-17,430	0	-10,287
Debt securities	125,926	40,007	-17,663	-29,513	83,595	3,588	0	85,919
Loans	211,242	187,529	-1,834	5,140	111,931	72,292	0	23,713
Equity and investment funds	290,427	244,966	121,805	36,815	65,216	21,130	0	45,461
Life insurance and pensions	39,069	39,069	39,069	0	0	0	0	0
Other accounts receivable	-258,905	-251,790	-138,861	3,005	-115,909	-25	0	-7,115
Net transactions in financial liabilities	515,160	432,526	105,824	-2,156	188,245	140,613	0	82,634
Official international reserves	11,617	0	0	0	0	0	0	11,617
Total currency and deposits	95,784	83,790	0	0	78,799	109	0	11,994
Debt securities	125,926	114,289	0	21,671	-49,909	142,527	0	11,637
Loans	211,242	187,247	102,724	-7,657	88,299	3,881	0	23,995
Equity and investment funds	290,427	263,832	0	77,185	186,647	0	0	26,595
Life insurance and pensions	39,069	39,069	0	0	33,487	5,582	0	0
Other accounts payable	-258,905	-255,701	3,100	-93,355	-153,960	-11,486	0	-3,204
Discrepancy	0	557	-245	110	-1,083	69	1,706	-557
Net financial investment (Financial flow accounts)	..	..	..	..	..	..	..	55,056
Plus: net reinvested earnings on direct investment	..	..	..	..	..	..	..	-7,494
Balance of international payments, financial account, net lending or net borrowing	..	..	..	..	..	..	..	47,562

.. not available for a specific reference period

Source: Statistics Canada, table 36-10-0578-01.



The first row in Table 6.1 shows **net saving** by sector as calculated in the income and expenditure accounts (see chapter 5). As can be seen, the households and NPISH sector, the non-financial corporations sector and the non-resident sector were the saving sectors in 2009 while the government sector was the main dissaving sector. To net saving is added **consumption of fixed capital at replacement cost, net capital transfers** to/from the sector,<sup>14</sup> and the income-side all-sector statistical discrepancy from the income and expenditure accounts. This yields **gross saving and capital transfers**. This represents the total amount of money that is received by sectors but not spent on current consumption, which is therefore available either for current investment or for lending to other sectors.

**Non-financial capital acquisition**, or ‘investment’ is comprised of **new capital** formation, purchases and sales of **existing capital** between sectors,<sup>15</sup> inventory change and the expenditure-side all-sector statistical discrepancy from the income and expenditure accounts.

**Net lending or borrowing** for each sector, as calculated in the income and expenditure accounts (as explained in chapter 5) is the difference between gross saving and capital transfers on the one hand and non-financial capital acquisition on the other. In the particular year shown in Table 6.1, the households plus NPISH sector and government sector were net borrowers, while the non-financial and financial corporations and non-residents sectors were net lending sectors. The net borrowing of the national economy (excluding the non-resident sector) was \$54,500 million and this was necessarily equal to the net lending of the non-resident sector. This means capital was flowing into Canada that year.

The second estimate of net lending or borrowing for each sector is calculated in the financial flow accounts by subtracting net transactions in financial liabilities from net transactions in financial assets. It is called net financial investment. As noted earlier, this second estimate should be equal, in principle, to the corresponding net lending or borrowing estimate that is calculated in the income and expenditure accounts. In practice, the two calculations are not equal due to variations in accounting and reporting practices of institutions in different sectors, non-reporting of transactions and other limitations of the statistical system. The discrepancy between the two is added to the financial flow estimate to bring the two accounts into balance. In this particular period, the absolute value of the discrepancy is largest for the financial corporations sector.

**Net transactions in financial assets** for each of the sectors is broken down by financial instrument category. The word ‘net’ is quite important in this context. Typically each sector acquires and disposes of financial assets during any particular period. The gross acquisitions and gross disposals can be very large, but they are not recorded in the financial flow accounts. Only the difference between the two, called net transactions in financial assets, is reported. However, even net transactions were quite large in this particular year, totalling \$377,469 million for the nation and \$137,691 million for non-residents.<sup>16</sup>

All institutional sectors had positive net transactions in financial assets in 2009. The households and NPISH sector had positive net asset acquisitions in the currency and deposits, equity and investment funds and life insurance and pensions categories.<sup>17</sup> Non-financial corporations had positive net asset acquisitions in the currency and deposits, loans, equity and investment funds and other accounts receivable instrument categories. Financial corporations had positive net acquisitions as well, in all categories except other accounts receivable. Governments had positive net transactions in financial assets in debt securities, loans and equity and investment funds. Finally, the non-resident sector had positive net transactions in debt securities, loans, and equity and investment funds.

Only one national sector ever records net financial asset transactions in official monetary reserves; the financial corporations sector (more specifically, the monetary authorities sub-sector within that sector). Similarly, only the households sector records financial asset transactions in the life insurance and pensions category.

**Net transactions in financial liabilities** were positive for each of the sectors except non-financial corporations in 2009, as can be seen in Table 6.1. For the official international reserves category, all changes in liabilities are by definition seen in the non-residents sector. Thus the change in official international reserves liabilities for the non-resident sector equals the corresponding change in financial assets in the financial corporations sector. In the currency and deposits category, the households plus NPISH sector and the non-financial corporations sector cannot offer currency or deposit liabilities, so their net liabilities transactions must necessarily be zero. As well, these two sectors do not issue life insurance and pension liabilities. In addition, since the households plus NPISH sector does not itself issue debt securities or equity and investment funds liabilities, the change in net liabilities for these two categories is also zero for this sector.

The other accounts receivable instrument category includes short-term credit extended to purchasers by wholesalers and retailers, plus a sub-category called other receivables. The estimates for net financial asset and liabilities acquisition in this latter category also include derivatives, repurchase agreements, accrued interest and credits relating to wages and salaries, taxes and rents.

The last three lines in Table 6.1 reconcile non-resident sector net financial investment from the financial flow accounts—which is the financial account estimate of net lending or borrowing, before adding the discrepancy—to the non-resident sector financial account net lending or borrowing estimate that is recorded in the balance of international payments. The two measures of net lending or borrowing are different conceptually due to differing treatments of reinvested earnings on direct investment. Canadians can invest directly in foreign enterprises and when they do so, they typically leave earnings from those investments abroad. Similarly, non-residents can invest directly in Canadian enterprises and typically also leave some of their earnings from those investments in Canada. There are no observed net transactions in financial assets or liabilities in such cases, but the balance of international payments treats those reinvested earnings as if they were repatriated as dividends and then simultaneously flowed back as new financial asset acquisitions. The “imputed” **net reinvested earnings on direct investment** are shown in the second-to-last line of Table 6.1 and when they are added to net financial investment as measured in the financial flow accounts, the result is net lending or borrowing by non-residents as measured in the balance of payments financial account.

### 6.3 Other changes in assets accounts

As mentioned earlier, the **other changes in assets accounts** record changes in non-financial and financial assets and liabilities other than those directly associated with transactions. When combined with the transactions-based capital account and financial flows account, these accounts provide a comprehensive explanation for differences between the opening and closing balance sheets. There are two sub-accounts: the **other changes in the volume of assets account** and the **revaluation account**.

#### 6.3.1 Other changes in the volume of assets accounts

In the financial flows accounts, a financial asset appears when an institutional unit accepts a new liability in exchange for some benefit such as a cash loan. The asset subsequently disappears when the institutional unit extinguishes the liability by means of a payment. A non-financial asset such as a building might also appear on the balance sheet as the result of a direct purchase by an institutional unit. These flows are transactions. But assets and liabilities can also be created and extinguished by other means and these ways are itemized in the **other changes in the volume of assets account**. This account, as described in chapter 12 of *SNA 2008*, has three component parts.

The account’s first part includes entries relating to the appearance and disappearance of assets other than by transactions.

- For example, structures created and fully depreciated in the past might now, after a delay of many years, be recognized as buildings of historical significance and added to the balance sheet as national monuments.
- Items such as works of art, antiques and precious stones might have been purchased as consumption goods in the past and might now, with the passage of time, be recognized on the balance sheet as precious ‘stores of value’.
- Sub-soil minerals might be newly discovered or, though discovered previously, might be newly seen as economic or uneconomic as a result of improvements in technology or changes in prices.
- Wilderness land considered previously to be essentially valueless might suddenly become valuable as the result of new roads and bridges having been constructed in the general area.
- The quality of land and water resources might be degraded as a result of economic activity, thereby losing some value.
- An institutional unit might choose to write down the value of some asset as a result of, for example, bankruptcy of the liability holder, without there being any mutual agreement between the parties.

These are all examples of the appearance or disappearance of assets by means other than transactions.<sup>18</sup>

The account's second part includes the effect of major external events on the value of non-financial and financial assets and liabilities. Catastrophic losses might occur, for example, as the result of forest fires, earthquakes, tsunamis, hurricanes, floods or ice storms. The destruction of assets as a result of acts of war, terrorism, riots or major accidents such as large-scale explosions, fires, toxic spills or nuclear meltdowns would also be included in the account. Note that the effects of geological and climatic disruptions or accidents of a smaller, more normal scale, such as those that are often covered by property insurance arrangements, are not included under this heading.

Finally, the non-financial and financial assets and liabilities of an institutional unit might change as a result of reclassifications of institutional units, or of various types of assets and liabilities. For example, a household might move from one country to another, taking its non-financial and financial possessions with it. Or in some circumstances when the government nationalizes a private business enterprise, or privatizes a government business enterprise, the change might involve a reclassification from the corporate to the government sector or vice versa.<sup>19</sup> Reclassification can also be required if a residential building was converted for commercial use or vice versa. Again, since there are no transactions involved in these kinds of changes they are recorded in the other changes in assets account.

### 6.3.2 Revaluation accounts

The revaluation accounts record changes in the value of non-financial and financial assets and liabilities, between the opening and closing balance sheets, that are the result of changes in the market prices of those assets and liabilities, as distinct from changes that are attributable to transactions or other changes in the volume of assets. Such changes are referred to as **holding gains or losses**. *SNA 2008* distinguishes three related concepts—**nominal**, **neutral** and **real** holding gains and losses—and defines them as follows:<sup>20</sup>

- The **nominal holding gain** on a non-financial asset is the value of the benefit accruing to the owner of that asset as a result of a change in its price over a period of time. The nominal holding gain on a financial asset is the increase in value of the asset, other than by transactions in the assets (including the accrual of interest over a period of time) and other changes in the volume of assets. The nominal holding gain on a liability is the decrease in value of the liability, other than by transactions or by other volume changes. Nominal holding 'gains' can, of course, be negative or positive.
- A **neutral holding gain (loss)** over a period is the increase (decrease) in the value of an asset that would be required, in the absence of transactions and other changes in the volume of assets, to maintain command over the same amount of goods and services as at the beginning of the period, that is to allow for general inflation or deflation.
- A **real holding gain (loss)** is the amount by which the value of an asset increases (decreases) over the neutral holding gain for the period, in the absence of transactions and other changes in the volume of assets. It is equal to the nominal holding gain minus the neutral holding gain.

Neutral holding gains and losses are calculated with reference to some comprehensive index of the prices of goods and services, such as the national accounts price index for final expenditures. For example, if a household owned a house and its value rose by 2 per cent in a year, representing a nominal holding gain of that amount, this would be an entirely neutral holding gain if the general inflation rate that year was also 2 per cent. If inflation were not 2 per cent but rather 0.5 per cent, then the neutral holding gain would be 0.5 per cent and the real holding gain would be 1.5 per cent.

Nominal holding gains or losses are sometimes referred to as **capital gains or losses**. They can be **realized**, as when an institutional unit sells a non-financial or financial asset or extinguishes a liability at a price that is different from the price at the beginning of the accounting period, or they can be **unrealized**, as when an institutional unit holding a non-financial or financial asset or liability throughout the accounting period finds the price of that asset or liability is different at the end of the period from what it was at the beginning.

Holding gains and losses on financial assets and liabilities totalled over all sectors should add to zero, since every gain is matched by a corresponding loss somewhere else. For example, if bond holders make capital gains following a decline in interest rates, bond issuers will make a corresponding holding loss. As another example, if the domestic sectors all make holding gains on assets denominated in foreign currencies as a result of a depreciation of the Canadian dollar relative to other world currencies, the non-resident sector makes a corresponding holding loss.

The balancing item in the revaluation account is **changes in net worth due to nominal holding gains or losses**, which in turn is the sum of the positive or negative nominal holding gains on all of the non-financial and financial assets and liabilities of an institutional unit. During periods when relative prices are changing substantially, real holding gains and losses may imply substantial redistributions of real net worth among institutional units, sectors and countries. They can be an important economic variable helping to explain trends in consumption and capital formation.

#### Text box 6.2

##### An example of holding gains from SNA 2008 (p. 250)

Suppose a corporation owns 100 units of a stock (inventories or shares, for instance) at the beginning of the period and these are worth \$20 each or \$2,000 in total. At some point in the period, when the price per unit has risen to \$22, another 15 units are bought; a cost of \$330. At the end of the period, when the price has risen to \$25, some 15 units are sold for a value of \$375. The value of the stock in the closing balance sheet represents 100 units valued at \$25 each or \$2,500. The increase in the balance sheet of \$500 represents unrealized holding gain on the stock of 100. The value of the transactions represents a decrease in the balance sheet since the value of the stock added to the balance sheet (\$330) is less than the value of stock sold (\$375). The difference, -\$45, is a reduction in net worth brought about by realizing some holding gains. The total nominal holding gain is thus \$545 which satisfies the identity that the opening stock (\$2,000) plus the transactions (-\$45) plus the nominal holding gains (\$545) plus the other changes in the volume of assets (\$0) equals the value in the closing balance sheet (\$2,500).

Currency, deposits and loans are not subject to nominal holding gains or losses. However, during periods of positive inflation neutral holding gains on these financial instruments are positive and real holding gains are negative. Bonds, equities and other types of financial assets and liabilities experience nominal holding gains and losses when their market prices fluctuate. Holding gains affect not only financial assets and liabilities, but also non-financial assets such as capital goods and inventories, as well as valuables.

### 6.3.3 Other changes in assets account statistics

For financial assets and liabilities, Statistics Canada releases an aggregate other changes in assets account, combining the other changes in the volume of assets account and the revaluation account in a single table.

The estimates in this table are calculated by taking the difference between the end-of-period financial balance sheet and the start-of-period balance sheet and then deducting from this the financial flows during the period. In other words, the table is residually determined, attributing any financial balance sheet changes that are not accounted for by financial flows to other flows. On Statistics Canada's work agenda for the future is the task of developing cell-by-cell estimates for each of the two component accounts—the other changes in the volume of assets account and the revaluation account—that are built up from more detailed sub-components.

The other changes in assets account for financial assets and liabilities is shown for the year 2009 in Table 6.2. It reports total other changes in financial assets and liabilities of \$1.1 trillion, a very large amount. An even larger but negative change was recorded the previous year. Most of this is attributable to equity and investment fund shares and one can presume that stock market price changes (affecting the revaluation account), following the sharp drop in equity prices in 2008, are the principal explanatory factor. Households plus NPISH is the sector showing the largest net gain in 2009, followed by the non-resident sector, while non-financial corporations recorded the greatest net loss.

**Table 6.2**  
**Other changes in assets account, 2009**

Asset and liability component	Sector						
	Total	National	Households and non-profit institutions	Non-financial corporations	Financial corporations	Governments	Non- residents
			serving households				
millions of dollars							
Total financial assets	1,070,055	919,754	342,952	166,846	405,755	4,201	150,301
Official international reserves	-7,923	-7,923	0	0	-7,923	0	0
Total currency and deposits	-31,197	-21,924	-3,501	-9,036	-9,376	-11	-9,273
Debt securities	71,595	103,424	10,757	5,688	85,615	1,364	-31,829
Loans	-68,711	-45,946	0	-1,180	-40,939	-3,827	-22,765
Equity and investment fund shares	1,006,839	794,977	177,679	154,047	449,402	13,849	211,862
Life insurance and pensions	13,394	13,394	13,394	0	0	0	0
Other accounts receivable	86,058	83,752	144,623	17,327	-71,024	-7,174	2,306
Total financial liabilities	1,070,055	938,591	-4,239	514,728	421,056	7,046	131,464
Official international reserves	-7,923	0	0	0	0	0	-7,923
Total currency and deposits	-31,197	-24,140	0	0	-24,140	0	-7,057
Debt securities	71,595	85,087	0	1,966	78,035	5,086	-13,492
Loans	-68,711	-41,812	-3,689	-15,623	-22,580	80	-26,899
Equity and investment fund shares	1,006,839	823,103	0	503,585	319,518	0	183,736
Life insurance and pensions	13,394	13,394	0	0	12,809	585	0
Other accounts payable	86,058	82,959	-550	24,800	57,414	1,295	3,099

Source: Statistics Canada, table 36-10-0448-01.

The other changes in assets account for Canadian non-financial assets has not yet been developed. The task of doing so is on Statistics Canada's future agenda. For produced non-financial assets, existing price statistics are expected to be helpful in the development of the revaluation account while demolitions and materials disposal statistics plus media reports will be of value in calculating estimates of other changes in the volume of assets. Work will also be necessary to develop these accounts for non-produced non-financial assets.

## 6.4 National balance sheet accounts

### 6.4.1 What is a balance sheet?

When an investor studies a business as a potential investment target, one of the key sources of information he or she turns to is the corporate balance sheet. This accounting statement shows the value of all the things the company owns—its non-financial and financial assets—on one side of the ledger and all the means by which it has acquired funds to pay for those things—its liabilities and shareholders' equity—on the other side. Its non-financial and financial assets can include a wide variety of items including buildings, machinery, land, inventories, intangible assets, cash, bank deposits and so on. The other side of the ledger lists the methods of financing these assets. These include borrowing via loans, corporate bonds and other means, growing the value of existing shareholders' equity or issuing new equity. In corporate balance sheets, non-financial and financial assets must always equal liabilities plus shareholders' equity and equity is the balancing item. If, for example, the value of a non-financial or financial asset drops with no corresponding decrease in liabilities, then there must be a decrease in the value of shareholders' equity. If assets are less than liabilities then shareholders' equity is negative and the business is insolvent.

By studying the various elements of the corporate balance sheet—the types of non-financial and financial assets the company owns and their relative size, the magnitude of its liabilities in relation to its shareholders' equity, the extent to which its financial assets or liabilities are short-term or longer-term in their maturity and so on—much can be learned about the financial health of any business.

The corporate balance sheet has its counterpart in the government sector. Governments are required to report on their non-financial and financial assets and liabilities in audited public accounting statements. Their non-financial and financial assets and liabilities are well defined and reported. But unlike corporations, governments have no

stated shareholders' equity as such. Often government liabilities exceed government assets (non-financial plus financial) and the difference is referred to as the **accumulated deficit**. The balance sheet identity for governments, then, is that total assets must be equal to liabilities plus the accumulated deficit. The accumulated deficit can also be considered the **net worth** of the government. Unlike other kinds of institutional units, governments can have a persistent negative net worth because governments have the power to tax and, in the case of the Government of Canada, the power to issue new currency.<sup>21,22</sup>

Households also have well defined balance sheets, though they are not required to issue reports as listed corporations and governments must do. Their non-financial and financial assets include housing, bank deposits, pension financial assets, mutual fund shares and so on while their liabilities include mortgages, bank loans, credit card debt and other kinds of debt obligations. The excess of their non-financial and financial assets over their liabilities is their net worth. Like corporations, they can become bankrupt when liabilities exceed assets. If a household wishes to borrow a large sum of money for a major purchase such as a house or a car, its lender will undoubtedly want to take a look at the significant elements of its balance sheet.

In the national accounts, a balance sheet is also drawn up for the non-resident sector, showing liabilities originating in the Canadian economy and held by non-residents as financial assets, plus foreign liabilities held as financial assets by Canadian residents.<sup>23</sup> The mirror image of this balance sheet for non-residents, which is the balance sheet for the aggregate of all Canadian resident sectors vis-à-vis non-residents, is referred to as the **international investment position** and is discussed in chapter 8. From Canada's point of view, the external sector's net worth is Canada's balance of international investment. Over most of the period for which statistics are available, Canada has been a net debtor nation, such that the positive net worth of the non-resident sector has been a net international indebtedness position (also referred to as net foreign debt or as a net liability to the rest of the world) for Canada.

In effect, each sector has its own accounting practices. In the corporate world, businesses keep track of their non-financial and financial assets and liabilities using Generally Accepted Accounting Principles (GAAP) under the general guidance of the Accounting Standards Board.<sup>24</sup> Government accounting standards are set by the Public Sector Accounting Board, although individual governments frequently diverge from those standards. Households, on the other hand, do not have well defined accounting standards. The national balance sheet accounts provide a standard treatment for all of the sectors, including the non-resident sector, thereby allowing their interrelationships to be much more effectively understood.

The **national balance sheet accounts** comprise the individual balance sheets of the various institutional units in the economy—households, NPISH units, non-financial and financial corporations, governments and non-residents. The difference between assets (both non-financial and financial) and liabilities, referred to as **net worth**, is the balancing item for the national balance sheet accounts.

The **national wealth** of Canada is the sum of the non-financial assets of each of the domestic institutional sectors. Canada's balance of international investment is added (if net foreign financial assets are positive) or deducted (if net foreign financial assets are negative) from national wealth in the calculation of **national net worth** (which is also equal to the sum of domestic sectors' net worth).

Like most other national accounts statistics, statistics in the main balance sheet table are expressed at **market value**. To the extent possible, relevant non-financial and financial assets and liabilities (notably marketable securities and non-financial assets) are estimated at current market values, whereas audited financial statements of many institutional units (the fundamental source data) are expressed at **book value**.<sup>25</sup> Because, for some financial instruments and some institutional sectors, book value estimates are relevant, Statistics Canada also publishes such valuations for selected elements.

At the end of 2009, total financial assets on the Canadian national balance sheet were \$18.0 trillion when measured at market prices.

### 6.4.2 Temporal changes in balance sheet items

The various items in the national balance sheet accounts are **stocks** rather than flows.<sup>26</sup> They are measured at the end of the period, whether that period be a quarter or a year. The change in a balance sheet item at the end of one period, compared with the beginning of that period (or equivalently, compared with the end of the previous period) is determined by three general factors:

1. Flows of saving and investment and financial flows in assets and liabilities during the intervening period may change asset and liability stocks. These flows are reflected in transactions.
2. Changes in the volume of assets or liabilities due to extraordinary, one-off, catastrophic events such as earthquakes, floods and property destruction due to wars; the finding of previously undiscovered subsoil mineral resources;<sup>27</sup> or changes in classification<sup>28</sup> may imply increases or decreases in the non-financial and financial assets or liabilities of a particular sector without there being any associated transaction flows. These 'other flows' are not reflected in transactions.
3. Changes in non-financial and financial asset prices may cause the market value of certain assets and liabilities to rise or fall, even if those assets and liabilities were not exchanged in a transaction. The impact of such nominal valuation changes is referred to as **holding gains or losses** and they too are reflected on the market value balance sheet. One important example where such changes sometimes have a large effect is the value of securities or other financial assets denominated in foreign currencies, which are converted to Canadian dollars using the end-of-period exchange rate. Exchange rate fluctuations can often lead to large changes in the value of a security. Another example is the value of listed equities, which is re-estimated each period based on the latest stock market price quotations.

A thorough explanation of these factors is discussed in chapter 5 and in section 6.2 and section 6.3 of this chapter.

### 6.4.3 Non-financial assets on the balance sheet

The asset side of the national balance sheet consists of both non-financial and financial assets. In the national accounts, non-financial assets can only be directly held by resident sectors.<sup>29</sup> The non-resident sector, however, can directly hold financial assets, which are claims on non-financial assets.

Non-financial assets are classified in two categories, **produced** and **non-produced assets**. Produced assets come into existence as outputs from production processes that are within the production boundary of the SNA, whereas non-produced assets originate in other ways. The major categories of non-financial assets in Canada's national balance sheet are as follows.

Produced non-financial assets:

- Residential structures
- Non-residential structures
- Machinery and equipment
- Intellectual property products
- Consumer durable goods
- Inventories
- Weapons systems

**Non-produced non-financial assets:**

- Land
- Radio spectrum
- Timber
- Subsoil energy resource stocks
- Subsoil mineral resource stocks

As can be seen above, in Canada there are seven sub-categories of produced assets and five of non-produced assets. All of the produced asset sub-categories, with one exception, are considered capital items. Indeed, total produced non-financial assets grow or change from period to period as a result of gross capital formation, after allowing for capital consumption and other flows.<sup>30</sup> The exception is consumer durable goods which are not considered to be a form of capital. While they are included in Canada's total for produced non-financial assets, they are outside the *SNA 2008* asset boundary, which treats consumer durable goods as non-capital items. This exception allows for a broader and in some ways more complete definition of Canada's total non-financial assets, national wealth and national net worth, which is consistent with the distributional estimates of household assets and debt. It also makes Canada's national wealth estimates more comparable to those of the United States, since that country also capitalizes consumer durable goods in its flow of funds accounts.<sup>31</sup> Changes in the stock of consumer durable goods are recorded in the other changes in assets account.

Some tangible produced assets are not currently included in Canada's national balance sheet. These include historical monuments and valuables, such as precious metals and stones, antiques and other collectors' items, and entertainment, literary and artistic originals. They are excluded from Canada's national balance sheet because available source data are inadequate. The value of these assets would likely be relatively small in comparison to other countries with longer histories and more significant collections of art and artifacts. Nevertheless, the omission of these assets constitutes a gap on which it is hoped to make progress in the future.

As noted in chapter 3, intangible produced assets—known as intellectual property products—are also present in Canada's national balance sheet accounts. Included is knowledge resulting from research and development and from mineral exploration, and computer software. Human capital is excluded as recommended by *SNA 2008*.<sup>32</sup>

The value of produced assets as reported in corporate and government accounting statements can differ from those that are reported in the national balance sheet for several reasons. First, enterprises and governments often value capital items at historical cost rather than current market prices as in the national balance sheet. Second, the value of fixed capital in business accounts is influenced by tax considerations affecting depreciation allowances, which is not the case for the national balance sheet estimates which aim to measure true capital consumption. Third, while some intangible non-produced assets such as patents and trademarks are reported on corporate balance sheets, corporations do not typically capitalize research and development and mineral exploration expenses as is done in the national balance sheet.

The balance sheet also includes non-produced non-financial assets. According to *SNA 2008* the category can include, in addition to the value of land, the radio spectrum, mineral and energy resources, non-cultivated biological resources, water resources and other natural resources as well as the associated leases derived from these natural assets. Some of these non-produced non-financial asset types are not yet recognized on Canada's national balance sheet due to measurement difficulties.

Land (residential, commercial and agricultural) is by far the largest non-produced, non-financial asset in the balance sheet accounts, at \$1.9 trillion in 2009. Estimates of some of the other asset types in this category have been developed as part of the environmental satellite accounts. These include timber and subsoil resource stocks. The latter are comprised of energy resources, referring to crude oil, natural gas, crude bitumen and coal and mineral resources, including gold, iron, copper, nickel, lead, zinc, molybdenum, uranium, diamonds and potash.

The land component includes only privately-owned property. Publicly-owned land is vast, but difficult to value, and is thus excluded.<sup>33</sup> Renewable stocks of fish, game and wildlife are largely publicly-owned and are also excluded.

Excluded non-produced intangible assets include patents, trade-marks, copyrights and goodwill. Assets of this kind are essentially legal constructs and they are not explicitly included in Canada's national balance sheet accounts.



Rather they are reflected in the value of produced assets as part of capitalized research and development which is the basis for the value of such things as copyrights, patents and goodwill.

#### 6.4.4 Relationship of economic and business accounting

The national balance sheet accounts are the most closely related to business accounting of any branch of the Canadian macroeconomic accounts. The basic identity from business accounting that the value of non-financial and financial assets equals the value of liabilities plus owners' equity or net worth holds true for the firm, the sectors of the economy and the nation. However, the similarities between business and economic accounting are more apparent in individual sector balance sheets than at the total level where financial asset and liability claims are equal and offsetting. The major departures from business accounting occur in the areas of valuation and in specific inclusions and exclusions of items.

Non-financial and financial assets are resources available to the firm, through ownership or the right to use, to be utilized in the production of goods and services or to be sold or consumed. They consist of holdings of financial assets including amounts prepaid for such items as rent, interest and insurance that will be consumed in a future period of account. They also include non-financial items such as property, plant and equipment, inventories and in business accounting, intangible assets such as patents, trade-marks, franchises and goodwill. In business accounting, fixed assets are often valued at historical or acquisition cost and are shown net of depreciation, also based on historical cost. In the national accounts the preferred valuation is current market value, although in practice variants similar in concept, such as written down replacement cost, are sometimes used.

In business accounting, liabilities and net worth are the claims of creditors against the firm including trade accounts payable, taxes and interest payable, and loans and bonds outstanding, plus the owners' equity in the firm which is normally comprised of two major elements, contributed capital by the owners and retained earnings. The single most important adjustment in converting this side of the balance sheet to the economic accounting framework concerns the allocation of share capital. In business accounts the original price of stock at the time of issue is considered part of net worth (along with retained earnings and reserves), whereas in the economic accounts it is recorded as a liability under the 'shares' category in the corporate sectors and is revalued at market prices, since these equities are held as financial assets by investors. Retained earnings disappear in the economic accounts as they are embedded implicitly in the market value of equity.

The Canadian system provides estimates of net worth on three different conceptual bases for the corporate sectors. Although only one calculation is used to derive net worth on a consistent basis for each sector throughout the national balance sheet, two additional concepts are adopted for analytical use for each of the corporate sectors in the individual sector presentations.

The net worth concept used for the corporate sector in the national balance sheet accounts is derived by deducting liabilities from total assets. Owners' equity is treated as a liability. In business accounts this would result in a net worth of zero or close to zero. In the economic accounts, however, because fixed assets and some financial assets and liabilities have been revalued at market prices, the technique results in a net worth which reflects the difference between the current market<sup>34</sup> and historical cost. The effect of treating corporate owners' equity as a liability is that it properly allocates most of the net worth to the sector holding the shares (as the ultimate owners) while leaving the net effect of non-financial and financial asset and liability revaluations as the net worth of the corporate sector. This measure of net worth has limited analytical significance but fits within the balancing constraints of the national balance sheet table, which ensures that national net worth is allocated to the appropriate institutional sectors (ultimate owners) according to their corporate equity holdings.<sup>35</sup>

Two other estimates of net worth for the corporate sectors are provided for analytical purposes as supplementary items. One, which does not treat the market value of share capital as a liability but rather as part of corporate sector net worth, provides a net worth figure considerably higher and corresponds to a 'liquidation' value of the sector. This is called '**net worth: current value**' in the national balance sheet table. The remaining measure relates more closely to the estimate produced by standard business accounting, providing a net worth figure equal to the owners' equity with shares valued at book value plus retained earnings. It is called '**net worth: equity**' in the national balance sheet table.

Goodwill is an example of a particularly nebulous intangible item that appears on many business balance sheets. Goodwill normally results from one company's acquisition of another and represents the amount by which the purchase price exceeds the current market value of the acquired non-financial and financial assets and liabilities (or the book value, when the purchased company is private). It is attributable to the value of intangible factors like customer loyalty, good employer/employee relationships and exceptional ability of management (beyond the recognized value these factors may already have in the company's market price). Even though it does appear in the audited financial statements of some companies, goodwill is not directly included in Canada's national balance sheet, but it may be reflected indirectly, in part, in the value of corporate produced assets, since research and development expenditures are capitalized.

#### 6.4.5 National balance sheet accounts dataset: an example

As for the financial flows, the national balance sheet dataset can be thought of as a table with three dimensions. The first dimension is institutional sectors, of which the CSMA includes 36; the second is non-financial asset categories,<sup>36</sup> of which there are 12, and financial instrument categories, of which there are 83; and the third is time, which is measured in quarters from the first quarter of 1990 to date.<sup>37</sup>

As a practical example of Canada's national balance sheet, Table 6.3 presents the estimates at the end of calendar year 2009. These statistics are market values, measured in millions of dollars.

The columns of the table show the institutional sectors: Households and non-profit institutions serving households, non-financial corporations, financial corporations, general governments and non-residents. They also show the total balance sheet, the national balance sheet and the consolidated balance sheet.

Total assets consist of both non-financial assets and financial assets, broken out in detail in the table. The components of liabilities are also shown. Net worth, the difference between total assets and liabilities, is at the bottom of the table.

**Table 6.3**  
**National balance sheet accounts, detailed presentation, 2009**

	Sector							Consolidated balance sheet
	Total, all sectors	National balance sheet	Households and non-profit institutions serving households	Non-financial corporations	Financial corporations	General governments	Non-residents	
	millions of dollars							
Total assets	25,028,713	22,741,012	7,811,786	4,847,445	8,349,885	1,731,896	2,287,701	7,071,982
Non-financial assets	7,071,982	7,071,982	3,777,790	2,471,883	72,405	749,904	0	7,071,982
Produced non-financial assets	4,126,010	4,126,010	2,098,247	1,526,798	66,255	434,710	0	4,126,010
Residential structures	1,687,296	1,687,296	1,516,929	150,119	253	19,995	0	1,687,296
Non-residential structures	1,192,859	1,192,859	53,924	783,207	17,710	338,018	0	1,192,859
Machinery and equipment	338,956	338,956	28,395	253,742	31,550	25,269	0	338,956
Intellectual property products	193,164	193,164	3,235	135,749	9,879	44,301	0	193,164
Consumer durables	476,914	476,914	476,914	0	0	0	0	476,914
Inventories	230,107	230,107	18,850	203,981	6,863	413	0	230,107
Weapons systems	6,714	6,714	0	0	0	6,714	0	6,714
Non-produced non-financial assets	2,945,972	2,945,972	1,679,543	945,085	6,150	315,194	0	2,945,972
Land	2,242,258	2,242,258	1,679,543	431,304	6,150	125,261	0	2,242,258
Natural resources	703,714	703,714	0	513,781	0	189,933	0	703,714
Other non-produced non-financial assets	0	0	0	0	0	0	0	0
Net financial assets	0	-221,638	2,541,670	-2,235,672	229,102	-756,738	221,638	0
Total financial assets	17,956,731	15,669,030	4,033,996	2,375,562	8,277,480	981,992	2,287,701	0
Official international reserves	57,130	57,130	0	0	57,130	0	0	0
Gold	125	125	0	0	125	0	0	0
Foreign currency deposits and securities	44,775	44,775	0	0	44,775	0	0	0
Of which: deposits	667	667	0	0	667	0	0	0
Of which: securities	44,108	44,108	0	0	44,108	0	0	0
Reserve position in the International Monetary Fund	2,548	2,548	0	0	2,548	0	0	0
Special drawing rights	9,682	9,682	0	0	9,682	0	0	0

**Table 6.3**  
**National balance sheet accounts, detailed presentation, 2009**

	Sector							Consolidated balance sheet
	Total, all sectors	National balance sheet	Households and non-profit institutions serving households	Non- financial corporations	Financial corporations	General governments	Non- residents	
	millions of dollars							
Total currency and deposits	1,622,756	1,555,986	971,367	317,408	205,799	61,412	66,770	0
Canadian currency and deposits	1,419,308	1,395,372	945,451	254,326	134,339	61,256	23,936	0
Foreign currency and deposits	203,448	160,614	25,916	63,082	71,460	156	42,834	0
Debt securities	2,712,101	2,148,603	119,210	79,333	1,708,275	241,785	563,498	0
Canadian short-term paper	402,553	369,630	5,949	37,178	258,536	67,967	32,923	0
Government of Canada short-term paper	186,029	167,163	3,104	5,791	148,467	9,801	18,866	0
Other short-term paper	216,524	202,467	2,845	31,387	110,069	58,166	14,057	0
Foreign investments: short-term paper	9,253	9,253	463	569	7,290	931	0	0
Canadian bonds and debentures	2,162,155	1,631,580	107,997	39,751	1,320,478	163,354	530,575	0
Of which: savings bonds	21,105	21,105	21,105	0	0	0	0	0
Government of Canada bonds	403,291	335,416	28,342	3,501	266,791	36,782	67,875	0
Provincial and territorial government bonds	461,641	342,780	17,445	914	261,374	63,047	118,861	0
Local government bonds	50,146	45,468	17,476	3	14,447	13,542	4,678	0
Other Canadian bonds and debentures	1,247,077	907,916	44,734	35,333	777,866	49,983	339,161	0
Foreign investments: bonds	138,140	138,140	4,801	1,835	121,971	9,533	0	0
Loans	3,615,187	3,171,336	5,485	210,664	2,764,535	190,652	443,851	0
Consumer credit	480,304	480,304	0	1,321	461,682	17,301	0	0
Non-mortgage loans	575,799	519,650	0	19,859	460,237	39,554	56,149	0
Mortgages	1,091,492	1,091,008	5,485	9,670	1,070,754	5,099	484	0
Corporate claims: loans and advances	1,340,192	952,974	0	178,411	771,236	3,327	387,218	0
Government claims: loans and advances	127,400	127,400	0	1,403	626	125,371	0	0
Equity and investment fund shares	6,468,026	5,329,495	1,351,231	912,133	2,759,160	306,971	1,138,531	0
Listed shares	1,691,625	1,320,709	317,466	90,387	863,133	49,723	370,916	0
Unlisted shares	3,279,179	2,511,564	383,490	814,127	1,286,591	27,356	767,615	0
Of which: corporate claims: equity	0	0	0	494,029	845,002	15,145	767,615	0
Mutual fund shares (units)	852,184	852,184	607,904	1,301	235,891	7,088	0	0
Government claims: equity	142,537	142,537	0	0	0	142,537	0	0
Foreign investments: equity	502,501	502,501	42,371	6,318	373,545	80,267	0	0
Life insurance and pensions	1,483,412	1,483,412	1,483,412	0	0	0	0	0
Other accounts receivable	1,998,119	1,923,068	103,291	856,024	782,581	181,172	75,051	0
Claims of pension funds on pension managers	136,773	136,773	0	0	136,773	0	0	0
Trade receivables	377,150	342,364	0	318,745	14,983	8,636	34,786	0
Other receivables	1,484,196	1,443,931	103,291	537,279	630,825	172,536	40,265	0
Liabilities and net worth	25,028,713	22,741,012	7,811,786	4,847,445	8,349,885	1,731,896	2,287,701	7,071,982
Total financial liabilities	17,956,731	15,890,668	1,492,326	4,611,234	8,048,378	1,738,730	2,066,063	221,638
Official international reserves	57,130	0	0	0	0	0	57,130	0
Gold	125	0	0	0	0	0	125	0
Foreign currency deposits and securities	44,775	0	0	0	0	0	44,775	0
Of which: deposits	667	0	0	0	0	0	667	0
Of which: securities	44,108	0	0	0	0	0	44,108	0
Reserve position in the International Monetary Fund	2,548	0	0	0	0	0	2,548	0
Special drawing rights	9,682	0	0	0	0	0	9,682	0
Total currency and deposits	1,622,756	1,527,205	0	0	1,522,015	5,190	95,551	0
Canadian currency and deposits	1,419,308	1,419,308	0	0	1,414,118	5,190	0	0
Foreign currency and deposits	203,448	107,897	0	0	107,897	0	95,551	0
Debt securities	2,712,101	2,564,708	0	429,100	985,367	1,150,241	147,393	0
Canadian short-term paper	402,553	402,553	0	61,788	109,053	231,712	0	0
Government of Canada short-term paper	186,029	186,029	0	0	0	186,029	0	0
Other short-term paper	216,524	216,524	0	61,788	109,053	45,683	0	0
Foreign investments: short-term paper	9,253	0	0	0	0	0	9,253	0
Canadian bonds and debentures	2,162,155	2,162,155	0	367,312	876,314	918,529	0	0
Of which: savings bonds	21,105	21,105	0	0	0	21,105	0	0
Government of Canada bonds	403,291	403,291	0	0	0	403,291	0	0
Provincial and territorial government bonds	461,641	461,641	0	0	0	461,641	0	0
Local government bonds	50,146	50,146	0	0	0	50,146	0	0

**Table 6.3**  
**National balance sheet accounts, detailed presentation, 2009**

	Sector							Consolidated balance sheet
	Total, all sectors	National balance sheet	Households and non-profit institutions serving households	Non- financial corporations	Financial corporations	General governments	Non- residents	
	millions of dollars							
Other Canadian bonds and debentures	1,247,077	1,247,077	0	367,312	876,314	3,451	0	0
Foreign investments: bonds	138,140	0	0	0	0	0	138,140	0
Loans	3,615,187	3,234,156	1,449,763	1,032,855	704,680	46,858	381,031	0
Consumer credit	480,304	480,304	480,304	0	0	0	0	0
Non-mortgage loans	575,799	505,987	81,546	298,094	86,534	39,813	69,812	0
Mortgages	1,091,492	1,091,492	887,913	192,853	5,745	4,981	0	0
Corporate claims: loans and advances	1,340,192	1,028,973	0	508,737	520,236	0	311,219	0
Government claims: loans and advances	127,400	127,400	0	33,171	92,165	2,064	0	0
Equity and investment fund shares	6,468,026	5,191,462	0	2,451,921	2,739,541	0	1,276,564	0
Listed shares	1,691,625	1,691,625	0	1,090,521	601,104	0	0	0
Unlisted shares	3,279,179	2,505,116	0	1,309,028	1,196,088	0	774,063	0
Mutual fund shares (units)	852,184	852,184	0	0	852,184	0	0	0
Government claims: equity	142,537	142,537	0	52,372	90,165	0	0	0
Foreign investments: equity	502,501	0	0	0	0	0	502,501	0
Life insurance and pensions	1,483,412	1,483,412	0	0	1,262,178	221,234	0	0
Other accounts payable	1,998,119	1,889,725	42,563	697,358	834,597	315,207	108,394	0
Claims of pension funds on pension managers	136,773	136,773	0	48,056	963	87,754	0	0
Trade payables	377,150	351,096	19,476	315,034	5,342	11,244	26,054	0
Other payables	1,484,196	1,401,856	23,087	334,268	828,292	216,209	82,340	0
Net worth	7,071,982	6,850,344	6,319,460	236,211	301,507	-6,834	221,638	6,850,344
Net worth: current value	0	0	0	2,688,132	3,007,287	0	0	0
Net worth: equity	0	0	0	2,451,921	2,705,780	0	0	0

Source: Statistics Canada, table 36-10-0580-01.

The zeros in the financial assets categories of the balance sheet table have explanations similar to those provided above for the financial flows matrix. National accounts concepts and definitions prevent the non-resident sector from holding non-financial assets (if a non-resident institutional unit holds non-financial assets in Canada and there is no foreign-controlled domestic institutional unit associated with those assets, then an artificial domestic institutional unit is created for this purpose and a non-resident financial claim is shown). Only the monetary authorities, which are part of the financial corporations sector can have official international reserve assets and liabilities, so the other sectors have zeros for this financial category. Likewise, the households and NPISH sector and non-resident sector do not issue consumer credit loans so the corresponding financial assets of these sectors are zero. Similarly the households and NPISH sector does not make non-mortgage loans to the other sectors, or issue corporate or government loans, advances or equity. The corporate, government and non-resident sectors do not hold life insurance or pension assets, so those entries in the balance sheet are also zero.

There are also several easily explained zeros in the liabilities categories. Only non-resident units can hold official international reserve liabilities. Currency and deposit liabilities are only held by financial corporations and the federal government. The households and NPISH sector does not issue debt securities, but it is the only sector that does incur consumer credit liabilities. Both the households and NPISH sector and the government sector do not issue equity and investment fund shares. The households and NPISH sector, the non-financial corporations sector and the non-residents sector do not issue life insurance or pension liabilities.

Net worth is the 'bottom line' of the balance sheet. It shows how each sector stands in terms of the excess of its non-financial and financial assets over its liabilities. At the end of 2009, the households and non-profit institutions serving households sector had a net worth of \$6.3 trillion and this huge amount accounted for almost all of national net worth. The government sector had a net worth of -\$7 billion, including government net debt which is in effect the cumulative deficit of all Canadian governments since Confederation. The total corporate sector (non-financial and financial together) had a net worth of \$538 billion and the non-resident sector net worth was \$222

billion (this was Canada's net indebtedness to non-residents in 2009). National net worth, defined as (i) total net worth less the net worth of non-residents or (ii) the sum of domestic sectors net worth, was \$6,850 billion.

The net worth of corporations is small relative to that of the households and NPISH sector. There are several factors explaining this. One is the fact that, in the national balance sheet accounts, corporate equity is recorded as an asset of other sectors and a liability of the corporate sector. This differs from audited corporate accounting statements, where equity is shown as the balancing item in the identity "Assets = Liabilities + shareholders' equity". If this were the only major factor, one might expect corporate net worth to be near zero in the national balance sheets. However, there is another important factor which is the fact that the national balance sheets largely record non-financial and financial assets and liabilities at market values, whereas audited corporate financial statements record some assets and liabilities at book value. This factor can lead to positive or negative net worth for the corporate sector, but to the extent that the market-book difference is positive and greater for assets than for liabilities, positive net worth can be the result. Overall, corporate sector net worth fluctuates due to differences in non-financial and financial asset and liability valuations, missing assets and other measurement issues.

The last two lines of Table 6.3 show the two alternative measures of corporate sector net worth that are discussed in section 6.4.4.

The reader can easily verify that the same constraints hold in the national balance sheet as in the financial flows: namely, that total financial assets for any instrument category must equal total liabilities for that same category, and that net financial assets (financial assets less liabilities) summed over all sectors must be zero.

## 6.5 Financial instrument categories

As explained above, the financial flow accounts and the national balance sheet accounts record changes in, and levels of financial assets and liabilities held by the institutional sectors. The two sets of accounts use the same classification of financial asset and liability categories, as is briefly discussed in section 6.4.3. This section explains these financial instrument categories in more detail.

### 6.5.1 Official international reserves

The **term reserve assets** refers to those external financial assets that are readily available to, and controlled by Canada's monetary authorities for meeting balance of payments financing needs, intervention in exchange markets to influence the currency exchange rate and other related purposes such as maintaining confidence in the currency and the economy. Reserve assets are, by definition, denominated in foreign currency.

**Official international reserves** are defined as the sum of official holdings of foreign exchange and gold, loans to or from the International Monetary Fund (IMF) on general account, Special Drawing Rights (SDRs) and Canada's reserve position in the IMF. The Exchange Fund Account (EFA) is the main repository of Canada's official international reserves.<sup>38</sup>

Official holdings of gold and foreign exchange comprise gold, U.S. dollars, euros and other foreign-convertible-currency-denominated deposits and securities held as financial assets by the monetary authorities. The corresponding liability is in the non-resident sector. Gold is a tangible asset and not a financial claim, but in the balance of international payments and financial flow accounts it is treated as a financial claim on the non-resident sector. Both flows and levels for this category are valued in Canadian dollars in the financial flow accounts. The financial flows measure the monthly change in the quantity of gold or foreign-currency-denominated claims, converted into Canadian dollars at the average noon rate for the month; these monthly flows are summed to calculate the quarterly flows. Valuation changes resulting from fluctuations in foreign exchange rates are excluded from the financial flows and appear in the revaluation accounts.

The IMF general account covers loans by Canada to the IMF under, for example, the General Arrangements to Borrow (GAB) or the New Arrangements to Borrow (NAB). Loans are recorded as financial assets of the Exchange Fund Account (EFA). In addition, Canada's net balance with the IMF exclusive of these loans is recorded as a financial asset of the monetary authorities. This latter balance with the IMF is equal to Canada's IMF quota less IMF holdings of Canadian dollars. If this balance is positive it is Canada's reserve position and is equal to the amount of foreign exchange Canada is entitled to draw from the IMF for balance of payments purposes. Outstanding Canadian

dollar loans by the IMF add to the reserve position. A negative balance represents Canada's use of IMF credit. The corresponding liability is that of the non-resident sector.

Canada's SDRs balance reflects the allocation of new, and the movement of existing SDRs between Canada and the non-resident sector. SDRs are reserve assets that have been created by the IMF for the purpose of augmenting total world reserves. They are allocated to participating member nations in proportion to their IMF quotas. An IMF participant is obliged to accept them as payment between countries. New allocations of SDRs have been made to IMF members on numerous occasions. SDRs are valued in terms of a weighted average of four major currencies: the euro, the yen, the pound sterling and the U.S. dollar. The Canadian dollar value of SDRs fluctuates with foreign exchange rates, but these price fluctuations are excluded from the financial flow statistics and are included in the revaluation accounts.

### Text box 6.3 International Monetary Fund

The IMF is an organization of 188 countries, headquartered in Washington, D.C. It began operations on March 1, 1947. Its self-described mandate is "... to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world."

Among its many functions, the IMF provides liquidity to countries experiencing balance of payments difficulties and offers economic policy advice. It is, in some ways, the central bank for the national central banks of the member countries. The organization also monitors the economic health of member countries and issues forecasts of world economic developments. It provides technical assistance and training to help countries improve their economic management.

## 6.5.2 Currency and deposits

The **currency and deposits** financial instrument category includes Canadian paper currency and coin in circulation, deposits denominated in Canadian and foreign currency at deposit-taking institutions in Canada and at the Bank of Canada, and foreign currency deposits held abroad. Deposit-taking institutions are licensed to accept deposits in Canada and include chartered banks, credit unions and Caisses Populaires and trust and loan corporations.

In principle, deposits are recorded net of 'items in transit' (cheques outstanding). These items constitute an important example of the '**float**' that results from timing differences in the recording of transactions on the books of the payer and the recipient. A cheque written on the payer's account may be credited to the recipient's account but not yet cleared and debited to the payer's account. This inconsistency is corrected when such cheques outstanding are deducted.

Canadian currency and deposits cover all types of Canadian-dollar-denominated deposits booked at chartered banks in Canada, including demand, savings and term deposits plus inter-bank deposits. Demand deposits consist of financial asset balances that are transferable by means of cheques, drafts or direct debit/credit. Savings and term deposits, in contrast, are non-transferable. Also covered are Canadian-dollar-denominated deposits at the Bank of Canada (which are largely statutory reserves of the chartered banks), Canadian dollar currency outstanding, which is a liability of the Bank of Canada, plus coin in circulation, which is a liability of the Government of Canada.<sup>39</sup>

Deposits in other institutions are also included in this category, notably deposits of all types held at near-banks and public financial institutions. Provincial near-banks comprise credit unions, Caisses Populaires and trust and loan companies. Included are shares in credit unions and Caisses Populaires plus the retained earnings of these institutions. Since these institutions are treated as associations of individuals rather than as corporate businesses, their retained earnings constitute a liability to members (depositors). There is one provincial financial institution that accepts deposits from the public: Alberta Treasury Branches.<sup>40</sup>

This category also includes foreign currency and deposits which means holdings of foreign currency and foreign-currency-denominated deposit assets of all sectors (including non-residents) with chartered banks in Canada, foreign branches, agencies and subsidiaries of Canadian chartered banks, foreign banks and other foreign deposit

institutions. Credit unions and trust and loan companies also have small amounts of foreign currency and deposits. This category excludes foreign currency items held as official international reserves.

### 6.5.3 Debt securities

**Debt securities** are financial instruments that can be bought and sold between parties after they have been initially issued and that have specified terms of issue such as the amount borrowed, the interest rate payable (if any) and the maturity or renewal date. They include government, corporate and non-resident sector short-term paper, federal, provincial, territorial and municipal government bonds, corporate bonds, foreign bonds and collateralized securities.

#### 6.5.3.1 Canadian and foreign short-term paper

In the **short-term paper** sub-category are Government of Canada Treasury bills,<sup>41</sup> which can be described as negotiable bearer promissory notes with an original term to maturity of less than one year that are issued at a discount without coupons by the Government of Canada. These notes are sold at weekly auctions. Original maturities are usually 13, 26 or 52 weeks. Holdings are generally valued at amortized value, which means the difference between purchase price and maturity value is amortized, usually on a straight line basis, on the books of the financial asset holder. The liability on the books of the Government of Canada is recorded at par value less amortized discount.

The other short-term paper sub-category consists of marketable, short-term notes (original term to maturity of one year or less). These are issued by a variety of financial and non-financial corporations, usually at a discount, bearing no coupons and are often called commercial paper. Major issuers are sales finance and consumer loan companies. Bankers' acceptances are also included as a form of short-term paper.<sup>42</sup> They are considered the liability of the original issuer, not the guarantor bank. Provincial and municipal Treasury bills are included. Asset-backed securities<sup>43</sup> are also classified in this sub-category.

Foreign investments in short-term paper include holdings of U.S. Treasury bills and other U.S. short-term paper plus short-term paper instruments from elsewhere in the world.

#### 6.5.3.2 Bonds and debentures

Government of Canada **bonds**<sup>44</sup> are marketable direct and guaranteed bonds with an original term to maturity of more than one year issued by the Government of Canada, whether in Canadian or foreign currency, plus Canada Savings Bonds, real return bonds, special non-marketable bonds issued to Canada Pension Plan, as well as bonds issued by a federal government business enterprise carrying an explicit guarantee. Canada Savings Bonds are not marketable and can be cashed at any time at the bearer's option. They can only be held by the households sector. Bonds guaranteed by the Government of Canada are included in this category and are usually recorded as the liability of federal non-financial government enterprises.

Provincial government bonds consist of direct and guaranteed marketable bonds in Canadian or foreign currency issued with an original term to maturity of more than one year by provincial governments. The category also includes provincial savings bond issues and special issues to the Canada Pension Plan that are not marketable. Provincial guaranteed bonds (for example, Hydro-Québec bonds) are recorded as the liability of the relevant enterprise.

Municipal government bonds are direct and guaranteed marketable bonds in Canadian or foreign currency, issued with an original term to maturity of more than one year by municipal governments and municipal government business enterprises. Bonds guaranteed by municipal governments but issued by local non-financial government enterprises, are recorded as a liability of those enterprises.

Other Canadian bonds consist largely of bonds and debentures issued by Canadian corporations. By definition, they are issued with an original term to maturity of more than one year and may be denominated in Canadian or foreign currency. Mortgage bonds are included but not mortgages (which are generally characterized by blended payments of principal and interest and are not considered to be bonds). In addition to bonds issued by private non-financial and financial corporations, this category covers bonds issued by non-profit organizations (for example, churches, universities, non-profit co-operatives), bonds issued by government business enterprises and bonds issued by hospitals.

This category also includes Canadian holdings of bonds and debentures issued by foreign governments and corporations.

### 6.5.4 Loans

**Loans** are distinguished from other credit market instruments such as bonds or short-term paper by their characteristic of non-marketability. Usually the financial asset cannot be sold nor the liability assumed by any but the original party. Non-marketable notes are classified as loans. No distinction is made between short-term and long-term loans.

This category includes consumer credit, bank and other loans, mortgages, corporate claims<sup>45</sup> representing loans and advances to affiliated<sup>46</sup> enterprises and government claims representing loans and advances to government business enterprises.

Consumer credit, in general terms, consists of credit extended to persons for the purchase of consumer goods and services, although it is often impossible to determine the actual use of a loan and therefore this definition is imprecise. This category includes foreign currency and Canadian dollar personal loans by chartered banks (which excludes business and mortgage loans, loans for renovations of personal property, loans for mobile homes and loans to purchase or carry securities), similar loans by near-banks, policy loans advanced by life insurance companies and loans to persons by sales finance and consumer loan companies. Loans by the sales finance subsidiaries of department stores and automobile companies are also included in this category.

Non-mortgage loans include loans, overdrafts, instalment loans and securities repurchase agreements booked in Canada by Canadian chartered banks. Financing by means of financial leases may also be classified as loans, depending on the terms of the lease.<sup>47</sup> Canadian chartered banks comprise domestically-owned and non-resident-owned banks that have charters (licences) to operate in Canada under the terms of the Bank Act. Loans may be in Canadian or foreign currency, but values are expressed in Canadian dollars for purposes of the financial accounts. Loans to domestic sectors by foreign banks (that is, banks having no Canadian charter and operating outside Canada) or by foreign branches, agencies and subsidiaries of Canadian chartered banks, are also included in the loans category. Some personal loans are classified as consumer credit.

The mortgages category includes mortgage loans and agreements of sale secured by real property (mostly residential buildings). First, second and third mortgages are included. Home improvement loans are not considered to be mortgages, being instead classified as bank or other loans. Mortgage bonds are also excluded, being classified instead as bonds. Mortgages are characterized by blended repayments, usually monthly, of mortgage principal and interest. Bonds, while they may be secured by real property, usually require semi-annual payment of interest (the coupon) and repayment of principal at maturity. No distinction is made between mortgages privately placed and issues sold in the market.

Loans and advances to corporate affiliates are classified as corporate claims within the loans category. Loans and advances to government affiliates have the same treatment.

### 6.5.5 Equity and investment funds

The **equity and investment funds** instrument category includes claims on the residual value of a corporation after the claims of all creditors have been met. In the Financial and wealth accounts, equity is treated as a liability of the issuing institutional unit. Equities comprise common and preferred shares (stocks), which represent a stake in the ownership of the company. In addition, the following are also considered to be equities: depository receipts,<sup>48</sup> most units of mutual funds,<sup>49</sup> income trusts,<sup>50</sup> and warrants.<sup>51</sup> Equities can be part of portfolio investment or direct investment in the balance of payments and the international investment position (see chapter 8), depending upon the relationship of the issuer and the holder. The equity and investment funds category includes both listed and unlisted shares as well as corporate and government equity claims and foreign equity investments.

All of the stock, whether issued to associated or non-associated enterprises or to households, is recorded on the liability side. Stock issued by a government business enterprise to the parent government is classified as a liability owed to the parent government. On the asset side, investments in the stock of associated enterprises are reported under corporate and government equity claims. The financial flow accounts record new issues, redemptions and sales and purchases of outstanding shares at market value. The balance sheet accounts include accumulated retained earnings implicitly as part of equity outstanding. The financial flows do not record retained earnings.



On the asset side, corporate claims include investment in shares, marketable debt securities and loans and advances to associated corporations (parent, subsidiary or affiliates such as joint ventures or sister corporations with the same parent). On the liability side, shares issued to associated corporations are not reported separately from total share capital.

Claims of or on associated government enterprises include investment in shares issued by government business enterprises plus investments in marketable securities, loans and advances issued by the parent government or government business enterprise. Share capital issued to the parent government or associated government business enterprise is separately reported, in contrast to the situation that exists for corporate claims.

Contributed surplus<sup>52</sup> is included in the balance sheet as a component of claims of associated government enterprises.

Claims between parent governments and government business enterprises are classified to government equity claims. Claims between one government enterprise and another government enterprise are also classified to this category. Claims between a government business enterprise and an associated private corporation are classified as corporate claims.

Foreign investments include common and preferred shares and other similar instruments. These investments may be denominated in Canadian or foreign currency. Liabilities of non-resident corporations in these marketable forms, plus loans and advances, when held as financial assets by associated domestic corporations, are classified as corporate claims.

### 6.5.6 Life insurance and pensions

The *SNA 2008* (p. 232) notes that “insurance, pension and standardized guarantee schemes all function as a form of redistribution of income or wealth mediated by financial institutions. The redistribution may be between individual institutional units in the same period or for the same institutional unit over different periods or a combination of the two. Units participating in the schemes contribute to them and may receive benefits (or have claims settled) in the same or later periods. While they hold the funds, insurance corporations invest them on behalf of the participants.”

The life insurance and pensions asset/liability category in Canada’s Financial and wealth accounts pertains to the liability of life insurance companies and pension funds to policyholders and beneficiaries. Included are the liabilities of life insurance companies, fraternal benefit societies, segregated funds of life insurance companies, accident and sickness insurance companies and the liability of trustee pension plans to pension plan members. The corresponding financial asset is held entirely by the households sector. In the Canadian System of National Accounts, life insurance companies are treated as associations of individuals and the net financial assets accumulated by life insurance companies are considered to be the property of the policyholders on whose behalf benefits will eventually be paid. Life insurance companies and fraternal benefit societies also have other liabilities such as bank loans and mortgages. Trustee pension funds are also treated as associations of individuals and all of their accumulated non-financial and financial assets are considered to be owned by the persons who are or will be the pension beneficiaries.

The financial flows record only the acquisition and disposition of financial assets and liabilities by the sector and not the operational flows of funds into and out of the sector. In other words, the flows recorded in this category are net of employer and employee pension contributions plus life insurance premiums and annuity considerations plus health and other insurance premiums paid to accident and sickness branches of life insurance companies plus the interest and other investment income of these sub-sectors less their operating costs and benefits and claims paid.

### 6.5.7 Other accounts receivable or payable

**Other accounts receivable or payable** consist of trade credits (receivables and payables) and other receivables/payables. The former generally includes short-term credit advanced or received in the ordinary course of business by suppliers or buyers of goods and services. These credits are outstanding from the time the goods or services are provided until payment is received. Trade credit does not constitute a marketable instrument like short-term paper and it is not negotiated like a bank loan. Receivables and payables between affiliated corporations (for example, a parent and a subsidiary) are included in this category. The financial flow accounts are not presented on a fully consolidated basis for most sectors and as a result, a considerable share of the trade credit statistics are flows

within a sector or even within an enterprise or group of companies. Such intra-sectoral flows are most important in the non-financial corporations sector.

There is a ‘float’<sup>53</sup> problem in the trade credit statistics, the size of which is unknown. This float arises from differences between the time when trade credit is recorded as a financial asset by the supplier and the time the buyer receives the goods or the bill and records the liability. Similarly there can be a discrepancy between the time a trade credit liability is removed from the books of the payer and the time when payment is received and the financial asset is removed from the supplier’s books. There is no explicit estimate of float assets and liabilities in the financial flow accounts due to measurement difficulties.

This category also includes repurchase agreements and other financial derivative instruments such as option and forward contracts.

## 6.6 Financial analysis

Most of the statistics in the national accounts pertain to the non-financial or ‘real’ economy, but as seen in this chapter the Financial and wealth accounts provide a comprehensive perspective on the financial side of the economy as well.

Financial statistics—especially quarterly financial statistics—can often appear ‘noisy’ because seemingly small variations in relative rates of return on different financial instruments can cause large portfolio shifts. Changes in the slope of the yield curve can cause movements into or out of short-term instruments and out of or into long-term ones. Interest rates and bond yields for Canadian financial instruments may rise or fall relative to comparable rates abroad, causing international financial flows. For these reasons and others, the financial flows tend to exhibit greater volatility than most of the non-financial flows.<sup>54</sup> Accordingly, it can sometimes be difficult to discern the underlying interactions between the ‘real’ and financial economies, especially at the quarterly frequency.

Nevertheless, the Financial and wealth accounts can be used to gain analytical insight on economic trends.

### 6.6.1 Borrowing and debt indicators

The financial flow and national balance sheet accounts can be used to provide a comprehensive picture of flows of borrowing and stocks of indebtedness across the different sectors and to reveal how that picture is changing through time. Borrowing is an important indicator of demand pressure in the economy, while trends in and the extent of indebtedness may help signal whether economic storm clouds lie ahead.

The financial market summary table extracts borrowing statistics from the financial flows matrix to reveal borrowing trends by sector and by financial instrument category, in a time series context. By focussing on the more market-sensitive instruments and omitting intermediary activities like deposit taking and transactions such as the extension of trade credit and claims on associated enterprises, it provides an approximation of final borrowing through organized markets for securities and negotiated loans. Funds raised by non-financial domestic sectors constitute by far the greater part of this domestic credit market activity. As an example, Table 6.4 displays the financial market summary table for the period leading up to and including the international financial crisis of 2008 and the recession of 2009.

The last line of the table shows total funds raised, which peaked in 2007 before declining by half in 2008 and 2009, the years of the financial crisis and recession. The table shows how households, non-financial corporations and non-residents accounted for this decrease. While the private sector was cutting back on its borrowing in view of the economic downturn, governments went into fiscal stimulus mode and increased their borrowing. This dampened the overall decline in borrowing considerably.

The table shows that short-term borrowing rose sharply in 2008, as institutional units sought to increase their liquidity during the crisis, and declined only modestly in 2009. Bond borrowing remained comparatively low until 2009, when it rose sharply as market confidence strengthened and the extremely low interest rate environment permitted corporations and governments to raise new funds while paying minimal coupon rates. Consumer credit increased by about a quarter between 2007 and 2009 while net new non-mortgage borrowing disappeared. Mortgage borrowing fell sharply as the housing market weakened. Funds raised through listed equity shares virtually disappeared in the crisis year of 2008 before returning to a more normal level in 2009.

**Table 6.4**  
**Financial market summary table, 2006 to 2009**

	2006	2007	2008	2009
	millions of dollars			
<b>Financial flows borrowing category</b>				
Households	108,185	131,261	115,149	102,132
Consumer credit	33,874	37,452	36,362	43,519
Non-mortgage loans	9,604	7,270	5,349	819
Mortgages	64,707	86,539	73,438	57,794
Non-profit institutions serving households	2,536	308	-1,215	592
Non-mortgage loans	2,221	249	-1,409	305
Mortgages	315	59	194	287
Non-financial private corporations	87,759	121,017	34,657	9,355
Short-term paper	14,838	4,814	1,806	-14,319
Bonds	11,765	15,342	13,201	34,206
Non-mortgage loans	38,527	61,167	22,610	-38,262
Mortgages	10,403	21,221	1,036	11,708
Listed shares	12,226	18,473	-3,996	16,022
Non-financial government enterprises	101	-1,965	-1,976	1,648
Short-term paper	-602	-165	-482	-354
Bonds	2,143	2,666	506	2,138
Non-mortgage loans	-1,478	-4,511	-1,684	-137
Mortgages	38	45	-316	1
Listed shares	0	..	0	0
Federal general government	-10,104	-18,682	73,253	89,056
Short-term paper	-3,687	-8,586	66,330	3,428
Bonds	-6,389	-10,214	3,662	85,620
Non-mortgage loans	-28	118	3,261	8
Other levels of government	18,509	22,201	21,531	57,745
Short-term paper	1,395	7,099	12,902	9,141
Bonds	17,316	13,605	12,797	44,213
Non-mortgage loans	-63	1,687	-4,550	3,264
Mortgages	-139	-190	382	1,127
Total funds raised by domestic non-financial sectors	206,986	254,140	241,399	260,528
Short-term paper	11,944	3,162	80,556	-2,104
Bonds	24,835	21,399	30,166	166,177
Consumer credit	33,874	37,452	36,362	43,519
Non-mortgage loans	48,783	65,980	23,577	-34,003
Mortgages	75,324	107,674	74,734	70,917
Listed shares	12,226	18,473	-3,996	16,022
Non-residents	96,591	74,516	-8,683	22,696
Short-term paper	8,367	-8,720	-6,277	4,066
Bonds	42,439	50,361	-37,190	7,571
Non-mortgage loans	5,408	11,553	9,401	11,791
Foreign investments: equity	40,377	21,322	25,383	-732
Total borrowing excluding domestic financial institutions	303,577	328,656	232,716	283,224
Domestic financial institutions	121,382	143,016	136,910	-45,505
Short-term paper	28,445	16,228	-23,325	-49,760
Bonds	76,593	108,614	130,916	-149
Non-mortgage loans	11,333	16,998	11,866	-6,130
Mortgages	1,867	-1,323	120	-1,060
Listed shares	3,144	2,499	17,333	11,594
Total funds raised	424,959	471,672	369,626	237,719

.. not available for a specific reference period

Source: Statistics Canada, table 36-10-0579-01.

Non-residents raised, in Canada, less than a third as much in 2009 as they did in 2007, with the decrease being especially evident in bond and equity sales.

Domestic financial institutions cut their borrowing very substantially, on a net basis, between 2007 and 2009. They liquidated short-term paper and non-mortgage loans in 2009 and instead raised more funds through listed shares. Bond borrowing ceased on a net basis despite low interest rates and financial institutions also sought to raise additional equity to strengthen balance sheets, taking advantage of the sharp decline in equity prices that had occurred in 2008 and early 2009.

Financial developments during this four-year period can also be explored using the credit market summary table, which parallels the financial market summary table in its general structure and shows total debt outstanding, at book value, by institutional sector and by financial instrument category.

Table 6.5 shows statistics from the credit market summary table for the period 2006 to 2009. The debt statistics shown tell a story similar to the one told by the changes in borrowing recorded in Table 6.4. However, as noted, the balance sheet stocks can change for reasons other than variations in borrowing and sometimes additional insights can be gained by looking at the balance sheet. For example, although the non-resident sector did substantial borrowing in 2009 (\$22,696 million, see Table 6.4), the sector's debt outstanding increased just \$465 million (from \$865,880 in 2008 to \$866,345 in 2009), mainly due to a reduction of bond indebtedness. In addition, although total debt outstanding continued growing in 2009, its growth rate fell from 8.7 per cent in 2008 to 6.2 per cent in 2009.

**Table 6.5**  
**Credit market summary table at book value, 2006 to 2009**

	2006	2007	2008	2009
	millions of dollars			
<b>Balance sheet liability category</b>				
Households	4,208,637	4,700,885	5,201,558	5,573,352
Consumer credit	1,417,328	1,562,686	1,711,373	1,850,727
Non-mortgage loans	232,583	265,747	288,654	294,381
Mortgages	2,558,726	2,872,452	3,201,531	3,428,244
Non-profit institutions serving households	46,375	55,215	45,004	48,278
Non-mortgage loans	34,791	43,011	32,226	34,493
Mortgages	11,584	12,204	12,778	13,785
Non-financial private corporations	2,776,087	3,133,496	3,412,985	3,474,323
Short-term paper	249,005	284,716	306,933	270,228
Bonds	932,145	997,011	1,081,730	1,193,054
Non-mortgage loans	978,724	1,153,929	1,310,198	1,251,562
Mortgages	616,213	697,840	714,124	759,479
Non-financial government enterprises	257,502	245,101	203,269	206,054
Short-term paper	13,665	10,970	10,012	8,642
Bonds	206,289	205,211	184,369	191,202
Non-mortgage loans	36,274	27,484	8,316	5,956
Mortgages	1,274	1,436	572	254
Federal general government	1,633,718	1,576,634	1,673,911	2,150,675
Short-term paper	509,492	487,661	568,843	784,854
Bonds	1,124,079	1,088,181	1,093,728	1,347,669
Non-mortgage loans	147	792	11,340	18,152
Other levels of general government	1,717,194	1,781,246	1,876,855	2,073,690
Short-term paper	69,034	76,946	104,701	149,932
Bonds	1,489,109	1,541,656	1,623,347	1,761,150
Non-mortgage loans	144,194	148,501	136,504	143,173
Mortgages	14,857	14,143	12,303	19,435
Total debt outstanding of domestic non-financial sectors	10,639,513	11,492,577	12,413,582	13,526,372
Short-term paper	841,196	860,293	990,489	1,213,656
Bonds	3,751,622	3,832,059	3,983,174	4,493,075
Consumer credit	1,417,328	1,562,686	1,711,373	1,850,727
Non-mortgage loans	1,426,713	1,639,464	1,787,238	1,747,717
Mortgages	3,202,654	3,598,075	3,941,308	4,221,197
Non-residents	650,273	838,145	865,880	866,345
Short-term paper	73,821	72,421	42,149	40,450
Bonds	426,461	593,613	589,439	558,169
Non-mortgage loans	149,991	172,111	234,292	267,726
Total debt outstanding excluding domestic financial institutions	11,289,786	12,330,722	13,279,462	14,392,717
Domestic financial institutions	3,172,134	3,805,842	4,253,845	4,232,512
Short-term paper	603,640	733,487	671,804	471,650
Bonds	2,279,990	2,734,335	3,207,421	3,387,993
Non-mortgage loans	257,446	312,234	347,138	347,970
Mortgages	31,058	25,786	27,482	24,899
Total debt outstanding	14,461,920	16,136,564	17,533,307	18,625,229

Source: Statistics Canada, table 38-10-0234-01.

## 6.6.2 Financial ratio indicators

When combined with statistics from the non-financial accounts by means of ratios, the financial accounts provide perspective on the relative indebtedness and liquidity of the institutional sectors. A number of these ratios can be calculated, some pertaining to the household sector, some to the corporate sector and some to the government sector. Table 6.6 shows the financial ratio indicators that are available from Statistics Canada.

### 6.6.2.1 Financial ratio indicators

Household debt can be defined as the sum of household sector liabilities in the form of loans, which is to say consumer credit, mortgages and non-mortgage loans, plus trade payables. The household sector does not hold any liabilities by means of other financial instruments such as bonds, deposits or equities. The ratio of household debt to gross domestic product can be compared with itself through time and also with similar ratios for the corporate and government sectors, and with the household-debt-to-GDP ratio in other countries.

Another interesting indicator, the overall household-debt-to-disposable-income ratio, is calculated as household debt, as defined for the previous ratio, divided by household disposable income as defined in chapter 5. Tracking the value of this ratio through time shows the changing burden of household debt relative to the capacity of households to repay that debt out of income.

An alternative is the household-credit-market-debt-to-disposable-income ratio, which is similar to the previous ratio but the numerator excludes debt in the form of trade payables. Trade payables are typically quite small relative to other household sector liabilities and they are short term in nature. Many analysts prefer this ratio to the previous one as an indicator of household debt burden.

Another alternative is the household-consumer-credit-and-mortgage-liabilities-to-disposable-income ratio. This ratio further restricts the scope of household debt by excluding not just trade payables, but also non-mortgage loans. Like trade receivables, non-mortgage loans are typically a relatively small share of total household debt and these loans are often taken out to finance undertakings other than the purchase of consumer goods and services, such as unincorporated business activities.

As explained earlier in this chapter, household net worth represents the excess of household non-financial and financial assets over household liabilities. The ratio of net worth to disposable income is an indicator of the wealth effect on potential consumer expenditure. To the extent that household net worth is growing more rapidly than disposable income, households may be inclined to increase discretionary consumer spending.

The household-debt-to-total-assets ratio compares total household debt, as defined for purposes of the first and second ratios, to total financial and non-financial assets of the household sector. This is an indicator of household financial risk. When liabilities are small relative to total non-financial and financial assets, households have the option of reducing them by liquidating assets, so the associated risk may be regarded as less than would be the case if liabilities were large relative to assets.

The household-debt-to-net-worth ratio can be interpreted as a leverage indicator. Net worth provides potential collateral for borrowing, so the higher this ratio is the less capacity will the household sector have for additional borrowing.

The household-credit-market-debt-to-net-worth ratio is similar to the household-debt-to-net-worth ratio, the difference being that the numerator excludes trade payables. Another alternative is the household-consumer-credit-and-mortgage-debt-to-net-worth ratio. This ratio is similar to the previous one except that non-mortgage loans are excluded from the numerator. This ratio aims at consumer debt (including mortgages) as distinct from broader definitions of debt.

The household-financial-assets-to-non-financial-assets ratio provides insight on the structure of household sector assets, particularly with respect to their liquidity (since financial assets tend to be more liquid than non-financial ones). Greater liquidity may imply an increased inclination by households to spend on goods and services.

The household-real-estate-equity-to-real-estate-assets ratio is the value of household real estate equity (the value of residential and non-residential real estate plus land owned by households less the mortgage liabilities of households) divided by the value of residential and non-residential real estate and land owned by households. Real

estate accounts for a large share of household sector assets and when the equity share in those assets is relatively large, households are better situated in the event of an economic downturn.

Another useful household real estate ratio is the household-real-estate-to-disposable-income ratio. It is an indicator of the affordability of housing. In this connection, the debt service ratio from the income and expenditure accounts, defined as household mortgage and non-mortgage interest paid as a proportion of disposable income, is also useful.

The first and second panels of Table 6.6 show all of the ratios just mentioned over the period between 2006 and 2009. Debt is measured at year end while income is the flow for the year as a whole. The debt-to-income and debt-to-assets ratios generally show a rising trend over the entire period. Net worth as a percentage of disposable income peaks in 2007 and then declines. Total assets rose although financial assets decreased relative to net worth. Owners' equity declined steadily relative to the value of real estate assets.

**Table 6.6**  
**National balance sheet financial ratio indicators, 2006 to 2009**

	2006	2007	2008	2009
	percent			
<b>Financial flows component</b>				
<b>Households</b>				
Debt to gross domestic product	72.7	77.3	81.1	88.5
Debt to disposable income	134.8	142.2	149.2	154.8
Credit market debt to disposable income	133.0	140.4	147.1	152.7
Consumer credit and mortgage liabilities to disposable income	125.6	132.4	139.0	144.6
Net worth as a percentage of disposable income	685.7	709.2	683.5	660.8
Debt to total assets	16.4	16.7	18.0	19.0
Debt to net worth	19.7	20.1	21.9	23.4
Credit market debt to net worth	19.4	19.8	21.6	23.1
Consumer credit and mortgage liabilities to net worth	18.3	18.7	20.4	21.9
Total assets to net worth	119.7	120.1	121.9	123.4
Financial assets to net worth	63.4	63.5	62.7	62.9
Financial assets to non-financial assets	112.8	112.2	105.9	104.0
Owner's equity as a percentage of real estate	75.0	74.8	73.8	72.6
Real estate as a percentage of disposable income	323.8	340.7	346.4	342.9
<b>Households and non-profit institutions serving households</b>				
Debt to gross domestic product	74.6	79.2	83.1	90.7
Debt to disposable income	134.8	141.9	148.7	154.3
Credit market debt to disposable income	130.9	138.3	144.4	149.9
<b>Private non-financial corporations</b>				
Total debt to equity	162.1	168.4	190.1	201.4
Credit market debt to equity (book value)	60.9	66.1	67.9	68.4
<b>General government</b>				
Gross debt (book value) to gross domestic product	94.8	92.1	90.0	101.6
Federal general government gross debt (book value) to gross domestic product	41.6	38.9	39.0	47.5
Other levels of general government gross debt (book value) to gross domestic product	53.0	53.1	50.5	53.9
Net debt (book value) to gross domestic product	44.2	39.7	37.1	41.1
Federal general government net debt (book value) to gross domestic product	33.3	30.9	28.8	30.9
Other levels of general government net debt (book value) to gross domestic product	19.3	18.1	17.6	20.1

Source: Statistics Canada, tables 38-10-0235-01, 38-10-0236-01 and 38-10-0237-01.

### 6.6.2.2 Corporate sector financial indicators

The private-non-financial-corporations-debt-to-equity ratio at market values is a measure of financial leverage in the business sector. When the ratio is rising, corporations are financing an increasing proportion of their activities through debt as distinguished from retained earnings and the issuance of new shares. This makes the sector more vulnerable to rising interest rates. This ratio may fluctuate substantially when stock prices are volatile. It rose sharply in 2008 and 2009.

The private-non-financial-corporations-credit-market-debt-to-equity ratio at book value is defined somewhat more narrowly than the previous ratio, as debt for this ratio is limited to loans, bonds and short-term paper, and is

expressed at book value for debt and equity. This ratio rose moderately in 2008 and 2009 after a sharper increase in 2007.

### **6.6.2.3 Government sector financial indicators**

One of the most useful classes of government sector financial ratios is the set that shows alternative measures of debt expressed in relation to the size of the economy (that is, gross domestic product). Examined in a time series context, these ratios provide a useful means for comparing government debt in different epochs. When studied in a cross-section, these ratios reveal how the indebtedness of the different levels of government—federal, provincial and territorial, local and aboriginal—compares.<sup>55</sup> Inter-temporal and inter-governmental comparisons of these kinds can be useful in assessing the ease with which governments can manage current debt levels and potentially take on additional debt if the need should arise.

The numerator of these government-debt-to-GDP ratios can be either gross or net debt. When a government borrows funds, through a bond issue for example, and deposits the proceeds in its bank account, gross debt rises by the amount borrowed. However, net debt remains unchanged, at least initially, since financial assets (deposits) have risen by the same amount as financial liabilities. The gross debt ratios show the degree of influence of governments in debt markets, while the net debt ratios are a better indicator of the burden of government debt. Net debt can be thought of as a government's cumulative budgetary deficit or surplus since it came into existence.

The 2006-2008 ratios for both the federal government and other levels of government show generally declining relative debt. In 2009 the relative debt measures increase substantially reflecting the weak economy combined with stimulative budgetary policies.

## Notes for chapter 6

1. In some countries these accounts are referred to as the **flow of funds accounts**. *SNA 2008* refers to them simply as the **financial accounts**, as does the United States. These differences typically refer to the kind of detail in the accounts. The term **financial accounts** often refers to financial transactions only; **financial flow accounts** refer to combined capital and financial accounts; and **flow of funds accounts** are understood to be financial flow accounts with considerable sub-instrument (to-whom-from-whom) details.
2. For example, consumer credit borrowing is associated with consumer expenditure and mortgage borrowing with housing expenditure.
3. The adjective '**real**' has two quite different meanings in economics, depending on the context. In the present context it refers to the non-financial aspects of the economy (income, consumption, investment and so on) as distinct from the financial ones (borrowing, lending, financial assets and liabilities). In the other context, 'real' refers to time series that have been deflated to remove the effects of price change as distinct from time series that are measured in nominal terms.
4. Commercial paper is an unsecured, short-term debt instrument issued by a corporation, typically for the financing of accounts receivable, inventories and meeting short-term liabilities. Maturities on commercial paper rarely extend beyond 270 days.
5. A sales finance company buys, at a discount, the installment sales contracts of retail merchants.
6. The classification is broadly consistent with the standard recommended by *SNA 2008*. See Annex 1, pp. 546-548. It is fully consistent with the North American Industry Classification System, 2012 edition, 'sector' 52 called 'Finance and insurance' and sector 55, 'Management of companies and enterprises'.
7. The amount of lending/borrowing that occurs directly between primary lenders and borrowers (for example, directly between households and governments, or between non-financial corporations and non-residents) without financial intermediation is comparatively small.
8. Some of the other sectors might be net mortgage borrowers as well, but taken as a group the other sectors would necessarily be a net mortgage lender with lending equal to the household sector's mortgage borrowing.
9. In some countries, the financial accounts incorporate an explicit instrument discrepancy in order to bring instrument financial assets and liabilities into balance. In Canada, there is no explicit discrepancy. Rather, when the accounts are being estimated adjustments are made to one or more instruments in order to ensure balance.
10. In this respect, the financial flow accounts estimation methodology is analogous to the product balancing approach that takes place in constructing the supply and use accounts, discussed in chapter 4. In both, the statistical estimates for several series are constrained by an identity, which helps in assessing the accuracy and consistency of the source data and in producing the final estimates.
11. The statistical discrepancy, calculated in the income and expenditure accounts as the difference between income-based and expenditure-based GDP, cannot be allocated to any particular sector, so it is defined as a sector in itself. The statistical discrepancy is reported separately from the other sectors in the financial flows the same way as it is in the income and expenditure accounts. This should not be confused with the financial flows discrepancy, which is the difference between net lending in the income and expenditure accounts and financial account net lending in the sectors of financial flow accounts. Nevertheless, the two measures are closely related, in that a reduction of the GDP discrepancy has the effect of lowering selected sectors' discrepancies.
12. The financial flows dataset is available free on the Statistics Canada Internet site in table 36-10-0578-01. Financial flow statistics are available as well for the period 1961-2011 on a basis consistent with the *SNA 1993* standard, in tables 36-10-0010-01, 36-10-0015-01, 36-10-0017-01, 36-10-0036-01, 36-10-0037-01, 36-10-0040-01, 36-10-0041-01, 36-10-0119-01, 36-10-0120-01, 36-10-0216-01, 36-10-0227-01, 36-10-0228-01, 36-10-0354-01, 36-10-0421-01, 36-10-0422-01, 36-10-0429-01, 36-10-0436-01, 36-10-0437-01, 36-10-0439-01, 36-10-0457-01, 36-10-0483-01, and 36-10-0492-01 to 36-10-0507-01. When Statistics Canada converted to the *SNA 2008* standard, the financial flows were revised back to 1990.
13. This is extracted from table 36-10-0578-01.



14. Observe that net capital transfers between sectors must sum to zero over all sectors.
15. Observe that purchases and sales of existing capital between sectors must sum to zero over all sectors.
16. By way of comparison, gross domestic product was \$1,542 billion in 2009.
17. In the Financial and wealth accounts, as elsewhere in the national accounts, reserves held against life insurance policies and pension plans are treated as wealth belonging to the households sector.
18. For additional examples, see *SNA 2008*, chapter 12.
19. See *SNA 2008*, chapter 21, p. 428.
20. *SNA 2008*, chapter 12, p. 248.
21. This is not to imply it is a sustainable scenario for a government to have any conceivable level of net debt. The higher a government's net debt is in relation to its revenue, and the higher the interest rates it must pay on that debt, the larger will be the share of debt servicing charges in its expenditure budget and the less budgetary room it will have to pay for other government programs. Moreover, there are obvious social and economic limits on a government's ability to tax and issue new currency. For an example of the accounting for government balance sheets, see the Government of Canada, *Public Accounts of Canada 2014*, Volume 1, Summary Report and Consolidated Financial Statements.
22. Individual member countries of the European Union, unlike Canada, do not have unfettered power to issue their common currency, the Euro. Similarly, Canadian provinces and municipalities cannot issue Canadian currency.
23. The non-resident balance sheet is, of course, a very partial balance sheet for non-residents because it excludes all assets and liabilities for which there is no Canadian counterparty.
24. In 2006 it was decided that Canadian accounting principles should converge with those of the International Accounting Standards Board, which is responsible for a set of principles referred to as the International Financial Accounting Standards.
25. This is changing, however, with the adoption of International Financial Reporting Standards. Corporations have been reporting their financial statements at 'fair value', which resembles market value, since around 2006. Nevertheless, a **book value** is an asset or liability valuation based on the value recorded in the financial records (or 'books') of the institutional unit when the transaction associated with the asset's or liability's acquisition took place. When an asset is recorded at book value it is sometimes said to be measured at **historical cost**.
26. The distinction between stocks and flows is discussed in chapter 3.
27. Strictly speaking, the reference here is to the **economic appearance or disappearance** of such resources. The existence of the minerals might have been known previously, but they may have had no economic value because of technological limitations or low mineral prices.
28. For example, if a government-owned enterprise is privatized (sold to the private sector), the assets and liabilities of that enterprise might be reclassified from the non-financial government business enterprise sector to the non-financial private corporations sector. Changes in classification are generated by the statistical process, based on specific rules for classification.
29. According to *SNA 2008* (p. 63), "Owners of land, buildings and immovable structures in the economic territory of a country, or units holding long leases on either, are deemed always to have a centre of economic interest in that country, even if they do not engage in other economic activities or transactions in the country. All land and buildings are therefore owned by residents;" and "Extraction of subsoil resources can only be undertaken by resident institutional units. An enterprise that will undertake extraction is deemed to become resident when the requisite licenses or leases are issued, if not before." Non-residents can, of course, hold resident non-financial assets indirectly by holding the corresponding equity.
30. The creation of produced non-financial assets via gross capital formation is discussed in chapter 5.
31. See Board of Governors of the Federal Reserve System, *Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts*, first quarter 2014, June 5, 2014, p. v.

32. Estimates of the human capital stock are available outside of the national accounts framework, however. The following study estimates market-based human capital investment and stock for Canada over the period 1970 to 2007: Wulong Gu and Ambrose Wong, “Estimates of Human Capital in Canada: The Lifetime Income Approach”, Statistics Canada, Economic Analysis Research Paper Series, cat. no. 11F0027M, no. 062, June 2010.

33. This includes land located in government parks and other locations under government responsibility where produced assets are non-existent. Land surrounding public buildings and engineering structures such as roadways and bridges is included in the balance sheets.

34. Non-financial assets are usually valued at estimated replacement cost due to the thinness of markets for such assets. Financial assets and liabilities, which typically have more active markets, are mostly revalued using observed current market prices.

35. Corporate net worth as recorded in the national balance sheet accounts is sometimes referred to as residual net worth. In an economic sense it bears a resemblance to Tobin's  $q$ , which is the ratio of the market's valuation of a company to its asset replacement value. When corporate net worth is positive/negative, the market might be seen as undervaluing/overvaluing the sector. However, caution is required when applying this interpretation since corporate net worth is also affected by measurement problems.

36. These have no counterpart in the financial flows. The balance sheet includes both non-financial and financial stocks.

37. The national balance sheet dataset is available free on the Statistics Canada Internet site in table 36-10-0580-01. Balance sheet statistics are available as well for the period 1961-2011 on a basis consistent with the SNA 1993 standard, in tables 36-10-0508-01 through 36-10-0575-01 inclusive. When Statistics Canada converted to the SNA 2008 standard, the balance sheets were revised back to 1990.

38. The EFA, which is held in the name of Canada's Minister of Finance, is the largest component of Canada's official international reserves. It is an actively managed portfolio that is made up primarily of liquid foreign currency securities, SDRs, and a small holding of gold. The Government of Canada's Budget 2014 document (Annex 1) stated that “Liquid foreign exchange reserves are maintained at a level at or above 3 per cent of nominal GDP.”

39. Coins are treated as liabilities at full face value and there is no netting of the cost of producing coins or currency. Commemorative coins not in circulation are excluded.

40. Formerly the Government of Ontario owned the Province of Ontario Savings Office. However, the assets of this institution were sold to Desjardins Credit Union and the Savings Office ceased to exist as of April 1, 2003.

41. **Bills** are securities that give the holders the unconditional rights to receive stated fixed sums on a specified dates. Bills are issued and usually traded in organized markets at discounts to face value that depend on the rate of interest and the time to maturity.

42. **Bankers acceptances** involve the acceptance by a financial intermediary, for a fee, of a draft or bill of exchange and the unconditional promise to pay a specific amount at a specified date. Much international trade is financed by bankers acceptances. See *SNA 2008*, p. 228.

43. **Asset-backed securities** are backed by a discrete pool of self-liquidating financial assets. This type of securitization is a financing technique in which financial assets, in many cases themselves less liquid, are pooled and converted into instruments that may be offered and sold in the capital markets. In a basic securitization structure, an entity, often a financial institution and commonly known as a ‘sponsor’, originates or otherwise acquires a pool of financial assets, such as loans, leases, credit card receivables, or other receivables. It then sells the financial assets to a specially created investment vehicle that issues securities; ‘backed’ or supported by those financial assets.

44. **Bonds, debentures and notes** are securities that give the holders the unconditional right to fixed payments or contractually determined variable payments on specified dates. The earning of interest is not dependent on earnings of the debtors. Bonds are contrasted with Treasury bills, which have a shorter term to maturity and are sold at a discount to par value with no explicit interest payments.

45. **Claims** are a financial instrument comprising corporate claims and government claims. Corporate claims are loans, advances and issues of debt between associated corporations; on the asset side, they also include

investments in shares between associated corporations. Government claims are claims between governments, between related government business enterprises or between a parent government and its enterprises, in the form of shares, debt securities, loans or advances.

46. An **affiliated** entity is a business entity which is owned between 10% and 100% by another business entity. Depending on the level of ownership, affiliates are defined as associates or subsidiaries or branches.

47. “When goods are acquired under a **financial lease**, a change of economic ownership of the goods from the lessor to the lessee is deemed to take place. The change of economic ownership may be distinguished by the fact that all the risks and rewards of ownership are transferred from the legal owner of the good, the lessor, to the user of the good, the lessee. The lessee contracts to make payments that enable the lessor, over the period of the contract, to recover all, or virtually all, of his costs including interest. This de facto change in ownership is recorded by assuming a loan that is made by the lessor to the lessee, the lessee uses this loan to acquire the asset and the payments by the lessee to the lessor represent not rentals on the asset but payments of interest, possibly a service charge and repayments of principal on the imputed loan. Interest is recorded as property income payable or receivable and debt repayment is recorded in the financial account as reducing the value of the asset (loan) of the lessor and the liability of the lessee.” See *SNA 2008*, p. 230.

48. A **depository receipt** is a means by which a foreign company’s securities are traded in the domestic market. Typically they are issued by domestic banks. Depository receipts trade on a domestic stock exchange, although a bank or other institution in the foreign country holds the shares that they represent.

49. A **mutual fund** is a diversified portfolio of securities invested in on behalf of a group of investors and professionally managed. Individual investors own a percentage of the value of the fund represented by the number of units they purchased and thus share in any gains or losses of the fund. Depending on the objectives of a fund, its assets can include equity, debt, or other financial instruments. Mutual funds include exchange traded funds.

50. An **income trust** is an investment trust that holds assets that are income producing. The income is passed on to the unit holders. Some of the most popular income trusts are real estate investment trusts and natural resource trusts. The main attraction of income trusts is their ability to generate cash flows for investors.

51. A **warrant** is a form of option that is treated in the financial account in the same way as other options. Warrants are tradable instruments giving the holder the right to buy, under specified terms for a specified period of time, from the issuer of the warrant (usually a corporation) a certain number of shares or bonds. There are also currency warrants based on the amount of one currency required to buy another and cross-currency warrants tied to third currencies. They can be traded apart from the underlying securities to which they are linked and therefore have a market value. The issuer of the warrant incurs a liability, which is the counterpart of the asset held by the purchaser.

52. **Contributed surplus** is an amount of money a company earns from non-operational sources, that is, from sources other than profits. It is recorded on the balance sheet. Often this pertains to the gain a company would have if, after issuing new shares at a stated par value, it managed to sell some of those shares at a higher value.

53. **Float** refers to double-counting that arises temporarily in the banking system when cheques are in the process of being cleared. When a person deposits a cheque in his account it appears in the account even though it has not yet been deducted from the account of the person who wrote the cheque. The double-counting disappears within days when the cheque is deducted from the other account.

54. The financial flows are not seasonally adjusted. Statistical tests indicate a lack of significant seasonality in most of the financial time series.

55. The balance sheet accounts are only available at the national level, so inter-governmental comparisons based on these accounts must be for the aggregates of all provincial and territorial governments, all local governments and all aboriginal governments. However, more detailed debt comparisons are possible for the provincial and territorial governments individually using debt statistics from the government finance statistics combined with the provincial and territorial estimates of GDP. See chapter 9.

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 7 Price and volume measures

### What this chapter seeks to do

This chapter explains how the various time series in the national accounts pertaining to expenditures on goods and services, including expenditures on industry inputs and outputs, are decomposed into distinct 'price' and 'volume' components. It also discusses how these decompositions are used in practice. In addition, the chapter looks at a number of 'real income' concepts. Ending the chapter is a section on international price and volume comparisons.

This chapter links to *SNA 2008* chapter 15.

### 7.1 Introduction

The national accounts are mostly about **aggregates of transaction values** and **stocks of assets and liabilities**. Some transaction aggregates, such as 'household final expenditure on consumer goods and services', are about goods and services and can be decomposed into price and volume components. Others, such as 'current transfers from government to non-residents', are not, although changes in their associated purchasing power can be gauged with the use of price indexes. An individual transaction value pertaining to a specific good or service is obtained by multiplying the price of the product by the quantity of the product that is purchased/sold in that transaction. An aggregate of several transaction values is calculated by summing the individual values of those transactions. An aggregate of stock time series is derived similarly by adding the individual stock series together.

The decomposition of value time series into price and volume components is a very important aspect in national accounting. It makes possible the analysis of 'real growth', 'productivity change' and 'inflation'. Imagine, for example, that the value of gross domestic product per capita, in nominal terms, increased 20 per cent over the course of a decade. That might seem like a huge jump in living standards, but if the price-volume decomposition indicated that price increases accounted for 16 per cent of the rise and volume changes accounted for just 4 per cent of the advance, then the improvement in living standards would really be more modest. Most of the change over the decade would be attributable to inflation.

The price-volume decomposition allows users of the national accounts to 'draw back the veil of inflation' to determine what is happening in the 'real' economy. Price indexes permit analyses of relative price changes, which are the most basic signals provided by the free market economy as to how resources are being reallocated to meet the highest priority needs, while volume indexes show how the different components of the economy are expanding or shrinking as a result.

This chapter is mainly about the various ways in which changes in aggregates of transactions in diverse products can be decomposed into distinct price and volume components. In section 7.2, section 7.3 and section 7.4 the Laspeyres, Paasche and Fisher price-volume decompositions are explained in some detail, from both the theoretical and the practical perspectives. Section 7.5 considers the problem of constructing a stock time series with consistent value, volume and price components. In section 7.6 a number of 'real income' concepts are introduced. Purchasing power parities and international income comparisons are the topic of section 7.7. An annex closes out the chapter, reviewing the various sets of price indexes that are available from Statistics Canada.

### 7.2 Decomposing aggregates of transaction values: the simple case

If all the individual transactions in a particular aggregate of transactions pertain to an identical product, but with different prices and quantities, the price-volume decomposition is straightforward. Since the products involved in the transactions are identical, the aggregate volume for all of the transactions can be calculated as the sum of the individual quantities purchased/sold in each transaction. The aggregate price can be calculated as a weighted average of the prices in each of the individual transactions, with the quantities of each transaction serving as the weights. Equivalently, the aggregate price can also be calculated as the aggregate transaction value divided by the aggregate transaction volume. This logic is encapsulated in equations (7.1) to (7.5) below.

The value associated with an individual transaction  $i$  ( $v_i$ ) is the product of the price of that transaction ( $p_i$ ) and the quantity of that transaction ( $q_i$ ):

(7.1)

$$v_i = p_i q_i$$

The aggregate value for several transactions ( $\bar{V}$ ) in an identical product involving different prices and quantities for each transaction is the sum of the values for all of the transactions in the aggregate:

(7.2)

$$\bar{V} = \sum v_i = \sum p_i q_i$$

The aggregate volume (or quantity) for several transactions ( $\bar{Q}$ ) in an identical product involving different prices and quantities for each transaction is the sum of the quantities for all the transactions in the aggregate:

(7.3)

$$\bar{Q} = \sum q_i$$

The aggregate price for several transactions ( $\bar{P}$ ) in an identical product involving different prices and quantities for each transaction is the aggregate value divided by the aggregate volume, or equivalently the weighted average price over all the transactions with the weights being the quantities transacted:

(7.4)

$$\bar{P} = \frac{\bar{V}}{\bar{Q}} = \frac{\sum p_i q_i}{\sum q_i} = \sum p_i \left( \frac{q_i}{\sum q_i} \right)$$

Accordingly, the price-volume decomposition is:

(7.5)

$$\bar{V} = \bar{P} \times \bar{Q}$$

This is the simple case, but it is not the one that is usually dealt with in national accounting. The norm, rather, is that the products involved in an aggregate of several transactions are **not** identical. Thus, for example, the aggregate 'household final expenditure on consumer goods and services' includes transactions for a very wide range of different products—food items, clothing items, manufactured goods, personal services and so on. In this circumstance, the quantity involved in one transaction (number of cars, for example) is unlikely to be commensurable<sup>2</sup> with that of another transaction (kilograms of bananas, for example). **Price and volume index numbers** are needed to deal with non-commensurable cases such as this. They deal with the issue of non-commensurability by addressing **relative changes** in prices and volumes, rather than the prices and volumes themselves.

These index numbers, unlike the simple price and quantity aggregates just discussed, have an arbitrary scale which is typically, though not necessarily, set equal to 100.0 in some arbitrary period.<sup>3</sup> The index numbers, therefore, can only inform us about **relative changes** in the price and volume aggregates over time and not, in a meaningful way, about their levels. This is because the quantities being aggregated are not commensurable and neither are the associated prices. Accordingly, the price-volume decomposition cannot generally be written as in equation (7.5) but rather must be written as:

(7.6)

$$\frac{\bar{V}(t)}{\bar{V}(0)} = \frac{\bar{P}(t)}{\bar{P}(0)} \times \frac{\bar{Q}(t)}{\bar{Q}(0)}$$

Or, with different notation:

(7.7)

$$V = P \times Q$$

Where  $V = \frac{\bar{V}(t)}{\bar{V}(0)}$ ,  $P = \frac{\bar{P}(t)}{\bar{P}(0)}$  and  $Q = \frac{\bar{Q}(t)}{\bar{Q}(0)}$  are indexes of value, price and volume change between periods 0 and t. The relative change in aggregate value is expressed as the product of the relative change in aggregate price and the relative change in aggregate volume.

The theory and practice of price and volume index numbers has evolved considerably over the past three centuries. It has now reached a high state of development and is very well documented and explained in two international manuals, one focused on the consumer price index and the other on the producer price index.<sup>4</sup> These two books are highly recommended for readers looking for a more in-depth discussion and explanation of the theory and practice of index numbers. The International Monetary Fund's national accounts manual is also worth looking at.<sup>5</sup> Chapter 15 in *SNA 2008* is also a very good, though somewhat abbreviated reference source on price and volume index numbers in national accounting.

### 7.3 Decomposing aggregates of transaction values: the more common, complex case

In the more common, but also more complex case the problem is to decompose the **change** in an aggregate of transaction values, involving products that are **not** identical, into separate indexes representing the aggregates of changes in the prices involved in those transactions and in the volume of those transactions.

When reference is made to changes in the prices of the transactions, the reference is to **pure price changes**. If the product itself changes between two periods that are being compared, for example with an upgrade from version 1.0 to version 2.0 of the product,<sup>6</sup> then the observed price change represents something other than pure price change. **Quality change** in products is very common in the marketplace and poses a difficult challenge for price index statisticians. In principle, when statisticians refer to the change in the price of a given product between two time periods they are referring to the pure price change, meaning the price change suitably adjusted, if necessary, to remove the effects of any changes to the product itself between the two periods.<sup>7</sup> Therefore the volume change must include changes in quality as well as quantity.

#### 7.3.1 Laspeyres, Paasche and Fisher price indexes

So how might the pure price changes for multiple non-identical products, between two time periods, be combined into a price index? Many different formulas have been proposed over the last three centuries, but three have stood the test of time and are now the standards that are used in national accounting both in Canada and in other developed countries. These three formulas are the ones recommended by *SNA 2008*. They are named after their inventors: Étienne Laspeyres, Hermann Paasche and Irving Fisher.<sup>8</sup>

The Laspeyres formula is perhaps the most intuitive of the three. It has become known as the **fixed-basket approach**. One imagines a basket containing the purchased quantities, in the initial period, of all the various goods and services that are to be included in the price index. These purchased quantities are multiplied by their corresponding prices, also from the initial period, to calculate the aggregate transaction value of the basket in the initial period. Then, for the second of the two periods being compared one takes the same basket of products, with the same qualities and quantities as in the initial period, and multiplies them by the corresponding prices of the second period. In effect, a hypothetical aggregate transaction value is calculated in which the quantities are the same as those in the initial period but the prices are those of the second period. The ratio of this second, hypothetical aggregate transaction value to the initial one is called the Laspeyres price index. It measures the relative change in the cost of the fixed initial basket of quantities between the first and second periods.

The **Laspeyres price index** can be written mathematically as in equation (7.8):

(7.8)

$$P^L = \frac{\sum p_i(t)q_i(0)}{\sum p_i(0)q_i(0)}$$

Where  $P^L$  is the Laspeyres price index,<sup>9</sup>  $p_i(0)$  and  $p_i(t)$  are the prices of product  $i$  in periods 0 and  $t$ , and  $q_i(0)$  is the quantity of product  $i$  in period 0. Both summations are over all the products  $i$  that are included in the price index.<sup>10,11</sup> The quantities  $q_i(0)$  are those constituting the fixed basket.

The index compares prices in period 0, where the index is 1, with prices in period  $t$ , where the index is  $P^L$ . Often the index is multiplied by 100 so it equals that value in period 0 and  $100 * P^L$  in period  $t$ . Refer to the example in text boxes 7.1 and 7.2.

#### Text box 7.1 Fruit example

Below are some hypothetical data that are used in the subsequent examples to illustrate the calculation of price and volume indexes. The data record the prices of apples, oranges and bananas in two time periods, labelled 0 and 1. The price is measured in dollars per kilogram and the quantity is measured in kilograms. The value is the price multiplied by the quantity and is measured in dollars. These data could pertain to a day's worth of sales by a small fruit stand, for example.

	Apples	Oranges	Bananas
<b>Period 0</b>			
Price (dollars per kg)	1.50	1.00	1.10
Quantity (kg)	10	20	25
Value (dollars)	15.00	20.00	27.50
<b>Period 1</b>			
Price (dollars per kg)	1.75	1.05	1.60
Quantity (kg)	15	40	20
Value (dollars)	26.25	42.00	32.00

**Text box 7.2**  
**Laspeyres price index example**

Below is an illustration of the calculation of the Laspeyres price index, using the example data shown in text box 7.1.

Laspeyres price index comparing period 1 to period 0 = 100.0:

$$P^L = 100 \times \frac{\$1.75 \times 10 + \$1.05 \times 20 + \$1.60 \times 25}{\$1.50 \times 10 + \$1.00 \times 20 + \$1.10 \times 25} = 125.6$$

The **Paasche price index** is the obvious alternative to the Laspeyres price index. Instead of using the quantities from the initial period,  $q_i(0)$ , to construct the fixed basket, the quantities from the second period,  $q_i(t)$ , are used instead. Thus, the Paasche price index can be written mathematically as in equation (7.9):

(7.9)

$$P^P = \frac{\sum p_i(t)q_i(t)}{\sum p_i(0)q_i(t)}$$

Where  $P^P$  is the Paasche price index,  $p_i(0)$  and  $p_i(t)$  are the prices of product  $i$  in periods 0 and  $t$ , and  $q_i(t)$  is the quantity of product  $i$  in period  $t$ . The Paasche price index is, in a sense, a backward-looking index since it compares the actual value of the aggregate of transactions in the second period with the hypothetical value of the aggregate of transactions in the first period wherein the prices come from the initial period but the quantities are from the second period.<sup>12</sup> See the example in text box 7.3.

**Text box 7.3**  
**Paasche price index example**

Below is an illustration of the calculation of the Paasche price index, using the example data shown in text box 7.1.

Paasche price index comparing period 1 to period 0 = 100.0:

$$P^P = 100 \times \frac{\$1.75 \times 15 + \$1.05 \times 40 + \$1.60 \times 20}{\$1.50 \times 15 + \$1.00 \times 40 + \$1.10 \times 20} = 118.6$$

To complete the picture, the **Fisher price index** is simply the geometric average of the Laspeyres and Paasche price indexes.<sup>13</sup> It therefore lies midway between the two.

(7.10)

$$P^F = \sqrt{P^L P^P} = \sqrt{\frac{\sum p_i(t)q_i(0)}{\sum p_i(0)q_i(0)} \times \frac{\sum p_i(t)q_i(t)}{\sum p_i(0)q_i(t)}}$$



See the example in text box 7.4.

**Text box 7.4**  
**Fisher price index example**

Below is an illustration of the calculation of the Fisher price index, using the example data shown in text box 7.1 and the results calculated in text boxes 7.2 and 7.3.

Fisher price index comparing period 1 to period 0 = 100.0:

$$P^F = 100 \times (1.256 \times 1.186)^{1/2} = 122.1$$

Fisher considered his price index formula to be an ideal blend of the best features of the Laspeyres and Paasche price indexes and modern index number statisticians generally agree with him. Diewert showed the Fisher formula to be a member of a small class of index numbers that he dubbed **superlative**.<sup>14</sup>

It can be shown that under certain assumptions the Laspeyres index is an upper bound on the true index while the Paasche index is a lower bound. The Fisher index, lying between the other two indexes, is the best measure of the change (again, under certain assumptions). Text box 7.5 compares the three indexes calculated in text boxes 7.2, 7.3 and 7.4.

**Text box 7.5**  
**Comparing the Laspeyres, Paasche and Fisher price indexes**

The table below compares the three price indexes calculated in text boxes 7.2, 7.3 and 7.4. Note that the Fisher price index lies midway between the other two indexes. The Laspeyres index is the largest and the Paasche index is the smallest which is true in most, but not all real-world cases.

	Period 0	Period 1
	index	
Laspeyres P	100.0	125.6
Paasche P	100.0	118.6
Fisher P	100.0	122.1

### 7.3.2 Laspeyres, Paasche and Fisher volume indexes

Many Canadians are acquainted with price indexes, such as the consumer price index. However, there is less familiarity with quantity or volume indexes. They are perhaps best illustrated by real gross domestic product, which shows the trend in total economic activity after the effects of price inflation (or deflation) have been removed.

To introduce the concept, consider a family doing its weekly grocery shopping. It buys several different items in week one and pays \$100. It buys different quantities of these same products, at different prices, in week two and pays \$110. Some of the 10% increase in the grocery bill is due to price changes and the rest is attributable to quantity changes. The part that is due to price changes is described by a price index and the portion attributable to changes in the quantities is measured with a quantity or volume index.

What is the difference between a quantity index and a volume index? For many purposes they are the same thing, but the difference in principle is that volume indexes include the effects of **quality change** as well as **quantity change** (recall the discussion at the beginning of section 7.3). For example, a litre of high-test gasoline has higher quality than a litre of regular gasoline. The quantities purchased in two different periods might be the same, 40 litres for example, but if the product qualities differ then a volume index would take that into account as well as the quantity difference. This is accomplished by **quality adjusting** the observed quantities. The challenge of quality

adjustment is especially formidable for high-tech products such as computers and automobiles for which quality changes in numerous and complex ways every year. **In what follows, all references to quantities should be interpreted as quality-adjusted quantities. References to prices should be interpreted as pure prices, with the effects of quality change removed.**

Laspeyres, Paasche and Fisher volume indexes can be defined using the same formulas just discussed, but with the roles of the prices and quantities reversed. Thus the **Laspeyres volume index** can be written mathematically as in equation (7.11):

(7.11)

$$Q^L = \frac{\sum q_i(t)p_i(0)}{\sum q_i(0)p_i(0)}$$

This formula compares the quantities in the two periods, 0 and t, by weighting them with a 'fixed basket of prices' from the initial period,  $p_i(0)$ . See the example in text box 7.6.

#### Text box 7.6

##### Laspeyres volume index example

Below is an illustration of the calculation of the Laspeyres volume index, using the example data shown in text box 7.1.

Laspeyres volume index comparing period 1 to period 0 = 100.0:

$$Q^L = 100 \times \frac{15 \times \$1.50 + 40 \times \$1.00 + 20 \times \$1.10}{10 \times \$1.50 + 20 \times \$1.00 + 25 \times \$1.10} = 135.2$$

The denominator of the Laspeyres formula in text box 7.6 is the value of fruit sold in period 0, expressed in the prices of period 0. The numerator is the value of fruit sold in period 1 **also expressed in the prices of period 0**. Thus, the numerator expresses the fruit sales **at the constant prices of the Laspeyres base period**. The value of fruit sold in the two periods, \$62.50 in period 0 and \$100.25 in period 1, is said to be measured **at current prices**. If the value of fruit sold in period 1 is instead expressed at the prices of period 0, then the value of fruit sold in the two periods is \$62.50 in period 0 and \$84.50 = \$62.50 \* 1.352 in period 1 and these values are said to be expressed **at the constant prices of period 0**, or at dollars of constant purchasing power, or simply **at constant (Laspeyres) prices**.

Similarly the **Paasche volume index** can be written mathematically as in equation (7.12):

(7.12)

$$Q^P = \frac{\sum q_i(t)p_i(t)}{\sum q_i(0)p_i(t)}$$

It compares the quantities in the two periods, 0 and t, by weighting them with a ‘fixed basket of prices’ from the second period,  $p_i(t)$ . See the example in text box 7.7.

#### Text box 7.7

##### Paasche volume index example

Below is an illustration of the calculation of the Paasche volume index, using the example data shown in text box 7.1.

Paasche volume index comparing period 1 to period 0 = 100.0:

$$Q^P = 100 \times \frac{15 \times \$1.75 + 40 \times \$1.05 + 20 \times \$1.60}{10 \times \$1.75 + 20 \times \$1.05 + 25 \times \$1.60} = 127.7$$

The numerator of the Paasche formula in text box 7.7 is the value of fruit sold in period 1, expressed in the prices of period 1. The denominator is the value of fruit sold in period 0 **also expressed in the prices of period 1**. Thus, the denominator expresses the fruit sales **at the constant prices of the Paasche base period**. As noted previously, the value of fruit sold in the two periods, \$62.50 in period 0 and \$100.25 in period 1, is said to be measured at current prices. If the value of fruit sold in period 0 is instead expressed at the prices of period 1, then the value of fruit sold in the two periods is \$78.50 = \$100.25/1.277 in period 0 and \$100.25 in period 1 and these values are said to be expressed **at the constant prices of period 1**, or at dollars of constant purchasing power, or simply **at constant (Paasche) prices**.

The Fisher volume index, similar to its price index counterpart, is the geometric average of the Laspeyres and Paasche volume indexes.

(7.13)

$$Q^F = \sqrt{Q^L Q^P} = \sqrt{\frac{\sum q_i(t)p_i(0)}{\sum q_i(0)p_i(0)} \times \frac{\sum q_i(t)p_i(t)}{\sum q_i(0)p_i(t)}}$$

See the example in text box 7.8.

#### Text box 7.8

##### Fisher volume index example

Below is an illustration of the calculation of the Fisher volume index, using the example data shown in text box 7.1 and the results calculated in text boxes 7.6 and 7.7.

Fisher price index comparing period 1 to period 0 = 100.0:

$$Q^F = 100 \times \sqrt{1.352 \times 1.277} = 131.4$$

Fisher volume indexes do not have the intuitive “at constant prices” interpretation that was discussed previously for the Laspeyres and Paasche volume indexes.

**Text box 7.9****Comparing the Laspeyres, Paasche and Fisher volume indexes**

The table below compares the three volume indexes calculated in text boxes 7.6, 7.7 and 7.8. Note that the Fisher volume index lies midway between the other two indexes. The Laspeyres index is the largest and the Paasche index is the smallest which is true in most, but not all real-world cases.

	Period 0	Period 1
	index	
Laspeyres Q	100.0	135.2
Paasche Q	100.0	127.7
Fisher Q	100.0	131.4

**7.3.3 The value indexes**

It is not difficult to prove mathematically that the product of the Fisher price and volume indexes is the value index,  $V$  (that is, the ratio of the aggregate value of transactions in the second period to the aggregate value of transactions in the first period).<sup>15</sup> This is a very welcome property of the Fisher indexes. However, it is **not** the case that the product of the Laspeyres price and volume indexes is equal to the value index. Nor is it true that the product of the Paasche price and volume indexes is the value index.

In fact, if the Laspeyres index number formula is used to calculate the price index, then the Paasche formula must be used to calculate the volume index, if the product of the two is to be equal to the value index. Similarly, if the Paasche index number formula is used to calculate the price index, then the Laspeyres formula must be used to calculate the volume index, if the product of the two is to be equal to the value index. See the examples in text box 7.10.

Prior to 2001, the year when the Fisher index number formula was adopted in Canada's national accounts, the practice was to decompose the value index for gross domestic product at market prices into a Laspeyres volume index and a Paasche price index. Since that time the decomposition is done using Fisher price and volume indexes, which is the approach recommended by SNA 2008. The historical estimates for the period 1981 to 2000 have also been recalculated using the Fisher formula.

**Text box 7.10****Comparing the Laspeyres, Paasche and Fisher value indexes**

The table below compares value indexes calculated using the index results in text boxes 7.2, 7.3, 7.4, 7.6, 7.7, and 7.8. The correct value index is the value of all fruit sales in period 1 divided by the value of all fruit sales in period 0, times 100.

	Period 0	Period 1
	index	
Value index	100.0	160.4
Laspeyres P $\times$ Laspeyres Q	100.0	169.8
Paasche P $\times$ Paasche Q	100.0	151.5
Fisher P $\times$ Fisher Q	100.0	160.4
Laspeyres P $\times$ Paasche Q	100.0	160.4
Paasche P $\times$ Laspeyres Q	100.0	160.4

### 7.3.4 Substitution bias and chained indexes

In the example shown in text boxes 7.1 to 7.10, the Laspeyres price and volume indexes are each larger than the corresponding Paasche indexes. In the practical, real-world application of these index number formulas, this relationship is usually, though not always in evidence. The reason is a phenomenon known as **substitution bias**.

When expenditure patterns in two periods are compared, buyers typically purchase relatively more, in the second period, of those products whose prices have decreased in relative terms and relatively less of those products whose prices have increased in relative terms. In other words, as buyers adjust their purchasing patterns through time they tend to gravitate towards products whose prices are becoming cheaper and away from products whose prices are becoming more expensive. There can be exceptions, as for example with some luxury goods that are used for ‘conspicuous consumption’ where higher prices may actually make the products more attractive,<sup>16</sup> but usually buyers tend to substitute, through time, relatively less expensive products for relatively more expensive ones.

The phenomenon of substitution bias is a significant problem for index number statistics. It implies that if a fixed-basket Laspeyres-type index is used to measure price change over an extended period of time, the quantity weights used in the index will tend to become increasingly unrepresentative of current purchasing patterns and price inflation will tend to be overestimated.

Consider the following example. Suppose a new Laspeyres price index, perhaps for different kinds of clothing, is commenced with a value of 100.0 in period 0. In period 1, the index is calculated using as weights the fixed basket of quantities from period 0. The index is then updated in period 2, again using the same set of quantity weights from period 0. This updating process continues into the future, using the same fixed basket of quantity weights from period 0. The further into the future this Laspeyres price index is extended, the more out of date the fixed-quantity weights from period 0 are likely to become, in the sense that the purchasing patterns from period 0 will differ more and more from those of the latest period for which the index is calculated. In other words, the fixed period 0 quantity weights will tend to become increasingly unrepresentative of current purchasing patterns as buyers continually substitute in favour of products whose prices are in relative decline and against products whose prices are experiencing relative increase. Substitution bias tends to make the fixed quantity weights of a Laspeyres index increasingly obsolete as time goes by.<sup>17</sup>

The solution to this problem is to use a symmetrically weighted index number formula. The Fisher index is such a formula, since it takes into account both the first and the second periods being compared. The Laspeyres formula, in contrast, takes its weights from the first of the two periods while the Paasche index takes them from the second period, so these two index number formulas have asymmetrical weights.

The method of index **chaining** also helps to eliminate substitution bias. Instead of using the same fixed basket of quantity weights period after period going forward, as with the Laspeyres formula, the index weights are updated at regular intervals. Thus, continuing the example provided, the comparison of periods 0 and 1 might use quantity weights from period 0 but the comparison of periods 1 and 2 might use quantity weights from period 1. The index from period 0 to period 2 is then obtained by ‘compounding’ the index from period 0 to period 1 with the index from period 1 to period 2. Hence the name ‘chaining’. Clearly chaining can be done for Paasche and Fisher indexes as well as Laspeyres indexes.

Chained indexes are considered preferable to unchained indexes in most circumstances because they measure changes using up-to-date and therefore more representative index weights. However they are not always a better choice. When the phenomenon being measured—the aggregate change of prices or volumes—trends in the same general direction over time, chained indexes usually work quite well, but when the phenomenon tends to oscillate, as for example would be the case for a highly seasonal price or volume pattern, chained indexes are less appropriate.

For example, if monthly indexes were measuring aggregate price and volume change for a group of farm products, and if the prices for these products always tended to rise sharply in the winter months while dropping steeply in the summer months with volumes tending to move in the opposite direction, it would be desirable for the price and volume indexes to return to their original values if the underlying configuration of individual prices and volumes returned to their original values.<sup>18</sup> However, the indexes would not do so if they were chained, but rather would tend to drift away from the original values. In such circumstances the price and volume indexes should not be chained every month or quarter, although they could perhaps be chained at annual intervals.

Index chaining can also lead to apparent inconsistencies when comparisons are made across the link period. This is discussed and illustrated in section 7.3.6 below.

During the first half-century or so of Canada's national accounts, between the late 1940s and the early 2000s, the Laspeyres volume indexes and Paasche price indexes for GDP at market prices were chained: irregularly at first, then at 10-year intervals and ultimately at 5-year intervals. Since Fisher volume and price indexes were adopted in 2001 the chaining has been done on a quarterly (seasonally adjusted<sup>19</sup>) basis in the income and expenditure accounts and on an annual basis in the supply and use accounts and in the monthly and provincial GDP by industry programs. For the quarterly income and expenditure accounts the estimates for previous years, back to 1981, have also been recalculated in this manner.

### 7.3.5 Additivity of Laspeyres and Paasche volume indexes and double deflation

The Laspeyres volume index formula has the very convenient property of additivity. If a set of unchained Laspeyres volume indexes are scaled, in the initial period to equal the corresponding nominal transaction values from the initial period (instead of another constant such as 100.0), then the Laspeyres volume index for the aggregate of the set of indexes can be calculated simply as the sum of the indexes. In effect, the indexes are self-weighted. If this is done, the indexes are sometimes said to be measured 'at the constant prices of the initial period'. A similar statement is true for the backward-looking Paasche volume index, with the index measured 'at the constant prices of the current period'. The Fisher volume index, however, is not additive in this way. Nor are chained indexes of any kind.

The additivity property of the Laspeyres and Paasche volume indexes can be used to calculate a volume index for a balancing item—gross value added or the merchandise trade balance, for instance. Gross value added, as discussed in chapter 4, is equal to output minus intermediate consumption. If Laspeyres or Paasche volume indexes are available for both output and intermediate consumption, and if these indexes are appropriately scaled as explained in the previous paragraph, then the corresponding volume index for gross value added can be calculated by subtracting the second index from the first. This is called **double deflation**.

Text box 7.11 provides an example with two industries, labelled 'goods' and 'services'. Transaction value data are provided for the output and intermediate consumption of these industries in two time periods, labelled '0' and '1'. In addition, corresponding price and volume indexes are provided for the two industries. In the 'goods' industry, gross value added is \$250 million in period 0 (measured in the prices of period 0) and \$400 million in period 1 (measured in the prices of period 1), while in the 'services' industry gross value added is \$1500 million in period 0 and \$1600 million in period 1.

**Text box 7.11**  
**Double deflation example, part 1**

The following are some example data for the output and intermediate consumption of two industries, called 'goods' and 'services', measured in billions of dollars.

	<u>Output</u>	<u>Intermediate consumption</u>	<u>Gross value added</u>
<b>Goods industry</b>			
<b>Period 0</b>			
Price index	100.0	100.0	...
Volume index	100.0	100.0	...
Value (dollars)	1,000	750	250
<b>Period 1</b>			
Price index	110.0	108.0	...
Volume index	136.4	135.8	...
Value (dollars)	1,500	1,000	400
<b>Services industry</b>			
<b>Period 0</b>			
Price index	100.0	100.0	...
Volume index	100.0	100.0	...
Value (dollars)	2,000	500	1,500
<b>Period 1</b>			
Price index	105.0	104.0	...
Volume index	104.8	115.4	...
Value (dollars)	2,200	600	1,600

Text box 7.12 shows the corresponding data for 'all industries'. The transaction value data, in nominal terms, are simply added for the two component industries. In addition, Laspeyres, Paasche and Fisher volume indexes for 'all industries' output and intermediate consumption are shown.

Computed as explained in section 7.3.2, the Laspeyres volume index for output in text box 7.12 is calculated as

$$120.6 = 100 \times \frac{100.0 \times 136.4 + 100.0 \times 104.8}{100.0 \times 100.0 + 100.0 \times 100.0}$$

The Paasche volume index for output is calculated as

$$121.0 = 100 \times \frac{110.0 \times 136.4 + 105.0 \times 104.8}{110.0 \times 100.0 + 105.0 \times 100.0}$$

And the Fisher volume index value for output is computed as

$$120.8 = 100 \times \sqrt{1.206 \times 1.210}$$

The volume index calculations for intermediate consumption are done similarly to those for output.

**Text box 7.12**  
**Double deflation example, part 2**

The following are the Laspeyres, Paasche and Fisher volume indexes for output and intermediate consumption for the total of both industries, 'goods' and 'services', in Text box 7.11.

	<u>Output</u>	<u>Intermediate consumption</u>	<u>Gross value added</u>
<b>All industries</b>			
<b>Period 0</b>			
L volume index	100.0	100.0	...
P volume index	100.0	100.0	...
F volume index	100.0	100.0	...
Value (dollars)	3,000	1,250	1,750
<b>Period 1</b>			
L volume index	120.6	125.6	...
P volume index	121.0	125.8	...
F volume index	120.8	125.7	...
Value (dollars)	3,700	1,700	2,000

The volume index for 'all industries' gross value added is calculated by double deflation, as shown in text box 7.13.

**Text box 7.13**  
**Double deflation example, part 3**

This table shows how gross value added at constant prices is calculated using the double deflation method.

	<u>Output</u>	<u>Intermediate consumption</u>	<u>Gross value added</u>
	dollars		
<b>All industries</b>			
<b>Period 0</b>			
Scaled L volume index	3,000	1,250	1,750
Scaled P volume index	3,059	1,351	1,707
Value	3,000	1,250	1,750
<b>Period 1</b>			
Scaled L volume index	3,618	1,570	2,048
Scaled P volume index	3,700	1,700	2,000
Scaled F volume index	...	...	2,049
Value	3,700	1,700	2,000

Scaling the Laspeyres volume indexes in text box 7.12 by the output and intermediate consumption values of period 0, the Laspeyres values are \$3000 and \$1250 respectively in period 0 and \$3618 and \$1570 respectively in period 1. See text box 7.13. Similarly, scaling the Paasche volume indexes by the output and intermediate consumption values of period 1, the Paasche values are \$3059 and \$1351 respectively in period 0 and \$3700 and \$1700 respectively in period 1. Subtracting intermediate consumption from output in each period, the Laspeyres volume index for gross value added is seen to be \$1750 in period 0 and \$2048 in period 1. Similarly, the Paasche volume index for gross value added is \$1707 in period 0 and \$2000 in period 1. Note that the Laspeyres estimates are measured in the constant prices of period 0 and the Paasche estimates in the constant prices of period 1.

The last step is to calculate the Fisher estimates, which are the geometric mean of the Laspeyres and Paasche estimates. This is also shown in text box 7.13. The relative increase in gross value added that is indicated by the Laspeyres volume indexes is  $\$2048/\$1750 = 1.1703$ . For the Paasche case the relative increase is  $\$2000/\$1707 = 1.1715$ . The Fisher index of relative change is therefore  $(1.1703 \times 1.1715)^{1/2} = 1.1709$ . If the Fisher estimates are then



scaled to equal gross value added in the first of the two periods (\$1750), the Fisher estimate of gross value added in period 1 is  $\$1750 \times 1.1709 = \$2049$ .

In section 7.3.2 it is explained how the Laspeyres and Paasche volume indexes can be interpreted as expressing the transaction aggregates in the constant prices of the first or second periods respectively. Using this interpretation, the 'double-deflation' approach is effectively to restate the output and intermediate consumption transaction values in dollars of constant purchasing power, instead of in nominal dollars. Either the constant dollars of the first period (Laspeyres) or the constant dollars of the second period (Paasche) can be used. Then gross value added at constant prices is calculated by subtracting intermediate consumption at constant prices from output at constant prices. This yields two estimates of gross value added, one in the constant prices of the first period and the other in the constant prices of the second period. As a final step, these can be combined to produce Fisher estimates of gross value added in volume terms. This, in fact, is just what is done by Statistics Canada to produce the official estimates of gross value added in the supply and use accounts.

### 7.3.6 Consistency of Laspeyres, Paasche and Fisher price and volume indexes

Suppose a price or volume index A is the aggregate of two other indexes B and C and all three indexes are scaled to equal 100.0 in the initial period. Then A should lie somewhere between B and C. Moreover, if B has a greater weight than index C then A should be closer to B than C. This is an example of the property of **consistency** and it is a very desirable property for an index to have. The Laspeyres, Paasche and Fisher index number formulas all have this property. However, when two indexes of these kinds (two Laspeyres indexes, for example) are chained, they do not necessarily have this property for comparisons that cross the period where the indexes were chained (that is, the link period).

The problem of apparent inconsistency is illustrated in text box 7.14. It shows two Laspeyres price<sup>20</sup> indexes, labelled P1 and P2. The first index extends from period 0 to period 2 and covers the prices of the three types of fruit. The second index covers the same types of fruit between periods 2 and 4. The two indexes have different weight structures. In addition, a third index is shown ranging from period 0 to period 4 which is the chained index, with period 2 as the link period.

In this example, the apparent inconsistency is evident in the fact that although the chained indexes for all three types of fruit individually show some degree of increase between period 0 and period 4, the aggregate index indicates a small decrease over this period.

**Text box 7.14**  
**Apparent inconsistency in chained indexes example**

This table shows how apparent inconsistencies can sometimes arise when two indexes are chained and comparisons are made across the link period.

	<u>Apples</u>	<u>Oranges</u>	<u>Bananas</u>	<u>Fruit</u>
	index			
<b>Laspeyres index P1</b>				
Period 0	100.0	100.0	100.0	100.0
Period 1	116.7	105.0	145.5	125.6
Period 2	114.3	114.3	93.8	105.3
Weights 1	0.24	0.32	0.44	1.00
<b>Laspeyres index P2</b>				
Period 2	100.0	100.0	100.0	100.0
Period 3	103.0	108.1	104.0	106.4
Period 4	104.2	89.0	107.0	94.5
Weights 2	0.30	0.65	0.05	1.00
<b>Chained Laspeyres index</b>				
Period 0	100.0	100.0	100.0	100.0
Period 1	116.7	105.0	145.5	125.6
Period 2	114.3	114.3	93.8	105.3
Period 3	117.7	123.5	97.5	111.9
Period 4	119.1	101.7	100.3	99.4

The chained index is apparently inconsistent because the value for total fruit declines between periods 0 and 4 while the values for each individual type of fruit increase over this time range.

Obvious inconsistencies such as this are uncommon, but they do arise from time to time in published time series. They are more likely to occur when the weight structures of the two indexes being chained are quite different, as in the example.

Apparent inconsistencies in chained indexes as illustrated in text box 7.14 can be a source of considerable concern and confusion for users of price and volume indexes unless this phenomenon is flagged and explained.

A related characteristic of the Laspeyres and Paasche formulas is that they are consistent in aggregation. This means, for example, that if one calculates a Laspeyres volume index based on the prices and quantities from one set of product transactions and one also calculates a second Laspeyres volume index based on the prices and quantities from another different set of product transactions, then the overall Laspeyres volume index representing both sets of transactions combined could be calculated either directly, from the individual prices and quantities in the combined data set, or indirectly by aggregating the two component Laspeyres indexes. Unfortunately the Fisher index is not consistent in aggregation, though it is approximately so.

### Text box 7.15 Base periods

When index numbers are discussed, the following **base periods** (sometimes called reference periods) come into play:

The **time base period** is the period, typically a year, in which the index is scaled to equal 100.0 (or some other value). When the index subsequently is rescaled so that it equals 100.0 (or some other value) in some other period, this is often called **rebasing**.

The **weight base period** is the period, typically a year, from which the index weights are drawn. In the case of a Laspeyres index, for example, this is the initial period. Sometimes this is simply called the **weight period** and changing the index from one weight base period to another is often called **reweighting**.

The **price base period** is the first of the two periods that are being compared by the index. The other period in the comparison is sometimes called the **current period**.

The **link base period** is the period in which one index is chained to another index.

It is possible for the time, weight, price (or current) and link periods to be the same, but they need not be so.

### 7.3.7 Elementary versus compound price and volume indexes

Suppose a sample of apple prices (average monthly) and quantities sold is collected in several stores within a given metropolitan area, once a month for a period of several months. A variety of different types of apples are sampled: large and small; fresh and not fresh; Cortland, McIntosh, Granny Smith, Red Delicious and so on. Then the Laspeyres, Paasche and Fisher index number formulas are used to construct apple price and volume indexes, making appropriate quality adjustments for the different types of apples. These are called **elementary** price and volume indexes because they are constructed from individual price and quantity data. Statistics Canada calculates many elementary price indexes every month as part of the compilation of the consumer price index and a variety of other price indexes.<sup>21</sup>

Now suppose a similar exercise is conducted for oranges and bananas, yielding elementary price and volume indexes for these fruits as well. How can the apple, orange and banana indexes be combined to produce price and volume indexes for fruit as a whole?

This calculation of **compound** price and volume indexes is done using the same Laspeyres, Paasche and Fisher index number formulas already described in equations (7.8) through (7.13). However, the  $p_i(t)$  are taken to be **the price indexes** for the three fruit types, instead of the individual prices, and the  $q_i(t)$  are obtained by **deflating** the aggregate transaction values of apples, oranges and bananas by their corresponding price indexes, rather than by using the individual quantities which are not commensurable. In addition, these compound index number calculations usually take advantage of a transformation of the Laspeyres and Paasche index number formulas.

The Laspeyres price index is transformed as follows:

(7.14)

$$P^L = \frac{\sum p_i(t)q_i(0)}{\sum p_i(0)q_i(0)} = \frac{\sum \{p_i(t)/p_i(0)\}p_i(0)q_i(0)}{\sum p_i(0)q_i(0)}$$

Equation (7.14) says that the Laspeyres price index can be calculated as a weighted average of the price relatives,  $p_i(t)/p_i(0)$ , with the weights being the transaction value shares from the second of the two periods,

$p_i(0)q_i(0)/\sum p_i(0)q_i(0)$ . The advantage is that no quantity information, as such, is required in this version of the formula. Only transaction value shares are needed. A similar transformation can be applied to the Laspeyres volume index.

Similarly, the Paasche price index can be transformed as follows:

(7.15)

$$P^P = \frac{\sum p_i(t)q_i(t)}{\sum p_i(0)q_i(t)} = \left[ \frac{\sum \{p_i(0)/p_i(t)\} p_i(t)q_i(t)}{\sum p_i(t)q_i(t)} \right]^{-1}$$

Equation (7.15) says that the Paasche price index can be calculated as the inverse of a weighted average of the inverse of the price relatives  $p_i(0)/p_i(t)$ , with the weights being the transaction value shares from the second of the two periods,  $p_i(t)q_i(t)/\sum p_i(t)q_i(t)$ .<sup>22</sup> Again, no quantity information, as such, is required in this version of the formula. A similar transformation can be applied to the Paasche volume index.

The use of this transformation of the Laspeyres and Paasche price index formulas to create compound indexes is illustrated in text box 7.16.

**Text box 7.16**  
**Compound price indexes using the fruit example**

Below are some hypothetical index numbers.

	Apples	Oranges	Bananas
	index		
<b>Period 0</b>			
Price index	100.0	100.0	100.0
Quantity index	100.0	100.0	100.0
Value index	100.0	100.0	100.0
Value share (ratio)	0.2400	0.3200	0.4400
<b>Period 1</b>			
Price index	116.7	105.0	145.5
Quantity index	150.0	200.0	80.0
Value index	175.0	210.0	116.4
Value share (ratio)	0.2618	0.4190	0.3192

The aggregate price indexes in period 1 for all types of fruit are calculated as follows:

$$\text{Laspeyres } P = 100 \times (116.7 \times 0.2400 + 105.0 \times 0.3200 + 145.5 \times 0.4400) = 125.6$$

$$\text{Paasche } P = 100 \div ((1/116.7) \times 0.2618 + (1/105.0) \times 0.4190 + (1/145.5) \times 0.3192) = 118.6$$

$$\text{Fisher } P = 100 \times (1.256 \times 1.186)^{1/2} = 122.1$$

This formula for computing compound price indexes is essentially the one that Statistics Canada uses to calculate national accounts transaction aggregates from price and volume components. Thus, for example, consider the transaction aggregate 'final household consumption expenditure on goods and services'. To calculate this aggregate, price indexes are first obtained for all the categories of spending making up total household consumption expenditure (food, clothing, etcetera). These price indexes are then divided into the values, at current prices, of the corresponding expenditures—this, again, is the process referred to as **deflation**. Finally, the price indexes together with the deflated expenditure values and the expenditure values themselves are used in the Laspeyres, Paasche and Fisher formulas to calculate the required price and volume indexes for total final household consumption expenditure on goods and services.

In other words, while aggregate value series are built up by summing component value series, aggregate price and volume series are constructed by applying the index number formulas invented by Laspeyres, Paasche and Fisher to component price and volume indexes. As a practical matter, the aggregate indexes so obtained are generally more reliable the more detailed is the collection of lower-level price and volume indexes being aggregated.

### 7.3.8 Contributions to change

In the previous section a hypothetical example was considered in which fruit price indexes were calculated, using the Laspeyres, Paasche and Fisher index number formulas, by combining price index and transaction value information for three types of fruit: apples, oranges and bananas. In the example (text box 7.16) the Laspeyres price index for fruit increased 25.6% between the initial period and the second period. How can this percentage increase be broken down into three separate and additive contributions attributable to the three types of fruit? This is the **contributions to change** problem.

In the case of the Laspeyres index number formula, the calculation of such contributions to change is straightforward. It is illustrated for the Laspeyres price index in text box 7.17. The contribution of each type of fruit is equally dependent on the price increase for that type of fruit and on the transaction weight of that type of fruit in total expenditure. The calculations for the Laspeyres volume index are similar. Contributions to change for the Paasche index are rarely calculated and are not illustrated here.

#### Text box 7.17

#### Contributions to change in the Laspeyres price index using the fruit example

Text box 7.16 illustrates the calculation of a Laspeyres compound price index for fruit. The calculation is as follows:

$$\text{Laspeyres } P = (116.7 \times 0.2400 + 105.0 \times 0.3200 + 145.5 \times 0.4400) = 125.6$$

This 25.6% increase in the price of fruit can be decomposed into three components as follows:

$$\begin{aligned} \text{Apples: } & 16.7\% \times 0.24 = 4.0\% \\ + \text{ Oranges: } & 5.0\% \times 0.32 = 1.6\% \\ + \text{ Bananas: } & 45.5\% \times 0.44 = 20.0\% \\ = \text{ Fruit: } & 25.6\% \end{aligned}$$

For the Fisher index number formula the calculation of contributions to change is not so simple. It turns out the contributions can be calculated using the approach shown in equation (7.16).

(7.16)

$$P^F - 1 = \sum w_i \{p_i(t) - p_i(0)\}$$

Where:

(7.17)

$$w_i = \frac{\frac{q_i(0)}{\sum p_i(0)q_i(0)} + (P^F)^2 \frac{q_i(t)}{\sum p_i(t)q_i(t)}}{1 + P^F}$$

In this formula,  $P^F$  is the Fisher price index comparing prices in period t to prices in period 0,  $p_i(0)$  is the price for component i in period 0,  $q_i(0)$  is the volume for component i in period 0,  $p_i(t)$  is the price for component i in period t and  $q_i(t)$  is the volume for component i in period t. The decomposition is illustrated in text box 7.18, using the fruit price data in text box 7.1.

The reason the formula is so complicated is that the Fisher index uses weights from two periods instead on just one, so the weights in the calculation of contribution to change must reflect relative price changes as well as relative quantity changes.

**Text box 7.18****Contributions to change in the Fisher price index using the fruit example**

Text box 7.4 illustrates the calculation of a Fisher compound price index for fruit, which is shown to be 22.1%. Here we illustrate the calculation of contributions to the change in the Fisher price index. The calculations are done using equations (7.16) and (7.17) plus the price and quantity information in Text box 7.1. First, the weights  $w_i$  from equation (7.16) are as follows:

Apples:

$$\begin{aligned} & (10 \div (\$1.50 \times 10 + \$1.00 \times 20 + \$1.10 \times 25) + (1.221)^2 \\ & \times 15 \div (\$1.75 \times 15 + \$1.05 \times 40 + \$1.60 \times 20)) \div (1 + 1.221) \\ & = 0.172 \end{aligned}$$

Oranges:

$$\begin{aligned} & (20 \div (\$1.50 \times 10 + \$1.00 \times 20 + \$1.10 \times 25) + (1.221)^2 \\ & \times 40 \div (\$1.75 \times 15 + \$1.05 \times 40 + \$1.60 \times 20)) \div (1 + 1.221) \\ & = 0.412 \end{aligned}$$

Bananas:

$$\begin{aligned} & (25 \div (\$1.50 \times 10 + \$1.00 \times 20 + \$1.10 \times 25) + (1.221)^2 \\ & \times 20 \div (\$1.75 \times 15 + \$1.05 \times 40 + \$1.60 \times 20)) \div (1 + 1.221) \\ & = 0.314 \end{aligned}$$

The contributions to change therefore are as follows:

$$\text{Apples: } 100.0 \times 0.172 \times (\$1.75 - \$1.50) = 4.3\%$$

$$\text{Oranges: } 100.0 \times 0.412 \times (\$1.05 - \$1.00) = 2.1\%$$

$$\text{Bananas: } 100.0 \times 0.314 \times (\$1.60 - \$1.10) = 15.7\%$$

$$\text{Fruit (Fisher): } 22.1\%$$

## 7.4 Index number calculations in the national accounts

In the application of the price-volume decomposition methods discussed above in the context of Canada's system of macroeconomic accounts a number of particular issues and special situations arise. These are discussed in this section.

### 7.4.1 Price deflation versus direct volume measurement

In most circumstances, the decomposition of transaction value aggregates involves the application of appropriate price indexes to deflate those transaction values and thereby compute volume estimates. There are some circumstances, however, where good volume estimates are available directly from other sources and relevant price indexes are not. In these cases the national accounts use the available volume estimates and calculate the associated price indexes by dividing the transactions aggregate by the corresponding volume series.

This approach is taken where the product classes involved are homogeneous. Examples include expenditures on electricity and natural gas. It is common for several product classes of merchandise exports and imports and for some components of final household consumption of goods and services. The volume estimates for a large part of government consumption expenditures are also calculated this way, since there are no market prices (or price indexes) associated with these series. The most important volume indicator for government consumption expenditures are hours worked by government employees. In rare instances no value measurements are directly available so these must be created by multiplying the price index by the volume index and scaling the resulting series to some benchmark value estimate.

#### 7.4.2 Income and expenditure accounts deflation

The income and expenditure accounts are described in chapter 5. The GDP-by-expenditure table in those accounts is decomposed into price and volume components, both in the quarterly and annual national tables and in the annual provincial-territorial tables.<sup>23</sup> Most of the volume estimates are calculated by deflating the final expenditure series by corresponding price indexes (chiefly from among those discussed in Annex A.7.1), although as noted in the previous section some are derived directly from volume indicators. The inventory change component is a special case that is discussed in section 7.5.2. Fixed-base quarterly Laspeyres volume indexes at constant prices from the year 2007 are available (36-10-0123-01) as well as quarterly chain-linked Fisher volume and price indexes (36-10-0104-01).

As already mentioned, aggregate indexes are generally more reliable the more detailed is the collection of lower-level price and volume indexes being aggregated. In the income and expenditure accounts, real GDP is made up from the level of detail described in Table 7.1. Many different price deflation approaches are used and the table highlights only the main ones.

**Table 7.1**  
**Level of detail in the compilation of real GDP**

	Number of expenditure categories deflated	Main deflator source <sup>1</sup>
Household final consumption expenditure	98	CPI
NPISH final consumption expenditure	1	SEPH
General governments final consumption expenditure	58	SEPH, LFS, CPI, IPPI
Residential structures investment expenditure	3	NHPI, MLS
Non-residential structures investment expenditure	2	NRBCPI, SEPH, IPPI
Machinery and equipment investment expenditure	9	MEPI
Intellectual property products investment expenditure	3	SEPH, LFS
NPISH investment expenditure	4	NRBCPI, SEPH, IPPI, MEPI
General governments investment expenditure	15	NRBCPI, SEPH, IPPI, MEPI
Investment in inventories	112	IPPI, CPI, WSPI
Exports of goods	90	IPPI, EIPI
Exports of services	4	IPPI, CPI
Imports of goods	90	BLS, EIPI
Imports of services	4	BLS

1. CPI = consumer price index, SEPH = survey of employment, payrolls and hours, LFS = labour force survey, IPPI = industrial product price index, NHPI = new housing price index, MLS = multiple listing service price index, NRBCPI = non-residential building construction price index, MEPI = machinery and equipment price index, WSPI = wholesale price index, EIPI = export-import price indexes, BLS = US Bureau of Labor Statistics price indexes.

Source: Statistics Canada.



### 7.4.3 Supply and use accounts deflation

The supply and use annual accounts are described in chapter 4. These accounts are also decomposed into price and volume components using the Laspeyres, Paasche and Fisher index number formulas. They are chained annually.

As is explained in chapter 4, the supply and use tables provide a very detailed description of the Canadian and provincial-territorial economies and their evolution through time. Most of the statistics in these tables have a product class dimension.<sup>24</sup> Accordingly, price indexes (see Annex A.7.1) associated with the product classes can be used to deflate most of the supply and use tables.

The supply and use volume estimates thereby obtained are quite valuable from several perspectives. First, they reveal the trend in real outputs and inputs by industry and by product class. Second, the resulting estimates of GDP at basic prices that are calculated by double deflation (see section 7.3.5) provide annual benchmarks for the timelier monthly GDP by industry and annual provincial and territorial GDP by industry programs, as described in chapter 4. The estimates of supply and use at constant prices also serve as real input and output statistics for use in calculating multi-factor productivity by industry and province/territory. They are used as well in the environmental statistics program.

The supply and use tables at constant prices are produced around November each year with a lag of almost three years relative to the reference period. They can be obtained in Microsoft Excel files on request from Statistics Canada. The estimates are available separately for outputs, intermediate consumption and final demand categories.

The tables are deflated both at basic prices and at purchaser prices. This is accomplished by developing explicit deflators for the eight margin categories: wholesale, retail, taxes, gas, storage, natural gas pipeline transport, crude oil pipeline transport and other transport.

## 7.5 Deflation of stocks

The discussion so far has focussed on the price-volume decomposition as it applies to transaction flows. However, the non-financial asset stocks in the national balance sheet can also be decomposed into price and volume components. Accomplishing this gives rise to additional issues that are discussed in this section.

### 7.5.1 Fixed capital stocks

The balance sheets of institutional units such as corporations and governments typically report stocks of non-financial assets at historical cost<sup>25</sup> minus depreciation. This means, for example, if a new corporation is formed in 2010 and invests (in machinery, equipment, plant and commercial real estate, say) \$2 million that year, \$1 million in 2011, \$3 million in 2012 and \$1.5 million in 2013, then its undepreciated non-financial assets at historical cost are \$7.5 million. The corporation would normally depreciate these assets at rates permitted by the tax authorities,<sup>26</sup> so its reported depreciated non-financial assets would be something less than \$7.5 million.

The difficulties with these numbers from a national accounting perspective are that (i) they are measured in a mixture of prices from different accounting periods (for example, the \$2 million investment in 2010 is measured in 2010 prices and the \$1 million investment of 2011 is measured in 2011 prices) and (ii) the tax-based depreciation rates that have been applied are unlikely to line up with economic reality. What is needed, for national accounts purposes, is a valuation of cumulative investment **at current prices**<sup>27</sup> with a deduction for the value of actual economic depreciation of that cumulative investment, also at current prices.

To address this kind of problem, non-financial asset values are normally constructed in a different manner, in preference to using the historical cost figures. The technique used is referred to as the **perpetual inventory method** (PIM). It is summarized in the following equation:

(7.18)

$$S^K(t) = S^K(t-1) + I^K(t) - D^K(t) - O^K(t)$$

Where S denotes a stock variable, I the corresponding investment variable, D the corresponding consumption of fixed capital variable and O the 'other disappearance' variable. The superscript 'K' is there to denote that all of these variables are Laspeyres volume measures. The equation simply states that the stock volume at the end of period t is equal to the stock volume at the end of the previous period t-1 plus any investment volume during the period t minus the consumption of fixed capital volume during period t minus any other disappearance of capital due, for example, to catastrophic weather loss.

According to *SNA 2008*, "consumption of fixed capital is the decline, during the course of the accounting period, in the current value of the stock of fixed assets owned and used by a producer as a result of physical deterioration, normal obsolescence or normal accidental damage."<sup>28</sup> This is sometimes referred to as **economic depreciation**. Occasionally the single word **depreciation** is also used as a synonym for **consumption of fixed capital** but the reader is cautioned that in normal business accounting the term most often refers to writing off historical capital costs at rates permitted by the tax authorities. In the national accounts the concept is one of **economic depreciation**—the decline in the value of an asset due to its physical deterioration, normal obsolescence or normal accidental damage—which is dependent on the current value of the asset, not its historical value.

Investment volumes are measured by deflating investment transaction flow statistics. The consumption of fixed capital variable is generally modelled<sup>29</sup> by treating depreciation as a simple function 'f'—such as a linear, geometric or hyperbolic function—of the stock at the end of the previous period, taking due account of the average life span (L) of the particular type of assets:

(7.19)

$$D^K(t) = f\{S^K(t-1), L\}$$

Given a starting value for the stock variable  $S^K(0)$ , an investment volume time series  $I^K(t)$ , an estimate of the average life span of capital L and a choice for the functional form f, these two equations can be used to generate a stock volume time series  $S^K(t)$ . Once this has been calculated, a corresponding capital stock series at current prices  $S^C(t)$  can be obtained by multiplying the stock volume series by an appropriate investment price index. The resulting capital stock estimates are referred to as having been valued at **replacement cost**. In effect, the capital stock in the current period is valued at the current cost to replace that capital.

Table 7.2 illustrates this type of calculation. It shows stocks of fixed non-residential capital by asset type for the two years 2007 and 2008, both at current prices and at the constant prices of 2007. These statistics are calculated using a geometric depreciation function, with different average life-of-capital assumptions for each asset type. They are done using the Laspeyres index number formula, although chained Fisher estimates are also available.

**Table 7.2**  
**Stocks of fixed non-residential capital by asset type**

	2007	2008	2009
	Current prices	Current prices	Constant 2007 prices
	millions of dollars		
Total non-residential	1,532,232	1,692,699	1,592,206
Non-residential buildings	445,909	494,709	453,974
Engineering construction	608,172	685,938	639,998
Machinery and equipment	308,611	329,014	321,652
Textile products, clothing, and products of leather	466	421	416
Wood products	229	235	224
Plastic and rubber products	338	310	296
Non-metallic mineral products	158	151	148
Fabricated metallic products	3,303	3,334	3,220
Industrial machinery	135,505	147,398	142,608
Computer and electronic products	45,663	48,703	48,573
Electrical equipment, appliances and components	13,943	14,827	13,971
Transportation equipment	88,673	92,314	91,235
Furniture and related products	17,386	18,336	18,011
Other manufactured products and custom work	2,947	2,984	2,951
Intellectual property products	169,541	183,039	176,583
Mineral exploration and evaluation	69,734	77,101	73,437
Research and development	64,150	67,116	65,422
Software	35,657	38,821	37,725

Source: Statistics Canada, table 36-10-0097-01.

## 7.5.2 Inventory stocks

A similar issue arises with respect to inventory stocks and flows. A business that acquires products for intermediate consumption or goods for resale records them in its inventories at cost. If they remain in inventory for more than one accounting period, inventories may be augmented in the following period at a different cost. When the goods are ultimately removed from inventory, either to be used in a production process or to be resold, a question arises as to what value should be attributed to them at removal, for accounting purposes.

Accountants suggest three alternative solutions to this problem, referred to as (i) first in, first out (FIFO), (ii) last in, first out (LIFO) and (iii) average cost valuation. Depending on which of these accounting conventions a business adopts, a firm's recorded inventory stocks can have different interpretations.

Inventory stocks appear in the national balance sheet as a form of non-financial produced assets (see chapter 6). The period-to-period change in inventory stocks also appears in the GDP-by-expenditure table (see chapter 5).

To calculate inventory stocks and period-to-period inventory changes for national accounts purposes, the following steps are followed. First, estimates of inventory stocks are obtained from the balance sheets of businesses. These estimates are at historical cost, so it is not appropriate to deflate them with a current price index. Instead, a composite price index is calculated—a weighted average of current and lagged price indexes depending on the estimated average turnover period of inventories in the particular industry and the most common method of inventory accounting used by establishments in the industry. This deflation process yields an estimate of the inventory stock volume series. A corresponding inventory stock value series at current prices is calculated by multiplying the volume series by a current price index for the types of goods held in inventory. To calculate the value, at constant prices, of the physical change in inventories for purposes of the real GDP-by-expenditure table, the change in the inventory volume series is used. Finally, the value of the physical change in inventories at current prices is calculated by multiplying the corresponding change at constant prices by the current price index.

## 7.6 Real gross domestic income and the terms of trade

The price-volume decomposition is primarily aimed at aggregates of transactions in products, rather than at income-related transactions. However, it is certainly reasonable and at times quite useful to deflate income aggregates. The resulting measures of 'real income' show how incomes change over time after adjusting for any losses, or gains, in the purchasing power of those incomes as a result of changing prices. The choice of price indexes used in deflating income aggregates is rather arbitrary though. While national accounts provide a few real income measures, users can easily construct others using different price deflators.

Real income-based GDP, as discussed in chapter 5, is one such measure of real income. In this case the deflator is not arbitrary. Since income-based GDP is equal to expenditure-based GDP at current prices, real GDP can be interpreted both as a real final expenditure measure and as a real income measure.

Real expenditure-based GDP includes exports, deflated by an export price index, and excludes imports, deflated by an import price index. However, consider what happens when export prices rise and import prices fall, or rise less rapidly than export prices. In such a circumstance, Canadians are better off because their exports are commanding higher prices on international markets, relative to what they must pay for imported goods and services. The terms of trade are said to have improved. The **terms of trade** are measured by the ratio of the export price index to the import price index and they have fluctuated rather widely, in both directions, at various times in Canadian history.

The concept of **real gross domestic income** (real GDI) is intended to take into account, in a way that the concept of real GDP does not, the gains and losses in purchasing power that accrue to Canadian residents as a result of changes in the terms of trade. It measures the purchasing power of the total incomes generated by domestic production, whether that production is consumed domestically or exported.<sup>30</sup> The difference between real GDI and real GDP, referred to here by the symbol 'T', is the trading gain or loss resulting from changes in the terms of trade. This is shown in equations (7.20) and (7.21) below.

(7.20)

$$\text{Real GDI} = \text{Real GDP} + T$$

(7.21)

$$T = (X - M) / P - (X / P^x - M / P^m)$$

Where T is the trading gain or loss, X and M are exports and imports at current prices,  $P^x$  and  $P^m$  are the price indexes for exports and imports, and P is a suitably chosen price index. The decision as to what price index should be used for P is debatable. Statistics Canada uses the gross final domestic expenditure price index.

Table 7.3 shows the concept of real GDI in action. The statistics are especially interesting in 2009, when the terms of trade worsened by 3.0%. Canadian export prices declined sharply while import prices rose. As a result, although real GDP decreased 2.7% that year real GDI dropped 5.7%. Not only did Canadian real incomes decline because of the drop in production associated with the recession, but they fell even more severely because the country received lower prices for its exports, and thereby generated less income, while having to pay higher prices for its imports.

**Table 7.3**  
**Gross national income and gross domestic income**

	2007	2008	2009
Real gross domestic product, volume index, 2007=100	100.0	101.0	98.0
Real gross domestic product, volume index, 2007=100, per cent change	2.1	1.0	-3.0
Real gross domestic income, volume index, 2007=100	100.0	102.5	96.3
Real gross domestic income, volume index, 2007=100, per cent change	3.0	2.5	-6.0
Real gross domestic product, contribution to real gross domestic income per cent change	2.063	1.000	-2.950
Real exchange rate, contribution to real gross domestic income per cent change	-0.073	0.104	-0.008
Terms of trade, contribution to real gross domestic income per cent change	1.002	1.351	-3.045
Real gross national income, volume index, 2007=100	100.0	102.5	96.1
Real gross national income, volume index, 2007=100, per cent change	3.1	2.5	-6.2
Real gross domestic income, contribution to real gross national income per cent change	3.039	2.492	-6.100
Investment income received from non-residents, contribution to real gross national income per cent change	0.301	-0.172	-0.747
Less: investment income paid to non-residents, contribution to real gross national income per cent change	0.196	-0.156	-0.592
Compensation of employees, Canadians working abroad, contribution to real gross national income per cent change	0.003	0.006	-0.002
Less: compensation of employees, non-residents working in Canada, contribution to real gross national income per cent change	0.029	0.019	-0.009
Gross final domestic expenditure, implicit price index 2007=100	100.0	102.5	103.4
Real exchange rate index, 2007=100	100.0	105.6	99.2
Terms of trade index, 2007=100	100.0	104.4	94.8
Real personal disposable income, volume index, 2007=100	100.0	104.1	106.7

Source: Statistics Canada, table 36-10-0129-01.

Table 7.3 also shows statistics for the concept of **real gross national income** (real GNI). This concept focuses on the income received by Canadian residents, whether that income is earned domestically or abroad, and it excludes income earned in Canada but paid to non-residents. Both the income received by Canadians from abroad and the income earned by non-residents in Canada are deflated by the price index for gross final domestic expenditure. Real GNI dropped 6.0% in 2009.

Finally, the table also shows, for reference, the concept of real personal disposable income (real PDI). Unlike the other measures of real income, real PDI increased in 2009, by 1.7% buoyed by wage increases and government transfers.

## 7.7 Inter-regional price and volume indexes

The price-volume decomposition examined to this point involves the comparison of prices and quantities in two distinct time periods, 0 and t. The same kind of decomposition can also be used to compare prices and quantities in two geographical regions or countries, A and B, instead of in two periods of time.

### 7.7.1 Purchasing power parities

Thus, for example, suppose prices and quantities of fruit sold are again being compared, but in two countries, Canada and the United States, in a single time period 0 (instead of in just one country, Canada, in two periods 0 and t). The same three index number formulas—Laspeyres, Paasche and Fisher—can be used to make this inter-regional comparison.

If prices are being compared using the Laspeyres formula, then there are two sets of fruit prices, one from Canada (in Canadian dollars) and the other from the United States (in US dollars), and the quantity weights used in the comparison are the ‘fixed basket’ of quantities of various types of fruit consumed in Canada. If the comparison is done with the Paasche formula, then the ‘fixed basket’ of quantity weights comes from the United States. The Fisher comparison is, of course, the geometric mean of the Laspeyres and Paasche comparisons.

The Laspeyres and Paasche estimates of the price difference may be very similar or very different, depending on how similar or different are the fruit purchasing patterns in the two countries. When Canada is being compared to the United States, as in the example just given, the difference between Laspeyres and Paasche might be much smaller than if Canada is compared to another country with very different climate, culture and per-capita income. In other words, the size of the Laspeyres-Paasche differential is a good indicator of how similar are the two regions being compared. Either way, the Fisher estimates are midway between the Laspeyres and Paasche estimates and give a balanced weighting to purchasing patterns in both regions.

A price index comparing prices in two regions or countries is often called a **purchasing power parity** (PPP). *SNA 2008* defines the concept as follows: “Purchasing power parities (PPPs) are used in producing a reliable set of estimates of the levels of activity between countries, expressed in a common currency. A purchasing power parity (PPP) is defined as the number of units of B’s currency that are needed in B to purchase the same quantity of individual good or service as one unit of A’s currency purchase in A. Typically, a PPP for a country is expressed in terms of the currency of a base country, with the US dollar commonly being used. PPPs are thus weighted averages of the relative prices, quoted in national currency, of comparable items between countries. Used as deflators, they enable cross-country comparisons of GDP and its expenditure components.”<sup>31</sup>

In the fruit example, the Canadian prices are measured in Canadian dollars and the United States prices are measured in American dollars. If the currency exchange rate as gauged on international financial markets were one Canadian dollar to the American dollar, as it was in February 2013 for example, then one might expect the PPP to be near 1.0. In fact, however, currency exchange rates and purchasing power parities are often far apart. This is, to a degree, because purchasing power parities generally cover untraded products (notably real estate and untradeable services) as well as traded ones. Currency markets are much more focussed on tradable products— notably, in Canada’s case, oil and gas, other minerals, metals and agricultural products. The divergence between PPPs and currency exchange rates is also because currency exchange rates react, often sharply and rapidly, to shifting financial market attitudes and expectations whereas purchasing power parities reflect retail and wholesale prices that are determined by more fundamental longer-term supply and demand forces.

Table 7.4 shows purchasing power parity estimates for Canada and the United States. These statistics are estimates of the amount of United States currency required to buy the same quantity of a given class of products that one Canadian dollar purchases in Canada. They are based on benchmark estimates for the United States and Canada derived by the Organization for Economic Co-operation and Development (OECD) once every three years, from 1993 on.<sup>32</sup> Interpolations between benchmark estimates are made using changes in the associated price indexes of the two countries. The estimates show, for example, that food, alcoholic beverages and tobacco, and clothing and footwear are substantially less expensive in the United States, in US dollars, than they are in Canada, in Canadian dollars, while health and education show the opposite relationship.

**Table 7.4**  
**Canada-United States purchasing power parities**

	2007	2008	2009
	United States dollar per Canadian dollar		
Gross domestic income (GDI)	0.860	0.861	0.847
Household final consumption expenditure	0.820	0.823	0.817
Food and non-alcoholic beverages	0.690	0.716	0.681
Alcoholic beverages and tobacco	0.512	0.499	0.543
Clothing and footwear	0.629	0.630	0.686
Housing, water, electricity, gas and other fuels	0.954	0.914	0.902
Household furnishings, equipment and maintenance	0.705	0.727	0.728
Health	1.042	1.038	1.020
Transport	0.644	0.672	0.654
Communication	0.878	0.936	0.952
Recreation and culture	0.798	0.819	0.817
Education	2.291	2.306	2.293
Restaurants and hotels	0.669	0.694	0.697
Miscellaneous goods and services	0.866	0.843	0.823
Net purchases abroad	1.014	1.041	1.027
General governments final consumption expenditure	0.976	0.975	0.926
Gross fixed capital formation	0.837	0.830	0.811
Construction	0.805	0.778	0.760
Machinery and equipment	0.838	0.855	0.808
Changes in inventories	0.697	0.714	0.701
Balance of exports and imports	0.859	0.861	0.847
Total goods	0.754	0.764	0.749
Consumer goods	0.702	0.712	0.732
Durable goods	0.710	0.740	0.772
Semi-durable goods	0.662	0.668	0.708
Non-durable goods	0.695	0.718	0.673
Capital goods	0.832	0.829	0.795
Total services	0.960	0.948	0.927
Consumer services	0.931	0.913	0.908
Government services	0.976	0.975	0.926

Source: Statistics Canada, table 36-10-0365-01.

### 7.7.2 Real income comparisons across regions

Suppose you wanted to determine whether an average American household consumes more or less than a Canadian household. The problem is that the expenditures in the United States are in US dollars and the expenditures in Canada are in Canadian dollars. You could use the exchange rate to convert the Canadian expenditures into US dollars, but that might be misleading given exchange rates fluctuate widely from day to day and are often a poor indicator of price differentials. Instead you need either to express the Canadian expenditures at US prices or to express the US expenditures at Canadian prices. This means deflating the Canadian or US expenditures using purchasing power parities.

Table 7.5 shows indexes of real expenditures per capita in the United States relative to those in Canada for categories of gross domestic income (GDI). The term “real expenditure” is used here to express expenditure of the two countries in the same set of prices through the process of conversion with purchasing power parities (PPP). The use of the term “real” in a spatial context is analogous to its conventional use in time series, where expenditures made in different time periods are expressed in base period prices in order to measure their real growth. United States per capita expenditures in current dollars are converted to Canadian dollars by dividing them by the Fisher PPPs. These converted expenditures are then expressed as a ratio of Canadian expenditures per capita.

**Table 7.5**  
**Canada-United States comparison of real final expenditure per capita**

	2007	2008	2009
	U.S. expenditure relative to Canadian expenditure at PPP valuation		
Gross domestic income (GDI)	116.9	113.0	118.8
Household final consumption expenditure	151.9	148.6	147.2
Food and non-alcoholic beverages	133.4	128.6	127.0
Alcoholic beverages and tobacco	135.0	139.8	135.3
Clothing and footwear	158.3	155.2	139.4
Housing, water, electricity, gas and other fuels	107.0	110.5	111.0
Household furnishings, equipment and maintenance	136.3	125.0	122.6
Health	571.3	567.2	575.1
Transport	141.8	128.2	122.8
Communication	138.3	133.4	123.4
Recreation and culture	153.4	146.4	140.7
Education	88.1	87.6	87.4
Restaurants and hotels	167.2	160.4	158.4
Miscellaneous goods and services	150.0	151.2	148.0
Net purchases abroad	-11.5	-15.7	-13.8
General governments final consumption expenditure	80.6	80.2	82.1
Gross fixed capital formation	112.9	104.4	102.7
Construction	88.3	79.8	74.3
Machinery and equipment	150.6	138.3	142.0
Changes in inventories	60.3	-48.8	419.2
Balance of exports and imports	-274.1	-322.4	221.0
Total goods	130.0	121.4	119.9
Consumer goods	144.1	138.6	130.5
Durable goods	139.1	122.3	114.9
Semi-durable goods	144.5	139.0	126.6
Non-durable goods	151.0	146.3	150.5
Capital goods	112.1	100.8	100.6
Total services	124.8	124.8	124.9
Consumer services	159.5	161.1	159.8
Government services	80.6	80.2	82.1

Source: Statistics Canada, table 36-10-0365-01.

As can be seen in the table, US gross domestic income per capita is greater than Canadian gross domestic income per capita when the comparison is made using PPPs. Expenditures are over five times greater for health care and they are greater by varying amounts for most other expenditure categories in the table. However, per capita expenditures on education, construction and government services are lower in the US than in Canada. It should be readily understood why it is important to make these comparisons using **actual household consumption** rather than **final household consumption expenditure** (these concepts are discussed in chapter 5).

International institutions use PPPs in this way to compare the per capita incomes of all countries around the world and thereby identify priority areas for developmental assistance. The World Bank leads a multi-national effort every few years to estimate PPPs for all of its member countries which is known as the International Comparison Program.<sup>33</sup>

### Annex A.7.1 Price indexes produced by Statistics Canada

Prices are the traffic control system of the market economy, serving to balance supply and demand for the wide range of products available. The relative movement of different prices provides valuable signals about which products are becoming more or less popular, where scarcities may be emerging, the impact of new trade restrictions or liberalization, the effects of technological change and innovation and various other economic developments.

Statistics Canada collects and publishes a lot of information about inter-temporal price changes, in the form of price indexes. These indexes are the principal ingredient in the national accounts price-volume decomposition calculation that is the focus of this chapter, along with the transaction aggregates, expressed at current prices, which are the targets for decomposition. The agency also releases a small number of spatial indexes, most notable the CPI intercity indexes and the Canadian remote post and foreign post price indexes.



### Annex A.7.1.1 Consumer price indexes

Consumer price indexes (CPIs)<sup>34</sup> are the best known of the price indexes that Statistics Canada releases. Published monthly, they are closely followed by government and private sector organizations. Their coverage spans the full range of goods and services purchased by Canadian households and they line up quite well against the product classes of household final expenditure on consumer goods and services in the national accounts. This makes the CPIs an ideal source for use in the national accounts price-volume decomposition of this component of final demand. The CPIs measure market prices paid by consumers and include taxes and subsidies on products as well as transportation and distribution margins.

The CPI is calculated using the Lowe index number formula, which is a slightly more general version of the Laspeyres formula, discussed in section 7.3. In essence, the index can be thought of as a weighted average of price relatives for a set of product classes, where the weights are the shares of household expenditure on the different product classes and the price relatives are simply the ratios of the price of some product in the current period to the price of the same product in the previous period. The number of price relatives going into the calculation for each particular product class depends on the size of the statistical sample, which varies by product class. The CPI weights are derived primarily from the Survey of Household Spending and the sample of prices is collected mostly by Statistics Canada staff who visit retail stores each month and observe listed prices.

#### Text box A.7.1.1 Price relatives

A price **relative** is simply one price divided by another price. Most often the numerator is the current price of some product or class of products and the denominator is the price of that same product or class of products in the previous time period. Some other examples of price relatives are the current price divided by the price one year ago, the current price divided by some higher-level aggregate price (such as the all-items CPI) or the current price in one country divided by the current price of the same product in another country.

There are numerous complications and special cases in the CPI methodology, not least among which are the difficult challenges involved in adjusting for quality changes in certain types of products. Canada's CPI structure and methodology are explained in considerable detail in *The Canadian Consumer Price Index Reference Paper*, Statistics Canada catalogue #62-553-X, released December 18, 2015.

### Annex A.7.1.2 Industrial product price indexes

The industrial product price indexes (IPPIs)<sup>35</sup> differ from the CPIs primarily in terms of their scope. They measure price changes for goods sold by manufacturers in Canada, usually to other producers rather than to households. Also included are non-residential electric power selling prices and raw materials' prices. The sample of prices collected is for goods sold at basic prices.<sup>36</sup> Accordingly, the prices covered by the IPPIs refer not to what a purchaser pays, but to what a producer receives. They exclude all taxes on products, such as sales taxes, since this money does not go to producers. They also exclude transportation services provided by common carriers beyond the factory gate and any distribution services performed by the retail or wholesale trade industries.

The IPPIs measure price changes by product class, based on the North American Product Classification System, as well as by industry, based on the North American Industry Classification System. They cover a wide range of products that may be part of the intermediate consumption of some businesses, or purchased for resale by wholesalers and retailers, or exported. These price indexes are used extensively in the price-volume decomposition for output, intermediate consumption and final demand in the supply and use accounts. They are also used extensively in the calculation of monthly real GDP by industry for Canada and annual real GDP by industry for provinces and territories. Finally, the IPPIs are also used in the deflation of the income and expenditure accounts, especially with regard to the components of fixed capital formation, inventory change and merchandise exports.

Like the CPI, the IPPI is calculated using the Lowe index number formula. The index weights are taken from the Annual Survey of Manufactures and Logging. The sample of monthly price quotes is collected from business establishments mostly by means of mail-out questionnaires. Efforts are made to collect transaction prices, including any typical discounts, rather than list prices.

### **Annex A.7.1.3 Machinery and equipment price indexes**

The machinery and equipment price indexes (MEPIs) provide estimates of price change for machinery and equipment purchased by industries in Canada. The indexes are released both by product class and by industry of purchase and they are available quarterly.<sup>37</sup>

While the IPPIs focus on the suppliers of Canadian manufactured goods, the MEPIs are concerned with the demand side and are limited to machinery and equipment products. Their target population consists of all industries that purchase machinery and equipment, whether domestically produced or imported. Ideally the MEPIs would measure purchasers' prices including taxes, tariffs, transportation costs and other margins, but because of the data sources used they are in fact measured mostly at basic prices.

There is no specific survey associated with the MEPIs. Rather, the price indexes are derived using data from other sources, notably the industry producer price index survey, the computer and peripherals price index survey and the United States Bureau of Labor Statistics producer price and export price indexes. The weights for the price indexes are derived from the final demand table of the supply and use accounts.

The MEPIs are used in the supply and use accounts and the income and expenditure accounts to deflate machinery and equipment capital expenditures and certain components of merchandise imports.

### **Annex A.7.1.4 Agriculture price indexes**

The agriculture price indexes consist of the monthly farm product price indexes (FPPIs) and the quarterly farm input price indexes (FIPIs).<sup>38</sup> The former measures the changes in prices that farmers receive for the agriculture products they produce and sell whereas the latter estimates the change in prices that farmers pay for inputs into their farming operations.

In the case of the FPPIs, the prices of products sampled are basic prices. The price index has separate crop and livestock components and is available by province as well as for Canada as a whole. The target population includes all Canadian agricultural operations as defined by the Census of Agriculture as well as marketing boards and agencies. Samples are selected and weighted using data from the farm cash receipts survey.

In the case of the FIPIs, the prices measured are for the full range of farm inputs including buildings, machinery and motor vehicles, fuel, repairs, seed, fertilizers, pesticides, insurance, stabilization premiums, wages, livestock purchases, feed, veterinary fees and drugs and some other costs. The goal is to measure purchaser prices. There is no specific survey for the FIPIs. Rather, the price indexes are constructed using price data from other sources such as the IPPIs, the MEPIs, the FPPIs, the CPIs, the labour force survey and some administrative data sources.

### **Annex A.7.1.5 Construction price indexes**

The construction price indexes provide measures of the average change in prices of various types of building and other construction. These price indexes are among the most challenging to construct because construction projects tend to be large, expensive and quite heterogeneous. The fact that the price of the land on which the construction takes place is often included in the purchase price also complicates matters. There are three construction-related price indexes, focused on housing, apartment buildings and non-residential buildings.<sup>39</sup>

The new housing price index (NHPI) is a monthly series that measures changes over time in contractors' selling prices of new residential houses (single, semi-detached and row), where detailed specifications pertaining to each house remain the same between two consecutive periods. The index is available for provinces but not territories, and for 21 metropolitan areas. Indexes are available for the total price, the land component and the residual component.

The apartment building construction price index (ABCPI) is a quarterly series measuring changes in contractors' selling prices of a representative apartment building. The non-residential building construction price index (NRBCPI) is a quarterly series measuring the changes in contractors' selling prices of non-residential building construction (offices, warehouses, shopping centres, light factories, schools). Both of these indexes exclude the cost of land, land assembly, design, development and real estate fees. They collect price quotes in seven large census metropolitan areas.

The construction price indexes are used in the national accounts to deflate residential and non-residential capital formation estimates and to calculate estimates of the capital stock and the rates of capacity utilization.

### **Annex A.7.1.6 Services producer price indexes**

The services producer price indexes (SPPIs) are relatively new indexes, so the length of the time series is typically shorter than is the case for the goods and construction price indexes. They aim to measure changes in the selling prices of products from a range of different business-services-producing industries including:

- traveller accommodation services;
- accounting services;
- couriers and messengers services;
- informatics professional services;
- passenger air services;
- retail services;
- wholesale services;
- commercial and industrial machinery and equipment rental and leasing services;
- commercial rental services;
- new lending services;
- for-hire motor carrier freight services; and
- architectural, engineering and related services.

They are intended as a complement to the industrial product price indexes, which are focused on goods.<sup>40</sup>

Measuring price change for business services is generally more challenging than for goods because the products sold are often differentiated (specialized to the customer) and also because their nature tends to change over time. It can be difficult to collect representative price quotes comparing identical products in two different time periods. Sometimes it is necessary to measure product price change indirectly by measuring changes in input costs instead. Each service category has a methodology that is uniquely tailored to its particular circumstances.

The SPPIs are used primarily in the supply and use accounts for deflating outputs and intermediate inputs by industry.

### **Annex A.7.1.7 International merchandise trade price indexes**

Statistics Canada also produces export and import price indexes, by product class. These indexes are derived from a wide range of diverse data sources.

Some of these price indexes are calculated directly from the Customs trade data. Those data, which are reported by exporters and importers when their goods cross the border, provide physical quantity as well as value information, which allows price changes to be inferred by means of unit values. However, this approach works well only for certain homogeneous products.

For homogeneous products that do not flow through Customs channels, price data are available from other specific sources. In the case of cross-border trade in electricity, price information is available from the National Energy Board. For exports of crude petroleum and natural gas, price data come from Statistics Canada's surveys of the energy sector.

In the case of exports, IPPIs and FPPIs are used for many manufactured and some agricultural products. For imports, producer price indexes from the United States Bureau of Labor Statistics are used for a large portion of imported manufactured products, since the majority of Canada's merchandise imports come from the United States. The corporate goods price index's export component, published by the Bank of Japan, is used as an indicator of price change for goods imported from Asia.

For a small number of selected representative products, Statistics Canada also collects export and import price data directly from Canadian exporters and importers, using a questionnaire with telephone follow-up.

The export and import price indexes are calculated in two sets, one based on the Laspeyres formula and the other the Paasche formula.<sup>41</sup> These price indexes are used both in the supply and use accounts and in the income and expenditure accounts to calculate the volume of trade as well as chained Fisher price and volume indexes of gross domestic product at market prices. The trade price indexes are also useful for purposes of analyzing the terms of trade and the impact of changes in these terms on Canadian incomes.

## Notes for chapter 7

1. One often sees the term ‘quantity’ used in textbooks on index numbers, instead of the term ‘volume’. National accountants generally prefer the latter term because the former term, taken literally, can be misleading when the quality of products varies. Volume changes should be interpreted as comprising changes in both quantity and quality. Price changes should be seen as ‘pure’ price changes, comprising changes in prices that have been adjusted to remove the effects of quality change. For more on this point see section 7.3.
2. Two things are commensurable if they are measurable or comparable by a common standard.
3. Another scale that is convenient in some circumstances is to set the index equal to 1.0 in some arbitrary period.
4. International Labour Office, International Monetary Fund, Organization for Economic Co-operation and Development, Statistical Office of the European Communities (Eurostat), United Nations and the World Bank, Consumer Price Index Manual: Theory and Practice, Geneva, 2004 and Producer Price Index Manual: Theory and Practice, Geneva, 2004 (both available free on the Internet).
5. Bloem, Adriaan, J. Dippelsman and N. Maehle, Quarterly National Accounts Manual: Concepts, Data Sources and Compilation, International Monetary Fund, Washington D.C., 2001, chapter IX. (Available free on the Internet.)
6. Other examples would be when the amount of product in the package changes, or when the associated product warranty changes, or certain services that were formally included with a good are no longer provided, or in the case of a service product when the effectiveness of the service noticeably improves.
7. A variety of methods have been devised for adjusting an observed price change to remove the effects of quality change. If the quality difference is solely due to a change in the quantity of product in the package, for example, a pro rata adjustment can be made. For changes to more complex products, such as high-tech equipment, the **hedonic modelling** method is sometimes used although this approach is increasingly seen as overly expensive and not totally effective. A much simpler alternative is group mean imputation.
8. Readers wishing to look at the original references attributed to these three statisticians, or to other index number statisticians mentioned in this chapter, are referred to the extensive bibliographies in the two international manuals cited in the previous section.
9. The reader should note again that, as in equation (7.7), the symbols P, Q and V represent price, volume and value indexes of relative aggregate change. That is, for example, P represents the relative aggregate change in prices between two periods, 0 and t, not the average level of prices as in equation (7.4).
10. The Laspeyres price index as described represents an aggregation of individual prices, weighted by quantities from the initial period 0. However, it should be noted that (higher-level) price and volume indexes can also represent aggregations of (lower-level) price and volume indexes rather than individual prices. See section 7.3.7.
11. A similar but slightly more general version of the Laspeyres price index is the Lowe price index, first proposed by Joseph Lowe in 1823, wherein the quantity weights need not necessarily come from the index’s initial period 0, but can rather come from **any** period. Most price indexes released by Statistics Canada, such as the consumer price index and the industrial product price index, are derived using the Lowe formula.
12. Most of the monthly price indexes released by Statistics Canada such as the consumer price index and the industrial product price index use a variant of the Laspeyres formula rather than the Paasche formula. The principle reason is that source data for the quantity weights are usually available only with a substantial lag, which makes the Paasche formula impractical.
13. Alternatively, the arithmetic average can be used instead of the geometric average as proposed by Drobisch, Sidgwick and Bowley. However, the statistical properties of this alternative approach are such that the geometric average is universally the preferred method. For non-negative relatives the natural average is the geometric average.
14. The OECD online Glossary of Statistical Terms defines superlative indexes as “price or quantity indexes that are ‘exact’ for a flexible aggregator. A flexible aggregator is a second-order approximation to an arbitrary production, cost, utility or distance function. Exactness implies that a particular index number can be directly derived from a specific flexible aggregator.” Again, for bibliographical references see the two international manuals referred to

earlier in this chapter. Two other 'superlative' index number formulas are credited to Törnqvist and Theil, and to Walsh.

15. In the professional literature, an index number formula with this property is said to pass the **factor reversal test**.

16. In a practical application of the two index number formulas, the Paasche index could also be greater than the Laspeyres index because the population of buyers changes between the two periods, or because the preferences of the original buyers for one product as compared to another might change. Nevertheless, the empirical evidence indicates quite strongly that Laspeyres indexes tend to increase more rapidly than Paasche indexes.

17. A similar point can be made about a Paasche index with fixed weights from the current period being used for past periods—the current period weights are likely to become increasing unrepresentative as one moves to earlier periods.

18. In the professional literature, an index number formula with this property is said to pass the time reversal test.

19. Quarterly chained Fisher estimates are not calculated with the unadjusted data because they would suffer from the same seasonal drift problem alluded to earlier.

20. The indexes could just as well be Laspeyres volume indexes. The same conclusions could be drawn.

21. For most of the price indexes produced by Statistics Canada, such as the CPI and the IPPI, individual price observations cannot be weighted by quantities, in the calculation of elementary price indexes, for the simple reason that no quantity information is available at this low level (although this may change in future if it becomes feasible to use scanner data from retailers). Instead, the individual price observations are typically expressed as period-to-period price relatives and the unweighted geometric mean is then calculated. In the national accounts, indexes are typically calculated at a somewhat higher level where quantity and price information are both available.

22. In other words, the Paasche price index is the weighted harmonic mean of the price relatives.

23. The quarterly volume and price estimates are available in tables 36-10-0104-01, 36-10-0106-01 and 36-10-0123-01. The annual national estimates are in table 36-10-0369-01 and the associated annual contributions to percentage change estimates are in tables 36-10-0128-01, 36-10-0131-01, 36-10-0132-01, 36-10-0133-01 and 36-10-0135-01. The annual provincial and territorial estimates are in table 36-10-0222-01.

24. The exception is the primary income tables, for which no price indexes are available.

25. Also referred to as 'book values'.

26. Canada's tax laws permit corporations to depreciate, in their corporate accounts, their capital investments at rates which are accelerated relative to the true or economic rates of depreciation of those assets.

27. In the context of economic accounting, the term current is used to refer to the time at which the economic activity took place. 'Current period' means the period of observation. It does not mean the present time nor the time of compilation. Values are said to be expressed in 'current prices' if the prices used in the valuation of goods and services are those prevailing in the period of observation, that is both the quantity and the price components of the value series relate to the current period.

28. See *SNA 2008*, page 123.

29. Unfortunately there are no transaction flows associated with consumption of fixed capital. Rather, the depreciation process goes on rather quietly behind the scenes, one might say, and is unobserved. It is modelled in the national accounts and this lends an element of arbitrariness to all the variables with which consumption of fixed capital is associated. This is perhaps the main reason why net domestic product tends to receive less attention than gross domestic product.

30. Real gross domestic income is a concept that is defined in real terms only. There is no corresponding nominal measure.

31. See *SNA 2008*, page 318.

32. The OECD's purchasing power parity estimates are available free on the Internet at [oecd.org](http://oecd.org).

33. For more information via the Internet see [worldbank.org](http://worldbank.org).
34. The consumer price indexes are in tables 18-10-0004-01 to 18-10-0006-01. The index weights are in 18-10-0007-01.
35. The industrial product price indexes for manufacturing goods and industries are available in tables 18-10-0029-01 to 18-10-0032-01. The electric power selling price indexes are in 18-10-0028-01 and the raw materials price indexes are in 18-10-0034-01.
36. 'Basic prices' are discussed in chapter 4.
37. The machinery and equipment price indexes are available in tables 18-10-0057-01 and 18-10-0058-01.
38. The farm product price indexes and the farm input price indexes are available in tables 32-10-0098-01 and 18-10-0023-01 respectively.
39. The three indexes are available in tables 18-10-0052-01 and 18-10-0050-01.
40. These indexes are available in tables 18-10-0020-01, 18-10-0021-01, 18-10-0024-01 to 18-10-0027-01, 18-10-0033-01, 18-10-0035-01 to 18-10-0037-01, 18-10-0040-01, 18-10-0041-01, 18-10-0043-01, 18-10-0045-01 and 18-10-0072-01.
41. These formulas are explained in section 7.3.

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 8 International accounts

### What this chapter seeks to do

The purpose of this chapter is to explain Canada's **international accounts**. These accounts provide a comprehensive statistical picture of Canada's economic relationships with non-residents. The chapter focuses on the internal structure of the balance of international payments and international investment position, the relationship of these accounts to the rest of the Canadian system of macroeconomic accounts and how these accounts are used to interpret economic developments.

This chapter links primarily to *System of National Accounts (SNA) 2008* Chapter 26 and to the *Balance of Payments and International Investment Position Manual, sixth edition (BPM6)*.

### 8.1 Introduction

Canada's economy is wide open to the rest of the world. Canadian households, corporations and governments engage in a variety of transactions with economic actors in other countries every day of the year. Over time Canadians have also accumulated large stocks of assets and liabilities in other parts of the world, as have non-residents in Canada. The international accounts keep track of these transactions with non-residents and the stocks of financial assets and liabilities that are associated with them.

Text box 8.1 highlights the wide variety of transaction types that are involved in Canada's economic relationship with the rest of the world. These different kinds of international transactions are the subject of later sections in this chapter.

#### Text box 8.1

##### Types of international transactions

- Exports and imports of goods (wheat, cars, oil and gas, etcetera)
- Exports and imports of services (travel, transportation, financial, etcetera)
- Compensation of employees working across the border
- Dividend, interest and other investment income flows, by type, across the border
- Current transfers across the border, such as foreign aid and personal transfers
- Capital transfers across the border, such as government forgiveness of foreign debts
- Direct investment flows, by type, across the border
- Portfolio investment flows, by type, across the border
- Other investment flows across the border
- Official international reserve flows

The international accounts are the central guide to and a vital framework for the analysis of Canada's cross-border trade and investment patterns, exchange rate policy, official reserves management, external financial exposure and many other economic issues. They are compiled according to the standards set out in the *Balance of Payments and International Investment Position Manual, sixth edition (BPM6)*, which is the responsibility of the International Monetary Fund and was developed in close cooperation with balance of international payments experts from countries all over the world, participating in the International Monetary Fund Committee on Balance of Payments Statistics.<sup>1</sup>



## 8.2 The framework for the international accounts

### 8.2.1 Residence

The international accounts record information about transactions between **residents** and **non-residents**. The concept of residence was discussed in Chapter 3, section 3.2.4. As mentioned there, the residence of an institutional unit is defined in *BPM6* as “the economic territory with which it has the strongest connection, expressed as its centre of predominant economic interest”.

As a practical matter residence is established for households on a calendar year basis. There are a number of special cases. Students and their spouses and children who go outside their home country to study remain residents of their home country. Similarly, patients who leave their country for the purpose of medical treatment maintain their original country of residence. The crews of ships, oil rigs, aircraft and the like are treated as resident in their home base territory. Diplomats, military personnel, staff of scientific research stations and other civil servants employed abroad in government enclaves are also considered to reside in their original economic territory, although locally recruited employees are resident in the country where their principal dwelling is located. Cross-border workers, seasonal employees and other temporary workers crossing the border are considered to reside in their country of principal residence rather than the country where they are employed.

According to *BPM6*, “an enterprise is resident in an economic territory when the enterprise is engaged in a significant amount of production of goods or services from a location in the territory.” In practice this means the enterprise is resident in the country to whose laws it is mostly subject. Corporations that deliver goods or services from a base country to one or more other countries are considered to reside in the base country. An example would be a corporation that supplies equipment repair services in the U.S. from a home base in Canada. However, if the external operations of a construction company are substantial, a branch of the company may be defined that is resident in the country of operations.

### 8.2.2 International accounts structure

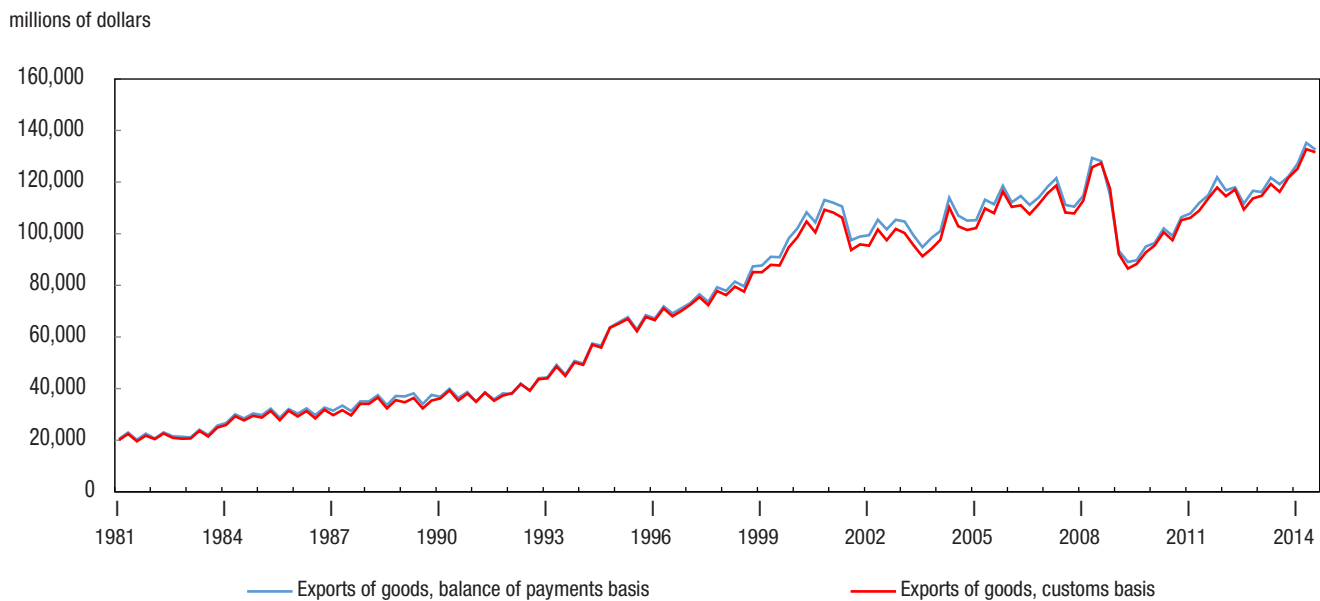
Earlier chapters in this volume have presented the SNA 2008 framework as a sequence of institutional accounts comprising six sectors:

- Households,
- Non-profit institutions serving households,
- Non-financial corporations,
- Financial corporations,
- Governments, and
- Non-residents.

The international accounts are fully consistent with this framework. If the first five of the above institutional sectors are consolidated, forming the resident sector of the Canadian economy, then the accounts discussed in this chapter can be thought of as depicting the relationship between the resident sector and non-resident sector. Note, however, that the international accounts should **not** be thought of as the non-resident sector accounts, since they are not presented from the non-resident sector’s point of view. Rather, they should be seen as the resident sector’s accounts vis-à-vis non-residents. They are, in effect, the mirror image of the non-resident sector accounts that are discussed in chapters 3, 5 and 6.

The Canadian international accounts are compiled in two broad sets of statistics: the balance of international payments (BOP) that aggregates all transactions between Canadian residents and non-residents and the international investment position (IIP) that presents the stocks of foreign financial assets and liabilities held by Canadian residents. These accounts can be viewed as an aggregated set of each resident sector’s transactions and positions (see Figure 8.1). At the moment, only the aggregate BOP and IIP are released, with limited sectoral detail, although work is ongoing to develop such detail. The focus in the international accounts has traditionally been on the international geographical dimension, rather than on the sectoral breakdown of international transactions and stocks

**Chart 8.1**  
**Exports on a customs basis versus a balance of payments basis**



Source: Statistics Canada, *User Guide: Canadian System of Macroeconomic Accounts (13-606-G)*.

The inverted international accounts are defined as the non-resident sector in the context of the income and expenditure accounts (Chapter 5), the financial flow accounts and the balance sheet accounts (Chapter 6) in order to be able to produce a complete and closed set of accounts. Each of the other five sectors' accounts records transactions and related positions with the sixth sector, the non-residents sector, which is a mirror image of the international accounts. In effect, the foreign assets recorded in the international accounts (investment abroad) become non-resident sector liabilities in the national accounts and Canadian foreign liabilities become non-resident sector assets (investment in Canada) in those accounts.

### 8.2.2.1 The international accounting framework in words

Figure 3.1 in Chapter 3 provides a schematic depiction of the framework for Canada's macroeconomic accounts. That same framework applies to the international accounts, except that the framework is simpler due to the fact that, under the concepts and conventions of *SNA 2008* and *BPM6*, the non-resident sector is a non-producing sector and does not engage in capital formation within the context of the Canadian economy. It does not have 'production', 'generation of income' or 'use of income' accounts. The primary income account records transactions of institutional units in their capacity as recipients of primary incomes rather than as producers whose activities generate primary incomes. It also shows the property incomes receivable and payable by institutional units. The framework also does not record non-financial assets in the international investment position. Figure 8.2 depicts the framework for the international accounts within the broader context of the framework for *SNA 2008* as a whole.

**Figure 8.2**  
**System of National Accounts 2008 framework including international accounts**

Stocks / International investment position	Transactions / Balance of payments	Other flows	Stocks / International investment position
	Goods and services account		
	Production account <sup>1</sup>		
	Generation of income account <sup>1</sup>		
	Distribution of income account		
	Secondary distribution of income account		
	Use of income account <sup>1</sup>		
Opening balance sheet, of which:	Accumulation accounts, of which:		Closing balance sheet, of which:
Non-financial assets <sup>1</sup>	Capital account	Other changes in non- financial assets <sup>1</sup>	Non-financial assets <sup>1</sup>
Financial assets and liabilities	Financial account	Other changes in financial assets and liabilities	Financial assets and liabilities

1. Account does not appear in the international accounts.

Source: Adapted by Statistics Canada from figure 2.1 in *Balance of Payments and International Investment Position Manual, 6th, Edition*.

### 8.2.2.1.1 The current account

The **current account** of the balance of international payments records non-capital, non-financial transactions of all kinds between the overall resident sector and non-resident sector. Transactions are recorded in both directions, as receipts and payments, and the difference between the two is the **current account balance**. The account has three component accounts:

- the **goods and services account**, recording international trade transactions in goods and services;
- the **primary income account**, logging cross-border income flows such as compensation of employees working outside their own economy and dividends and interest payments between resident and non-resident creditors and debtors; and
- the **secondary income account** setting out current transfer flows between countries such as government foreign aid and personal remittances between family members in different countries.

It can be easily shown (see section 8.2.2.2) that Canada's **current account balance**—the difference between receipts and payments on each of the above three component accounts combined—is equal to the difference between national saving and investment. In other words, when Canadians save more than they invest the current account balance is positive, signifying that the 'excess' savings are being invested abroad, and when they invest more than they save the current account balance is negative, indicating that Canada is borrowing on a net basis from other countries. Canada has had a substantial current account negative balance (or current account deficit) for much of its history,<sup>2</sup> reflecting the need for its relatively young and expanding economy to finance part of its investment abroad.

#### 8.2.2.1.2 The capital account

The **capital account** records capital transfers between economies, such as debt forgiveness, foreign capital assistance and unusually large cross-border non-life insurance claims. In Canada, the acquisition and disposal of non-produced non-financial assets between residents and non-residents are also included in this account. The receipts, payments and balance in the capital account are typically quite small in Canada's case, compared to the current account.

The sum of the balances in the current and capital accounts is **net lending or borrowing** by the resident sector to/from the non-resident sector.

#### 8.2.2.1.3 The financial account

The **financial account** records financial transactions that mirror the transactions shown in the current account. Thus, for example, when Canada exports goods worth \$10 million, which would be recorded in the goods and services account, it might receive payment by cheque, deposited in a bank account. That \$10 million acquisition of financial assets would be reported in the financial account. The sum of all such net transactions in financial assets less the net incurrence of liabilities is the financial account balance, which is also equal, in concept, to net lending or borrowing.<sup>3</sup> Accordingly, the statistics in the international accounts yield two estimates of net lending or borrowing which should be, but in fact virtually never are, exactly equal. The difference between the two is shown explicitly and is termed the BOP **net errors and omissions**.

These net errors and omissions occur because imperfect data from a variety of sources are used to compile the balance of international payments estimates, each source having its particular strengths and weaknesses. The estimates are almost always subject to a variety of types of error. The aggregate of the errors in all the different components of the account—with many of those errors tending to offset—is captured in net errors and omissions. When large, net errors and omissions provides international accounts compilers with a signal about the quality of the source data and causes them to investigate, make changes and invest in improvements to the statistical program.

#### 8.2.2.1.4 The other changes in financial assets and liabilities account

In addition to the current, capital and financial accounts just mentioned, there is one more that is called the **other changes in financial assets and liabilities account**. This account records changes to the value of residents' financial assets and liabilities abroad that are **attributable to factors other than transactions**. For example, when households change their economy of residence, the appearance (in their new economy) or disappearance (in their old economy) of their assets and liabilities is recorded in this account. Certain valuation changes also are recorded in this account. For example, the value of resident liabilities might rise if a Canadian energy company in which non-residents owned equity discovered new oil and gas reserves. The equity value of the non-resident holdings might rise simply because those holdings gained an increased valuation in the stock market. As another example, the Canadian-dollar-value of Canadian-held assets in the U.S. might rise due to an increase in the value of the U.S. dollar relative to the Canadian dollar.

For example, suppose a Canadian resident purchased an equity stake in a U.S. corporation on the New York Stock Exchange in the third quarter of 2012 in the form of 1000 shares each trading at US\$50.00, representing a total value of US\$50,000.00. Given the 1.0054 exchange rate at the time, this investment was equivalent to CAN\$49,733.59. Two years later the Canadian resident still owned the stock but the equity price had risen on the market from \$50 per share to \$60 per share and the exchange rate had decreased to 0.7640. The investment was then worth US\$60,000 or CAN\$78,534.72. In this example, the other changes in financial assets and liabilities account would record an appreciation of CAN\$28,801.13 on this asset over the two-year period.

#### **8.2.2.1.5 The international investment position**

The sequence of international accounts begins with the opening balances in the international investment position, which record the stocks of assets and liabilities held by residents vis-à-vis non-residents. Then the current account and the capital accounts determine resident sector saving and net lending or borrowing vis-à-vis non-residents. The financial account records international transactions in financial assets and liabilities, also yielding net lending or borrowing. The difference between the two, as noted previously, is net errors and omissions. The other changes in financial assets and liabilities account then determines changes in financial assets and liabilities held by residents vis-à-vis non-residents that are not directly linked to transactions. Finally, the closing balances are determined in the international investment position account by adding all the financial transactions (or, at the aggregated level, the net lending or borrowing) and other changes in financial assets and liabilities to the opening balances.

#### **8.2.2.2 The international accounting framework – a mathematical representation**

This section provides a mathematical representation of the framework of the international accounts. The following symbols, pertaining to the consolidated resident sector of the economy, are employed:

**Table 8.1**  
**Symbols pertaining to the consolidated resident sector of the economy<sup>1</sup>**

Symbol	Definition
C	Consumption expenditure by households
CAB	Current account balance
FAA	Net transactions in financial assets
FAL	Net transactions in liabilities
G	Consumption expenditure by governments
GDP	Gross domestic product
GNDI	Gross national disposable income
GNI	Gross national income
I	Gross domestic investment
IIPA	International investment position assets
I IPL	International investment position liabilities
KAB	Capital account balance
KTP	Capital transfer payments
KTR	Capital transfer receipts
M	Imports of goods and services
NEO	Net errors and omissions
NFI	Net financial investment
NIP	Net international investment position
NIPE	Net international investment position at end of period
NIIPS	Net international investment position at start of period
NLB	Net lending or borrowing
NNW	National net worth
NP	Consumption expenditure by non-profit institutions serving households
NPNFAP	Non-produced non-financial asset payments
NPNFAR	Non-produced non-financial asset receipts
NW	National wealth, the economy's total non-financial assets
OCFAL	Other changes in financial assets and liabilities
PIP	Primary income payments
PIR	Primary income receipts
S	Gross national saving
SIP	Secondary income payments
SIR	Secondary income receipts
X	Exports of goods and services

1. For the interrelationships among these terms, see the equations in the text.

Source: Statistics Canada, *User Guide: Canadian System of Macroeconomic Accounts*, 2017.

**8.2.2.2.1 Current account balance and gross national disposable income**

In Canada the current account balance is an important part of Canada's gross national disposable income. Parts of it also enter into gross domestic product and gross national income. This is illustrated below through accounting identities linking the CAB to GNDI.

First, the current account balance is defined by equation (8.1).

(8.1)

$$CAB \equiv (X - M) + (PIR - PIP) + (SIR - SIP)$$

Gross domestic product is defined by equation (8.2), gross national income by equation (8.3) and gross national disposable income by equation (8.4).

(8.2)

$$GDP \equiv C + NP + G + I + X - M$$

(8.3)

$$GNI \equiv GDP + (PIR - PIP)$$

(8.4)

$$GNDI \equiv GNI + (SIR - SIP) = CAB + C + NP + G + I$$

In other words, the X-M part of the current account balance enters directly into the calculation of GDP, this portion plus the PIR-PIP part both enter into GNI and the entire current account balance is part of GNDI.

**8.2.2.2.2 Current account balance, saving and investment**

Gross national saving net of gross investment is equal to the current account balance. In other words, any excess of national saving vis-à-vis investment is reflected in a positive current account balance and any deficiency in national saving relative to investment implies a negative current account balance. This is shown in the identities below.

Gross national saving is defined by equation (8.5).

(8.5)

$$S \equiv GNDI - C - NP - G$$

Substituting equation (8.4) into equation (8.5) yields equation (8.6).

(8.6)

$$S = GNI + (SIR - SIP) - C - NP - G$$

Substituting equation (8.3) into equation (8.6) yields equation (8.7).

(8.7)

$$S = GDP + (PIR - PIP) + (SIR - SIP) - C - NP - G$$

Substituting equation (8.2) into equation (8.7) yields equation (8.8).

(8.8)

$$S = C + NP + G + I + (X - M) + (PIR - PIP) + (SIR - SIP) - C - NP - G$$

Cancelling terms and substituting from equation (8.1) yields equation (8.9), underlining the fact that the current account balance brings gross domestic investment and gross national saving into balance.

(8.9)

$$S = I + CAB$$

Finally, rearranging terms in equation (8.9) yields equation (8.10), showing that the difference between gross national saving and gross investment expenditure is the current account balance.

(8.10)

$$CAB = S - I$$

#### 8.2.2.2.3 Current account balance and net worth

The current account balance also, in combination with the capital account balance, determines net lending or borrowing which in turn contributes to the explanation of changes in the international investment position and net national worth. This is shown in the identities below.

The capital account balance is defined by equation (8.11).

(8.11)

$$KAB \equiv (KTR - KTP) + (NPNFAR - NPNFAP)$$



Net lending or borrowing is defined by equation (8.12), and also on the financial accounts side by equation (8.13).

(8.12)

$$NLB \equiv CAB + KAB$$

(8.13)

$$NFI \equiv FAA - FAL$$

These two balances are equated via the net errors and omissions (8.14).

(8.14)

$$NFI = NLB + NEO$$

Finally, it is essential to link the flows and stocks. The net international investment position in any period is calculated as in equation (8.15).

(8.15)

$$NIIP = IIPA - IIPL$$

More interesting is the change in NIIP, which is closely related to NLB. At the end of an accounting period NIIP is determined by equation (8.16).

(8.16)

$$NIPE = NIIPS + NFI + OCFAL$$

This can be re-written as (8.17)

(8.17)

$$NIPE = NIIPS + NLB + NEO + OCFAL$$

The NIIP is also essential in determining national net worth from national wealth on the aggregate national balance sheet of the national balance sheet accounts (Chapter 6). The derivation is shown in equation (8.18).

(8.18)

$$NNW = NW + NIIP$$

## 8.3 The current account

### 8.3.1 The goods and services account

The goods and services account records transactions in goods and services between residents and non-residents that are the result of production activities. The largest categories of receipts and payments in the current account, by far, are those for exchanges of goods and services. As shown in Table 8.2, total receipts of goods were \$367,211 million and those of services were \$78,481 million in 2009 while payments were \$373,985 million and \$94,853 million respectively.

**Table 8.2**  
**Balance of international payments, current, capital and financial accounts, 2009**

	<b>2009</b>
	millions of dollars
Current account receipts	...
Goods and services	445,692
Goods	367,211
Services	78,481
Primary income	56,266
Compensation of employees	1,361
Investment income	54,904
Direct investment income	29,029
Portfolio investment income	19,888
Other investment income	5,986
Secondary income	9,051
Private transfers	3,474
Government transfers	5,577
Total current account receipts	511,009
Current account payments	...
Goods and services	468,837
Goods	373,985
Services	94,853
Primary income	75,826
Compensation of employees	2,878
Investment income	72,949
Direct investment income	30,653
Portfolio investment income	34,539
Other investment income	7,757
Secondary income	12,536
Private transfers	8,007
Government transfers	4,528
Total current account payments	557,199
Current account balances	...
Goods and services	-23,146
Goods	-6,774
Services	-16,371
Primary income	-19,561
Compensation of employees	-1,515
Investment income	-18,044
Direct investment income	-1,623
Portfolio investment income	-14,650
Other investment income	-1,772
Secondary income	-3,484

**Table 8.2**  
**Balance of international payments, current, capital and financial accounts, 2009**

	<b>2009</b>
	millions of dollars
Private transfers	-4,533
Government transfers	1,050
Total current account balance	-46,190
Capital account	...
Receipts	248
Payments	1,066
Capital account balance	-819
Net lending / net borrowing from current and capital accounts	-47,009
Financial account	...
Net acquisition of financial assets	97,624
Direct investment assets	42,769
Canadian portfolio investment	8,733
Foreign debt securities	-7,186
Foreign equity and investment fund shares	15,919
Official international reserves	11,618
Other Canadian investment	34,504
Loans	17,481
Currency and deposits	17,946
Other accounts receivable	-667
Net incurrence of liabilities	145,189
Direct investment liabilities	23,448
Foreign portfolio investment	112,727
Canadian debt securities	86,481
Canadian equity and investment fund shares	26,246
Other foreign investment	9,014
Loans	-11,989
Currency and deposits	13,185
Special drawing rights	8,825
Other accounts payable	-419
Net lending / net borrowing from financial account	-47,565
Discrepancy (net errors and omissions)	-556

... not applicable

Source: Statistics Canada, tables 36-10-0471-01 and 36-10-0016-01.

The valuation of goods in this account includes transportation costs within the exporting economy plus retail and wholesale margins that are not separately distinguishable in the price of the goods. In other words, 'Free on board' (FOB) valuation principles, as described in earlier chapters, apply. In addition, as will be explained below, the value of some services, as they are defined, includes the value of some goods, such as in the cases of travel, construction and government services. For transactions in goods and services between affiliated enterprises there can be special valuation difficulties because of transfer pricing.

As with transaction entries in all of the component accounts in the current account, there are entries in other accounts that correspond to those in the goods and services account. For example, if an export flow is paid for in currency, there is a corresponding 'currency and deposits' entry in the financial account. If the export flow is foreign aid in kind, the corresponding entries are under 'current transfers' or 'capital transfers'.

### 8.3.1.1 The goods account

The goods account of the balance of international payments is fundamentally based on merchandise trade statistics, which measure the cross border physical flow of merchandise. However, trade in goods differs from merchandise trade in a number of ways that will be discussed below. Perhaps most importantly international trade in goods follows the principle of ownership change as opposed to the concept of physical flow in the merchandise trade statistics.

Table 8.3 shows trade in goods, by product category, on a balance of international payments basis, for the year 2009. The product classes are those of the North American Product Classification System (NAPCS). Canada had a trade deficit of \$6,774 million that year, reflecting relatively large deficits in consumer goods, electronic and electrical equipment and parts, and motor vehicles and parts combined with notable surpluses in energy products and

forestry products and building and packaging materials. Total trade that year (exports plus imports) was \$741,195 million. This was equivalent to 47% of gross domestic product, illustrating how important goods trade is to Canada's economy.

**Table 8.3**  
**Exports and imports of goods, 2009**

	2009		
	Exports	Imports	Balance
	millions of dollars		
<b>Total of all merchandise</b>	<b>367,211</b>	<b>373,985</b>	<b>-6,774</b>
Farm, fishing and intermediate food products	20,331	11,019	9,312
Energy products	74,369	32,242	42,126
Metal ores and non-metallic minerals	12,573	6,636	5,937
Metal and non-metallic mineral products	37,832	30,482	7,350
Basic and industrial chemical, plastic and rubber products	26,284	26,882	-598
Forestry products and building and packaging materials	27,488	16,302	11,187
Industrial machinery, equipment and parts	23,625	33,307	-9,682
Electronic and electrical equipment and parts	24,146	46,905	-22,758
Motor vehicles and parts	44,227	58,175	-13,948
Aircraft and other transportation equipment and parts	17,746	13,713	4,034
Consumer goods	47,696	86,101	-38,405
Special transactions trade	4,739	4,489	249
Other balance of payments adjustments	6,156	7,732	-1,575

Source: Statistics Canada, table 36-10-0110-01. Based on the North American Product Classification System.

Most Canadian statistics on trade in goods originate in Canadian Customs administrative records. This is true for imports of goods and also for exports of goods to countries other than the U.S. For trade with the U.S. the two countries have agreed, since 1990, each to use the other's detailed trade data for imports as its measure of exports. This is explained in the following paragraph:

“In July 1987 Canada and the United States embarked upon a grand experiment by signing a Memorandum of Understanding (MOU) to exchange import statistics starting with January 1990 data. From this date, the two statistical agencies would no longer base their bilateral export statistics on export declarations. Instead, they would rely on the import statistics of the counterpart country. Statistics Canada relies on American imports from Canada as compiled by the U.S. Census Bureau as the source of its export data. Likewise, the U.S. Census Bureau derives its exports to Canada from data on imports from the United States compiled by Statistics Canada. Because of the greater scrutiny paid to imports by the Customs agencies in both countries, this exchange provides a more reliable measure of the bilateral trade. In addition, the reporting burden on exporters and forwarders in both countries was significantly reduced, as export declarations are no longer required for trade between the two partners. It was one of the first agreements between trading nations relating strictly to trade statistics.”<sup>4</sup>

*BPM6* includes a long list of items that are specifically included or excluded in the concept of trade in goods. The list is summarized in Table 8.4.

**Table 8.4**  
**Merchandise trade inclusions and exclusions**

Some specific inclusions	
1	Bank notes and coins not in current circulation and unissued securities. They are to be valued as commodities rather than at face value.
2	Electricity, gas and water (however, charges invoiced separately for the transmission, transport or distribution of these products are included in services).
3	Products such as packaged software and video and audio recordings that are purchased outright (that is, not through end-user or other licenses) if provided on disk, CD-ROM or other magnetic media. These products are valued at their full transaction value. If the products are downloaded online they would be included in trade in services (downloading computer software would be an import of computer services).
4	Goods supplied or acquired by carriers away from the territory of residence of the operator (for example, a Canadian ship catching fish outside of Canada's economic territory and selling them abroad would be an export).

**Table 8.4**  
**Merchandise trade inclusions and exclusions**

**Some specific inclusions**

5	Goods acquired by a lessee under a financial lease.
6	Goods sent abroad without a change in ownership, but later sold. Goods sent abroad on consignment or for storage, repair, exhibition or processing without a change in ownership are not recorded at the time they are sent abroad, but if they are later sold to a resident of an economy different from that of the owner, they should be treated as goods exports or imports.
7	Equipment that is bought/sold while outside the territory of residence of new/original owner.
8	Trade in illegal goods.
9	Smuggled goods that are otherwise legal.
10	Goods exempted from Customs procedures (for example, shuttle trade, acquisition of ships or aircraft and trade between free trade zones and non-residents).
11	Gifts and parcel post.
12	Goods lost or destroyed after ownership has been acquired by an importer but before the goods have crossed a frontier.
13	Government sales of goods to and purchases of goods from non-residents.
14	Humanitarian aid in the form of goods.

**Some specific exclusions**

1	Transit trade (goods passing through an economic territory).
2	Migrants' personal effects (individuals changing residency from one economic territory to another).
3	Goods consigned to embassies, military bases, etcetera from their home authorities and vice versa (for example, armoured personal carriers moved to a military base in Afghanistan).
4	Goods temporarily exported or imported without a change of ownership, such as goods for repair, as part of an operational lease, for storage and animals or artifacts for participation in exhibitions or competitions (such as the circus).
5	Goods with no positive value.
6	Returned goods.
7	Samples of no commercial value.
8	Trade in goods between free trade zones and residents of the same economy.
9	Goods acquired by a lessor under a financial lease.
10	Goods temporarily exported or imported with a change in ownership (for example, goods for repair, artifacts for participating in exhibitions or competitions).
11	Goods that are included in travel services.
12	Goods acquired by persons undertaking study or medical treatment.
13	Goods that are acquired by border, seasonal, and other short-term workers.
14	Goods that are acquired by diplomats, consular staff, military personnel.
15	Goods locally acquired for construction undertaken by non-resident enterprises (construction services).
16	Customized devices (for example, disks which belong in computer services).
17	Products (for example, packaged software, video and audio recording) under a fixed-period license to use (services).
18	Licenses to reproduce or distribute audio and video that are conveyed by supply of the original recording (services).
19	Customized blueprints and non-bulk newspapers and periodicals (services).

**Source:** *Balance of Payments and International Investment Position Manual 6th Edition*, pages 151 to 154.

**8.3.1.1 Valuation of goods trade**

Delivery of goods by an exporter to an importer signifies a change of ownership and may occur at any time and place from the point at which the goods are produced to the point of final use. The terms of delivery of goods are the responsibility of the buyer and seller as specified under each transaction contract and they differ from case to case. Consequently, transaction prices agreed between exporters and importers include varying amounts of distributive costs containing none, some or all of wholesaling, transport, insurance and taxes. In order to promote consistency between the accounts of different countries, it is important to establish a common valuation principal.

Within the balance of international payments framework, the point of uniform valuation is at the Customs frontier of the economy from which the goods are first exported, which means:

- ‘Free on board’ (FOB) at a port on the frontier of the exporting country (for goods dispatched by sea or inland waterways);
- ‘Free carrier’ (FCA) at a terminal on the frontier of the exporting country (for goods dispatched by means of transport to which FOB is not applicable); or
- ‘Delivered at frontier’ of the exporting country (for goods dispatched by means of transport to which FOB and FCA are not applicable, such as when goods are exported by railroad or pipeline).

The Customs imports value excludes transportation charges and insurance that occur after the point of direct shipment (typically this is the border), but includes all the transportation costs from the point of production to the point of direct shipment.

Suppose, for example, goods are imported to Canada from Mexico valued at \$20 at the plant and it costs \$2 to move the goods from the plant to the U.S.-Mexico border and an additional \$5 for a U.S. carrier to move the goods from the U.S.-Mexico border to the Canada-U.S. border. In this scenario, the imported goods would be valued at \$22 on an FOB basis and in addition there would be \$5 of imports of transportation services.

For imports from the U.S. it is slightly different. Customs will record the value at the point of direct shipment, but in the case of imports by truck, by rail or by pipeline the point of direct shipment is unlikely to be equivalent to the Canada-U.S. border. For example, if a product is manufactured in California, put on a truck in San Francisco and delivered to Vancouver, the freight charge from San Francisco to the border (which will not be included in the Customs transaction value) will have to be added to get the balance of international payments value.

In some cases, an estimate of a market price equivalent may need to be made. Barter trade, overseas shipments of aid goods, provision of goods and services between affiliated enterprises where transfer pricing is a concern,<sup>5</sup> goods on consignment or for auction, or where goods change ownership but a final price is determined later may require adjustment to the goods value.

### 8.3.1.1.2 Balance of international payments adjustments

While the Customs data from which most of the goods trade statistics are derived are timely and very detailed, by product class and by country of origin or destination, they do not conform to all of the conceptual requirements of the balance of international payments so a number of adjustments are made. These account for differences in coverage, timing, valuation and classification. Most of these adjustments are applied to specific product categories for specific reasons. Some, such as certain coverage adjustments, are applied at the global level.

The aggregate effect of these adjustments is quite small relative to total exports and imports of goods (see Table 8.5 and Chart 8.1), but the adjustments can be significant for particular goods categories or countries of origin and destination. This section will discuss the more important of these adjustments.

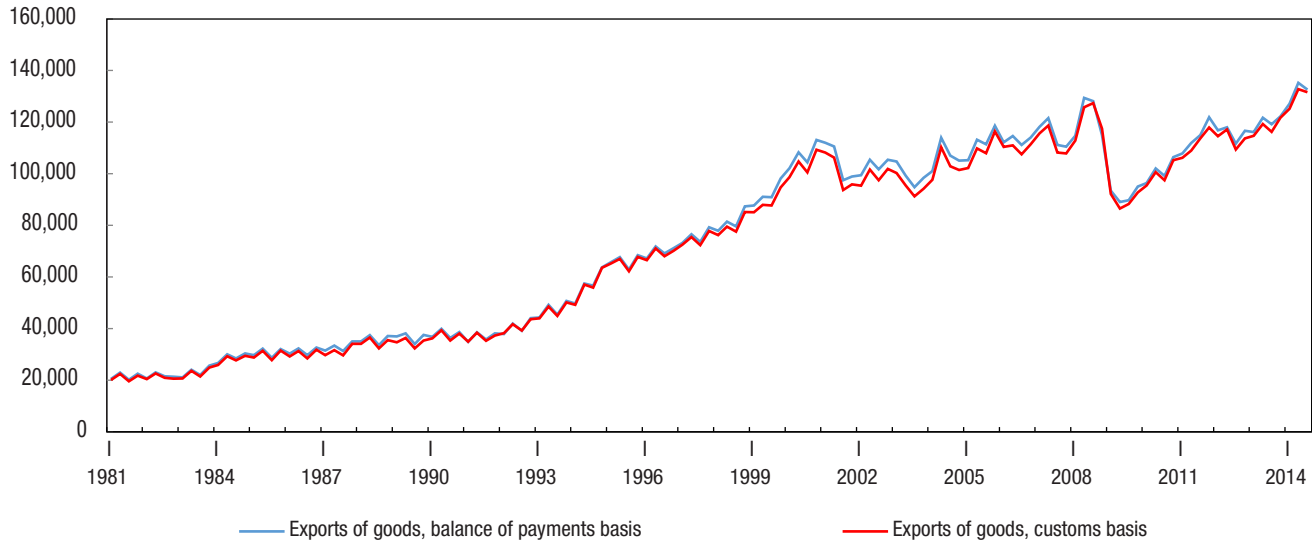
**Table 8.5**  
**Balance of payments adjustments, 2009**

	2009		
	Exports	Imports	Balance
	millions of dollars		
Inland freight	6,157	7,732	-1,575
Valuation and residency	-8,213	202	-8,415
Timing	-187	0	-187
Coverage	9,700	691	9,009
Total	7,457	8,625	-1,168

Source: Statistics Canada, tables 36-10-0019-01 and 36-10-0020-01.

**Chart 8.1**  
**Exports on a customs basis versus a balance of payments basis**

millions of dollars



Source: Statistics Canada, *User Guide: Canadian System of Macroeconomic Accounts (13-606-G)*.

Adjustments for **wheat** consist of replacing Customs data with information on clearances that are obtained from the Canadian Grain Commission. These data reflect more accurately the timing of shipment of Canadian grains.

Trade data for various **energy** products require special treatment for coverage and timing. Canadian exports of natural gas and petroleum shipped to the U.S. by pipeline are derived from Canadian sources, rather than from U.S. Customs data, because the former are viewed as more accurate. Data are obtained from Statistics Canada pipeline surveys and the National Energy Board.

An adjustment is made from 1996 forward for duplication of custom **software** already classified and covered in services imports and for undervaluation of prepackaged software exports.

Some freight adjustments are made to reported trade data to include inland freight between the plant and the border, or to reflect transaction as opposed to list prices. For example, deductions are made from exports to cover discounts and handling charges for **forestry** products.

Balance of international payments adjustments are also made to include transactions in **gold** between residents and non-residents where the gold is located in Canada and remains in Canada, since these transactions generate no Customs records.

On a customs basis, imports are allocated to the country of origin. This treatment was adopted in 1988 with the introduction of the international Harmonized Commodity Description and Coding System, or HS. For balance of international payments purposes, however, the country of last shipment better reflects the concept of ownership change.

One of the global adjustments made is a timing adjustment applied to non-U.S. exports since 1998. Its purpose is to adjust for Customs documents expected but not yet received in the accounting period.

Another global adjustment arises from goods trade reconciliation studies with Japan and the European Union which indicate that Canadian exports on a customs basis were understated in relation to counterpart imports for these and several additional countries other than the U.S. For this reason a coverage adjustment is applied from 1986 forward. Following other studies made in collaboration with Canada Customs and Revenue Agency (CCRA), the undervaluation of exports is re-estimated annually.

### 8.3.1.1.3 Re-exports and re-imports

*BPM6* defines re-exports as follows (page 157): “Re-exports are foreign goods (goods produced in other economies and previously imported) that are exported with no substantial transformation from the state in which they were previously imported. The price of the re-exported good may differ from its price at the time it was originally imported, due to factors such as transport costs, dealers’ margins, and holding gains or losses. For goods to be included in re-exports for balance of international payments statistics, a resident must acquire then resell the goods with the goods passing through the territory.”

This category is to be distinguished from goods sold under merchanting, goods in transit through Canada and returned goods, none of which are classified as re-exports. Re-exports are included in Canada’s balance of international payments.

Some countries, like Hong Kong and the Netherlands, have very large re-exports relative to the size of their economies. In Canada, however, re-exports are relatively small. They were \$25,183 million in 2009, about 5 per cent of total exports. It is useful to separate them from other exports because re-exported goods are not produced in Canada and therefore have less connection to other macroeconomic trends in the domestic economy compared to other goods exports.

Re-imports are the opposite of re-exports: domestic goods imported in the same state as previously exported, without any substantial transformation occurring to the goods while they were outside the territory. For goods to be included in re-imports, a non-resident must have acquired the goods from a resident institutional unit in Canada, then resold them to a resident institutional unit. In cases where there was no change of ownership they are omitted from imports, such as goods shipped for repair. Goods crossing the border for processing should be treated similarly but, like in most other countries, this is not currently the case.

### 8.3.1.1.4 Merchanting

*BPM6* (page 157) defines merchanting “... as the purchase of goods by a resident (of the compiling economy) from a non-resident combined with the subsequent resale of the same goods to another non-resident without the goods being present in the compiling economy.” The acquisition of goods by such merchants is shown as a negative export of goods under merchanting. The subsequent sale of the goods is shown as a positive export of goods under merchanting. The net difference between the two, known as ‘net exports of goods under merchanting’, includes merchants’ margins and holding gains and losses and may be positive or negative.

For example, suppose a Canadian wholesaler purchased \$1 million worth of goods from a Chinese manufacturer and subsequently sold the goods to a U.S. firm for \$1.5 million without having the goods cross the Canadian border. In the accounting period when the goods were acquired, a negative \$1 million export of goods under merchanting would be recorded. In the subsequent period when the goods were sold to the U.S. firm a positive export of goods under merchanting of \$1.5 million would be recorded.

This kind of transaction is increasingly common in the global economy. However, it is not captured in Canadian administrative data sources or surveys and is for this reason difficult to measure accurately. Canada, as with most other countries, does not presently include merchanting trade in its balance of international payments statistics.

### 8.3.1.1.5 Goods for processing

The forces of globalization have, in recent decades, brought a much tighter integration of production processes across national boundaries. It is increasingly common for enterprises to operate corporations in two or more countries and to ship goods back and forth from one such corporation to another for different stages of processing. In the past these cross-border shipments for processing have been treated as merchandise trade, even if ownership of the goods does not change. *SNA 2008* and *BPM6* recommend that in these kinds of circumstances the transactions be treated as services trade (processing) rather than goods trade.

For example, suppose a Canadian automobile manufacturing plant shipped some parts to another plant in the U.S. for additional tooling and finishing. The value of the original parts shipped to the U.S. was \$10 million and the value of the same parts after tooling and finishing when shipped back to Canada was \$12 million. Instead of recording an export of \$10 million followed by an import of \$12 million, a single processing services import transaction of \$2 million would be recorded.



This recommendation has not yet been implemented in Canada's international accounts.

#### 8.3.1.1.6 Non-monetary gold

Gold has played a special role in international trade for centuries, both as a store of value and as a medium of exchange. There was a time when many countries fixed the value of their currencies in terms of a specific quantity of gold. Today most countries have long abandoned this 'gold standard'. For this reason among others the role of gold in global financial affairs is relatively less important today than in the past. Nevertheless it continues to be a part of the official international reserves of many countries. It is treated separately in the balance of international payments for this reason.

For purposes of the national and international accounts there are two types of gold—monetary and non-monetary. According to *BPM6* (page 93): “**Monetary gold** is gold to which the monetary authorities (or others who are subject to the effective control of the monetary authorities) have title and is held as reserve assets. Gold includes gold bullion and unallocated<sup>6</sup> gold accounts with non-residents that give title to claim the delivery of gold. Gold bullion takes the form of coins, ingots, or bars with a purity of at least 995 parts per 1,000, including such gold held in allocated gold accounts. All monetary gold is included in reserve assets or is held by international financial organizations.” **Non-monetary gold** consists of all gold that is not monetary and it is a good, not a financial asset. Changes in the classification of a quantity of gold between the monetary and non-monetary categories are recorded in the other changes in financial assets and liabilities account.

Transactions in non-monetary gold are recorded in the same fashion as transactions in other products, although special treatment is sometimes required. If a Canadian resident imports or exports non-monetary gold it is recorded as a non-monetary gold import or export. This aligns with Customs data. If a Canadian resident sells gold to a non-resident but the gold remains in Canada this is recorded in the balance of international payments as an export of non-monetary gold, even though it is not recorded in the Customs data.

If the Bank of Canada is involved in a gold transaction with a central bank in another country, this transaction is not recorded in the current account but rather in the financial account since it is a transaction in financial assets. However, if the Bank of Canada buys or sells gold in the open market the transaction is recorded in the current account and a corresponding increase or decrease in Canada's monetary gold assets is recorded in the other changes in financial assets and liabilities account.

#### 8.3.1.2 The services account

**Trade in services** is growing in importance. In 1981 it accounted for 11% of total trade in goods and services whereas in 2015 this percentage was 16%. However, this component is more difficult to measure than trade in goods because there are usually no associated Customs records. It is sometimes referred to as '**invisibles trade**'. In most cases it is measured by business survey vehicles that provide a lot less product and country of origin or destination detail than is the case for trade in goods.<sup>7</sup> Nevertheless, substantial services trade detail is available by country, on an annual basis, for product class aggregates.

The classification for traded services products that is used in Canada is the Extended Balance of Payments Services (EBOPS) classification. This is consistent with, but somewhat more detailed than the services categories elaborated in *BPM6*. It is product based and linked to the international Central Product Classification (CPC), version 2.

Table 8.6 shows trade in services in the year 2009 while Table 8.7 lists some additional tables that provide further details on trade in services. Services exports were \$78 billion while services imports were \$95 billion, implying a sizeable services trade deficit. There are four principal categories which are travel services, transportation services, commercial services and government services.

**Table 8.6**  
**Exports and imports of services, 2009**

	2009		
	Exports	Imports	Balance
	millions of dollars		
<b>Total, all services</b>	<b>78,481</b>	<b>94,853</b>	<b>-16,372</b>
Travel	15,546	27,679	-12,133
Business travel	2,530	3,531	-1,001
Personal travel	13,017	24,150	-11,133
Transport	11,625	20,077	-8,452
Water transport	2,738	8,044	-5,306
Air transport	4,818	8,879	-4,061
Land and other transport	4,070	3,153	917
Commercial services	49,503	46,006	3,497
Maintenance and repair services	1,821	268	1,553
Construction services	374	351	23
Insurance services	1,493	3,641	-2,148
Financial services	5,090	5,409	-319
Financial intermediation services	1,890	817	1,073
Other financial services	3,200	4,593	-1,393
Telecommunications, computer, and information services	8,566	4,666	3,900
Charges for the use of intellectual property	4,111	10,164	-6,053
Professional and management consulting services	10,833	9,902	931
Research and development services	4,160	1,064	3,096
Technical, trade-related and other business services	10,631	8,179	2,452
Personal, cultural and recreational services	2,423	2,360	63
Government services	1,806	1,091	715

Source: Statistics Canada, table 36-10-0021-01.

**Table 8.7**  
**Trade in services, other breakdowns**

Table number	Table title	Frequency	Availability
36-10-0004-01	International transactions in services, travel by category and geographical area	annual	1961 to date
36-10-0005-01	International transactions in services, transportation by category	annual	1961 to date
36-10-0006-01	International transactions in services, commercial services by category	annual	1961 to date
36-10-0007-01	International transactions in services, by selected countries	annual	1990 to date
36-10-0022-01	International transactions in services, commercial services, by North American Industry Classification System	annual	2007 to date
36-10-0070-01	International transactions in services, commercial services, by selected countries and regions (archived)	annual	1990 to 2000
36-10-0071-01	International transactions in services, commercial services by industry (archived)	annual	1990 to 2001
36-10-0093-01	International transactions in services, commercial services, by North American Industry Classification System (archived)	annual	1999 to 2009
36-10-0072-01	International transactions in services, by category (archived)	quarterly	First quarter 1995 to second quarter 2012

Source: Statistics Canada.

### 8.3.1.2.1 Travel services

The **travel services** category covers goods and services purchased for own use, or as gifts, during visits to another economy. The goods and services include food, lodging, recreational gifts and other incidentals as well as local transportation purchased in the country of travel. It excludes passenger fares for international travel.

The visits must be for less than one year.<sup>8</sup> There are two sub-categories, one for business travel and the other for personal travel. The latter is normally much larger than the former, as seen in Table 8.6 for 2009. Each trip is allocated either to business services in its entirety or to personal services in its entirety, based on the primary purpose of the travel.

Unlike most other services categories, travel is an assortment of goods and services, rather than strictly services. For this reason travel per se is not identified as a services category in the North American Product Classification System, although traveller accommodation and travel arrangement, reservation and planning services are recognized.

**Business travel services** pertain to goods and services acquired for personal use<sup>9</sup> by persons whose primary purpose of travel is for business. That means:

- employees on business travel,
- employees of international organizations on official business,
- employees doing work for enterprises that are not resident in the economies in which the work occurs,
- individuals temporarily engaged in productive activities (seasonal work, ongoing cross-border work and other short-term workers) directly for an entity resident in the compiling economy (their expenditures on goods and services in the host economy are included in travel) and
- carrier crews on lay over.

For example, suppose an individual in Canada is sent by her company to the U.S. to install some software. The client in the U.S. agrees to pay the company in Canada \$8,000 per day, for an expected period of 10 days. The cost to fly the employee to the U.S. and back, on an American airline, is \$1000 and the hotel and incidentals cost \$4,000 for the two-week stay. While in the U.S., the employee buys gifts for her family and attends an opera at a total cost of \$1,000.

In this example, all of the travel would be allocated to business services because that is the primary purpose of the travel. Canada would import \$5,000 of business travel services. The export of the installation services of an expected \$80,000 would be captured in commercial services and the imported airline services of \$1000 would be in transportation services.

Similarly, **personal travel services** cover goods<sup>10</sup> and services acquired by persons going abroad for purposes other than business, such as vacations, participation in recreational and cultural activities, visits with friends and relatives, religious pilgrimages and education- and health-related travel.

### 8.3.1.2.2 Transport services

**Transport services** include:

- carriage of passengers,
- movement of freight,
- rentals (charters) of carriers with crew,
- supporting and auxiliary services such as cargo handling, navigation fees and cleaning of carriers, and
- postal and courier services.

Table 8.6 shows transportation services by type of carrier. It is also possible to break out these services by functional category: passenger, freight and other transport services.

**Passenger transportation** includes fares and other expenditures related to the carriage of passengers, such as charges for excess baggage items purchased on board carriers, provided in the international transport of non-residents by resident carriers (exports of transport services) and residents by non-resident carriers (imports of transport services). Also included are passenger services performed within an economy by non-resident carriers. An example of the former would be a U.S. non-resident flying on Air Canada to Canada or some foreign destination while an example of the latter would be a Canadian resident flying on United Airlines to the U.S. or some other foreign destination. Note that passenger services provided by a resident institutional unit to non-residents within

the territory of residence of the carrier are included in travel rather than in transport services. Goods and services bought by non-resident travellers within the compiling economy are included either in travel or government services, not transport services.

The treatment of **freight services** is a consequence of adopting FOB as the uniform valuation principle for goods. By convention, all freight costs up to the Customs frontier are shown as incurred by the exporting country and all freight costs beyond the Customs frontier are incurred by the importing country. In addition to freight on exports and imports of goods, freight transport services may also apply to goods moved with no change of ownership, such as goods sent for storage or processing in another country and the shipment of migrants' personal effects.<sup>11</sup>

For example, suppose goods are imported into the U.S. from Japan, entering North America through the Port of Vancouver. The goods are then shipped by rail from Vancouver to the east coast of the U.S. using a Canadian carrier. The goods are valued at \$10,000 and the cost of transporting them from Vancouver to the east coast is \$1,000. In this example, Canada would show exports of transport services to the U.S. of \$1,000. In its balance of international payments, the U.S. would record imports of goods from Japan of \$10,000 and imports of transport services from Canada of \$1,000.

### 8.3.1.2.3 Commercial services

**Commercial services** is by far the largest of the main categories of trade in services, as seen in Table 8.6. It has ten sub-categories.

#### 8.3.1.2.3.1 Maintenance and repair services

The **maintenance and repair services** sub-category includes payments by Canadian residents to non-residents (imports) for repair work, including parts and other materials supplied by the repairing business, as well as receipts by Canadian businesses from non-residents (exports) for repair work performed on the non-residents' goods. The value of the goods themselves—the ones that are being maintained or repaired—are of course excluded from the valuation of the imported or exported maintenance and repair services.

For example, if a Canadian company representative travels to the U.S. to repair a machine the U.S. company purchased a few years earlier and the cost of the service is \$10,000 including Canadian-sourced parts of \$6,000 and labour of \$4,000 then the Canadian balance of international payments would record exports of maintenance and repair services of \$10,000.

There are two exceptions. First, construction maintenance and repair work is classified as construction services rather than general maintenance and repair services. Second, the repair of computer equipment is regarded as part of the telecommunications, computer and information services sub-category rather than the maintenance and repair services sub-category.

#### 8.3.1.2.3.2 Construction services

**Construction services** pertain to the building, renovation, repair or extension of existing fixed assets in the form of buildings, engineered land improvements and other infrastructure works such as roads, bridges and dams. Related installation and assembly work is included as are management of construction projects, site preparation and specialized services such as painting, plumbing and demolition.

These services comprise work performed on construction projects by an enterprise that is non-resident from the perspective of the host country. Generally the work is of a short-term nature. The value of the construction service provided is equal to the full value of the construction project itself inclusive of all goods and services provided by the enterprise as inputs to the work and also inclusive of other costs of production and the operating surplus that accrues to the enterprise.

The acquisition of goods and services from within the host economy for use as intermediate inputs to a construction project by the enterprise undertaking the construction work is recorded under general merchandise imports. However, goods and services acquired from the home economy are treated as resident-to-resident transactions and as such are excluded from trade. Goods and services purchased from third economies are recorded under the appropriate general merchandise or service category for the economy of the enterprise doing the construction work—in other words, as imports of goods or services in the home economy of the construction enterprise.

For example, suppose a Canadian company undertakes construction work in the U.S. The construction project takes six months to complete. Over the course of the project the company brings in \$1 million of construction materials from Canada, purchases \$2 million of materials in the U.S. and imports \$1 million of services from Mexico. The total value of the project is \$10 million. These transactions would be recorded in the Canadian balance of international payments as \$2 million of merchandise imports from the U.S., \$1 million of services imports from Mexico and \$10 million of construction services exports to the U.S.

Generally the construction contracts covered in international trade are of a short-term nature. If the external operations of a construction enterprise are substantial enough, they may be managed through a local site office and as such a **branch** may be identified as an institutional unit resident in the host economy. A branch is a kind of notional institutional unit or quasi-corporation (see Chapter 3) that is defined even though it is unincorporated. It is treated as a direct investment enterprise (see section 8.5.1). Conditions for establishing a branch within the international accounts include:

- either a separate set of accounts, including a balance sheet, exists for the unit identified as a branch or it could be created;
- the unit being identified as a branch is managing production of significant scale for one year or more, or intends to do so;
- the unit being identified as a branch purchases or rents business premises, recruits local staff and operates a bank account; and
- the unit being identified as a branch is subject to the income tax system and other legal requirements of the host economy.

For example, suppose a Canadian company undertakes construction work in the U.S. The construction project takes two years to complete and is managed by a foreign branch of the Canadian company. Over the course of the project the branch brings in \$1 million of materials from Canada, purchases \$2 million of goods from the U.S. and imports \$1 million of services from Mexico. The total value of the project is \$10 million. In the Canadian balance of international payments these transactions would be recorded simply as exports of goods \$1 million. The U.S. balance of international payments would show imports of goods of \$1 million from Canada and imports of services of \$1 million from Mexico. The payment for construction services would be treated as if it were made to the branch office—treated as an institutional unit in the U.S.—which might then remit the profits back to the Canadian firm as primary income flows in the current account.

### 8.3.1.2.3.3 Insurance and pension services

Insurance and pension services cover provision of life insurance and annuities, non-life insurance, re-insurance, freight insurance, pensions, standardized guarantees and auxiliary services to non-residents by resident insurance companies and vice versa.

Insurance and pension services get special treatment in *SNA 2008* and *BPM6* (in the latter, see Appendix 6c, pp. 282 to 288). The services here are the financial management and administration services provided by insurance and pension funds. For insurance, the services component is calculated as gross premiums earned by the insurance companies plus premium supplements<sup>12</sup> minus claims payable, with adjustment for unusual claims volatility if necessary. For pensions the calculation is similar, but involves contributions instead of premiums and benefits rather than claims, plus an adjustment for changes in pension entitlements.

For example, suppose a U.S. property insurance company sold insurance policies in Canada in 2009. Suppose Canadians paid CAN\$50 million in premiums to the company that year and the company earned an addition CAN\$1 million in premium supplements. Suppose Canadians made claims on their policies in the amount of CAN\$45 million that year. Assume there was no unusual claims volatility that year. In this example, Canada would be importing  $\text{CAN}\$50 + \text{CAN}\$1 - \text{CAN}\$45 = \text{CAN}\$6$  million worth of property insurance services that year from that company.

The above calculation generates components that appear in the following places of the current account of the balance of international payments:

- Goods and services account: the services components
- Primary income account: investment income attributable to policy holders
- Secondary income account: net premium receivable which is equal to gross premiums receivable plus investment income minus the service component; also claims payable
- Financial account: change in insurance reserves

**Life insurance** policyholders make regular payments in return for an agreed sum, or an annuity, at a specified date in the future. This type of insurance is a form of saving combined with indemnification against early death. The insurance company must combine the saving aspect of a single policy with actuarial calculations on the insured population when determining the relationship between premiums and benefits. Life insurance policies redistribute income for a single policyholder across time periods while spreading the risk of early death across all policyholders.

**Non-life insurance** is designed primarily to spread property and casualty risks across policy-holders as a group. Typically the number of claimants is much smaller than the number of policyholders. All policyholders pay a premium each accounting period. Only those policyholders for whom an insured event occurs receive payment for claims.

**Re-insurance** allows insurance risk to be transferred from one insurance provider to another. The original insurers issue insurance policies in return for premiums and then pass on either a portion of the associated risk or the entire risk above a specified threshold. In effect, the insurance companies become insurance policyholders themselves, protecting against extraordinary events such as those related to catastrophic losses. Re-insurance is often cross-border in nature.

**Freight insurance** raises particular issues for the valuation of goods in the current account. It is extended to cover policyholders against theft, damage and loss of freight. The FOB valuation principle determines whether the insurance is included in the price of the merchandise to which freight insurance applies or is treated separately as an export or import of freight insurance services. Recall from section 8.3.1.2.2 that freight insurance premiums are included in the FOB price up to the border of the exporter while beyond the exporter's border, freight insurance is measured separately either as part of trade in services if provided by the exporter country or another economy, or as part of the importing country's domestic production.

*BPM6* has the following to say about **auxiliary services** (p. 172): "Auxiliary insurance services consist of the provision of services that are closely related to insurance and pension fund operations. Included are agents' commissions, insurance brokering and agency services, insurance and pension consultancy services, evaluation and loss adjustment services, actuarial services, salvage administration services, and regulatory and monitoring services on indemnities and recovery services. These services are charged through explicit charges."

#### 8.3.1.2.3.4 Financial services

The production of **financial services** is discussed in Chapter 4 (section 4.4.1.3). The topic here is the export and import of these services.

Included in this category are services provided by financial intermediaries and auxiliaries between residents and non-residents, except those provided by insurance and pension funds. Most often financial services are supplied by banks and other financial corporations.

Financial services may be charged for by explicit fees, margins on buying and selling transactions, asset management costs deducted from property income receivable in the case asset-holding entities or margins between interest payable and the reference rate on loans and deposits called financial intermediation services indirectly measured (FISIM).

Explicit charges include loan application fees, commissions and brokerage fees, account charges, early or late payment fees and the like. Financial market regulatory services charges are also in this sub-category.

Margins on transactions include those charged by dealers, market-makers, foreign-exchange bureaus and similar businesses. Typically these firms intermediate by both buying and selling within a given market. They buy at a lower price than they sell, with the difference being their total margin on transactions.

Asset management fees apply to institutional units who entrust their assets to financial enterprises for safekeeping and investment. Mutual funds, investment funds, hedge funds, holding companies and trusts are examples of such businesses. They charge the owners of the assets for the financial management services they provide. This is often done by deducting a percentage of the investment income earned.

For example, suppose an individual invests \$100,000 in a mutual fund abroad that pays interest or dividend income each quarter. The individual receives \$1,500 of income each period and the foreign fund manager retains \$500 of the income earned in the period, as asset management fees. In the Canadian balance of international payments this would be recorded as property income received of \$1,500 and financial service imports of \$500. Note that the only directly observable flow is the \$1,500 of investment income coming from the non-resident fund manager to the Canadian resident.

The remaining sub-category of financial services is intermediation services which are indirectly measured, or FISIM. A depositor might deposit funds in a bank and earn 2.0% interest, although if he could find another borrower of equivalent creditworthiness in the open market he might earn 3.5% instead. A borrower might come to the bank and borrow funds at 5.0%, although if he could find another lender in the open market he might be charged just 3.5%. The bank's revenue is the difference between the rate paid by the borrower and the rate received by the depositor, which is  $5.0\% - 2.0\% = 3.0\%$ . The bank earns this margin by intermediating between the depositor and the borrower, making it simpler and more economic for both to carry out their transactions via the bank rather than in the open market. The market rate, 3.5% in the example, is referred to as the reference rate. So for loans from financial corporations, the service charge is the difference between interest actually payable and the amount payable if the reference rate were used while for deposits it is the difference between the interest that would be paid if reference rate were used and interest actually paid.

The reference rate represents the pure cost of borrowing funds. It should include no service component, should reflect the risk and maturity structure of deposits and loans, and is likely to be different as between local currency transactions and other currency transactions.

In the example just discussed, if the depositor deposited \$100,000 in a foreign bank account and the borrower was lent \$200,000 by a foreign bank, in the Canadian balance of international payments there would be annual imports of financial services equal to  $\$100,000 \times 0.015 = \$1,500$  in the form of FISIM services to the depositor and  $\$200,000 \times 0.015 = \$3,000$  in the form of FISIM services to the borrower.

Note that because of FISIM, adjustment is required for the interest received and interest paid in the primary income account. Actual interest payable by a borrower is partitioned between pure interest to be recorded in the primary income account and FISIM that is recorded in trade in services. Similarly, pure interest receivable by depositors (actual interest which excludes the value of services (FISIM)) is recorded in the primary income account and the implicit FISIM component is recorded in trade in services.

International FISIM flows are measured using information on international loans and deposits obtained from a variety of sources including Statistics Canada surveys of Canadian banks, the Bank of International Settlements, the Bank of England, the U.S. Federal Reserve and monthly reports of the Export Development Corporation.

At time of writing FISIM is measured with a single reference rate in domestic currency terms (Canadian dollars). However, there has been much international discussion about the desirability of identifying separate reference rates for borrowing and lending in different currencies. Doing so would help statisticians assure that the exports of FISIM from country A to country B, as measured in country A, are equal to the imports of the same FISIM as measured by country B after currency conversion. International discussions continue on this topic.

#### 8.3.1.2.3.5 Telecommunications, computer and information services

**Telecommunications services** include the broadcast or transmission of sound, images, data or other information by telephone, telex, telegram, radio and television cable transmission, radio and television satellite, electronic mail, facsimile and so forth, including business network services, teleconferencing and support services. Mobile telecommunications services, Internet backbone services and online access services, including provision of access

to the Internet, are also included. Excluded are the value of the content being transmitted and installation services for telephone network equipment (included in construction) and information services (included in other trade categories).

**Computer services** include hardware- and software-related services and data-processing services such as licenses to use software, maintenance and repairs of computers, data recovery services, web page hosting services and hardware and software consultancy services. Specifically excluded are charges for licenses to reproduce or distribute software, leasing of computers without an operator, computer training courses not designed for a specific user and non-customized packaged software all of which are included in other trade categories.

**Information services** include news agency services, database services such as data storage, dissemination of data and databases, web search portals, non-bulk subscriptions to newspapers and periodicals and downloaded content that is not software, audio or video. Measurement of these cross-border services is becoming more and more challenging as the amount of available on-line information-for-a-fee grows. Specifically excluded are bulk newspapers, downloaded software and downloaded audio and video which are included in other trade categories.

#### 8.3.1.2.3.6 Charges for the use of intellectual property

**Charges for the use of intellectual property** include payments for the use of proprietary rights such as patents, trademarks, copyrights, industrial processes and designs including trade secrets and franchises. These rights can arise from research and development, as well as from marketing. Intellectual property charges also include payments for licenses to reproduce or distribute intellectual property embodied in produced originals or prototypes, such as copyrights on books and manuscripts, computer software, cinematographic works and sound recordings and related rights such as for live performances and television, cable and satellite broadcasts. Specifically excluded, in Canada, are outright purchases and sales of franchises and trademarks, which are recorded in the capital account.

#### 8.3.1.2.3.7 Professional and management consulting services

**Professional and management consulting services** include legal, accounting, management consulting, managerial and public relations services as well as advertising, market research and public opinion polling services. Also included in this sub-category are services for the general management of a branch, subsidiary or associate provided by a parent enterprise or other affiliated enterprise.

#### 8.3.1.2.3.8 Research and development services

**Research and development services** refer to the outright purchase or sale of the ownership rights to the results of research and development, such as patents, copyrights and information about industrial processes. Specifically excluded are charges for the use of the outcomes of research and development.

#### 8.3.1.2.3.9 Technical, trade-related and other business services

**Technical and other business services** include agricultural, engineering, waste treatment, pollution remediation, operational leasing and a variety of other services.

**Trade-related services** refer to commissions on goods and services transactions payable to merchants, commodity brokers, dealers, auctioneers and commission agents.

**Other business services** include distribution services related to water, steam, gas and other petroleum products and air-conditioning supply, where these are identified separately from transmission services; placement of personnel, security and investigative services; translation and interpretation; photographic services; publishing; building cleaning; and real estate services. Also included are forfeited down payments not able to be associated with any other service. (See *BPM6*, p. 179.)

#### 8.3.1.2.3.10 Personal, cultural and recreational services

There are two broad sub-categories of **personal, cultural and recreational services**, which are audiovisual and related services and other cultural and recreational services.

**Audiovisual and related services** refer to services related to the production of motion pictures, radio and television programs and musical recordings. Included are rentals of films and videotapes, fees received by actors, directors



and producers<sup>13</sup> and charges for access to encrypted television channels such as cable and satellite services. Specifically excluded are mass-produced recordings and manuscripts on physical media, which are included in general merchandise trade, and charges or licenses to reproduce or distribute radio, television, film and music programming, which are included in charges for the use of intellectual property.

**Other cultural and recreational services** include other types of services such as those associated with museums, libraries and archives, other cultural, sporting and recreational activities, education services, health services and gambling.<sup>14</sup> Some examples are cross-border diagnostic laboratory services, correspondence courses, fees and prizes paid to athletes and the service component of lottery tickets. Specifically excluded are education and health services provided to non-residents who are present in the territory of the service provider, which are included in travel. Also excluded is the acquisition of other personal, cultural and recreational services by persons while outside their territory of residence, which are also included in travel.

#### 8.3.1.2.4 Government services

There are three sub-categories of **government services**.

The first is goods and services supplied by and to enclaves such as embassies, military bases and international organizations. This includes, for example, visas and other services provided to residents of the host economy (exports) and office supplies, vehicles, repairs, rental of premises, electricity and so on purchased from the host economy (imports).

The second is goods and services acquired from the host economy by diplomats, consular staff and military personnel located abroad and their dependents. For example, if an embassy staff member or a member of her family purchases food and clothing in the host economy, this is an import of government services. Similarly if a diplomat sells his car at the end of his stay abroad this would be a Canadian export of government services and an import of government services by the host economy.

Finally, the third sub-category is services supplied by and to governments and not included in other categories of services, such as technical assistance on public administration when not classified to a specific service, payments for police-type services and the issue of licenses and permits to government agents to exercise some proper regulatory function. These services should, in principle, be classified to other specific services categories, but sometimes this is not possible.

#### 8.3.1.3 Price and volume indexes for goods and services trade

The current and capital accounts, the financial account, the other changes in financial assets and liabilities account and the international investment position are all recorded at current market prices. Estimates at constant prices are not available, with the exception of the estimates for trade in goods and services. For these particular components of the current account, aggregate price indexes are available and they are used to produce associated trade volume indexes.<sup>15</sup>

Many of Canada's import and export price indexes are constructed using either domestic prices or U.S. prices adjusted for the movement in the Canada-U.S. exchange rate. The implication is that changes in exchange rates are reflected immediately and fully in import and export prices. Studies have shown this is not always the case and some prices tend to respond in a lagged manner. To address this problem an aggregate price adjustment is made to the 'other balance of international payments adjustments' price.

The measurement of trade-in-services prices is especially difficult, compared to trade-in-goods prices. However, the fact that a significant portion of goods trade is included in services trade by definition—in travel services, construction and government services—somewhat lessens this challenge.

### 8.3.2 The primary income account

The primary income account shows primary income flows between resident and non-resident institutional units. As explained in earlier chapters, primary incomes represent "the return that accrues to institutional units for their contribution to the production process or for the provision of financial assets and renting natural resources to other institutional units."<sup>16</sup> The compensation of employees and taxes and subsidies on products and production are income related to the production process. The returns associated with the ownership of financial assets (called

investment income) and renting natural resources (rent) are property income consisting of dividends and withdrawals from income of quasi-corporations, reinvested earnings, interest and rents.

Primary incomes accrue in the first instance to producing units—corporations, households, governments and non-profit institutions serving households. From there they are allocated as labour compensation and taxes on products and production or property incomes to the institutional units providing financial assets and renting natural resources. The allocation of primary income focusses on institutional units in their capacity as recipients of income rather than as producers of primary income.

Table 8.2 shows primary income transaction flows broken down in two main categories, compensation of employees and investment income. The investment income flows, in turn, are reported separately for direct investment income, portfolio investment income and other investment income. Direct investment income flows are those coming from direct investment enterprises—enterprises for which an influential (10% ownership or more) or controlling (50% ownership or more) direct investor resides in another economy. This type of investment income includes not just dividends and interest, but also reinvested earnings (more on this below). Portfolio investment income flows, in contrast, are those associated with investors whose individual investment holdings are not considered influential (less than 10% ownership). Other investment income is a smaller residual category and includes interest on loans and investment income attributable to policyholders in insurance among other things.

Cross-border primary income flows are the link between the concept of gross domestic product and that of gross national income. GDP is linked to production which generates primary income, while the latter represents the income earned by residents or non-residents from ownership of labour, financial assets and natural resources. The difference between the GDP and GNI is equal to the difference between primary income receivable from non-residents and primary income payable to non-residents, described as net income from abroad.

### **8.3.2.1 Compensation of employees**

Compensation of employees arises in the international accounts when the employer and the employee are resident in different economies. In Canada this could occur, for example, at the Windsor-Detroit border with the United States. Canadian residents might work in Detroit and U.S. residents might work in Windsor. It can also occur with seasonal and other temporary workers. For example, if Honduran residents come to work in Canada in seasonal jobs in the agriculture industry, their compensation would be considered as a primary income payment from a Canadian employer to a Honduran resident. As usual, the practical criterion for determining residency is whether the employees are domiciled for more than one year. Primary income flows between resident and non-resident institutional units can also occur when the embassy of one country, located in another country, engages local individuals as employees. The local employees are non-resident from the perspective of the country with the embassy.

In order for compensation of employees to be recorded there must be an employee-employer relationship. This requires an agreement between a producing institutional unit and a person whereby the person works for the producing unit in return for remuneration, in cash or in kind, based on some objective indicator of the amount of work done. If the individual is contracted to produce a specific result there may be a service contract relationship rather than an employment relationship, as with consultants, in which case the associated transactions are exports or imports of services rather than flows of compensation of employees. Sometimes it may not be immediately clear whether the relationship is 'employer'-'employee' or 'service purchaser'-'service provider'. If necessary, a variety of indicators can be examined to make this determination.

Compensation of employees is recorded on an accrual basis. It is the amount of compensation that the employees become entitled to as a result of their work performed during the accounting period, regardless of any leads or lags that may exist in the actual payment of the compensation. If employees incur travel expenses and pay income taxes associated with their employment, these amounts should not be deducted from compensation as recorded in the primary income account. All the other guidelines applying to compensation of employees that are discussed in Chapter 5 apply similarly in the international accounts.

### 8.3.2.2 Investment income

Investment income accrues to an investor as a result of his or her ownership of a financial asset. This category of primary income flows can be presented using the functional classification (investment income from direct investment, from portfolio investment or from other investment) or the instrument classification (dividends, reinvested earnings, interest, investment income attributable to policyholders of insurance, standardized guarantees and pension funds). In this section investment income will be discussed according to the second classification, although the information is also available according to the functional classification. This is important as it permits the income statistics to be compared with the corresponding financial flow and international investment position statistics.

#### 8.3.2.2.1 Dividends

If a resident institutional unit owns equity in a corporation that is resident in another economy, the owning unit may be entitled to dividend flows at the discretion of the corporation. These dividends appear in the primary income account in the accounting period in which the corresponding 'ex dividend' date occurs.<sup>17</sup> This date is the first day, following the announcement of the dividend, that the corporation's shares trade on equity markets without the dividend. Prior to that date, if someone purchases the corporation's shares they will be entitled to receive that dividend when it is eventually paid out.

#### 8.3.2.2.2 Reinvested earnings

*BPM6* defines retained earnings as follows (page 188): "Retained earnings of an enterprise shows the net earnings from production and primary and secondary income transactions before attributing reinvested earnings. It is equal to net operating surplus plus primary income, current transfers receivable, and change in pension entitlements, and minus primary income (excluding reinvested earnings payable to the enterprise's direct investors and owners of investment funds) and current transfers payable."

The international accounts treat the retained earnings attributable to investment funds and direct investment enterprises as if they were paid to the owners and then reinvested. "The rationale behind this treatment is that, because a direct investment enterprise is, by definition, subject to control or influence by a direct investor or investors, the decision to retain some of its earnings within the enterprise represents an investment decision on the part of the direct investor(s)" (*BPM6*, page 32).

Thus, as a simple example, suppose a direct investor in Canada had a direct investment enterprise in country A. Suppose that the enterprise had retained earnings of \$100 million in a particular accounting period and the direct investor had an ownership position of 60% in the direct investment enterprise. In this situation, the international accounts would record imputed reinvested earnings of \$60 million in the primary income account as receipts by Canada. The accounts would also record an imputed direct investment from Canada in country A of \$60 million.<sup>18</sup>

#### 8.3.2.2.3 Interest

Interest is paid to institutional units who own certain financial assets, namely deposits, bonds and other debt securities, loans and other accounts receivable. It is recorded on an accrual basis, continuously over time. Similar to dividends, interest can be paid on direct investment or portfolio investment. Primary income flows of interest are adjusted to reflect FISIM as discussed in section 8.3.1.2.3.4.

The fact that interest is recorded on an accrual basis in the international accounts, even though it is usually paid at discrete intervals depending on the specific contractual arrangements, means that offsetting entries must be made in the financial account. For example, if a household in Canada owns a bond from country A that pays \$1000 interest at the end of each year, the interest income in the primary income account would be recorded as \$250 per quarter during the year while the financial account would record investment income receivable of \$250 in each of the first three quarters of the year and -\$750 in the fourth quarter when the interest cash payment was actually made. The financial account would also show the cash receipt of \$1000 in the fourth quarter.

### 8.3.2.3 Other primary income

#### 8.3.2.3.1 Rent

According to *BPM6* (page 200): “Rent covers income receivable for putting natural resources at the disposal of another institutional unit. The party providing the natural resource is called the lessor or landlord, while the user is called the lessee or tenant. The terms under which rent is payable are expressed in a resource lease. A resource lease is an agreement whereby the legal owner of a natural resource that has an infinite life makes it available to a lessee in return for a regular payment recorded as rent.”

Rent payments are a form of primary income flows. However, most rent payments are made by resident units and for this reason do not appear in the international accounts. An example of a rent payment that would enter the international accounts might be a fishing operation that pays for temporary access to fishing rights in another country. Such payments are not significant in Canada and do not appear explicitly in its international accounts.

#### 8.3.2.3.2 Taxes and subsidies on products and production

If a non-resident institutional unit paid taxes on products or taxes on production to a resident government, or received subsidies from that government, those tax payments or subsidy receipts would be recorded in the primary income account. Such trans-border payments of taxes and subsidies are not considered significant in Canada’s case. For example, the Goods and Services Tax does not apply on goods and services exported by Canada and import duties have been greatly reduced under various free trade agreements. However, it is possible some import duties and state and provincial tax payments across the Canada-U.S. border may become more prevalent in future as consumers engage increasingly in direct international purchases online.

### 8.3.3 The secondary income account

The secondary income account records current transfers, in cash or in kind, between resident and non-resident institutional units. These current transfers have the effect of redistributing income that would otherwise be available for consumption expenditure or saving by the donor units. In other words, net secondary income plus gross national income determine gross national disposable income.

As with all entries in the balance of international payments, a current transfer gives rise to two accounting entries for each party to the transaction, one in the current account and one in the financial account. If the transfer is in cash, the donor typically records a decrease in deposits and a transfer payable while the recipient usually records an increase in deposits and a transfer receivable. For current transfers in kind, the donor shows an export of goods or services and a transfer payable while the recipient records an import of goods or services and a transfer receivable.

Most current transfers are recorded at the time when economic ownership changes. However, for tax transfers the recording takes place when the tax liability is incurred—that is, when the activities, transactions or other events that give rise to the government’s tax claim occur—rather than when the funds are actually transferred.

*BPM6* identifies two broad categories of current transfers: ‘personal transfers’ and ‘other current transfers’. Their composition is discussed below. Canada presents the secondary income account somewhat differently and with less detail, recording two aggregate components: ‘private transfers’ and ‘government transfers’.

#### 8.3.3.1 Personal transfers

**Personal transfers** consist of current transfers between resident and non-resident households, regardless of whether the households are related or unrelated.<sup>19</sup> They also include the winning proceeds from lotteries and other gambling schemes. Of the total amount paid for the gambling services (by means of lottery tickets, slot machines, etcetera), a portion goes to the service provider as a service charge and is counted in the goods and services account. The remainder is paid out as prizes and these are considered to be current transfers from households to households or, in some cases, to NPISH units. If the payment is from a resident gambling scheme to a non-resident, or from a non-resident gambling scheme to a resident, the payment is considered to be a personal transfer.

The concept of **international remittances** is related to personal transfers, but is broader. It includes personal transfers but also several other types of international transaction flows: travel and transport related to employment of border and short-term workers (in the goods and services account), compensation of employees (in the primary income account), taxes and social contributions related to border and short-term workers plus social benefits and

current transfers to NPISH units (in the secondary income account) and capital transfers between households and from households to NPISH units (in the capital account). International remittances are a large and important part of the balance of international payments in some countries. According to the World Bank,<sup>20</sup> worldwide remittances exceeded \$430 billion in 2015 with the countries receiving the most being India, China, the Philippines, Mexico and Nigeria. International remittances are explained more fully in Appendix 5 of *BPM6*.

### 8.3.3.2 Other current transfers

**Other current transfers** (that is, current transfers other than personal transfers) comprise a variety of transactions, without quid pro quo, between resident and non-resident units.

#### 8.3.3.2.1 Current taxes on income and wealth

**Current taxes on income and wealth** include taxes imposed by governments on the primary income, transfer receipts or assets of non-resident units. For example, seasonal or other temporary workers who are present in Canada for less than one year earn compensation as employees and typically pay income tax on their earnings. Those taxes are regarded as a transfer from non-residents to Canadian governments and are included as secondary income of governments. Similarly institutional units who own equity or fixed income assets in another country normally pay withholding tax on their dividend and interest income. Taxes on capital gains also fall in this category. Note that taxes on products and production are excluded from this category and are included, rather, in the primary income account. Also excluded are inheritance taxes, which are regarded as capital transfers.

#### 8.3.3.2.2 Social contributions

**Social contributions** include contributions to social security schemes and pension arrangements in another economy for purposes of securing social benefits for the beneficiaries. They include the contributions both by employees directly and by employers on behalf of their employees. In the case of pension schemes the social contributions are calculated as the employees' actual contributions plus the employers' actual contributions plus the employers' imputed contributions plus contribution supplements (investment income payable by pension schemes on pension entitlements) minus service charges paid to pension administrators.

#### 8.3.3.2.3 Social benefits

**Social benefits** include assistance payments or receipts, in cash or in kind, under social security and pension schemes. For example, someone who had lived in Canada for a long period of time and paid into the Canada Pension Plan (CPP) before moving to the United States would be entitled to collect CPP benefits even though resident in the U.S. The flow of payments in this example would be secondary income transfers from the Canadian government sector to a non-resident household. This category also includes benefits paid to households by governments or NPISH units that are not made under social insurance arrangements. Social benefits transfers are not large in Canada's balance of international payments, although they are more significant in some other economies.

#### 8.3.3.2.4 Net premiums on non-life insurance and standardized guarantees

When institutional units purchase non-life insurance or standardized guarantees, they pay in the form of premiums and premium supplements (investment income accruing from premiums paid in advance). Some of these amounts are retained by the service providers as service fees and the remainder, referred to as net premiums, are eventually paid out to satisfy claims against the insurance or guarantee policies. When these net premiums are paid between residents and non-residents they are treated as a form of secondary income transfer. For example, if a Canadian household purchased a non-life insurance policy from a corporation in the U.S., the net premium that it paid to the corporation during an accounting period would be considered a secondary income transfer from a resident household to a non-resident institutional unit.

The term 'standardized guarantees' refers to guarantees against creditors defaulting in probabilistic conditions that have characteristics similar to non-life insurance. As with non-life insurance, only a relatively small proportion of those acquiring the guarantees actually end up making claims. Often these guarantee schemes are offered by governments, though private corporations also provide such arrangements. The deposit insurance scheme operated by the Canada Deposit Insurance Corporation is an example of such a scheme. Mortgage loan insurance offered by the Canada Mortgage and Housing Corporation is another.

### 8.3.3.2.5 Non-life insurance claims and calls under standardized guarantees

Similar but opposite to the previous section, when institutional units make claims against non-life insurance policies or standardized guarantee schemes, the amounts paid out between residents and non-residents are treated as a form of secondary income transfer. For example, if a Canadian household made a claim against a non-life insurance policy acquired from a corporation in the U.S., the claim payout it received from the corporation during an accounting period would be considered a secondary income transfer from a non-resident institutional unit to a resident household. In relatively rare circumstances where large non-life insurance claims result from a catastrophe, some part of the claims may be recorded as capital transfers rather than current transfers.

### 8.3.3.2.6 Current international cooperation

It is common for the governments and NPISH units of developed countries to provide secondary income transfers to governments in less developed countries for various reasons. In some cases these are one-time current transfers intended to provide assistance during specific emergencies related to floods or other natural disasters. In other instances they are ongoing transfers, other than for capital purposes (which are treated as capital transfers), to assist with economic development in those countries. Payments to cover the salaries of technical assistance staff resident in the countries they are assisting also fall into this category. Canadian institutional units seldom if ever receive transfers of this kind, but the Government of Canada and various Canadian NPISH units do make transfers abroad of this type.

In fiscal year 2014-2015, for example, Canada provided international assistance disbursements totalling \$5,842 million according to the Statistical Report on International Assistance, Fiscal Year 2014-2015.<sup>21</sup> Not all of this amount is considered to be current international cooperation transfers, however. For example, the total includes the provincial costs of refugees in Canada.

*BPM6* notes that concessional loans to developing countries—for example, economic development loans with a zero rate of interest—could also, in principle, be considered as a form of secondary income transfer, but as yet no adequate means has been devised to calculate the transfer portion of such transactions. It recommends that information about concessionary loans be provided as supplementary information pending the development of international standards for such loans.

### 8.3.3.2.7 Miscellaneous current transfers

The **miscellaneous current transfers** category includes a variety of additional kinds of current transfers that are not encompassed by the other categories. Membership dues and donations to NPISH units are one example. Fines imposed on institutional units by courts of law or other government bodies are another. Additional examples include payments of compensation and gifts or donations of a current nature.

## 8.4 The capital account

The capital account records receipts and payments of a capital nature. These include capital transfers receivable and payable between residents and non-residents and the net acquisition of non-produced non-financial assets.

Table 8.2 shows total receipts and payments in the capital account in 2009. Receipts were \$248 million and payments \$1,066 million, implying a balance on capital account of  $-\$819$  million. These are relatively small amounts given that total current account receipts were \$511 billion that year and total current account payments \$557 billion. The capital account typically plays a minor role in Canada's international accounts.

### 8.4.1 Capital transfers

Capital transfers are encountered in earlier chapters. They involve the provision of resources for capital purposes by one transactor without anything of economic value being supplied as a *quid pro quo*. To quote *BPM6* (p. 209): “Capital transfers are transfers in which the ownership of an asset (other than cash or inventories) changes from one party to another; or that oblige one or both parties to acquire or dispose of an asset (other than cash or inventories); or where a liability is forgiven by the creditor. Cash transfers involving disposals of noncash assets (other than inventories) or acquisition of noncash assets (other than inventories) are also capital transfers. A capital transfer results in a commensurate change in the stocks of assets of one or both parties to the transaction without affecting

the saving of either party.” Note that capital transfers can be in cash or in kind. If they are in kind, a market value equivalent estimate is assigned to them for purposes of the accounts.

#### **8.4.1.1 Debt forgiveness**

One common form of capital transfer is debt forgiveness.<sup>22</sup> This occurs when a resident institutional unit cancels all or part of a debt obligation of a non-resident institutional unit. For example, under the ‘Heavily Indebted Poor Countries’ initiative led by the World Bank and the International Monetary Fund, Canada and other Paris Club creditor countries have committed to providing comprehensive debt relief to the world’s poorest and most indebted countries. Canada has forgiven debt as part of this initiative and these amounts are treated as capital transfers and as corresponding transactions in the financial account.

#### **8.4.1.2 Assumptions of debt under guarantees**

One-off guarantees and other assumptions of debt, if and when activated, are also capital transfers. If the debt assumer receives a liability from the debtor consequent to assuming the debt, such as a promise of reimbursement, this is regarded as a financial account transaction.

#### **8.4.1.3 Capital taxes**

Capital taxes are another form of capital transfer. They include taxes, levied at infrequent intervals, on assets or net worth. Taxes on wealth that are levied at frequent intervals, such as property taxes, are current transfers. Capital taxes also include levies on assets transferred such as estate or inheritance taxes and gift taxes. They do not include taxes on sales of assets.

#### **8.4.1.4 Non-life insurance claims**

Cross-border non-life insurance claims are also classified as capital transfers if they are exceptionally large or unusual. In the event of cross-border reinsurance claims resulting from large or unusual events they would be classified as capital transfers. In the Canadian international accounts all such claims are treated as current transfers.

#### **8.4.1.5 Transfers to finance investment**

Sometimes governments, NPISH units or international organizations make cash transfers or transfers in kind to institutional units in other countries to finance all or part of the costs they incur by acquiring fixed assets. Such transfers are often tied to specific investment projects and they are classified as capital transfers.

#### **8.4.1.6 Compensation for extensive damage**

Finally, capital transfers also include major non-recurrent payments in compensation for extensive damage, such as from oil spills, or serious injury not covered by insurance policies. Large gifts and legacies such as those made to non-profit institutions (hospitals, universities) are also regarded as capital transfers.

### **8.4.2 Acquisitions of non-produced non-financial assets**

Acquisitions of non-produced non-financial assets include natural resources and contracts, leases and licenses. The purchase of land in a foreign country by the Canadian government for purposes of constructing an embassy or military base is an example of an acquisition of natural resource assets. Contracts, leases and licenses are also recognized to be economic assets that might be traded internationally. For example, a Canadian company might purchase transferable rights to exploit natural resources abroad, or options to purchase goods in other countries or sub-leases of operational leases outside Canada. This kind of international transaction is not very common since the contracting, leasing or licensing enterprise generally has a presence in the country.<sup>23</sup>

## 8.5 The financial account

The financial account records transactions in financial assets and liabilities that occur between residents and non-residents. It measures the sources and uses of funds embodied in financial instruments. Transactions in financial instruments have a direct impact on the international investment position by creating, extinguishing or modifying financial assets and liabilities (see section 8.7). In turn, financial assets and liabilities generate investment income flows, which are recorded in the current account (see section 8.3.2). The financial account for 2009 is shown in Table 8.8.

**Table 8.8**  
**Financial account, 2009**

	<b>2009</b>
	millions of dollars
<b>Net lending / net borrowing, from financial account</b>	<b>-47,564</b>
Net acquisition of financial assets	97,623
Direct investment assets	42,769
Canadian portfolio investment	8,732
Canadian portfolio investment, foreign debt securities	-7,186
Canadian portfolio investment, foreign money market instruments	1,844
Canadian portfolio investment, foreign bonds	-9,029
Canadian portfolio investment, foreign equity and investment fund shares	15,918
Official international reserves	11,617
Other Canadian investment	34,504
Other Canadian investment, loans	17,481
Other Canadian investment, currency and deposits	17,946
Other Canadian investment, trade credits and advances	-256
Other Canadian investment, other accounts receivable	-668
Net incurrence of liabilities	145,189
Direct investment liabilities	23,448
Foreign portfolio investment	112,726
Foreign portfolio investment, Canadian debt securities	86,480
Foreign portfolio investment, Canadian money market instruments	681
Foreign portfolio investment, Canadian bonds	85,799
Foreign portfolio investment, Canadian equity and investment fund shares	26,246
Other foreign investment	9,013
Other foreign investment, loans	-11,990
Other foreign investment, currency and deposits	13,185
Other foreign investment, special drawing rights	8,825
Other foreign investment, trade credits and advances	-588
Other foreign investment, other accounts payable	-419
<b>Discrepancy (net errors and omissions)</b>	<b>-556</b>

Source: Statistics Canada, table 36-10-0472-01.

Most transaction entries in the current and capital accounts are mirrored by corresponding entries in the financial account. For example, if the Government of Canada sends a Canada Pension Plan cheque to a non-resident, that payment would be recorded as a payment in the secondary income account and also as a reduction in resident currency and deposits assets in the financial account. However, the reverse is not generally true: many entries in the financial account are **not** mirrored by entries in the current and capital accounts. For example, a resident might purchase a U.S. government bond which would result in an increase in that resident's debt securities assets and a decrease in his currency and deposits assets, with no effect on the current or capital accounts. Another example would be if a resident corporation issued and sold new equity to non-residents, thereby increasing its currency and deposit assets and also increasing its equity liabilities.

The transactions in the financial account are presented on a net basis, unlike in the current and capital accounts where they are shown on a gross basis. This means that, on the asset side, acquisition of assets is netted against disposal of assets and, on the liability side, incurrence of liabilities is netted against redemption of liabilities. A plus sign denotes an increase in net investment and a negative sign a decrease in net investment.



For example, suppose the following transactions took place in a given accounting period:

- Mr. A purchased CAN\$10,000 worth of bonds in the U.S.
- Mr. B purchased CAN\$20,000 worth of bonds in the U.S.
- Mr. C purchased CAN\$25,000 worth of bonds in Europe
- Mr. A sold CAN\$15,000 worth of bonds in the U.S.
- Mr. D sold CAN\$35,000 worth of bonds in Japan

This would be recorded in the financial account of Canada's balance of international payments as CAN\$5,000 net investment in foreign bonds.

The currency (unit of account) in which a financial asset or liability is denominated is **not** relevant for determining the residence of the asset or liability holder. For example, if a Canadian resident opens a saving account at a Canadian bank and deposits U.S. dollars in the account this is not an international transaction. Rather, it is a domestic transaction involving foreign currency. When internationally traded assets and liabilities are denominated in a currency other than the Canadian dollar they are converted, for purposes of the international accounts, to Canadian dollar equivalents using prevailing exchange rates during the period. For this reason, fluctuations in exchange rates play a very important role in the BOP and IIP.

The classification system used in the financial account is based primarily on functional categories (direct investment, portfolio investment, reserve assets and other investment). However the financial account also provides statistics based on financial instrument categories (equity and investment fund shares, debt instruments such as bonds and money market instruments and other financial assets and liabilities such as loans, deposits and trade and non-trade credits). The different types of financial instruments in use in Canada are discussed in Chapter 6.

### 8.5.1 Direct investment

Among the major functional categories of financial asset acquisition, **direct investment** often receives special attention because, when compared to the other categories, it is most closely associated with the gaining of power and influence in other economies. Direct investment is closely associated with the phenomenon of **globalization**.

The concept of direct investment is a behavioural notion in that it purports to measure the investment by a resident enterprise, a **direct investor (DI)**, that has been made with the intent of having a significant influence in the affairs of a non-resident enterprise, a **direct investment enterprise (DIE)**, or vice versa. This concept is difficult to apply in practice. Canada retains, as prescribed by international standards, a rule of 10 per cent minimum ownership of voting equity when identifying a direct investment relationship.

The connection between the direct investor and the direct investment enterprise is referred to as a **direct investment relationship**. All enterprises that are under the control or influence of the same direct investor are considered to be part of a single direct investment relationship. In this context, **control** requires more than 50 per cent of the voting power in the enterprise while **influence** requires that the direct investor own equity equivalent to between 10 and 50 per cent of the voting power.

The determination of whether or not a direct investment relationship exists in a particular case can get rather complicated because control and influence can be exercised indirectly, through the control of a chain of other enterprises, as well as directly. The Framework for Direct Investment Relationships (FDIR) provides a disciplined structure of rules for identifying the extent and type of direct investment relationships.<sup>24</sup>

The direct investment flows that are recorded in the financial account include all transactions that occur directly between enterprises in different economies that are in a direct investment relationship. Direct investment flows into Canada are referred to as **inward direct investment**, or **Foreign Direct Investment in Canada (FDIC)**, while direct investment flows from Canada to other countries are called **outward direct investment**, or **Canadian Direct Investment Abroad (CDIA)**.

In this context, a **subsidiary** is defined to be a direct investment enterprise over which the director investor can exercise control, owning more than 50% of the voting equity of the DIE. **Branches**<sup>25</sup> which are normally wholly owned unincorporated enterprises are treated as subsidiaries. An **associate** is a direct investment enterprise over

which the direct investor can exercise significant influence, owning between 10 and 50% of the voting equity, but not control. The **affiliates** of any enterprise consist of its direct investor(s), both immediate and indirect, its direct investment enterprises, whether subsidiaries, associates or subsidiaries of associates, both immediate and indirect, and its **fellow enterprises** which is to say those enterprises that are under the control or influence of the same immediate or indirect investor, with neither being an immediate or indirect investor in the other.

Direct investment covers all transactions in equity and debt between the direct investor and its direct investment enterprise. Equity comprises equity capital and reinvested earnings; debt comprises both long and short-term debt except for banks where these intercompany debt transactions are excluded and presented in 'other investment'.

Direct investors can be business enterprises, investment and pension funds, households, government organizations, international organizations, non-profit institutions serving households, estates or trustees. Direct investment enterprises by definition cannot be governments, households or international organisations.

When a direct investment enterprise lends funds to or acquires equity in its own immediate or indirect direct investor, **reverse investment** is said to have occurred as long as the direct investment enterprise does not own equity with 10 per cent or more of the voting power in the direct investor. In 2015 the financial account main presentation was modified to show these reverse investments based on an **asset-liability principle** (that is, on a gross basis) as opposed to a **directional principle** (that is, on a net basis) as had been the case previously in Canada. The difference between the two foreign direct investment conceptual presentations resides in the classification of reverse investments such as (1) Canadian affiliates' claims on foreign parents and (2) Canadian parents' liabilities to foreign affiliates. Under the asset/liability presentation, (1) is classified as assets and included in direct investment assets and (2) is classified as liabilities and included in direct investment liabilities. New terminology was introduced to represent this concept: **Canadian direct investment abroad** is now referred to as **direct investment assets** in the new presentation while **foreign direct investment in Canada** was renamed **direct investment liabilities**. Under the former directional principle presentation, (1) is still classified as foreign direct investment in Canada and (2) is classified as Canadian direct investment abroad. However when two enterprises each have 10 per cent or more of the voting power in the other, two **distinct direct investment relationships** are created as was the case previously.

International purchases and sales of land and any buildings on the land, or expenditures on natural resource exploration and development, are treated as direct investment flows. Recall that by the conventions of *SNA 2008* and *BPM6*, non-residents cannot directly own land and other capital assets. In such cases a notional resident institutional unit is created to own the assets and the non-resident is deemed to own the equity in the notional unit. Thus in principle, when a household in another country purchases a real asset in Canada, such as a house, while continuing to reside outside Canada, a notional enterprise is created in Canada to own the asset and the non-resident is deemed to own the equity associated with this notional institutional unit. In practice, presently available data sources do not permit such international transactions by households to be well identified.

Section 8.3.2.2.2 discusses the role of reinvested earnings as an imputed transaction flow in the current account. The counterpart to this transaction in the financial account is a corresponding imputed direct investment transaction flow.

Most of the data used to derive direct investment transactions originate from economic surveys of Canadian companies that are asked to consolidate all of their Canadian operations and accordingly are referred to as Canadian enterprises. A number of administrative and other data sources are also used from the Bank of Canada, the financial press, electronic business publications and company reports. Information collected by Statistics Canada under the authority of the *Corporations Returns Act*, which identifies ownership information on corporations, is also used to help identify the frame of enterprises involved in direct investment transactions.

Foreign direct investment statistics not only serve as a major input to the balance of international payments and the international investment position, but are also released as an annual stand-alone product showing inward and outward foreign direct investment positions by country and industry.

Detailed foreign direct investment statistics published annually by Statistics Canada also feed the coordinated direct investment survey<sup>26</sup> in which many countries including Canada participate, under the leadership of the International Monetary Fund. This database is used by many countries to assess foreign direct investment positions (and indirectly transactions) vis-à-vis what has been collected by counterpart countries. Canada's detailed foreign direct

investment statistics are also provided to the financial directorate of the Organization for Economic Cooperation and Development and to the United Nations.

### 8.5.2 Portfolio investment

**Portfolio investment** embodies the notion of marketability, that is, of financial instruments that can be traded (bought or sold) on organized financial markets after they have been issued. In the Canadian statistics, portfolio investment covers transactions in stocks and bonds (both Canadian and foreign) and in Canadian money market instruments between Canadian residents and non-residents. However, it excludes the following: security transactions which are part of direct investment, as described section 8.5.1, foreign security transactions which are part of Canada's official international reserves (see section 8.5.3) and repurchase and reverse repurchase agreements on securities, which are classified as 'other investment' (section 8.5.4).

Transactions in securities comprise new issues, trade in outstanding securities (both sales and purchases), retirements of debt securities when they come to maturity and interest accrued on debt but not paid (inclusive of amortization of discounts or premiums and coupon interest).

Data on portfolio investment transactions, both by Canadian residents in other countries and by non-residents in Canada, are collected monthly via the international transactions in securities survey. This survey operates through questionnaires sent to agents, brokers and other intermediaries and also to a number of major institutional investors such as pension funds. Respondents to this survey send detailed transaction-level data to Statistics Canada that enable the compilation of a wealth of information related to international transactions in securities. Other administrative sources are used such as the Bank of Canada and commercial databases.

The coordinated portfolio investment survey,<sup>27</sup> administered by the International Monetary Fund, is also used to confront domestic holdings with the country of the issuer. While the survey is about stocks rather than flows, much is revealed about transaction flows by looking at the difference between successive holdings as reported in this survey.

An extensive and detailed system is used to process data on Canadian bonds and money market instruments. In the system, each Canadian issuer is identified by name, sector (federal government, private company name and so on) and industrial classification; each security held abroad is listed with the dates of issue and of maturity, the currency of issue, the interest rate, the timing of payments of interest and so on. Because the system is extensive in terms of the details maintained, it is used to derive a number of variables such as position, new issues, market values as well as interest and retirements. This all-encompassing system processes not only flows but also positions and investment income statistics. This system is being revamped to enhance functionality in order to meet evolving data demands, including those associated with the G-20 'data gaps' initiative.<sup>28</sup>

### 8.5.3 Official international reserves

Canada's **official international reserves** consist of foreign currency assets held by the Exchange Fund Account<sup>29</sup> plus Canada's reserve position at the International Monetary Fund.<sup>30</sup> These reserves are available for purposes of potential intervention in currency exchange markets, meeting balance of international payments financing needs and other related purposes. The reserve assets are of such a nature that they are readily acceptable as a means of payment by the central banks of other countries. They are denominated in convertible foreign currencies and they are readily and unconditionally available for use at any time. They may consist of currency and deposits, debt and equity securities, monetary gold, Canada's reserve position with the International Monetary Fund, Special Drawing Rights<sup>31</sup> holdings and other claims. By convention, official international reserves are usually expressed at market value in U.S. dollar terms, although their value is converted to Canadian dollars when they are recorded in the international accounts.

Some countries have enormous official international reserves—notably China which, at the end of 2016, had approximately US\$3 trillion. Other countries with relatively large reserves include Japan, Switzerland and Saudi Arabia, although none of these approach the size of China's reserves. Canada's official international reserves were US\$82 billion on March 31, 2016 consisting of US\$67 billion of securities, US\$5 billion of deposits, US\$8 billion of Special Drawing Rights at the IMF and US\$2 billion in Canada's reserve position with the IMF. Note that Canada no longer held gold in its official international reserves at the end of fiscal year 2015-2016.

The nature and composition of Canada's official international reserves are also discussed in Chapter 6, section 6.5.1.

### 8.5.4 Other investment

The **other investment** category in the financial account records the net acquisition of financial assets and the net incurrence of liabilities by residents vis-à-vis non-residents in the form of loans, currency and deposits, trade credits and advances and other accounts receivable or payable. In the case of the net incurrence of liabilities, the allocation of Special Drawing Rights to Canada, as an International Monetary Fund member, is also shown, with a corresponding entry under Special Drawing Rights in reserve assets.

Transactions in domestic currency in circulation between resident holders and non-residents are recorded in liabilities while transactions by resident holders with non-residents in foreign-issued currency are transactions in assets. Transactions in domestic liabilities between non-residents and transactions in foreign assets between residents are, of course, not recorded in the balance of international payments.

Table 8.8 shows the financial account for Canada in 2009 and Table 8.9 lists some additional tables with further statistics on items in the financial account. In 2009, Canada had net borrowing of \$47,564 million from non-residents, according to the financial account. As shown in Table 8.2, net borrowing was \$47,009 million based on the current and capital accounts so net errors and omissions were -\$556 million. The net borrowing reflected the net acquisition of \$97,623 million in financial assets and the net incurrence of \$145,189 million in liabilities. The asset accumulation was the result of \$42,769 million in net direct investment abroad, \$8,732 million in net portfolio investment abroad, an \$11,617 million buildup of official international reserve assets and net other Canadian investment abroad of \$34,504 million. The net incurrence of liabilities was attributable to \$23,448 million of net foreign direct investment in Canada, \$112,726 million of net foreign portfolio investment and \$9,013 million of net other foreign investment.

**Table 8.9**  
**Financial account, other breakdowns**

Table number	Table title	Frequency	Availability
36-10-0471-01	Balance of international payments, financial account	annual	1981 to date
36-10-0025-01	Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada	quarterly	First quarter 2007 to date
36-10-0026-01	Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, by North American Industry Classification System	quarterly	First quarter 2007 to date
36-10-0442-01	Balance of international payments, direct investment conceptual presentations	quarterly	First quarter 1990 to date
36-10-0027-01	Balance of international payments, Canadian chartered bank transactions in assets and liabilities booked in Canada with non-residents	quarterly	First quarter 1981 to date
36-10-0028-01	International transactions in securities, portfolio transactions in Canadian and foreign securities, by type of instrument and issuer	monthly	January 1988 to date
36-10-0029-01	International transactions in securities, portfolio transactions in Canadian and foreign securities, by type of instrument and issuer	quarterly	First quarter 1981 to date
36-10-0030-01	International transactions in securities, portfolio transactions in Canadian and foreign securities, by geographic area	monthly	January 1988 to date
36-10-0031-01	International transactions in securities, portfolio transactions in Canadian bonds, by type of issuer and transaction	monthly	January 1988 to date
36-10-0032-01	International transactions in securities, portfolio transactions in Canadian bonds, by currency of issue and type of transaction	monthly	January 1988 to date
36-10-0033-01	International transactions in securities, portfolio transactions in Canadian equity and investment fund shares, by type of transaction	monthly	January 1988 to date
36-10-0034-01	International transactions in securities, portfolio transactions in foreign bonds, by currency of issue	monthly	January 2005 to date
36-10-0035-01	International transactions in securities, loans under repurchase agreements, assets and liabilities, by type of instrument	monthly	January 1995 to date

Source: Statistics Canada.

## 8.6 The other changes in financial assets and liabilities account

The financial account together with the **other changes in financial assets and liabilities account** determine the change in the international investment position between the opening and closing of an accounting period. The latter account records ‘other flows’, which is to say changes in financial positions that are attributable to factors other than international transactions. In the financial account, transactions are recorded involving two accounting entries for each of the two parties to a transaction, while in the other changes in financial assets and liabilities account other flows involve just one entry for each party.

The other changes in financial assets and liabilities account includes the effects of revaluations and other changes in volume. It displays several kinds of other flows affecting financial assets and liabilities such as those attributable to:

- holding gains and losses due to exchange rate changes and other price changes,
- changes due to institutional units altering their economy of residence,
- reclassifications, including monetization and demonetization of gold bullion,
- changes in model assumptions relating to insurance reserves, pension entitlements and provisions of standardized guarantee schemes,
- unilateral debt cancellations and write-offs by a creditor, and
- uncompensated seizures of financial assets by governments.

As an example of how holding gains are treated in the account, suppose at the beginning of a period a Canadian investor holds 100 units of a U.S. exchange traded fund valued at US\$10 dollars per unit for a total holding value of US\$1,000. At the beginning of the period the Canadian dollar is at par with the U.S. dollar (CAN\$1 = US\$1). Suppose further that the Canadian investor purchases 10 more units of the fund during the period and that the unit purchase price increases to US\$15 per unit. Moreover the Canadian dollar’s value decreases relative to the U.S. dollar during the period such that it costs CAN\$1.10 to purchase US\$1. In this example the investor’s position (assets held) at the beginning of the period is CAN\$1,000 = US\$1,000. At the end of the period the position is CAN\$1,815 = US\$1,650. Financial transactions, as recorded in the financial account, are CAN\$165 = US\$150. There are no other changes in volume during the period, but other changes in assets due to revaluation are CAN\$650 = US\$500. Thus the change in position between the end and beginning of the period, CAN\$815 = US\$650, is explained by the change in the financial account, CAN\$165 = US\$150, plus the change in the other changes in financial assets and liabilities account, CAN\$650 = US\$500. The revaluation change can be decomposed as CAN\$100 due to exchange rate changes and CAN\$550 due to other price changes.

In the Canadian balance of international payments, the effects of exchange rate valuations are calculated on a very detailed basis for every functional category and instrument that are denominated in foreign currencies.<sup>32</sup>

In Canada, the top-level aggregates of the other changes in financial assets and liabilities account are shown in table 36-10-0454-01, where they are derived by subtracting the financial account and the opening international investment position from the closing international investment position. In future the account will be made more explicit with a breakdown of its main component parts. This account is the mirror image of the other changes in assets account of the non-resident sector, which is discussed in Chapter 6.

## 8.7 The international investment position

Canada’s **international investment position (IIP)** is the statistical statement that presents the stock of financial assets and liabilities of its residents vis-à-vis non-residents. It records, at an instant in time, the value of the financial assets of residents that are claims on non-residents (including gold bullion held as reserve assets) and the value of liabilities of residents to non-residents. The difference between these asset and liability stocks is the Canada’s net international investment position.

As explained previously, the change in the IIP between the beginning and end of an accounting period is equal to the sum of financial transaction flows recorded in the financial account and other flows shown in the other changes in financial assets and liabilities account (refer to Figure 8.2). The IIP is based on the same general principles with

respect to valuation, timing, units and the concept of residence that apply to the rest of the international accounts and SNA 2008 more generally.

The IIP can be viewed as a subset of the national balance sheet and is also discussed in Chapter 6.<sup>33</sup> It provides statistical information that is valuable for many kinds of analysis such as:

- monitoring Canada's external asset and debt position,
- assessing Canada's general economic relationships with the rest of the world,
- evaluating potential currency or debt maturity mismatches as between Canadian foreign assets and liabilities,
- examining the global geography of international assets and debts,
- studying the relationship between domestic and foreign sources of financing,
- calculating average rates of return on foreign assets and liabilities by instrument class, and
- reviewing Canada's balance of international payments sustainability and vulnerabilities.

Table 8.10 shows the IIP for 2009 (that is, as of December 31, 2009). Total assets were \$2,067,092 million, total liabilities were \$2,288,731 million and Canada's net international investment position was -\$221,639 million, indicating a net indebtedness by Canadian residents to non-residents of that absolute amount. When a country's foreign assets are greater than its foreign liabilities that situation is referred to as a net asset position. In the opposite circumstance, with liabilities greater than assets, it is referred to as a net liability position or net debt position.

**Table 8.10**  
**International investment position, 2009**

	<b>2009</b>
	millions of dollars
<b>Total assets</b>	<b>2,067,092</b>
Direct investment assets	979,409
Direct investment assets, equity	..
Direct investment assets, debt instruments	..
Canadian portfolio investment	645,272
Canadian portfolio investment, foreign debt securities	142,772
Canadian portfolio investment, foreign money market instruments	4,631
Canadian portfolio investment, foreign bonds	138,140
Canadian portfolio investment, foreign equity and investment fund shares	502,501
Official international reserves	57,129
Other Canadian investment	385,281
Other Canadian investment, loans	99,433
Other Canadian investment, currency and deposits	223,581
Other Canadian investment, trade credits and advances	7,169
Other Canadian investment, other accounts receivable	55,098
<b>Total liabilities</b>	<b>2,288,731</b>
Direct investment liabilities	953,379
Direct investment liabilities, equity	..
Direct investment liabilities, debt instruments	..
Foreign portfolio investment	940,629
Foreign portfolio investment, Canadian debt securities	570,506
Foreign portfolio investment, Canadian money market instruments	32,923
Foreign portfolio investment, Canadian bonds	537,583
Foreign portfolio investment, Canadian equity and investment fund shares	370,123
Other foreign investment	394,723
Other foreign investment, loans	64,434
Other foreign investment, currency and deposits	299,354
Other foreign investment, special drawing rights	10,224
Other foreign investment, trade credits and advances	7,619
Other foreign investment, other accounts payable	13,091
<b>Canada's net international investment position</b>	<b>-221,639</b>

.. not available for a specific reference period

Source: Statistics Canada, table 36-10-0485-01.

The presentation of the IIP in the table is by functional category—direct investment, portfolio investment, official international reserves and other investment—as recommended in *BPM6*. This classification also aligns with that of the financial account and the primary income account, thereby facilitating the calculation of investment-flow-to-stock ratios and income-to-stock ratios. IIP statistics can also be obtained with a variety of other breakdowns—by region, by industry for direct investment, by sector, by currency of issue, by maturity for debt instruments, by book versus market value—as shown in Table 8.11.

**Table 8.11**  
**International investment position, other breakdowns**

Table number	Table title	Frequency	Availability
36-10-0008-01	Canadian direct investment abroad and foreign direct investment in Canada by country	annual	1987 to date
36-10-0009-01	Canadian direct investment abroad and foreign direct investment in Canada by North American Industry Classification System and region	annual	1999 to date
36-10-0469-01	Canada's gross external debt position by sector, book and market values	quarterly	Fourth quarter 2002 to date
36-10-0361-01	Canadian portfolio investment abroad at market value by country	annual	1997 to date
36-10-0368-01	Canadian portfolio investment abroad at market value by country	quarterly	First quarter 2013 to date
36-10-0443-01	Direct investment conceptual presentations	quarterly	First quarter 1990 to date
36-10-0474-01	International investment position book value	annual	1981 to date
36-10-0485-01	International investment position book and market values	quarterly	First quarter 1990 to date
36-10-0038-01	Portfolio and other investment in Canada by sector, book value	annual	1981 to date
36-10-0039-01	Portfolio and other investment in Canada by sector, book and market values	quarterly	First quarter 1990 to date
36-10-0486-01	Foreign portfolio investment in Canadian bonds and Canadian money market instruments, by geographic region	monthly	January 1991 to date
36-10-0475-01	Foreign portfolio investment in Canadian bonds and Canadian money market instruments, by currency of issue and sector	monthly	January 1991 to date
36-10-0444-01	Foreign portfolio investment in Canadian debt securities by remaining maturity and sector	monthly	January 2007 to date
36-10-0446-01	Canada's gross external debt position by currency	quarterly	Fourth quarter 2002 to date
36-10-0454-01	Change in Canada's international investment position, market value	quarterly	First quarter 2015 to date

Source: Statistics Canada.

The proper valuation of financial assets and liabilities in the IIP is sometimes a challenge. The aim is to value them at current market prices and this is readily done for listed equity and debt instruments that are regularly traded in financial markets. Non-negotiable financial instruments such as loans, deposits and accounts payable or receivable are recorded at their nominal values. However, for unlisted direct investment enterprises, private equity, joint ventures, listed but illiquid companies and unincorporated enterprises the determination of the current market valuation can be quite problematic.

In 2012, market value estimates of foreign direct investment were introduced in Canada's international accounts and market value aggregates became the main measure for the compilation of the international investment position.

A most widely-accepted methodology for creating market value estimates<sup>34</sup>—the market capitalization approach—was developed to produce market value estimates for foreign direct investment. This amounts to using capitalization ratios (market value over book value) derived from listed companies and applying these to the book value equity estimates of unlisted companies, with exceptions for specific cases such as small companies or companies in particular sectors. Moving equity to a market value basis provides a more accurate picture of the value of assets

and liabilities of the international investment position. The switch from a book value to a market value measure has, in recent years, tended to move the net international investment position toward a larger net asset position.

## 8.8 Historical balance of international payments statistics

Canada's balance of international payments statistics program has existed for a long time, longer in fact than any other part of the Canadian system of macroeconomic accounts. This is discussed in Chapter 2.

The presentational format of the international accounts changed in 2012 to bring them in line with *SNA 2008* and *BPM6*. Unfortunately it was not possible to carry the changes back to the start of the time series in 1926. However, the old time series are still accessible and the tables in which they are available are listed in Table 8.12. As can be seen there, many annual current, capital and financial account time series are available from 1926 to 2011 and the quarterly statistics are available from 1946 forward. Annual international investment position statistics are also available on the old presentational format from 1926 to 2011.

**Table 8.12**  
**Selected historical balance of payments statistics**

Table number	Table title	Frequency	Availability
36-10-0043-01	Balance of international payments, current account (archived)	annual	1926 to 2011
36-10-0045-01	Balance of international payments, current account (archived)	quarterly	First quarter 1946 to second quarter 2012
36-10-0047-01	Balance of international payments, current account, seasonally adjusted (archived)	quarterly	First quarter 1946 to second quarter 2012
36-10-0044-01	Balance of international payments, capital and financial account (archived)	annual	1926 to 2011
36-10-0046-01	Balance of international payments, capital and financial account (archived)	quarterly	First quarter 1946 to second quarter 2012
36-10-0048-01	Balance of international payments, current account, goods (archived)	annual	1946 to 2011
36-10-0049-01	Balance of international payments, current account, goods (archived)	quarterly	First quarter 1961 to second quarter 2012
36-10-0002-01	Balance of international payments, current account, investment income, by type and sector	annual	1926 to date
36-10-0055-01	Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, by category of transactions (archived)	annual	1946 to 2011
36-10-0058-01	International transactions in securities, portfolio transactions, net and gross sales and purchases, by type and sector (archived)	annual	1952 to 2011
36-10-0073-01	International investment position (archived)	annual	1926 to 2011
36-10-0075-01	International investment position, foreign portfolio investment in Canadian bonds and Canadian money market, by sector (archived)	annual	1955 to 2011
36-10-0076-01	International investment position, portfolio and other investment in Canada, by sector (archived)	annual	1926 to 2011
36-10-0079-01	Balance of international payments, flows of Canadian direct investment abroad and foreign direct investment in Canada, by industry and type of transactions (archived)	annual	1946 to 1993
36-10-0082-01	Net official financing from the official international reserves and the foreign currency borrowings of the Government of Canada (archived)	annual	1927 to 1996
36-10-0083-01	International investment position, capital employed in non-financial industries by country of ownership (archived)	annual	1926 to 1993
36-10-0095-01	International investment position, capital employed in non-financial industries, by country of control (archived)	annual	1926 to 1993

Source: Statistics Canada.



### Annex A.8.1 Globalization and foreign affiliate statistics

Canadian companies are increasingly engaged in the global economy and as a result there is a growing demand for more detailed information on their international activities. As Canadian businesses expand across national borders and foreign businesses expand their activities in Canada, both through foreign direct investment, this brings a number of policy-related challenges on issues such as outsourcing jobs, competitiveness and export performance and how these relate to foreign affiliate sales.

Foreign affiliate statistics (FATS)<sup>35</sup> shed light on these issues by going beyond the traditional realm of cross-border foreign direct investment statistics to articulate the activities and financial positions of Canadian majority-owned affiliates operating abroad and foreign majority-owned affiliates operating in Canada.

FATS are an extension of statistics on foreign direct investment. They provide additional insight into the impact of foreign direct investment on economic agents in national economies in terms of earnings, productivity, employment, trade and foreign exposure resulting from an inter-connected global economy. They are not part of the balance of international payments as such because they are not, at least not primarily, about economic relationships between residents and non-residents. Rather, they are about the effects of those relationships, in terms of jobs, earnings and other variables.

There are two dimensions of FATS: First, there are activities and positions of foreign majority-owned affiliates in Canada, known as **inward** FATS; and, second, there are activities and positions of Canadian majority-owned affiliates abroad, known as **outward** FATS. In order to be consistent with the international practice for measuring FATS,<sup>36</sup> only the data for Canadian majority-owned foreign affiliates (MOFAs) and foreign majority-owned domestic affiliates (MODAs) are included. Sales and employment figures of such majority-owned affiliates are fully attributed—that is, there is no adjustment for less than 100 per cent ownership.

Selling goods or services through foreign majority-owned affiliates is a means for Canadian companies to market their products internationally and for foreign firms to market their products in Canada. In the case of goods, the products sold by majority-owned affiliates may be produced in Canada or produced abroad.

Statistics related to MOFAs are needed in relation to the negotiation and monitoring of trade and investment agreements. The statistics are also needed to meet Canada's statistical obligations to international organizations, such as the Organization for Economic Co-operation and Development. Canada has had a partial program of foreign affiliate statistics related to outward FATS since 2000.

For outward FATS, information is collected by Statistics Canada's annual Survey of Activities of Canadian Majority-Owned Affiliates Abroad. This survey currently measures sales of goods and services, employment and assets of Canadian MOFAs abroad and is conducted in conjunction with the Canadian Investment Abroad survey questionnaire. On the other hand, inward FATS statistics are a recent addition to the international accounts. The data are compiled by linking a variety of survey and administrative data<sup>37</sup> about each particular foreign majority-owned affiliate in Canada.

The FATS statistics are available in seven tables, as summarized in Table 8.13.

**Table 8.13**  
**Foreign affiliate statistics**

Table number	Table title	Frequency	Availability
36-10-0470-01	Activities of Canadian majority-owned affiliates abroad, by countries	annual	2011 to date
36-10-0440-01	Activities of Canadian majority-owned affiliates abroad, by North American Industry Classification System	annual	2011 to date
36-10-0445-01	Activities of foreign majority-owned affiliates in Canada, by countries	annual	2010 to date
36-10-0447-01	Activities of foreign majority-owned affiliates in Canada, by North American Industry Classification System	annual	2010 to date
36-10-0451-01	Activities of foreign majority-owned affiliates in Canada, employment at establishment level, by province and the North American Industry Classification System	annual	2010 to date
36-10-0011-01	Foreign affiliate trade statistics, Canadian operations abroad, by North American Industry Classification System (archived)	annual	1999 to 2012
36-10-0012-01	Foreign affiliate trade statistics, Canadian operations abroad, by countries (archived)	annual	1999 to 2012

**Source:** Statistics Canada.

Statistics Canada's FATS program is relatively new and continues to develop and expand. The end goal is to produce additional variables and update on-going annual estimates for inward FATS that are tied to trade in goods and services as well as research and development, employment and financial characteristics in support of global production measures. For outward FATS, in addition to sales in goods and services, employment and total assets of the foreign affiliates, the introduction of other variables, such as value added will be evaluated. A broader framework is also being envisaged, to include Canadian parent enterprises and to link to trade by enterprise characteristics.

### Annex A.8.2 International accounts releases and their linkages to other CSMA releases

The international accounts are disseminated through eight regular statistical releases which are:

- Monthly merchandise trade statistics
- Monthly international transactions in securities
- Quarterly balance of international payments
- Quarterly international investment position
- Annual international trade in services statistics
- Annual Canadian portfolio investment survey
- Annual foreign direct investment statistics
- Annual foreign affiliate statistics

These releases are tightly integrated with those for the other components of the CSMA. In particular, the monthly merchandise trade statistics and the quarterly balance of international payments align with the quarterly income and expenditure accounts and the annual supply and use accounts. The monthly international transactions in securities release and the quarterly balance of international payments also are consistent with the quarterly financial flow accounts. The quarterly international investment position statistics are fully consistent with the quarterly national balance sheet accounts.

## Notes for chapter 8

1. Art Ridgeway participated on the committee from Canada. The manual is available free on the Internet and can be easily found by an Internet search for *BPM6*.
2. Note however that the current account balance was positive between 1999 and 2008.
3. *BPM6* observes (p. 133) that: “Despite the lending-oriented terms, net lending/net borrowing is a balance that takes into account equity, financial derivatives, and monetary gold, as well as debt instruments. Also, net lending includes reduction of liabilities and net borrowing includes reduction in assets.”
4. Steven Mozes and Diane Oberg, “[U.S.-Canada Data Exchange, 1990-2001](https://www.census.gov/foreign-trade/aip/uscanada.pdf)”, technical paper available on the Internet at <https://www.census.gov/foreign-trade/aip/uscanada.pdf>.
5. The Canada Revenue Agency requires that corporations file a T106 form when they engage in non-arm’s-length transactions with non-residents. The information on these forms is valuable for purposes of determining market valuation equivalent valuations.
6. **Allocated gold** is gold that is owned outright by the institutional unit. It may be stored for safekeeping in a bank, but it is not owned by the bank and is therefore safe from the bank’s potential insolvency. **Unallocated gold** is not the investor’s property. Rather, the investor owns a legal claim against another institutional unit to supply a given amount of gold on demand. If that other institutional unit goes bankrupt it may be unable to fulfill its liability
7. Concerns about survey respondent burden and survey cost preclude the collection of very detailed information.
8. The one year rule for travel services does not apply to students and medical patients. Their expenditures are included in travel services for the entire length of their stay outside their own economy.
9. In other words, business travel services exclude any purchases business travelers may make on behalf of the enterprises they represent. Purchased goods for resale or for use as intermediate inputs or for use as capital assets are included in goods trade.
10. Consumer durable goods and other purchases for own use valued in excess of the Customs threshold are excluded from travel services and included in goods trade.
11. Figure 5.1 entitled “Conventions for cross-border trucking of Canadian exports and imports of goods” on page 36 in the Statistics Canada publication *Canada’s Balance of International Payments and International Investment Position: Concepts, Sources, Methods and Products* provides a detailed picture of how transportation services are valued in Canada’s international accounts.
12. Purchasers of insurance typically pay their premiums in advance of the period during which the insurance applies. The insurance companies invest the premiums and earn investment income which is due to the policyholders. The policyholders, in turn, allow the insurance companies to retain these amounts as ‘premium supplements’.
13. If the persons receiving the payments are employees of the entity making the payments this is treated as compensation of employees rather than as trade in services.
14. Gambling includes a transfer element as well as a service element.
15. Quarterly volume indexes are available for both goods and services in table 36-10-0104-01. More detailed monthly and quarterly price and volume indexes for merchandise trade are available in tables 12-10-0003-01, 12-10-0004-01, 12-10-0006-01 through 12-10-0010-01 and 12-10-0087-01.
16. *BPM6*, page 183.
17. As a practical matter it may sometimes be difficult to allocate dividends to the accounting period when they become ‘ex dividend’. In such circumstances they are recorded in the period when they are paid.
18. This imputation in Canada’s international accounts is not present in Canada’s Financial Flow Accounts, so a reconciliation between the two is provided at the end of table 36-10-0578-01. For a discussion of reservations about this imputation see Arthur Ridgeway, “Dividends and Retained Earnings of Foreign Direct Investors: BOP and SNA Treatment in Canada,” a paper presented to the IMF Balance of Payments Committee, December 2003.

19. When migrants bring their own assets from their old economy to their new one this is not recorded as a transfer, but rather is recorded in the other changes in financial assets and liabilities account.
20. World Bank Group, *Migration and Remittances: Recent Developments and Outlook*, Migration and Development Brief 26, April 2016.
21. Global Affairs Canada, [Statistical Report on International Assistance, Fiscal Year 2014-2015](https://www.international.gc.ca/development-developpement/assets/pdfs/2014-15StatisticalReport-eng.pdf), available online at <https://www.international.gc.ca/development-developpement/assets/pdfs/2014-15StatisticalReport-eng.pdf>.
22. Debt forgiveness is to be distinguished from debt write-offs. The latter involves the involuntary cancellation of debt due to bankruptcy or other events. Debt write-offs are recorded in the other changes in financial assets and liabilities account as other (non-transaction) flows.
23. *SNA 2008* and *BPM6* also recognize marketing assets such as trademarks and corporate goodwill as types of non-produced non-financial assets in the capital account. However, these are not currently recognized in the Canadian capital account.
24. See Organization for Economic Cooperation and Development, *OECD Benchmark Definition of Foreign Direct Investment*, fourth edition, Annex 4. This volume is often referred to as *BD4*.
25. A branch is defined in section 8.3.1.2.3.2 in the context of trade in construction services.
26. For more information about the survey see International Monetary Fund, *Coordinated Direct Investment Survey Guide – 2015*, 2015, available free on the International Monetary Fund website.
27. For detailed information about the Coordinated Portfolio Investment Survey see International Monetary Fund, *Coordinated Portfolio Investment Survey Guide*, available free on the Internet.
28. The G-20 ‘Data Gaps’ initiative was a result of a meeting of Group-of-20 finance ministers and central bank governors in April 2009. The purpose of the meeting was to review lessons learned from the international financial crisis in 2008. It was decided at the meeting to call upon the International Monetary Fund and the Financial Stability Board to identify major financial and economic information gaps needing to be filled. A set of 20 recommendations on the enhancement of financial and economic statistics were subsequently made.
29. The Exchange Fund Account is held in the name of the Minister of Finance. The status of the account is reported annually. See for example *Report on the Management of Canada’s Official International Reserves, April 1, 2015 – March 31, 2016*, Government of Canada, catalogue number F1-31E-PDF, 2016.
30. IMF members are each assigned a quota, which must be deposited with the IMF. A country’s reserve position at the IMF is the difference between that quota and the IMF’s holdings of that country’s currency.
31. Special Drawing Rights are a monetary reserve currency created by the International Monetary Fund in 1969. They are intended to add to international liquidity and are used by countries to supplement their other foreign exchange reserves. An SDR is a defined basket of national currencies. The contents of the basket and the weights of the currencies are changed from time to time. As of the end of 2016 the basket included the U.S. dollar (41.73%), the European euro (30.93%), the Chinese Renminbi (10.92%), the Japanese yen (8.33%) and the British pound (8.09%).
32. For a detailed example of exchange rate calculations see: *Canada’s Balance of International Payments and International Investment Position, Concepts, Sources, Methods and Products*, Statistics Canada catalogue 67-506-X, 2000, p. 98. For a detailed explanation of the calculation of revaluations see also *BPM6*, paragraph 9.28, p. 146 and Box 9.1, p. 148.
33. Again, the non-resident sector part of the balance sheet accounts, as discussed in Chapter 6, records the assets of non-residents that are claims on Canadian residents and the liabilities of non-residents to Canadian residents. This is the mirror image of the IIP, which records the claims of Canadian residents on non-residents and the liabilities of Canadian residents to non-residents.
34. *BPM6* discusses these and other valuation methods on pp. 122 to 124.
35. *BPM6* refers to Activities of Multinational Enterprises (AMNE) statistics, which are closely related to but broader in scope than FATS. See appendix 4, pp. 269 to 271.

36. In addition to *BPM6*, see also *Recommendations Manual on the Production of Foreign Affiliates Statistics*, 2007 edition, Eurostat and the European Commission, Luxembourg, 2007.

37. It is a striking advantage of Statistics Canada's highly integrated business survey system that data for a particular business enterprise, on a wide variety of variables collected by numerous different surveys and administrative data systems, can be readily combined to paint a picture of that enterprise's activities without there being a need for additional survey collections.

# User Guide: Canadian System of Macroeconomic Accounts

## Chapter 9 Government Finance Statistics

### What this chapter seeks to do

The purpose of this chapter is to explain Canada's **public sector accounts**. These accounts provide a comprehensive statistical picture of Canada's general government sector, including the federal government, provincial and territorial governments, local (municipal) governments, Aboriginal governments and the accounts of the Canada and Quebec Pension Plans (CPP and QPP). They also include the accounts of government-controlled business enterprises. The chapter focuses on the internal structure of the public sector accounts, the relationship of these accounts to the rest of the Canadian system of macroeconomic accounts and how these accounts are used to interpret economic developments.

### 9.1 Introduction

#### 9.1.1 Role of government in Canada's economy

The **general government sector** is an important component of Canada's economy, representing roughly one quarter of economic activity. In 2009 it accounted for \$345 billion of final consumption expenditure and \$72 billion of gross fixed capital formation expenditure, together comprising 26.6 per cent of gross domestic product.<sup>1</sup> In that same year average employment in educational services, health care, social assistance and public administration was 3,792,968 persons, equivalent to 26.0 per cent of total employment.<sup>2</sup>

The wide range of goods, services and transfers provided to Canadians by governments—federal, provincial, territorial, local and Aboriginal—affects all residents as do the taxes and other charges levied by governments. Citizens need accurate, timely and comparable facts about government activities in order to assess government performance. That information is provided by Canada's system of macroeconomic accounts.

**General government** appears as one of six sectors in the income and expenditure accounts (Chapter 5) and the financial flow and wealth accounts (Chapter 6). The activities of **government business enterprises** (GBEs) are recorded in the financial and non-financial corporations sectors (in the same two chapters). General government and government business enterprises are also represented in the supply and use tables (Chapter 4). The current chapter brings all of this information about general government and government business enterprises together in one place, with a different organizational structure called **government finance statistics** (GFS).

GFS gauge the financial position of public sector components and sub-components. These measures are used by a variety of economists and industry analysts in both the private and government sectors. They are comparable with GFS in other countries and they provide statistics that are comparable among the various Canadian governments—federal, provincial, territorial, local and Aboriginal.

#### 9.1.2 Government finance statistics

The GFS are compiled by assembling information from the detailed government accounting systems ('ledgers') and public accounting statements available from the different levels of government and adjusting to a single, internationally comparable accounting standard. These statistics give the public sector perspective in a manner consistent with the *SNA 2008* framework, discussed in earlier chapters.

The influence of government extends beyond its own activities to include those of government-controlled enterprises. They operate in many industries, notably electrical utilities, postal services, public transit, rail passenger services, ports, lotteries and gaming, ferries, liquor and cannabis control and distribution, convention centres and finance, insurance and real estate. Total revenue of government business enterprises was \$137 billion in 2009.<sup>3</sup>

As mentioned, Canada's government sector accounts are discussed in Chapters 4, 5 and 6 along with the accounts for the other five institutional sectors in the context of the **sequence of accounts**. The interlocking sequence of accounts is explained in section 3.6 of Chapter 3 and comprises the following:

- the production account,
- the generation of income account,
- the allocation of primary income account,
- the secondary distribution of income account,
- the use of disposable income account,
- the redistribution of income in kind account,
- the use of adjusted disposable income account,
- the capital account,
- the financial account,
- the other changes in the volume of assets account,
- the revaluation account, and
- the balance sheet account.

However, for some purposes government policymakers and financial analysts prefer to see the government accounts set out in a different format, one that more closely mirrors the layout in official government budgetary statements and audited public accounts.<sup>4</sup> That format shows a number of different aggregates and balancing items that do not appear in the sequence of accounts, such as total revenue and expense, total expenditures or outlays, tax revenues, the net operating balance and total debt. These are compiled in another Canadian System of Macroeconomic Accounts (CSMA) component known as the **government finance statistics** (GFS), which uses the same basic concepts, definitions and accounting rules elaborated in the 2008 edition of the System of National Accounts (*SNA 2008*) but displays the statistics in the just-referenced alternative arrangement.

This chapter describes the GFS system of accounts. It draws extensively, and in places directly, from the manual published by the International Monetary Fund entitled *Government Finance Statistics Manual 2014 (GFSM 2014)*.

The GFS framework measures the economic dimensions of the public sector of Canada. The principal dimensions are: revenues, expenditures and the resulting surplus or deficit, assets, liabilities and net worth or net debt position.

Since financial statements and reports issued directly by Canada's various governments are based on the organizational structures and the accounting and reporting practices of each individual government, which differ considerably from government to government and from year to year, there is a lack of consistency across jurisdictions and over time. To address this matter, over the last seven decades Statistics Canada, in cooperation with representatives of all levels of government and with the academic and business communities, developed the **financial management system** (FMS). In 2014 this uniquely Canadian structure was replaced by the internationally comparable GFS system. (See Annex A.9.1)

## 9.2 The GFS framework

### 9.2.1 Structure of the GFS system

The GFS framework is intended to facilitate fiscal analysis in a macroeconomic context. It takes elements from the sequence of accounts, discussed in Chapters 3, 4, 5 and 6, that apply to the general government and government business enterprise<sup>5</sup> sectors and rearranges them in a tabular format that resembles the fiscal tables that are typically reported in budgetary presentations and audited financial statements by governments.

The framework includes four financial statements, which are:

- the statement of operations,
- the statement of other economic flows,
- the balance sheet, and
- the statement of sources and uses of cash.

The first of these, the **statement of operations**, records transactions in revenue, expense, net investment in non-financial assets, net acquisition of financial assets and net incurrence of liabilities. The GFS **revenue** item includes taxes on income, profits, capital gains, payroll, property, goods and services, international transactions and other tax bases, social contributions, grants from other levels of government, property income such as interest on loans and distributed income of government business enterprises and some other types of revenue. In *SNA 2008* these items are recorded in the generation of income account, the allocation of primary income account, the secondary distribution of income account and the capital account. The GFS **expense** item includes compensation paid to employees, purchases of goods and services, subsidies, interest on public debt, social benefits paid, consumption of fixed capital and some other types of expense. These components are also recorded in the *SNA 2008* sequence of accounts. Net investment in non-financial assets refers to purchases of buildings, engineering structures, machinery and equipment and other capital goods. The net acquisition of financial assets and net incurrence of liabilities refer to changes in government holdings of various financial instruments, such as currency and bank deposits, loans, bonds, other securities and the like. In *SNA 2008* these transactions are found in the financial account.

Statistical tables are available on the Statistics Canada website showing the statement of operations for each sub-sector within Canada's general government sector.<sup>6</sup>

The difference between revenue and expense, as defined in the statement of operations, is the **gross or net operating balance**, with the gross balance omitting consumption of fixed capital as an expense item and the net balance including it. These balancing items measure the change in government net worth resulting from non-financial, non-capital transactions and they are important indicators of fiscal sustainability. The subsequent deduction of the net acquisition of non-financial assets from the net operating balance produces a balance called net lending/borrowing, which measures the extent to which government either provides financial resources to the other sectors of the economy and the rest of the world (net lending) or uses financial resources generated by the other sectors (net borrowing). Net lending/borrowing is also equal to the government financing requirement derived as the net of transactions in financial assets and liabilities. It is a measure of the net financial impact of government activity on the rest of the economy.

The **statement of other economic flows** presents information on changes in net worth that arise from flows other than transactions. It is the GFS counterpart to the other changes in assets account in the *SNA 2008* sequence of accounts. These flows are classified as either changes in the value (revaluations, meaning holding gains or losses) or the volume (meaning the physical quantity and quality) of assets and liabilities. The balancing item of this statement is the change in net worth resulting from other economic flows. This statement is not yet developed in Canada's GFS.

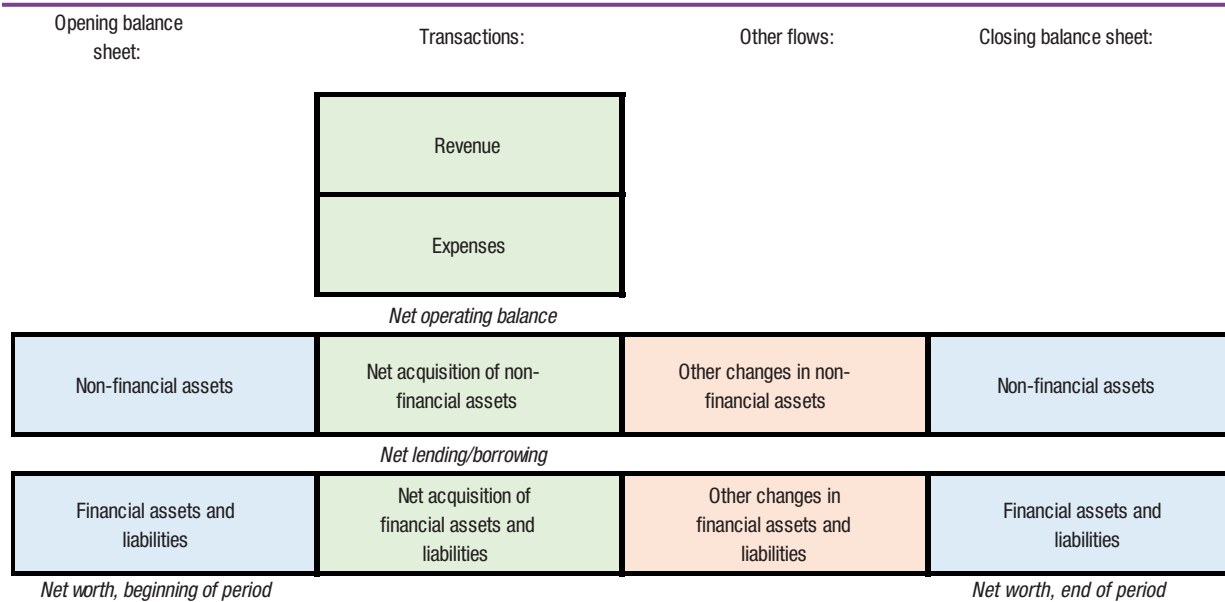
The GFS **balance sheet** presents the stocks of assets, liabilities and net worth at the end of the accounting period and corresponds directly to the balance sheet in the sequence of accounts. The government's **net worth** is defined as the difference between total assets and total liabilities. Another balancing item that can be derived from the balance sheet is **net financial worth**, which is defined as total financial assets minus total liabilities.

In parallel with the other sector accounts (for households, non-profit institutions serving households, financial and non-financial corporations and non-residents) discussed previously, the **closing balance sheet** for a public sector institutional unit at the end of a given accounting period is always equal to the **opening balance sheet** for that period, plus net lending or borrowing during that period as determined in the statement of operations, plus the change in net worth resulting from other economic flows during that period as determined in the statement of other economic flows.<sup>7</sup>



The overall structure of the government finance statistics database is summarized in Figure 9.1. The component parts of the system are discussed in detail in sections 9.4 through 9.8 below.

**Figure 9.1**  
**GFS accounting framework**



Source: Statistics Canada.

GFS is based on accrual accounting principles, but cash-based statistics are also useful. The **statement of sources and uses of cash** shows the amounts of cash generated and used in current operations, transactions in non-financial assets and transactions involving financial assets and liabilities, excluding cash itself. The balancing item, net change in the stock of cash, is the sum of the net cash received from these three sources of cash flows. This statement provides information on government liquidity and is also useful in reconciling between cash and accrual accounting statements. It is not yet developed in Canada's GFS.

## 9.2.2 Institutional units

Chapter 3 defines an institutional unit as “an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities.” The same concept applies in this chapter. The general government sector and its sub-sectors as well as the government business enterprise sector are comprised of institutional units. All general government institutional units are considered to be resident in their own country, while government business enterprise units can be resident or non-resident depending upon the countries in which they operate.

Institutional units in the Canadian public sector are listed and described in the public sector universe, which is discussed in section 9.3.1.

### 9.2.2.1 Government institutional units

Government institutional units are legal entities that are established by political processes and have legislative, judicial or executive authority over other institutional units. The main economic functions of government units are to assume responsibility for the provision of goods and services to the community or individual households primarily on a non-market basis, to redistribute income and wealth by means of transfers, to engage primarily in non-market production and to finance their activities primarily out of taxation or other compulsory transfers. Governments also regulate and incentivize the behaviour of other institutional units. A government unit may also finance a portion of its activities by borrowing or acquiring funds from sources other than compulsory transfers such as by earning interest

revenue, selling goods and services or collecting royalties on the exploitation of natural assets. All government units are part of the general government sector.

In Canada, government ministries, departments, agencies, boards, commissions, judicial authorities, legislative bodies and other entities are not institutional units since they do not have the authority to own assets, incur liabilities, or engage in transactions in their own right. Generally entities funded by appropriations made in accordance with a budget controlled by a legislature are not separate institutional units and are treated as constituting a single institutional unit. For example, Statistics Canada is not an institutional unit in itself. Rather, it is part of the Government of Canada institutional unit.

The geographic location of a government unit is not always limited to one place within Canada's territory. For example, individual ministries or departments of the federal government are in many cases dispersed across the country. They remain, nevertheless, part of the same institutional unit. Similarly, a given ministry or department may maintain branch offices or agencies in many different locations to meet local needs. These offices and agencies are part of the same institutional unit.<sup>8</sup>

One government unit controls another government unit by appointing its managers and/or determining the laws and regulations that provide its finance.

### 9.2.2.2 Corporations controlled by government

As in *SNA 2008* more generally, **corporations** are defined in GFS as entities that are capable of generating a profit or other financial gain for their owners, are recognized by law as legal entities separate from their owners and are set up for purposes of engaging in market production. In GFS and *SNA 2008*, the term corporation is not necessarily used in the same way as in the legal sense.

The key to classifying a unit as a private or public corporation in GFS and *SNA 2008* is the notion of being a **market producer**. Of particular importance are the requirements that a corporation produce goods and services for the market at economically significant prices and have the potential to be a source of profit or other financial gain to the owners. Some non-profit institutions and government units have the legal status of a corporation, but are not considered corporations for the purposes of GFS because they are not market producers. Other non-profit institutions are legal corporations that produce for the market but they are not allowed to be a source of financial gain to their owners. Conversely, some entities with legal titles other than 'corporation', such as partnerships, could be considered corporations in GFS when they satisfy the definition of corporations.

In *SNA 2008* all corporations are part of the non-financial corporations sector or the financial corporations sector, depending on the nature of their primary activity. Institutional units that qualify as corporations and are controlled by government units or other public corporations are classified as **public corporations** or equivalently as **government business enterprises**.

### 9.2.2.3 Quasi-corporations

A **quasi-corporation** is either (i) an unincorporated enterprise owned by a resident institutional unit that has sufficient information to compile a complete set of accounts and is operated as if it were a separate corporation and whose relationship to its owner is effectively that of a corporation to its shareholders, or (ii) an unincorporated enterprise owned by a non-resident institutional unit that is deemed to be a resident institutional unit because it engages in a significant amount of production in the economic territory over a long period of time. These entities are not incorporated or otherwise legally constituted, but function as if they were corporations. They are treated as corporations in GFS as in *SNA 2008*.

### 9.2.2.4 Restructuring agencies

**Restructuring agencies** are units set up to reorganize companies that are in trouble and/or to sell corporations and other assets of such companies. They are sometimes created in the context of a banking crisis and may also be used for the annulment of impaired assets and repayment of liabilities of insolvent entities. Restructuring agencies can be short-lived or sometimes long-standing public sector units.

Governments may fund the activities of restructuring agencies either directly through capital transfers, loans or equity infusions, or indirectly by means of guarantees.

A unit taking on low risk because it acts with strong public financial support and, by law or de facto, on behalf of the government, is likely to be classified within the general government sector rather than the GBE sector. Likewise a unit that sells most assets at values less than market values is more likely to be classified in the general government sector than the GBE sector. However, a unit controlled by the government that borrows on financial markets at its own risk to acquire financial and non-financial assets that it actively manages is likely to be classified as a financial GBE. If such a unit also engages in transactions on behalf of government, these can be rerouted through the general government sector.

#### 9.2.2.5 Sinking funds

A **sinking fund** is a separate account, which may or may not be an institutional unit, that is made up of segregated contributions provided by the unit or units making use of the fund (the parent unit or units) for the gradual redemption of debt.

Units of this kind are mostly used by government institutional units, but are also used by public corporations on occasion. A variety of practices exist as to the operation of sinking funds and the degree of control by the parent unit(s).

Sinking funds are classified according to whether they are distinct institutional units or not and, if they are institutional units, whether they provide services at market or non-market prices.

#### 9.2.2.6 Pension schemes

There are several kinds of **pension schemes** and these can sometimes be challenging to classify in GFS.

Pension contributions and benefits flowing through a social security scheme, such as the Canada Pension Plan (CPP) which is managed by the CPP Investment Board, are treated as a social security fund institutional unit. However, pension benefits from universal non-contributory pension schemes such as Old Age Security and the Guaranteed Income Supplement that are not managed by a separate institutional unit are, rather, classified as part of a general government unit.

Employment-related pension schemes other than social security can be either 'defined contribution' or 'defined benefit' arrangements. If no actual fund or reserve exists, such schemes are not considered to be separate institutional units. They are classified with the private or public sector employer unit that controls the pension scheme. Pension plans for government employees are often of this nature and are considered part of the government institutional unit even though they may be documented in separate notional accounting statements. The Public Service Pension Plan, covering federal public servants, is an example.<sup>9</sup>

Sometimes pension funds are managed by another financial institution, such as an insurance company, to which contributions from an employer and its employees are channelled and from which pension benefits are paid out. Trusteed pension plans of this kind are registered with the Canada Revenue Agency for tax purposes and are classified in GFS and the CSMA more generally as part of the financial institution that manages them.<sup>10</sup> The Ontario Teachers' Pension Plan, covering elementary and secondary school teachers, is an example.

#### 9.2.2.7 Sovereign wealth funds

**Sovereign wealth funds** are special purpose government funds created to hold and manage assets. The Alberta Heritage Savings Trust Fund is perhaps the best known example in Canada, although other provinces have also established such funds. Internationally the funds set up by the governments of Norway, Saudi Arabia and certain other states with abundant but gradually depleting petroleum and natural gas resources are additional examples.

Resident sovereign wealth funds organized as separate institutional units and providing financial services to governments at market prices are classified as GBEs. If the services are provided at non-market prices, or if there is no separate unit, the funds are classified as part of the government units they serve.

### 9.2.2.8 Special purpose entities

**Special purpose entities** are units that are intentionally created as legal entities to fulfill specific and often temporary objectives. In the private sector they are sometimes used to isolate a firm from financial risk.

These entities can be established in countries other than those in which the parent companies are resident, to engage in international transactions. They might be holding companies or sales and administration companies, for example. In the international accounts, these entities are treated as direct investment enterprises if they meet the ten-per-cent ownership criterion (see Chapter 8).

Normally a company or a government will transfer assets to a special purpose entity for management or use by the special purpose entity to finance a large project, thereby achieving a narrow set of goals. They are often an integral part of public-private partnerships since they can be owned by one or more other entities.<sup>11</sup>

Resident special purpose entities functioning only in a passive manner relative to general government and carrying out fiscal and quasi-fiscal activities on the instruction of their parent government are not classified as separate institutional units. But resident special purpose entities acting independently, acquiring assets and incurring liabilities on their own behalf, are classified as separate institutional units.

### 9.2.2.9 Joint ventures

Sometimes public sector units enter into arrangements with private corporations or other public sector units to undertake activities jointly. The combined entity is called a **joint venture** and could be a market or non-market producer.

A joint venture involves the establishment of a corporation, partnership or other institutional unit in which the parties have shared legal control over the activities of the joint venture unit. As an institutional unit, the joint venture may enter into contracts in its own name and raise finance for its own purposes. Such a joint venture maintains its own accounting records.

To decide the sector classification of a joint venture in GFS it must be determined which unit has economic control. Given the nature of a joint venture—created legally with joint control—the principal question to be considered is whether the effective economic control implies a public or a private unit. If it operates as a non-market producer, then government is in effective control and it is classified as part of the general government sector. If it is a market producer, it is treated as a public or private corporation according to whether it is or is not controlled by a government unit. Normally, the percentage of ownership will be sufficient to determine control. If the public and private units own equal percentages, the other indicators of control must be considered.

### 9.2.3 Accounting rules<sup>12</sup>

With the exception of consolidation, the accounting rules of the GFS framework are the same as those of *SNA 2008*. There are also many similarities between the rules used in GFS and those applied by businesses and governments in their audited financial statements. The following, which is drawn from *GFSM 2014*, briefly describes the accounting rules governing topics such as the time of recording and the valuation of flows and stock positions.

The recording of economic events in GFS derives from general bookkeeping principles. **Double-entry recording** is used for all flows. In a double-entry system, each transaction gives rise to at least two equal-value entries, referred to as a **credit entry** and a **debit entry**. This principle ensures the totals of all credit entries and of all debit entries for all transactions are equal, thus permitting a check on consistency of GFS accounts for a unit, sub-sector or sector. Other economic flows also lead to debit and credit entries. These flows have their corresponding entries directly in changes in net worth. As a result, double-entry recording ensures the fundamental identity of a balance sheet, that is, the total value of assets equals the total value of liabilities plus net worth.

**A debit entry is an increase in an asset, a decrease in a liability or a decrease in net worth. A credit entry is a decrease in an asset, an increase in a liability or an increase in net worth.** Revenue entries result in an increase in assets or decrease in liabilities, which ultimately increase net worth so revenue entries are recorded as credits. Conversely, expense entries result in a decrease in assets or increase in liabilities, which ultimately decrease net worth so expense entries are recorded as debits. Other economic flows can increase or decrease assets and liabilities, thereby directly impacting net worth. In the case of the reclassification of assets or liabilities, a change

occurs in the stock positions of two categories of assets or liabilities with no impact on net worth (for example, an increase in one category of asset is paired with a decrease in another category of asset).

A balance sheet is a statement of the values of the stock positions of assets owned and of the liabilities owed by an institutional unit or group of units, drawn up in respect of a particular point in time. The fundamental identity of the balance sheet and of accounting in general is that the total value of the assets always equals the total value of the liabilities plus net worth. Use of double-entry recording ensures this identity is maintained. There are several possible combinations of debits and credits affecting assets, liabilities and net worth. For example, the purchase of a service by a general government unit with payment to be made in 30 days would be recorded on an accrual basis (see section 9.2.3.1) as an expense, or debit, and an increase in the liability, other accounts payable, a credit. Thus, net worth, through the expense, decreases by the same amount that liabilities increase, and assets are not affected. The subsequent payment at the end of the 30 days would be recorded on an accrual basis as a decrease in currency and deposits, a credit, and a decrease in other accounts payable, a debit. In this case, both assets and liabilities decrease by the same amount and net worth is unaffected.

### 9.2.3.1 Time of recording flows

One of the problems in determining the timing of transactions is the frequent existence of a long period between the initiation of an action and its final completion. For instance, many purchases of goods commence with the signing of a contract between a seller and a buyer, followed by the initiation and completion of production of the item ordered, shipment from the seller's location, arrival at the buyer's location, preparation and mailing of the invoice, receipt of the invoice, approval of payment, the beginning of interest accruing on a late payment or the expiration of a discount for prompt payment, signing a check for payment, mailing of the check by the buyer, receipt of the check by the seller, deposit of the check in the seller's bank and finally the payment of the check by the buyer's bank. Even then, the transaction may not be complete as there may be rights of return or warranty claims. Each of these distinct moments is to some extent economically relevant and may result in multiple transactions being recorded in GFS, but only one time can be attributed to each transaction.

Similarly, in analyzing government expense and acquisition of non-financial assets one can distinguish the day that a budget is voted on by the legislature, the day on which the ministry of finance authorized a department to pay out specified funds, the day a particular commitment is entered into by the departments, the day deliveries take place and finally, the day payment orders are issued and checks are paid. With regard to taxes, for example, important moments are the day or the period in which the liability arises, the moment the tax liability is definitively assessed, the day that it becomes due for payment without penalty and the day the tax is paid or refunds are made.

**In summary, when using the accrual basis of recording, transactions are recorded when economic ownership changes hands for goods, non-produced non-financial assets and financial assets and liabilities, when services are provided and for distributive transactions, when the related claims arise.** On the other hand, when using the cash basis of recording, flows are recorded when cash is received and disbursed.

**In the accrual basis of recording, flows are recorded at the time economic value is created, transformed, exchanged, transferred or extinguished. In other words, the effects of economic events are recorded in the period in which they occur, regardless of whether cash was received or paid, or was due to be received or paid.** Nevertheless, the time at which the economic events occur is not always clear. In general, the time attributed to events is the time at which economic ownership of goods changes, services are provided, the obligation to pay taxes is created, the claim to a social benefit payment is established or other unconditional claims are established.

Here are some examples.

- When a government business enterprise employee works for a month, the wages paid to the employee are recorded in that same month even though there may be a lag of a week or two before the full cash payment is made.
- When a government signs a contract to build a new airport over a period of several years, with progress payments made on an annual basis, the resulting payments are recorded year by year as the construction takes place.

- When a person pays the goods and services tax on a retail purchase in a given month, the resulting government revenue is recorded in that same month even though there may be a lag of some weeks before the government receives the tax revenue from the retailer that collected it.

### **9.2.3.2 Valuation**

All flows and stock positions are measured at market prices if at all possible. Market prices refer to current exchange value, that is, the value at which goods, services, labour or assets are exchanged or else could be exchanged for cash. Flows recorded in the Statement of Operations are valued at the market prices at which these flows take place, while flows recorded in the Statement of Sources and Uses of Cash are valued at the monetary value of the cash flows. Stock positions are valued at the market prices prevailing on the balance sheet date.

#### **9.2.3.2.1 Valuation of transactions**

Market prices for transactions are defined as amounts of money that willing buyers pay to acquire something from willing sellers. The exchanges are made between independent parties and on the basis of commercial considerations only, sometimes called “at arm’s length.” Thus, according to this definition, a market price refers only to the price for one specific exchange under the stated conditions. A second exchange of an identical unit, even under circumstances that are almost exactly the same, could result in a different market price. A market price defined in this way is to be clearly distinguished from a price quoted in the market, a world market price, a going price, a fair market price or any price that is intended to express the generality of prices for a class of supposedly identical exchanges rather than the price actually applying to a specific exchange. Furthermore, a market price should not necessarily be construed as equivalent to a free market price. In other words, a market transaction should not be interpreted as occurring exclusively in a purely competitive market situation. In fact, a market transaction could take place in a monopolistic, monopsonistic or any other market structure. Indeed, the market may be so narrow that it consists of a sole transaction of its kind between independent parties.

When a price is agreed to by both parties in advance of a transaction taking place, this agreed or contractual price is the market price for that transaction regardless of the prices that prevail when the transaction takes place.

Actual exchange values, expressed in monetary terms, are presumed to be the market prices in most cases. Transactions that involve dumping and discounting represent market prices. Transaction prices for goods and services are inclusive of appropriate taxes and subsidies. A market price is the price payable by the buyer after taking into account any rebates, refunds or adjustments from the seller.

Transactions in financial assets and liabilities are recorded at the prices at which they are acquired or disposed of. Transactions in financial assets and liabilities are recorded exclusive of any service charges, commissions, fees, taxes and similar payments for services that would be necessary to acquire the asset or incur the liability. These costs of ownership transfers are excluded regardless of whether these are charged explicitly, included in the purchaser’s price or deducted from the seller’s proceeds. This is because both debtors and creditors are expected to record the same amount for the same financial instrument. The commissions, fees and/or taxes are recorded separately from the transaction in the financial asset and liability, under appropriate categories of revenue or expense. The valuation of financial instruments, which excludes commission charges, differs from the valuation of non-financial assets (other than land) which includes any costs of ownership transfer. Costs of ownership transfer on land are typically included in the value of land improvements.

When market prices for transactions are not observable, such as for some barter or transfer-in-kind transactions, valuation according to market price equivalents provides an approximation to market prices. In such cases, market prices of the same or similar items, when such prices exist, provide a good basis for applying the principle of market prices. Generally, market prices are taken from the markets where the same or similar items are currently traded in sufficient numbers and in similar circumstances. If there is no appropriate market in which a particular good or service is currently traded, the valuation of a transaction involving that good or service may be derived from the market prices of similar goods and services by making adjustments for quality and other differences.

### 9.2.3.2 Valuation of stock positions

Stock positions are valued at market value, that is, as if they were acquired in market transactions on the balance sheet reference date. Market prices are readily available for assets and liabilities that are traded in active markets, most commonly certain financial assets and their corresponding liabilities. Market values of other assets and liabilities often need to be estimated in a more approximate manner.

Valuation according to market-value equivalent is needed for valuing assets and liabilities that are not traded in markets or are traded only infrequently. For these assets and liabilities, it is necessary to estimate values that approximate market prices.

Alternative valuation methods are also used in some circumstances. Market values, fair values and nominal values are distinguished from such notions as amortized values, face values, book values and historic cost.

Fair value is a market-equivalent value defined as the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's-length transaction. It thus represents an estimate of what could be obtained if the owner sold the asset or the debtor settled the liability.

Nominal value at any moment in time is the amount that the debtor owes to the creditor. It reflects the value of the instrument at creation and subsequent economic flows, such as transactions, valuation changes and other changes, such as exchange rate changes. For financial instruments other than debt securities, equity and financial derivatives, the lack of generally available market values means these values are estimated using the nominal value.

The amortized value of a loan reflects the gradual elimination of the liability by regular payments over a specified period of time. On the date of each scheduled payment, the amortized value is the same as nominal value, but it may differ from the nominal value on other dates because nominal value includes interest that has accrued.

Face value of a debt instrument is the amount of principal to be repaid at maturity. The use of face value as a proxy for nominal value in measuring the gross debt position can result in an inconsistent approach across all instruments and is avoided if possible. For example, the face value of deep-discounted bonds and zero-coupon bonds includes interest not yet accrued, which runs counter to accrual principles.

Written-down replacement cost is the current acquisition price of an equivalent new asset minus the accumulated consumption of fixed capital, amortization or depletion.

Book value generally refers to the value recorded in the entities' records. Book values may have different meanings because their values are influenced by accounting standards, rules and policies, as well as the timing of acquisition, company takeovers, frequency of revaluations and tax and other regulations.

Historic cost reflects the cost at the time of acquisition, but sometimes it may also reflect occasional revaluations.

The valuation of assets and liabilities based on accounting standards may not fully reflect the market prices of the assets and liabilities. In such cases, the source data for GFS are adjusted to reflect, as closely as possible, the market value of the assets and liabilities.

Some financial assets and liabilities, such as bonds, have a nominal value, face value as well as a market value. However, transactions in these assets and liabilities are valued at the prices actually paid. Similarly, to attain integration between stock positions and flows, the stock positions of debt securities are valued at their market value when recorded on the balance sheet.

### 9.2.3.3 Consolidation

Canada's federal, provincial, territorial and local governments engage in a lot of transactions with one another. For example, the federal government transfers billions of dollars every year to the provincial governments in support of their activities related to health, education and welfare. If total combined federal and provincial government activity was measured by simply adding together the federal and provincial expenditures, these transfer payments would be double-counted. A better picture of the combined activities of these governments is obtained by **consolidation**.

Consolidation is about combining the financial accounts of units **within** a government or combining the financial accounts of **different** governments to yield aggregate unduplicated financial statistics. In other words, it is presenting financial data for a number of government units as if they were one unit.<sup>13</sup> There are two basic dimensions of consolidation. One is the coverage—in other words, the choice of entities to be included in any given consolidation.

The other dimension is the accounting rules used to perform the consolidation, which involve eliminating the transactions between the units being consolidated in order to avoid double counting.

In consolidations, the transactions in financial assets and liabilities between two parties are eliminated. For example, if a municipal government purchased securities issued by its provincial government, both the acquisition of the financial asset and the incurrence of the liability would disappear in the consolidated financial statement. They would not disappear in the separate unconsolidated statements of the two governments.

Since government financial statements and reports are based on the organizational structures and the accounting and reporting practices of individual governments, there is a lack of consistency across jurisdictions and over time. For example, one government may discharge a function through a departmental structure, while another uses a Crown corporation, and another employs a board, a commission or an agency. Also, similar departmental titles within two different governments do not necessarily mean identical responsibilities and an individual government may regard a given operation as contributing to one or several functions. Organizational structures change as new programs are introduced, existing ones are amended and responsibilities are assigned or reassigned. Each Canadian government maintains its own accounts in a way that best serves its own purposes. The result is that the public accounts published by the different governments can be neither combined nor compared directly. The size of the surplus/deficit in one province cannot be meaningfully compared to the size of the surplus/deficit in another without appropriate adjustments being made to enable comparability.

The essential benefit of consolidation resides in inter-governmental comparability with the avoidance of double counting. The accounts, consolidated on the basis of the GFS accounting system by applying the same rules and procedures to the financial data of all governments, yield numbers that are comparable. With GFS consolidated statistics it is possible to compare the state of one province's finances with that of another. Similarly, it is possible to compare the state of the federal government's finances with those of any one province or with those of all provinces combined.

As an example, suppose the Government of Ontario paid \$1 billion directly for social services in the province, transferred \$500 million to the Ontario local governments in support of social services and the local governments in Ontario spent \$750 million on social services. Suppose further that in Alberta the provincial government did not spend any money directly on social services but did transfer \$600 million to the local governments and those governments then spent \$800 million on social services. To compare spending on social services in the two provinces it would be incorrect to simply add together provincial and municipal government expenditures. That approach would yield spending of \$2.25 billion in Ontario and \$1.4 billion in Alberta. The correct method would be to compare consolidated statistics for social spending in the two provinces: \$1.75 billion in Ontario and \$800 million in Alberta.

### 9.3 Defining the public sector

The GFS framework extends to both general government institutions and government-controlled business enterprises (GBEs), which together are known as the **public sector universe** (see Figure 9.2). It has three main sectors, general government, financial public corporations and non-financial public corporations. In the *SNA 2008* framework as a whole, which as discussed in previous chapters has six institutional sectors, there are separate sectors for financial and non-financial corporations. These two sectors include sub-sectors for the financial and non-financial public corporations (GBEs). The general government sector includes sub-sectors for the various government institutions and also a sub-sector for social security funds, which in Canada's case are the Canada and Quebec Pension Plans. This organizational framework is part of the Canadian Classification of Institutional Sectors 2012.<sup>14</sup>



**Figure 9.2**  
**Public sector universe**

Public sector									
General government					Government business enterprises (GBEs)				
Federal general government	Social security funds	Provincial and territorial general government	Local general government	Aboriginal general government	Federal government GBEs				
Federal ministries, departments, non-autonomous funds and organizations	Canada Pension Plan	Provincial and territorial ministries, departments, non-autonomous funds and organizations	Local municipalities, other local public administrations and non-autonomous funds and organizations	Aboriginal governments	Non-financial federal GBEs	Financial federal GBEs			
Federal autonomous funds and organizations	Quebec Pension Plan	Provincial and territorial autonomous funds and organizations	Local autonomous funds and organizations		Provincial and territorial government GBEs				
Federal non-autonomous pension plans		Provincial and territorial non-autonomous pension plans	School boards		Non-financial provincial and territorial GBEs	Financial provincial and territorial GBEs			
		Universities and colleges			Local government GBEs				
		Health and social service institutions							

Source: Statistics Canada.

### 9.3.1 Public sector universe

GFS record economic transaction flows and stocks for all resident institutional units controlled<sup>15</sup> directly or indirectly by resident government units, which is to say all units in the general government sector as well as resident public corporations. Statistics Canada maintains a **public sector universe** that is a database containing records for all of these institutional units.<sup>16</sup> The information in the database is updated annually and is a key element in understanding Canadian government finance statistics and reconciling them with accounts published by governments and their enterprises.

Information in the database for these public sector units includes the legal name, date of entry and/or exit from the public sector universe, province of residence, Standard Geographical Classification city code, institutional sector and industry (North American Industry Classification System) classification code.

Ministries, departments, agencies, boards, commissions, judicial authorities, legislative bodies and other entities that make up a government are not institutional units unless they have authority to own assets, incur liabilities and engage in transactions in their own right. Entities funded by appropriations made in accordance with a budget controlled by a legislature generally are not separate institutional units and are treated as a combined entity constituting a single institutional unit.

The public sector universe database is updated annually for the period from 2008 forward for the federal and provincial-territorial governments and the government business enterprises they control.<sup>17</sup> At the time of writing there were 5,316 entries in the database. Of these, 64 were federal government and 622 were provincial and territorial agencies, authorities, foundations, funds, tribunals, boards, councils, commissions, institutes, museums, corporations and the like, 35 were federal government business enterprises and 99 were provincial and territorial government business enterprises. There were 4,493 local government units. The Canada and Quebec Pension Plans accounted for the other units in the database.

It should be noted that units in the database can sometimes switch from one sub-sector to another when their characteristics change over time. This depends on a number of criteria. For example, the Crown corporation Atomic Energy of Canada Limited was treated as a federal GBE when it entered the database, but in 2012 it moved to the federal government sub-sector.

### 9.3.2 Sub-sectors of the general government sector

The sub-sectoring of the **general government sector** varies considerably among nations. Key factors are the size of a country, whether it is a federation or not and the manner in which its social security system is structured.

The general government sector as a whole consists of groups of resident institutional units classified by level of government. Non-market, non-profit institutions that are controlled by government units are also classified to this sector. The sector does not include market-oriented public corporations, even when all the equity of such corporations is owned by government units. Quasi-corporations that are owned and controlled by government units are also not part of this sector. However, unincorporated enterprises owned by government units that are not quasi-corporations are part of the general government sector.

There are distinct sub-sectors for federal general government, provincial and territorial general government, local general government, Aboriginal general government and social security funds. The Aboriginal general government sub-sector represents First Nations and other Aboriginal government institutional units. Non-profit institutions serving government are also included within each level of government.<sup>18</sup>

There is, of course, only one federal general government. There are ten provincial general governments, three territorial general governments and over 3,000 local general governments.

Canada has signed 22 self-government agreements recognizing a wide range of Aboriginal jurisdictions that involve 36 communities across Canada. Of those, 18 are part of a comprehensive land claim agreement.<sup>19</sup> However, the development of the Aboriginal general government sub-sector in GFS is a work in progress.

Within each of these levels of general government there are a number of institutional units, including one for the ministries, departments and non-autonomous funds and organizations of each of the governments. There are additional units for autonomous funds and organizations and for non-autonomous government pension plans.

Finally, the general government sector also includes sub-sectors for the Canada and Quebec Pension Plans, organized in the **social security funds sector**. Social security funds are recognized as distinct institutional units only if (i) they are separately organized from the other activities of government units, (ii) they hold assets and liabilities separately from other government units and (iii) they engage in financial transactions on their own account. These criteria are met by the CPP and QPP, but not by other social protection programs such as the federal Old Age Security program, provincial and territorial health care programs, the Employment Insurance program and various provincial workers compensation programs.

All of the individual institutional units in the general government sector are listed in Statistics Canada's online public sector universe.<sup>20</sup>

Figure 3.3 in Chapter 3 of this volume provides a decision tree for assigning institutional units to sectors. In particular, it shows how to distinguish government units from units belonging to the other five institutional sectors. It also shows how financial and non-financial corporations are allocated among the public, private and foreign-controlled sectors.

### 9.3.3 Government business enterprise sector

Annual statistics on the finances of the federal, provincial, territorial and local government business enterprises are available in Canada's GFS database (for more on this topic, see section 9.8). Federal and provincial government business enterprise statistics are derived using a modified version of the Statistics Canada Chart of Accounts (COA), a standardized tool for collection and dissemination of business statistics, and they are presented with the classification shown in Table 10-10-0023-01. The information is used as an input to the estimates of gross domestic product by income and expenditure, the supply and use tables as well as the financial and wealth accounts.

### 9.3.4 Some examples

As noted, the institutional units in the public sector universe are either part of the general government sector or part of the government business enterprise sector. The former are non-market producers and non-profit institutions serving government units, while the latter are market producers. In this section some examples will be presented.

#### 9.3.4.1 Canada Mortgage and Housing Corporation

The Canada Mortgage and Housing Corporation (CMHC) was founded in 1946 and has its headquarters in Ottawa. Its stated mandate is "to facilitate access to housing and contribute to financial stability in order to help Canadians meet their housing needs".<sup>21</sup> It is a Crown corporation of the federal government. The corporation is accountable to Parliament through a government minister and is governed by a board of directors and president appointed by the federal government.

CMHC states on its website that it earns revenue by selling mortgage loan insurance. It contributes to the improvement of housing conditions for First Nations people on reserves. It also has a securitization guarantee program that enables approved financial institutions to pool eligible mortgages and transform them into marketable securities that can be sold to investors, thereby generating funds that can be loaned to residential homeowners. The timely payment of interest and principal on these securities—*National Housing Act* Mortgage-Backed Securities issued by financial institutions and Canada Mortgage Bonds issued by the Canada Housing Trust—is fully guaranteed by the federal government, through CMHC. The corporation also collaborates with other organizations to provide affordable housing to low-income households. Finally, CMHC conducts economic research related to the Canadian housing market and provides information to Canadians to assist their decision-making.

CMHC is a market producer with \$252 billion in assets and \$232 billion in liabilities.<sup>22</sup> It has been in the public sector universe for a long time and it is part of the federal government business enterprises sub-sector. Its NAICS classification is "Other direct insurance (except life, health and medical) carriers".

#### 9.3.4.2 Hydro-Québec

Hydro-Québec is a public utility that generates, transmits and distributes electricity in Quebec. It is headquartered in Montreal and was created in 1944 by expropriating private companies. The Crown corporation has invested heavily in hydro-electric projects such as the Churchill Falls and James Bay projects. It supplies Quebec's power needs and also exports power to the United States. The Government of Quebec is the sole shareholder in the corporation.

Hydro-Québec had assets of \$75 billion and liabilities of \$55 billion in 2016.<sup>23</sup> Its revenue was \$13 billion and its expenses were \$8 billion. It paid out dividends of \$2.4 billion in 2016.

Hydro-Québec is a market producer and has been in the public sector universe for a long time. It is part of the provincial and territorial government business enterprises sub-sector. Its NAICS classification is "Electric bulk power transmission and control".

#### 9.3.4.3 Agricultural Implements Board of Saskatchewan

The Agricultural Implements Board of Saskatchewan is a regulatory agency established to implement and oversee the *Agricultural Implements Act* of Saskatchewan. It is headquartered in Regina.

The *Agricultural Implements Act* regulates the sale, lease and distribution of agricultural implements or parts in Saskatchewan. Dealers are legally required to make available the parts and service needed by farmers for their implements. The Act regulates minimum terms of warranties received from dealers selling or leasing equipment, sales contracts for new and used agricultural implements, the terms for leasing implements from financial institutions, guidelines for emergency parts and service, the means to obtain compensation for loss or damages because of unavailability of parts or non-fulfillment of warranty and the licensing of dealers and registering of distributors. Farmers not receiving parts or services in a timely manner may be awarded compensation through the Agricultural Implements Compensation Fund.<sup>24</sup>

The board is part of the provincial and territorial general government sub-sector. Its NAICS classification is “Other provincial and territorial public administration”. The board is not a GBE because it is not a market producer, does not compete in the marketplace and does not get its primary income from market activity.

#### 9.3.4.4 Canadian Broadcasting Corporation

The Canadian Broadcasting Corporation (CBC) is a federal Crown corporation that was founded in 1936 and has its headquarters in Ottawa. It describes the services it provides to Canadians in this way: “With services reaching from coast to coast to coast, CBC/Radio-Canada has Canadians covered for information, enlightenment and entertainment. CBC/Radio-Canada services are there on the leading edge with our radio, television and digital platforms including mobiles. We share Canada’s journey minute by minute and day by day, with the news, content and commentary that Canadians need today, tomorrow and in the future.”<sup>25</sup>

The corporation is accountable to Parliament through a government minister and is governed by a board of directors and president appointed by the federal government.

For its fiscal year 2016-17 the CBC reported revenue from advertising and other sources of \$301 million plus funding from the federal government of \$1,099 million. Largely because it is so dependent on Parliamentary appropriations, the corporation is not classified as a government business enterprise but rather is an institutional unit within the federal government sub-sector.

#### 9.3.4.5 Embassies and military bases abroad

Canada has embassies and military bases in other countries. These are considered to be part of the federal government institutional unit. The embassies and other such territorial enclaves representing other countries in Canada are considered to be institutional units in the non-resident sector.

## 9.4 Statement of operations

In the GFS presentation of the public sector accounts, the gross operating balance—a concept similar to what is popularly known as the surplus or deficit—is determined as the difference between two other concepts. The first, **revenue**, is defined as “an increase in net worth resulting from a transaction”. The second is **expense** which is defined as “a decrease in net worth resulting from a transaction”. This is illustrated for the federal government in Table 10-10-0016-01.

### 9.4.1 Revenue

#### 9.4.1.1 Government revenue components

The broad categories of revenue identified in Canada’s system of government finance statistics are:

- taxes,
- social contributions,
- grants, and
- other revenue.

Taxes are compulsory unrequited levies imposed on other institutional units by governments while social contributions are compulsory but requited levies. Grants are non-compulsory transfers from other institutional units. The residual category 'other revenue' includes property income, revenue from sales of goods and services and some other typically smaller revenue components. All components are recorded on an accruals basis if possible.

In Canada, compulsory levies and grants dominate over other revenue sources for general government units. For government business enterprises, sales of goods and services and property income are the primary revenue sources.

The Canadian GFS classification of revenue is based on the one that is recommended in the *GFSM 2014*. The classification categorizes taxes according to the base upon which the tax is levied.<sup>26</sup>

### 9.4.1.2 Taxes

Government institutional units are the only ones that can impose taxes within an economy. The revenues from these taxes are typically central to the financial status of a government. The tax burden—defined as total revenue from all taxes, often expressed as a ratio to gross domestic product—is a key fiscal indicator and its trend has a lot to say about the evolving power and role of a government.

As seen in previous chapters, taxes in *SNA 2008* are classified according to their role in economic activity. There are three broad categories: taxes on production, products and imports, current taxes on income and capital taxes.

In GFS there are six broad kinds of taxes:

- taxes on income, profits and capital gains,
- taxes on payroll and workforce,
- taxes on property,
- taxes on goods and services,
- taxes on international trade and transactions, and
- other taxes.

The first of these, comprising the personal and corporate income taxes, accounted for over half of total Canadian tax revenue in 2009. Taxes on payroll and workforce are not of major importance in Canada, in part because they provide a disincentive for employment.<sup>27</sup> Taxes on property are most significant for local government administrations. They include recurrent taxes on immovable property (land, buildings and other structures) or net wealth, special assessments, business property taxes, payments in lieu of taxes and non-recurrent taxes on property such as estate, inheritance and gift taxes. Taxes on goods and services are “taxes that become payable as a result of the production, sale, transfer, leasing, or delivery of goods and rendering of services, or as a result of their use for own consumption, or own capital formation.”<sup>28</sup> In Canada they include the goods and services tax, the harmonized sales tax, the retail sales tax, excise taxes primarily on liquor, tobacco and gasoline, and taxes on specific services such as air travel. Also included here are taxes on permission to use goods, such as motor vehicle licences, or to perform activities, as well as the profits of fiscal monopolies.<sup>29</sup> Overall, taxes on goods and services accounted for about one-quarter of total tax revenue in 2009. Finally, taxes on international trade and transactions consist mainly of Customs and other import duties. These tax revenues are small and generally declining as a result of the various ‘free trade’ initiatives in recent decades.

As for most other concepts in GFS, tax revenues are measured on an **accrual basis**, meaning that flows are recorded at the time economic value is created, transformed, exchanged, transferred or extinguished. As a practical matter, tax revenues are usually measured, in the first instance, at the time the funds appear in government bank accounts and adjustments must then be made to adjust their timing to an accrual basis. Note that for taxes to accrue they must be paid. Taxes owed but never collected are not considered to have accrued. Also, taxes collected but subsequently refunded are not considered to have accrued.

Tax revenues may be transferred from one government to another, but they are attributed to the government unit that exercises authority to impose the tax and has final discretion to set and vary the tax rate. For example, the federal and provincial portions of the personal income tax and the harmonized sales tax are attributed separately to each government.

#### 9.4.1.3 Social contributions

As mentioned previously, while taxes are compulsory and unrequited, **social contributions** are compulsory and requited levies. In other words, whereas taxes must be paid and no explicit benefits are receivable as a quid pro quo, social contributions must also be paid but are directly associated with the receipt of specific social benefits.

In Canada the main social contributions are those associated with the federal employment insurance program, the Régime Québécois d'assurance parental and the provincial and territorial workers compensation programs, which are funded by employee and employer social contributions. Employer and employee contributions to the Canada Pension Plan and Le Régime de rentes du Québec are also treated as social contributions.<sup>30</sup>

#### 9.4.1.4 Grants

**Grants** are a residual transfer category of revenue consisting of amounts receivable from other resident or non-resident government units or international organizations that do not meet the definition of taxes, subsidies or social contributions. They can be either current or capital transfers.<sup>31</sup>

Canadian governments do not often receive grants from non-resident government units or international organizations. Rather, most grants recorded in the public sector accounts are transfers between levels of government within Canada. These grants disappear when the accounts of the different levels of government are consolidated, but they account for a substantial proportion of total government revenues for individual provincial and territorial governments and local governments.

In the Canadian federation, it has long been the practice that higher levels of government, given their broader tax bases, raise revenues that are then transferred to lower level governments. More specifically, the federal government transfers large amounts of money to the provincial and territorial governments every year and the provincial governments in turn make transfers to the local governments within their jurisdictions. The federal government also makes smaller transfers to local and Aboriginal governments.

In fiscal year 2008–09 the federal government provided support in the form of transfer payments to provinces and territories totalling \$59,747 million.<sup>32</sup> The largest transfer by far was the Canada Health Transfer, totalling \$20,915 million. Equalization and territorial transfers accounted for \$16,332 million and the Canada Social Transfer \$9,470.

The Canada Health Transfer supports health care for Canadians and is calculated for each province and territory on a per capita basis and grown over time in line with a three-year moving average of nominal gross domestic product. Equalization transfers address fiscal disparities among provinces and are calculated using a rather complicated formula that aims at determining by how much a province's "fiscal capacity" is below the average capacity of all provinces. This program is also grown over time in line with a three-year moving average of nominal gross domestic product. The Canada Social Transfer supports post-secondary education, social assistance and early childhood development and is calculated on a per capita basis somewhat like the Canada Health Transfer. Finally, Territorial Formula Financing Transfers are broadly similar to Equalization transfers, but are directed to the three territories rather than the ten provinces. These transfers account for approximately four-fifths of territorial revenues.

As for transfers from provincial to local governments, "... the province establishes local governments and their geographic boundaries, mandates their expenditure responsibilities, sets standards for local service provision even for services that are not mandated, limits their own-source revenues largely to property taxes and user fees, sets the rules around levying the property tax, requires that municipalities not incur a deficit in their operating budget and determines the extent to which municipalities can borrow to meet capital requirements. At the same time, the province influences municipal expenditures through its grant programs."<sup>33</sup>

### 9.4.1.5 Other revenue

Governments also receive revenue from a variety of other sources. They receive property income of various kinds including interest on loans, bonds and deposits, dividends from government business enterprises and, in some cases, private enterprises, rent on land and royalty revenue from oil and gas mining, forestry, water power and mineral mining operations. They also obtain revenue as a result of sales of goods and services. For example, educational institutions typically charge tuition fees, municipal governments usually derive revenue from parking and rental fees, provincial governments get revenue from drivers' license and court fees and the federal government receives passport fees and museum admission fees. Finally, governments also get relatively modest revenue from fines, penalties and forfeits.

### 9.4.1.6 Revenue by government sub-sector

The same revenue categories are used in GFS for each of the government sub-sectors in order to permit comparisons to be made. Table 10-10-0016-01 shows the revenue estimates for the federal government. Tables 10-10-0017-01, 10-10-0018-01, 10-10-0019-01 and 10-10-0020-01 show the corresponding statistics for the provinces, broken out for the provincial and territorial governments, the municipalities and other local administrations, the health and social security institutions and the education institutions. Table 10-10-0022-01 shows the revenue statistics for the Canada and Quebec Pension Plans.

As explained in section 9.2.3.3, consolidation avoids double counting and is important because a substantial share of revenues received by the provinces and territories are transfer expenses for the federal government, and a significant share of local government revenues are transfer expenses from both the federal government and the provincial and territorial governments.

## 9.4.2 Expenses

### 9.4.2.1 Government expense components

Governments influence the economy through both their revenue and spending policies. Spending is recorded in GFS in a number of program expense categories and in expenditures on non-financial capital assets. Total outlays—the sum of program expenses and capital expenditures—are widely used as a measure of the size of government, especially when expressed as a ratio to gross domestic product to normalize for the fact that government spending tends to rise in concert with inflation and population growth. However, it should be noted that the total-outlays-to-gross-domestic-product ratio includes a variety of transfer payments in the numerator but not in the denominator. For some purposes a better measure of the size of government is total outlays excluding transfers.

The broad categories of expense in Canada's system of government finance statistics are:

- compensation of employees,
- use of goods and services,
- consumption of fixed capital,
- interest,
- subsidies,
- grants,
- social benefits, and
- other expenses.

The Canadian GFS classification of expense is similar to that recommended in the *GFSM 2014*. The classification categorizes expenses according to the associated economic purpose.<sup>34</sup>

### 9.4.2.2 Compensation of employees

As discussed in Chapters 3, 4, 5 and 8, **compensation of employees** is “the total remuneration, in cash or in kind, payable to an individual in an employer-employee relationship in return for work performed by the latter during the reporting period.” (*GFSM 2014*, p. 115) All government units pay compensation to employees and this is a significant component of government expenses in Canada.

Table 9.1 provides a breakdown of compensation of employees by government sub-sector, both consolidated and unconsolidated, in 2009.

**Table 9.1**  
**Canadian government finance statistics, compensation of employees**

	<b>2009</b>
	millions of dollars
<b>Government sub-sector</b>	
Consolidated general government of Canada	196,760
Unconsolidated provincial and territorial government administration	28,042
Newfoundland and Labrador	842
Prince Edward Island	392
Nova Scotia	1,023
New Brunswick	1,977
Quebec	7,178
Ontario	7,351
Manitoba	1,106
Saskatchewan	1,098
Alberta	2,784
British Columbia	3,083
Yukon	375
Northwest Territories	385
Nunavut	448
Unconsolidated health and social services	51,860
Newfoundland and Labrador	1,234
Prince Edward Island	2
Nova Scotia	1,763
New Brunswick	1,433
Quebec	12,284
Ontario	17,172
Manitoba	2,502
Saskatchewan	2,182
Alberta	6,673
British Columbia	6,438
Yukon	25
Northwest Territories	152
Nunavut	0
Unconsolidated universities and colleges <sup>1</sup>	17,061
Newfoundland and Labrador	345
Prince Edward Island	91
Nova Scotia	524
New Brunswick	182
Quebec	3,643
Ontario	6,057
Manitoba	541
Saskatchewan	685
Alberta	2,450
British Columbia	2,472
Yukon	22
Northwest Territories	26
Nunavut	23
Unconsolidated school boards <sup>2</sup>	36,662
Newfoundland and Labrador	805
Prince Edward Island	170
Nova Scotia	906
New Brunswick	0
Quebec	7,197



**Table 9.1**  
**Canadian government finance statistics, compensation of employees**

	<b>2009</b>
	millions of dollars
Ontario	15,609
Manitoba	1,491
Saskatchewan	1,359
Alberta	4,707
British Columbia	4,377
Yukon	0
Northwest Territories	41
Nunavut	0
Unconsolidated municipalities and other local public administrations	27,281
Newfoundland and Labrador	204
Prince Edward Island	33
Nova Scotia	338
New Brunswick	262
Quebec	5,269
Ontario	13,213
Manitoba	726
Saskatchewan	671
Alberta	3,174
British Columbia	3,230
Yukon	30
Northwest Territories	50
Nunavut	81

Data are for the fiscal year with its end closest to December 31.

1. Universities and colleges includes all Canadian universities and colleges whether they are controlled by governments or not. In Canada, the universities and colleges that are not controlled by government account for a very small proportion of the activity.

2. There are no school boards in New Brunswick, Yukon and Nunavut.

**Source:** Statistics Canada Tables 10-10-0015-01, 10-10-0017-01, 10-10-0018-01, 10-10-0019-01, and 10-10-0020-01.

### 9.4.2.3 Use of goods and services

The **use of goods and services** expense category consists of the value of goods and services that are purchased by government sector institutional units for use in the production of market and non-market goods and services. The category excludes consumption of fixed capital, use of goods and services in own-account capital formation (which is recorded as part of the acquisition of non-financial assets) and goods purchased by government and distributed without transformation (which are recorded as transfers in kind).

Consistent with accrual accounting principles, the value of use of goods and services is recorded when the goods and services are actually used, rather than when they are acquired or paid for. For services, there is a closer correspondence between payments made and services received, while for goods, purchased items often remain in inventory for a significant period of time before they are used. Accordingly, the value of goods used is estimated by taking account of inventory changes in the following manner:

- opening stock of inventories
- plus: purchases of goods
- minus: goods used in own-account capital formation
- minus: goods distributed directly as transfers in kind
- plus: holding gains/losses on goods owned
- plus: other volume changes affecting goods owned
- minus: closing stock of inventories
- equals: use of goods

Use of goods and services is recorded on a gross basis, which means revenue received as a result of the sale of goods and services is not deducted (it is recorded as a revenue item).

The services provided by contract employees, consultants and the like, where an employer-employee relationship does not exist, are included in the use of goods and services category rather than in compensation of employees. Also, goods and services used by employees to carry out their jobs or otherwise closely associated with the requirements of their jobs are treated as use of goods and services. Examples include tools and equipment, special clothing such as uniforms, special meals necessitated by working conditions or travelling and medical examinations required because of the nature of the job. Likewise goods and services purchased for use in producing non-market services, such as food, clothing and blankets bought for use in relief operations after a natural disaster at home or abroad, are treated as use of goods and services rather than as transfers in kind. However, if the goods are transferred directly from inventory without there being any associated relief operation they are classed as social benefits transfers in kind.

Goods purchased for use as fixed assets or valuables, or for use in own-account capital formation, are classified as acquisitions of fixed assets rather than as use of goods and services. Similarly goods acquired to increase inventories of materials and supplies, work in progress, finished goods and goods for resale are included in changes in inventories, a type of non-financial asset, not as use of goods and services.

GFS does not implement 'financial intermediation services indirectly measured' (FISIM) as in *SNA 2008*. Accordingly the imputed service fees associated with borrowing from and lending to financial institutions are not recognized in the use of goods and services. Rather, all interest is recognized as a separate expense category.

#### 9.4.2.4 Consumption of fixed capital

**Consumption of fixed capital** is recognized as an imputed expense item in GFS, just as in *SNA 2008*.<sup>35</sup> The concept is exactly the same in the two systems. However, in GFS consumption of fixed capital is divided into two portions, one of which is the consumption of fixed capital related to the production of capital on own account, which is recorded as part of the cost of acquisition of fixed assets, and the other being economic depreciation on the institutional unit's existing fixed capital, which is treated as a consumption of fixed capital expense. As in business accounting, the 'depreciation' that is sometimes recognized in official government accounting statements may differ considerably from consumption of fixed capital as measured in GFS and *SNA 2008*. The former is typically a backward-looking concept involving the 'writing off' of past capital expenditures whereas the latter is a more forward-looking concept related to the useful future life of a capital asset.

#### 9.4.2.5 Interest expense

As noted in section 9.4.2.3, the financial service component of **interest**, known as FISIM in *SNA 2008*, is not recognized in GFS. Rather, all interest obligations accrued by a government institutional unit are recorded under the expense category 'interest'.

Government interest payments can take a variety of forms depending on the specifications of the associated financial instruments. Interest can accrue on deposits, debt securities, loans and other accounts receivable. The interest may take the form of a coupon on a debt security or it may be implicit within the original price of the instrument, as for a deep-discount bond. It may be fixed when the initial debt contract was undertaken or it may vary over time as in index-linked securities.

As with some other expense categories, interest paid by one government to another appears in the GFS accounts of the two governments when viewed on their own, but disappears when the accounts are consolidated.

#### 9.4.2.6 Subsidies

In GFS as in *SNA 2008*, "subsidies are current unrequited transfers that government units make to enterprises on the basis of the level of their production activities or the quantities or values of the goods or services they produce, sell, export, or import." (*GFSM 2014*, p. 130). They are discussed in Chapter 4.

**Subsidies** are paid to producers, not final consumers, although households may receive subsidies in their capacity as producers. They may be paid on the production or sale of products, per unit or per dollar of value, or they may be paid on production, as with subsidies on payroll or pollution reduction. They do not include capital grants or other forms of capital transfers. Governments sometimes use the term subsidies to refer to expenses that are treated as social benefits in GFS.

### 9.4.2.7 Grants

Grants are “transfers payable by government units to other resident or non-resident government units or international organizations and that do not meet the definition of a tax, subsidy, or social contribution.” (*GFSM 2014*, p. 134). They are discussed from the revenue perspective in section 9.4.1.4.

### 9.4.2.8 Social benefits

According to GFS, “**Social benefits** are current transfers receivable by households intended to provide for the needs that arise from social risks, for example, sickness, unemployment, retirement, housing, education or family circumstances. These benefits are payable in cash or in kind to protect the entire population or specific segments of it against certain social risks. Social risks are events or circumstances that may adversely affect the welfare of the households concerned either by imposing additional demands on their resources or by reducing their income. Examples of social benefits are the provision of medical services, unemployment compensation and social security pensions.” (*GFSM 2014*, p. 134).

Social benefits are classified in three categories based on the type of social protection arrangement governing their payment.

- Social security benefits consist of social benefits paid in cash or in kind to households by social security schemes. Examples in Canada are benefits paid under the Employment Insurance program and under provincial and territorial workers’ compensation programs.
- Social assistance benefits are social benefits paid in cash or in kind to households to meet needs similar to those associated with social security benefits, but which are not made under a social security scheme. Examples in Canada include Old Age Security benefits, Guaranteed Income Supplement benefits, family allowance and child care benefits and veterans’ benefits.
- Employment-related social benefits are non-pension social benefits paid in cash or in kind by government institutional units to their own employees or eligible survivors. Examples of such benefits include sick pay, maternity leave and family, education and other allowances.

### 9.4.2.9 Other expense

The remaining, residual category of expense includes property expenses other than interest payments, transfers other than those classified to subsidies, grants and social benefits and amounts payable in respect of premiums, fees and claims related to non-life insurance and standardized guarantees.

When the owners of financial assets or natural resources make those assets available to other institutional units, they expect compensation in the form of interest, dividends, rent or some other form of investment return. This is discussed extensively in Chapter 6 and to an extent in Chapter 8. In the GFS presentation, interest is a separate category of expense and the other types of property expense are included in the ‘other expense’ category.

## 9.4.3 Expenses by function of government

Chapter 3 presents a number of classification systems that are used in *SNA 2008*. One is the Classification of the Functions of Government (COFOG), developed by the Organization for Economic Cooperation and Development and discussed in section 3.4.4.3. The Canadian classification of the functions of government (CCOFOG) is shown in Table 9.6. The classification breaks down government expenditures according to their broad purpose. The following ten high-level divisions are identified:

- general public services
- defence,
- public order and safety,
- economic affairs,
- environmental protection,
- housing and community amenities,

- health,
- recreation, culture and religion,
- education, and
- social protection.

CCOFOG provides a consistent way to compare government expenditures across jurisdictions and through time. The aim is to classify expenditures according to their function, or socioeconomic objective, reflecting the aims the associated government wants to achieve.

As a practical matter individual governments, be they federal, provincial, local or Aboriginal, typically report their expenditures by department or agency, and within these structures by economic class of expenditure (compensation of employees, use of goods and services, social benefits, etcetera). This means they are defined, in part, by the organizational structure which may change over time and which is unlikely to line up well with the organizational structures of other governments. This issue is important within Canada and it is especially acute when it comes to comparing government expenditures across different countries. CCOFOG statistics circumvent these problems of comparability by providing a single, purpose-oriented classification for the expenditures of all jurisdictions and holding this classification constant through time.<sup>36</sup>

Canada's CCOFOG statistics are shown in Table 9.2 for the year 2009. For the consolidated total Canadian general government sector, the largest functional expenditure categories are social protection (transfers related to sickness, disability, old age, family and children, unemployment, housing and other matters) and health, accounting for 23.7 and 23.4 per cent of total expenditures respectively. General public services (executive and legislative bodies, financial and fiscal affairs, external affairs, foreign economic aid, public debt transactions and some other sub-categories) and education are the next largest categories, accounting for 16.7 and 13.5 per cent of expenditures respectively. The federal government's expenditure breakdown shows a high degree of specialization in three functional categories: general public services, social protection and to a much lesser extent health. The consolidated provincial-territorial and local government sector concentrates on health- and education-related expenditures, as well as social protection and general public services.

**Table 9.2**  
**Canadian government finance statistics, outlays, classification of functions of government (COFOG)**

	2009	
	millions of dollars	percentage of total
<b>Consolidated Canadian general government</b>		
Total	568,540	100.0
General public services	94,844	16.7
Defence	16,357	2.9
Public order and safety	28,891	5.1
Economic affairs	50,243	8.8
Environmental protection	10,488	1.8
Housing and community amenities	8,830	1.6
Health	132,866	23.4
Recreation, culture and religion	14,478	2.5
Education	76,554	13.5
Social protection	134,989	23.7
<b>Federal government</b>		
Total	259,692	100.0
General public services	86,477	33.3
Defence	16,639	6.4
Public order and safety	9,695	3.7
Economic affairs	18,770	7.2
Environmental protection	2,277	0.9
Housing and community amenities	3,821	1.5
Health	29,981	11.5
Recreation, culture and religion	4,711	1.8
Education	4,047	1.6
Social protection	83,274	32.1
<b>Consolidated provincial-territorial and local governments</b>		
Total	389,257	100.0
General public services	47,189	12.1
Defence	0	0.0
Public order and safety	20,802	5.3
Economic affairs	38,663	9.9
Environmental protection	8,356	2.1
Housing and community amenities	7,147	1.8
Health	127,407	32.7
Recreation, culture and religion	10,155	2.6
Education	73,096	18.8
Social protection	56,442	14.5

Data are for the fiscal year with its end closest to December 31.

Source: Statistics Canada Tables 10-10-0024-01 and 10-10-0005-01.

It is possible, in principle, to cross-classify government expenditures using economic and functional classifications. Thus, for example, it would be of interest to present statistics showing how expenditures on social protection are broken down across compensation of employees, use of goods and services, grants, social benefits and other expenses, or how expenses in the form of compensation of employees are broken down across general public services, defence, public order and safety and the other functional categories. This is on Statistics Canada's agenda for the future.

#### 9.4.4 Transactions in assets and liabilities

The GFS accounting system includes net transactions in assets and liabilities—that is, acquisitions and disposals of assets and incurrence and repayments (or 'redemptions' or 'liquidations' or 'extinguishments') of liabilities—as well as transactions in goods and services. Both sets of transactions aggregate to the change in net worth as a result of transactions during the accounting period. This gives rise to a statistical discrepancy, since the equality between the two concepts—one based on asset and liability transactions and the other based on goods and services transactions—is unlikely to be born out in imperfect statistical measures.

Transactions in assets and liabilities are measured at market prices. They are valued on an accrual basis, recorded at the time economic value is created, transformed, exchanged, transferred or extinguished. For non-financial assets this means when ownership is obtained or relinquished. For financial assets and liabilities this usually means when a contract is signed or when money or some other financial asset is paid by the creditor to the debtor or repaid by the debtor to the creditor. It is important that valuation and timing be reflected in the same manner in the accounts of the creditor and debtor if at all possible. If there is an irreconcilable disagreement, the date on which the creditor records the transaction is deemed in GFS to be the date of record for both.

Net acquisitions of non-financial assets are calculated as acquisitions minus disposals minus consumption of fixed capital. Transactions in financial assets and liabilities are presented in the accounts as the net acquisition of each asset category and the net incurrence of each liability category.

## 9.5 Statement of other economic flows

### 9.5.1 Other economic flows

**Other economic flows** are changes in the value or volume of assets or liabilities **that do not result from transactions**. Recall that transactions are economic interactions between two institutional units that take place by mutual agreement. They include both exchange and transfer events.

As discussed in other chapters of this book (Chapters 3, 6 and 8 in particular) there are two major categories of other economic flows. **One is holding gains and losses** that result from valuation changes resulting from market price fluctuations without association with specific transactions. The other category is **changes in the volume of assets and liabilities** that result from windfall gains or losses, other than holding gains and losses that are unconnected to specific transactions.

### 9.5.2 Holding gains and losses

In the case of holding gains and losses, the value of an institutional unit's assets or liabilities is modified because the associated market values change without any associated transactions. A holding gain or loss accrues continuously, purely as a result of holding an asset or liability over time without transforming it in any way. Holding gains and losses can apply to virtually any type of asset or liability, and they may accrue on an asset held for any length of time during the reporting period.

A prominent example is holding gains or losses due to changes in the exchange value of the Canadian dollar vis-à-vis other currencies. A public sector institutional unit might have assets or liabilities denominated in some currency other than the Canadian dollar. Since the GFS accounts are compiled in Canadian dollar terms, the value of these assets or liabilities on the balance sheet must be converted. If the exchange rate changes, so will the value of these assets or liabilities even if there are no transactions in these assets or liabilities during the period. Another example would be if an institutional unit held shares in a Canadian corporation that traded on the Toronto Stock Exchange. The market price of those shares would typically fluctuate from day to day and this would imply holding gains and losses even if the institutional unit neither purchased nor sold any shares during the accounting period.

### 9.5.3 Changes in the volume of assets and liabilities

Changes in the volume of assets and liabilities occur because of certain specific events. One example would be a reduction in the value of assets due to their partial or total destruction by a natural disaster such as an earthquake, flood or ice storm. Another example would be the reduction in the value of assets that results from debt write-offs as a result of the bankruptcy of one of an institutional unit's debtors, or due to theft. In neither example would there be any associated transaction.

Changes in the volume of assets and liabilities can also occur due to **obsolescence** or **technological changes** that alter the value of existing assets.

A further example of changes in the volume of assets and liabilities is differences in the value of certain types of assets or liabilities from one accounting period to another as a result of **classification changes**. A reclassification rearranges assets and liabilities within the public sector or between the public and private sectors without adding to or subtracting from total net worth. For example, an institutional unit in the general government sector might be

reclassified to the government business enterprise sector if it began earning sufficient revenues from the sale of goods and services.

#### 9.5.4 Statement of other economic flows for Canada

Statistics Canada has not yet developed the component parts of the GFS 'other economic flows' tables. However, total other economic flows for each sector and sub-sector can be derived by taking the closing balance sheet, subtracting the opening balance sheet and subtracting the net effect of transactions on the balance sheet.

### 9.6 Public sector balance sheets

#### 9.6.1 Balance sheet overview

In GFS, the balance sheet for an institutional unit or sector is a statement of the values of stock positions of assets owned and of liabilities owed at a particular point in time. In a macroeconomic balance sheet, a distinction is made between non-financial assets, financial assets, liabilities and net worth. The net worth of an institutional unit or sector is measured as the total value of assets minus the total value of liabilities.

In any given accounting period, such as a quarter or a year, a balance sheet is typically compiled at the end of each reporting period, which is also the beginning of the next reporting period. The ending stocks of the reporting period are calculated as stocks of the beginning of that reporting period plus the net effect of transactions as well as the net effect of other economic flows during the period. This is illustrated in Figure 9.1.

#### 9.6.2 Components of the balance sheet

A balance sheet can be compiled for the general government sector or one of its sub-sectors, for individual government business enterprises and for the public sector as a whole. In the GFS framework, statistics for the general government sector and each of its sub-sectors are presented on a consolidated basis.

As mentioned earlier, a balance sheet consists of non-financial assets, financial assets, liabilities and net worth. Non-financial assets include produced assets (such as buildings, roads, airports, bridges, dams and other structures, weapons systems, machinery and equipment, inventories and valuables) and non-produced assets (such as natural resources, contracts, electromagnetic spectrum and goodwill). Financial assets consist of financial claims plus gold bullion held by the monetary authorities as a reserve asset. Examples of financial assets and liabilities include currency and deposits, loans, bonds and equity.

Components of the balance sheet are valued at current market prices where possible. If market price valuations are not directly measurable, valuations are imputed using different methods such as (i) accumulating and revaluing transactions or (ii) estimating the present value of future returns. The nominal value of financial instruments is also useful when market prices are not available. Due to the lack of information about current market values for aged structures and certain types of machinery and equipment, in these cases the **perpetual inventory method**, as described in section 7.5.1 of Chapter 7, is used. In other cases, such as for timber, sub-soil minerals and intangible assets, the **estimated present value** of the stream of expected future economic benefits is used to estimate current market value.

Tables 10-10-0016-01 through 10-10-0020-01 and 10-10-0022-01 show the balance sheets for the federal government, the provincial and territorial governments, the municipal and local governments, the health and social service institutions, the education institutions and the Canada and Quebec Pension Plans.

As seen in Table 9.3, in 2009 the consolidated Canadian general government sector had a negative net worth of about -\$106 billion and a net financial worth (excluding non-financial assets from consideration) of -\$876 billion. The total provincial and territorial general government sector had positive net worth of \$359 billion and negative net financial worth of -\$342 billion.

**Table 9.3**  
**Canadian government finance statistics, statement of operations and balance sheet, consolidated**

	2009
	millions of dollars
<b>Government sub-sector</b>	
<b>Consolidated general government</b>	
Gross operating balance	-13,401
Net operating balance	-61,955
Revenue	554,576
Expense	616,531
Net worth	-105,661
Non-financial assets	770,703
Net financial worth	-876,364
<b>Consolidated provincial-territorial and local general government</b>	
Gross operating balance	21,168
Net operating balance	-19,244
Revenue	409,862
Expense	429,105
Net worth	359,083
Non-financial assets	700,955
Net financial worth	-341,872

Data are for the fiscal year with its end closest to December 31.

Source: Statistics Canada Table 10-10-0147-01.

## 9.7 Statement of sources and uses of cash

As was emphasized in section 9.2.3.1, the main GFS statements are measured on an accrual basis. This means the effects of economic events are recorded in the period in which they occur, regardless of whether cash was received or paid, or was due to be received or paid. However, tax revenues may accrue in one period and be paid in some subsequent period. Goods and services may be purchased in one period, received in another and paid for in yet another. Some expenditures may be recorded as having been accrued even though no cash payments were made or will ever be made.

The differences between the timing of accounting accruals and cash flows<sup>37</sup> are important for purposes of the government's liquidity management. For example, if the government bought a large quantity of goods and services in one period but did not need to pay until some future period, it would need to manage its financial affairs carefully in order to have the necessary funds available for disbursement when the bill came due.

The **statement of sources and uses of cash** is similar to the statement of operations in some ways, but it records **actual** cash flows rather than accounting accruals. Thus, for example, revenues are recorded in the period when those revenues are actually received. Expenses are shown when the associated payments are made. Cash flows from transactions in financial assets and liabilities are reported when the associated cash is received or disbursed.

The statement also includes the following balancing items:

- net cash inflow from operating activities,
- cash surplus or deficit,
- net cash inflow from financing activities, and
- net change in the stock of cash.

Within this accounting framework, the cash surplus or deficit must equal the net cash inflow from financing activities. The net change in the stock of cash at the end of the accounting period is equal to the net stock of cash at the start of the accounting period plus the cash surplus or deficit (or equivalently, the net cash inflow from financing activities).

Consumption of fixed capital is of particular interest because it is an expenditure item that can add substantially to the net operating balance even though there are no directly associated cash flows. There may be indirectly associated cash flows, however, if the government decides to replace depreciated capital with newly purchased buildings and equipment at some point in the present or a future period. Barter and other transactions in kind as well



as debt forgiveness and write-offs are additional examples of transaction types that can appear in the statement of operations without ever having an impact on the statement of sources and uses of cash.

Statistics Canada has not yet developed the statement of sources and uses of cash and this task is currently on its future work agenda.

## 9.8 Government business enterprises

When government finances are referred to in the public conversation the reference is typically to general government, not to government business enterprises. Yet government-owned or controlled enterprises that engage in commercial activities may also be instruments of fiscal policy. Government-owned enterprises, such as the Bank of Canada, Canada Post, VIA Rail and the various port authorities, which are often referred to as public corporations or state-owned enterprises,<sup>38</sup> are also part of the overall public sector.

### 9.8.1 Types of government business enterprises

The public sector universe draws a distinction between financial and non-financial GBEs.

The 19 financial GBEs in the database at time of writing were as follows:

- Alberta Treasury Branches Financial
- Bank of Canada
- Business Development Bank of Canada
- Canada Mortgage and Housing Corporation
- Crown Investments Corporation Asset Management Incorporated
- Columbia Power Corporation
- Exchange Fund Account
- Export Development Canada
- Farm Credit Canada
- Finance PEI
- Gainers Incorporated
- Insurance Corporation of British Columbia
- Investissement Québec
- Manitoba Development Corporation
- Manitoba Public Insurance Corporation
- N.A. Properties (1994) Limited
- Saskatchewan Government Insurance
- Société Nationale de L'amiante
- 3052155 Nova Scotia Limited

Some of these are public deposit-taking corporations while others are classified as financial for a variety of other reasons. For example, N. A. Properties (1994) Limited is an Alberta GBE originally established to dispose of the assets of some failed companies, banks, credit unions and trust companies in the 1980s. It has no employees currently, but has not been closed down because it has assets maturing in 2027. The corporation 3052155 Nova Scotia Limited was incorporated in 2001 for the purpose of holding and administering various assets and obligations transferred from Nova Scotia Resources Limited prior to the sale of that company's shares.

There were a lot more non-financial public enterprises in the database at time of writing, 28 at the federal level and 83 at the provincial and territorial level. Some examples are:

- Canada Lands Company Limited
- C.A. Pippy Park Commission
- Charlottetown Area Development Corporation
- Nova Scotia Provincial Lotteries and Casino Corporation
- New Brunswick Power Corporation
- Société des Traversiers du Québec
- Metropolitan Toronto Convention Centre Corporation
- Manitoba Hydro-Electric Board
- Saskatchewan Research Council
- Alberta Gaming and Liquor Commission
- BC Transit
- Nunavut Liquor Commission
- Yukon Energy Corporation
- Western Canada Lottery Corporation – Northwest Territories portion

### 9.8.2 Government business enterprise statistics

Table 10-10-0023-01 shows GFS information for government business enterprises. In 2009, overall the reported revenue was \$136,546 million, expense was \$131,954 million and the operating balance was \$4,592 million. Non-financial assets for these enterprises were \$127,059 million, financial assets were \$555,532 million and liabilities were \$687,058 million. Provincial and territorial GBEs account for the majority of non-financial assets, 87.4 per cent, while federal GBEs own most of the financial assets, 86.4 per cent. Local government GBEs account for relatively small percentages of revenue and expense, although they do account for over half of subsidies and transfers received from government, 55.9 per cent.

## 9.9 Uses of government finance statistics

GFS provide a measure of the financial position of the various public sector components and sub-components, as well as for the sector as a whole. They reveal how the multitude of transactions involving public sector institutional units within a given accounting period have the effect of either adding to or subtracting from the assets, debt and net worth of the public sector. These statistics are used by a wide variety of economists and industry analysts in both the private and government sectors, both within Canada and internationally. Citizens use the statistics, both directly and via the news media, to help in assessing the performance of elected governments in terms of whether good judgement is shown in managing expenditures and taxes and also in terms of whether political commitments have been met. The statistics are also used as inputs to federal-provincial-territorial transfer payment formulas.

### 9.9.1 Sequence of accounts versus government finance statistics

As was mentioned toward the start of this chapter, the government financial accounts are presented in two quite different ways in Canada's System of Macroeconomic Accounts. One shows them as part of the broader structure of the economy as a whole while the other aims more specifically at the public sector itself.

In the first of these, the transaction elements of these accounts (income and sales tax revenues, other transfers to governments, interest and other types of public sector income, compensation of employees, transfers to other sectors, interest and other types of public sector expenses, assets and liabilities) appear in the **sequence of accounts** as described in Chapters 3, 5, 6 and 8. The landscape there comprises the entire Canadian economy. Within that accounting framework users can see the government sector as one of six that together comprise the Canadian economy as a whole, with government business enterprises as part of the financial and non-financial corporations sector and non-profit institutions serving households in the NPISH sector. Public sector institutional units and

sub-sectors are presented in a way that is directly comparable with private sector institutional units and sub-sectors. Their production, consumption, investment, saving and financial activities are integrated with those of the private sector. The similarities and differences between the organization and behaviour of governments as compared to households, corporations, non-profit organizations and non-residents are revealed and the transactions between these sectors are presented.

In the second presentation, GFS, the focus is on the public sector itself and in particular on the amount and variety of transactions during any given accounting period. These millions of transactions are aggregated and presented in a carefully constructed and inter-governmentally comparable classification system. Transactions by institutional units in one sub-sector, such as the federal government, can be analyzed by comparing them with transactions within the same sub-sector in a different accounting period, or with transactions in a different sub-sector such as the provinces and territorial governments or the local governments. Moreover, the GFS accounting structure is designed to be similar to that which is typically presented to Parliament, provincial and territorial legislatures and municipal councils in before-the-fact budget planning documents and after-the-fact audited financial statements.<sup>39</sup> This makes the GFS tables readily interpretable by analysts.

**Table 9.4**  
**Mapping the sequence of accounts to the statement of operations**

<b>Item no.</b>	<b>Accounts categories</b>
	<b>Transactions affecting net worth</b>
1	Revenue
2	Taxes on production, products and imports <sup>1</sup>
3	Taxes on income and wealth <sup>1</sup>
4	Property income received <sup>1</sup>
5	Social contributions <sup>1</sup>
6	Other current transfers received <sup>1</sup>
7	Sales of goods and services <sup>1</sup>
8	Capital transfers received <sup>1</sup>
9	Expense
10	Compensation paid to employees <sup>1</sup>
11	Purchases of goods and services <sup>1</sup>
12	Subsidies on production and products <sup>1</sup>
13	Property income paid <sup>1</sup>
14	Social benefits paid <sup>1</sup>
15	Current transfers paid <sup>1</sup>
16	Capital transfers paid <sup>1</sup>
17	Consumption of fixed capital <sup>1</sup>
18	Gross operating balance (1-9+17)
19	Net operating balance (1-9)
	<b>Transactions in non-financial assets</b>
20	Gross investment in non-financial assets
21	Fixed assets <sup>1</sup>
22	Inventories <sup>1</sup>
23	Valuables <sup>1</sup>
24	Non-produced assets <sup>1</sup>
25	Expenditure (9+20)

**Table 9.4**  
**Mapping the sequence of accounts to the statement of operations**

Item no.	Accounts categories
	<b>Transactions affecting net worth</b>
26	Net lending (+) or borrowing (-) (1-25)
	<b>Transactions in financial assets and liabilities</b>
27	Net acquisition of financial assets
28	Net incurrence of liabilities
29	Net lending (+) or borrowing (-) (27-28)

1. Item comes from the sequence accounts.

Source: Statistics Canada.

### 9.9.2 Fiscal analysis

Since the publication of John Maynard Keynes' master work in 1936<sup>40</sup> if not earlier, it has been recognized that governments can have an important influence on the economic direction of their countries by means of fiscal policy. The fiscal policy of a country is reflected in the combined net lending or borrowing (surplus or deficit) of **all** its various governments combined. GFS provides vital time series information about fiscal policy through its consolidated statement of government operations and balance sheet.

But there is more to fiscal policy than aggregate surpluses and deficits. The impact on economic growth of any given change in net lending or borrowing depends very much on the **source** of that change. Is it due to a change in taxes and if so, what specific taxes in what parts of the country? Does it reflect the impact of changes in interest rates on government interest payments? Did governments spend more or less and if so, what and where were the associated purchases? Did the purchases have large or small fiscal multipliers? These questions and many others like them have answers in the GFS database.

Moreover, fiscal policy has longer-term dimensions as well as shorter-term ones. Fiscal surpluses reduce the public sector debt while deficits add to them. GFS provides information not just about period-to-period changes in revenues, expenditures, infrastructure investment and net lending or borrowing, which affect the year-to-year business cycle, but also about government assets, liabilities and net debt. The latter can affect a country's longer-term economic growth and inflation **sustainability** over a time frame measured in decades rather than quarters or years. The GFS balance sheet time series statistics are what is needed for this kind of analysis.

A variety of other fiscal indicators are often constructed from GFS information. The database is the primary factual source on trends in **the size of the public sector**. Various definitions of size are possible. The focus can be on revenues, or expenses, or a broader definition of expenses that also includes capital spending (referred to as total expenditures or outlays). A still broader definition can include the revenues and/or expenditures of government business enterprises. Often indicators of this nature are expressed as ratios to gross domestic production, or to population, to bring out the trend in government activity after allowing for broad scale influences such as those of inflation and population change.

Table 9.5 provides a list of selected fiscal indicators that are either directly available or can be constructed from the GFS database. These and several other such indicators are listed in *GFSM 2014*. It is these indicators that are used by the International Monetary Fund to assess the stance of fiscal policy and the sustainability of government finances in member countries.

**Table 9.5**  
**Selected fiscal indicators available from the GFS framework**

Fiscal indicator	Definition
Net operating balance	Revenue minus expense. The net operating balance is also equal to the change in net worth due to transactions.
Gross operating balance	Revenue minus expense, excluding consumption of fixed capital.
Net lending or borrowing	Revenue minus expense minus net investment in non-financial assets.
Primary operating balance	Net operating balance excluding net interest expense.
Fiscal burden	Revenue in the form of taxes and social contributions.
Tax burden	Revenue in the form of taxes.
Government final consumption expenditure	Approximated by compensation of employees, plus the use of goods and services, plus consumption of fixed capital, plus purchases of goods and services for direct transfer to households (mainly social benefits in kind), minus the sales of goods and services.
Total expenditure or outlays	Expense plus net investment in non-financial assets.
Total financing	Transactions in financial assets minus transactions in liabilities.
Gross debt	Stock position in financial claims that require payments of interest and/or principal by the debtor to the creditor at a date or dates in the future. Includes all liabilities held in debt instruments.
Net debt	Gross debt minus the stock position in financial assets corresponding to debt instruments.
Net worth	Stock position in assets minus stock position in liabilities at the end of the reference period.

Each of these indicators can also be expressed as a ratio to GDP or population.

Source: *Government Finance Statistics Manual 2014*, Table 4A.1, selected components.

### 9.9.3 Federal-provincial-territorial transfers

GFS provide a good way for policy analysts and others to track intergovernmental transfers through time. In addition, the amounts of some of these transfers—notably the Equalization and Territorial Formula Financing Transfers—are determined by formulas that make use of data from the GFS database.

The Equalization formula compares the per capita revenue-raising capacities of the ten provinces individually to the revenue-raising capacity of the ten provinces combined. Note that it is the **capacity** to raise revenues rather than the actual raising of revenues that is compared. Thus, for example, if one province has a lower tax rate in a particular revenue category than the average rate for all provinces combined, the comparison is based on what that province's hypothetical revenues would be if it levied the average rate. The calculations are made separately for personal income taxes, business income taxes, consumption taxes, property taxes and natural resource revenues. The latter category gets a different treatment in view of its volatility.<sup>41</sup>

There are many ingredients in the Equalization formula and several of them come from the GFS database. Its statistics are especially useful for this purpose because they use a common accounting framework for all ten provinces. For similar reasons the Territorial Formula Financing Transfers are also calculated with an equation that uses a lot of GFS information. Statistics Canada supplies fiscal arrangements certificates to Finance Canada every year for the use of the latter in calculating provincial and territorial transfer entitlements.

### 9.9.4 International organizations

International organizations, such as the United Nations (UN), the International Monetary Fund (IMF) and the Organization for Economic Co-operation and Development (OECD) in particular, make extensive use of Canada's GFS for monitoring and analytical purposes.

Of the three, the IMF probably makes greatest use of these statistics since it has responsibility for monitoring and commenting on monetary and fiscal policies in member countries. Reflecting the organization's strong interest in this information source, the IMF also coordinates and participates actively in ongoing international discussions on the GFS standard itself and was the institution that published *GFSM 2014*. IMF staff visit most member countries annually, including Canada, as part of its surveillance program and the GFS information source is a key foundation for discussions at these encounters. The IMF also collects GFS data from all of its member countries and makes them available in the *Government Finance Statistics Yearbook*.

The OECD has used GFS in a variety of analytical studies. A recent example was a volume published in 2016.<sup>42</sup> Among many interesting findings that study found Canada, as a very decentralized nation, had larger sub-national (provincial, local and Aboriginal) government expenditure as a percentage of total general government expenditure than all of the 94 other countries in the study except China. In addition, Canada's sub-national government expenditure as a percentage of gross domestic product was greater than in all other countries except Denmark.<sup>43</sup> These results are derived from the GFS database.

## Annex A.9.1 The move from the financial management system to government finance statistics

### A.9.1.1 Financial management system statistics

For most of the period since World War II, Statistics Canada produced government sector statistics under the **financial management system** (FMS) accounting standard.<sup>44</sup>

The purpose of the FMS was to provide comparable financial statistics for the federal government, the (now) 13 provincial and territorial governments, the (now) approximately 3,700 local governments and the Canada and Quebec Pension Plans. In addition, the FMS allowed for consolidated statistics for these government sub-sectors and for the government sector as a whole.

A **cash accounting system** is one that requires revenue and expense to be reflected in the accounts only when the related cash receipts and disbursements occur. The FMS was founded on a **modified-cash-based system** of accounting. This means the system used the cash accounting system during an accounting period, but accrued certain items at the end of the period such as trade accounts, sales and purchases of goods and services and in some cases, taxes. There was no uniformity on the items subject to accrual.

The FMS was a uniquely Canadian accounting system, created to meet the specific requirements of Canada's federation. Along with its many other uses, the FMS provided statistics as inputs to the formulas for federal-provincial-territorial funding agreements as specified in the *Federal-Provincial Fiscal Arrangements Act*.<sup>45</sup> Statistics Canada developed FMS in cooperation with representatives of all levels of government and with the academic and business communities.

Although FMS concepts and classifications have not been used by Canadian governments for their internal purposes, they have been recognized by these same governments as suitable for their external dealings. This was seen in the selection of the FMS as the most appropriate system for the work of the Tax Structure Committee in the 1960s, the Tri-Level Task Force on Public Finance in the 1970s and by its usage in the successive Federal-Provincial Fiscal Arrangements Acts.

### A.9.1.2 The move to government finance statistics

The first substantial effort to develop a standard **international** accounting system for government sector transactions was the publication by the International Monetary Fund of *A Manual on Government Finance Statistics, 1986 (GFSM 1986)*. That system used modified cash accounting. Fifteen years later the IMF published an updated version called the *Government Finance Statistics Manual 2001 (GFSM 2001)* that adopted accrual accounting and also provided a much tighter integration of financial flows and stocks. In 2014 the current version of the standard was released called the *Government Finance Statistics Manual 2014 (GFSM 2014)*.

In Canada as governments moved from modified-cash-based accounting systems to **accrual-based accounting systems**, Statistics Canada began to move from the FMS to the 2014 version of the GFS.

“... governments have become less liquidity constrained in carrying out fiscal policy and have become more adept at separating the time of a fiscal action from the time it is paid for, so that cash transactions do not adequately capture either the timing of activities or their economic impact. In consequence, there has been increasing recognition worldwide of the need to adopt the accrual system of recording, which includes a cash-flow statement for assessing fiscal policy.”

“The GFS analytic framework facilitates a more comprehensive assessment of the economic impact of government activity and the resulting changes on liquidity and the implications for the sustainability of fiscal policy. More specifically, the use of accrual-based statements and the integration of balance sheets with

flows are consistent with the need for government behaviour to be determined in the context of its inter-temporal budget constraint.<sup>146</sup>

At time of writing, Canada's GFS are largely complete although the statement of other economic flows and the statement of sources and uses of cash remain to be developed.

The federal and provincial government quarterly statistics are compiled from the general ledgers of the various governments. In future, this will be done for the municipal governments as well. Preliminary quarterly estimates are compiled for the income and expenditure accounts and are then bridged to the GFS system. Once the annual audited public accounts data become available they are used to benchmark the preliminary quarterly estimates.

## **Annex A.9.2 Government finance statistics data sources**

### **A.9.2.1 Government finance statistics releases and data sources**

The GFS are produced by Statistics Canada on a quarterly basis and released approximately 90 days after the reference period. The statistics are available on the Statistics Canada website in 11 tables numbered 10-10-0015-01 through 10-10-0020-01, 10-10-0022-01 through 10-10-0024-01, 10-10-0005-01 and 10-10-0147-01.

GFS cover all general government (federal, provincial, territorial, local and Aboriginal) and the Canada and Quebec Pension Plans. Data for the federal government and provincial and territorial governments are obtained mostly from administrative data sources, known as public accounts, for the benchmark years. Supplementary information from surveys conducted by the Canadian Institute for Health Information and from Statistics Canada surveys of school boards, colleges and universities is also used. For the non-benchmark years, which are the most recent two-to-three years, the main sources of data for the federal, provincial and territorial governments are the published budget estimates and quarterly administrative files, known as general ledgers. For some provincial and territorial governments quarterly administrative files are not available and estimates are made.

For local governments, the most recent data are obtained through a questionnaire since budget estimates and financial statements, obtained through the provincial and territorial departments of municipal affairs, are not available until later.

For the Canada and Quebec Pension Plans, data are obtained from the Canada Pension Plan Investment Board and the Caisse de dépôt et placement du Québec.

### **A.9.2.2 Data processing and revisions**

Most of the data come from general ledgers and audited financial statements of governments. In many cases adjustments are required so the estimates conform to GFS and *SNA 2008*. For survey data, which represent roughly one per cent of the total value, several automated checks are performed to verify internal consistency and identify extreme values. For non-responding units, imputation is performed using historical information where available, or donor imputation otherwise. The donor imputation procedure involves using auxiliary information to substitute the data or using ratios from an entity with similar characteristics.

The coverage of the general government population is virtually complete. Imputation for non-response varies by public sector sub-component, but for all components the imputation rate is less than two percent. Similarly, the overall impact of imputation on major financial variables is less than two per cent.

Estimates are derived from the compilation of data obtained from the sources for each institutional unit in the population of interest. The practice is first to obtain the published financial information and then to approach individual government organizations when necessary in order to solicit the additional detail required to apply the classifications accurately.

## Annex A.9.3 Government finance statistics classifications

### A.9.3.1 Classification of revenue

Revenue elements in GFS are classified according to different characteristics depending on the type of revenue. For taxes, the classification scheme is determined mainly by the base on which the tax is levied—income, payroll, property, sales of goods and services, etcetera. Revenue from sources other than taxes is classified by the nature of the economic flow and in some cases by the source from which the revenue is derived.

### A.9.3.2 Classification of expense

While the GFS expense classification structure provides guidance on the minimum requirements for internationally-comparable classifications of expense, analytical needs necessitate further detailed classifications be added as sub-items in Canada's data presentations. These items usually relate to the need for consolidation of the general government or public sector, input into other macroeconomic datasets or items that will allow the calculation of supplementary aggregates or balances.<sup>47</sup>

### A.9.3.3 Classification of functions of government

The classification of the functions of government (COFOG) is an official United-Nations-approved classification system, developed by the Organization for Economic Cooperation and Development that enables government expenditures to be compared functionally among different countries. The classification was first published in 1980 and has been updated since. It has 10 high-level divisions of expenditure, with two-digit codes, and 69 lower-level groups of expenditure, with three-digit codes. The classification is shown in Table 9.6.

**Table 9.6**  
**Canadian classification of functions of government (COFOG)**

Code	Expenditure category
701	General public services
7011	Executive and legislative organs, financial and fiscal affairs, external affairs
7012	Foreign economic aid
7013	General services
7014	Basic research
7015	R&D General public services
7016	General public services not elsewhere classified
7017	Public debt transactions
7018	Transfers of a general character between different levels of government
702	Defence
7021	Military defence
7022	Civil defence
7023	Foreign military aid
7024	R&D Defence
7025	Defence not elsewhere classified
703	Public order and safety
7031	Police services
7032	Fire-protection services
7033	Law courts
7034	Prisons
7035	R&D Public order and safety



**Table 9.6**  
**Canadian classification of functions of government (COFOG)**

<b>Code</b>	<b>Expenditure category</b>
7036	Public order and safety not elsewhere classified
704	Economic affairs
7041	General economic, commercial and labour affairs
7042	Agriculture, forestry, fishing and hunting
7043	Fuel and energy
7044	Mining, manufacturing and construction
7045	Transport
7046	Communication
7047	Other industries
7048	R&D Economic affairs
7049	Economic affairs not elsewhere classified
705	Environmental protection
7051	Waste management
7052	Waste water management
7053	Pollution abatement
7054	Protection of biodiversity and landscape
7055	R&D Environmental protection
7056	Environmental protection not elsewhere classified
706	Housing and community amenities
7061	Housing development
7062	Community development
7063	Water supply
7064	Street lighting
7065	R&D Housing and community amenities
7066	Housing and community amenities not elsewhere classified
707	Health
7071	Medical products, appliances and equipment
7072	Outpatient services
7073	Hospital services
7074	Public health services
7075	R&D Health
7076	Health not elsewhere classified
708	Recreation, culture and religion
7081	Recreational and sporting services
7082	Cultural services
7083	Broadcasting and publishing services
7084	Religious and other community services
7085	R&D Recreation, culture and religion
7086	Recreation, culture and religion not elsewhere classified

**Table 9.6**  
**Canadian classification of functions of government (COFOG)**

Code	Expenditure category
709	Education
7092	Primary and secondary education
7093	College education
7094	University education
7095	Education not definable by level
7096	Subsidiary services to education
7097	R&D Education
7098	Education not elsewhere classified
710	Social protection
7101	Sickness and disability
7102	Old age
7103	Survivors
7104	Family and children
7105	Unemployment
7106	Housing
7107	Social exclusion not elsewhere classified
7108	R&D Social protection
7109	Social protection not elsewhere classified

Source: Statistics Canada, [Canadian Classification of Functions of Government \(CCOFOG\) 2014](#) and [United Nations](#).

Most governments display expenditures in their own public accounts by government department, with program breakdowns. Thus, for example, Canada's federal government shows the expenditures of Statistics Canada, one of its departments, for fiscal year 2016-2017 displayed in the following categories:

- censuses,
- economic and environmental statistics,
- socio-economic statistics,
- statistical infrastructure,
- cost-recovered statistical services, and
- internal services.

A breakdown can also be obtained for operational expenditure categories similar to those in GFS (see section 9.4.2), although not all of these are applicable in the Statistics Canada example:

- compensation of employees,
- use of goods and services,
- consumption of fixed capital,
- interest expense,

- subsidy payments,
- grant payments,
- social benefit payments, and
- other expenses.

For many purposes, the program expenditure classification is the more useful of the two as it provides information about the **goals** government is trying to achieve by means of its expenditures.<sup>48</sup> It also facilitates the accountability of government departments. The difficulty, though, is that governments frequently pursue one aim through expenditures in several different departments. Moreover, different governments use different terminology in reference to any given goal. In addition, specific programs within individual departments may be designed to serve more than one of the government's goals. Thus, for example, the federal government's environmental protection goals are pursued partly by expenditure on environmental statistics produced by Statistics Canada, but also by the program expenditures of Environment and Climate Change Canada and some other departments.

COFOG is an alternative classification of government expenditures that re-aggregates individual expenditure line items in a strictly functional classification. The categories are intended to be widely applicable around the world so statistics compiled on this basis can be directly compared country-to-country for all levels of government, or among different levels of government within a particular country.

Referring to Table 9.6, the broad COFOG categories are:

- general public services,
- defence,
- public order and safety,
- economic affairs,
- environmental protection,
- housing and community amenities,
- health,
- recreation, culture and religion,
- education, and
- social protection.

Each of these has more detailed sub-categories. Using this breakdown of expenditures it is possible, for example, to compare intergovernmentally the intensity of government spending, as a percentage of gross domestic product, on health care. Similarly, it is useful for some purposes to compare the share of government expenditure devoted to defence or environmental protection in different countries.

## Notes for chapter 9

1. According to the income and expenditure accounts. See Chapter 5.
2. According to the survey of employment, payrolls and hours (SEPH), classified using the North American Industry Classification System (Table 14-10-0202-01). Total employment as reported in SEPH excludes agriculture, fishing and trapping, private household services, religious organizations and the military.
3. See Table 10-10-0023-01.
4. For example, the *Consolidated Financial Statements of the federal government and Report of the Auditor General of Canada, 2014-2015* reports a statement of operations and accumulated deficit showing revenues, expenses and the annual surplus or deficit, a statement of financial position showing liabilities, financial assets, net debt and non-financial assets, a statement of change in net debt and a statement of cash flow.
5. The government business enterprise sector combines sub-sectors of the non-financial corporations and financial corporations sectors that consist of government-controlled enterprises producing market output.
6. See Tables 10-10-0015-01 (total government), 10-10-0016-01 (federal government), 10-10-0017-01 (provincial and territorial governments), 10-10-0018-01 (health and social service institutions), 10-10-0019-01 (education institutions), 10-10-0020-01 (municipalities and other local administrations), 10-10-0022-01 (Canada and Quebec Pension Plans) and 10-10-0023-01 (government business enterprises).
7. In Canada the closing balance sheet is estimated directly and the aggregate other flows are derived residually since the statement of other economic flows has not yet been developed.
8. This presents problems for the provincial economic accounts, as discussed in Chapter 5. It becomes necessary to allocate federal institutional units across the provinces and territories.
9. The federal pension plan is treated differently in the income and expenditure accounts, where the pension assets are considered to be on the balance sheet of the household sector.
10. Statistics Canada collects information on trustee pension plans in the Pension Plans in Canada annual census. The results for 2016 indicate the market value of employer-sponsored trustee pension fund assets was \$1.7 trillion in 2016. The number of trustee pension funds in Canada was 8,592. Public sector funds had 3.1 million active members and active members in private sector funds were 2.2 million. See Table 11-10-0106-01.
11. See Sagé De Clerck, "Special Purpose Entities in the Public Sector", by, paper presented at the fourth meeting of the *Task Force on Harmonization of Public Sector Accounting* in Washington, D.C., October 3-6, 2005.
12. Accounting rules are also discussed in Chapter 3, section 3.5 of this publication. See also *GFSM 2014*.
13. In the private sector, consolidation can also be applied within a business enterprise. If the enterprise is made up of several corporations that engage in financial and non-financial transactions with one another, these transactions and the balance sheets can be consolidated to provide a coherent, non-duplicative picture of the enterprise as a whole.
14. [Canadian Classification of Institutional Units and Sectors \(CCIUS\) 2012](#) on the Statistics Canada website.
15. By 'control' is meant the ability to determine general corporate policy relating to a corporation's strategic objectives as a market producer. Control is assessed using a variety of indicators such as majority ownership, control of the board or other governing body, control of the appointment and removal of key personnel, ownership of 'golden' shares and options and control attached to lending from the government to the corporation.
16. At time of writing the database did not contain all of the health and education units and local government GBEs. However, it is planned that these will be added in future annual updates to the database.
17. [Public Sector Universe](#) on the Statistics Canada website.
18. In the international standard for GFS accounting the components of the general government sector are referred to as central, state and local governments.

19. This includes the Yale Final Agreement, the Tla'amin Final Agreement and the Déline Final Self-Government Agreement which have been signed, but are not yet in effect. In addition, other forms of governance or self-government have been negotiated and implemented in Canada including the Nunavut Land Claims Agreement, the *Cree-Naskapi Act* in 1984 and the Mi'kmaq Education Partnership in Nova Scotia. This information comes from the website of Indigenous and Northern Affairs Canada.

20. [Public Sector Universe](#) on the Statistics Canada website.

21. [CMHC](#) website.

22. CHMC 2015 Annual Report.

23. Hydro-Québec 2016 Annual Report.

24. [Agricultural Implements Act](#) on the Government of Saskatchewan website.

25. [CBC](#) website.

26. The [Canadian Government Finance Statistics](#) classification of revenue is available on the Statistics Canada website.

27. Social contributions sometimes take the form of payroll taxes, as with the Employment Insurance scheme. However, the reference here is to **unrequited** payroll and workforce taxes.

28. *GFSM 2014*, page 94.

29. When a government wishes to impose a tax on a specific commodity, such as alcoholic beverages, it can do so directly or indirectly. The indirect approach is to establish a fiscal monopoly with exclusive rights to sell the product and charge higher prices than would otherwise prevail in a competitive market. This approach might be chosen to allow the government to more tightly regulate the sale of the product. The difference between the higher monopoly price and the competitive market price is effectively a tax on the commodity and is treated as such in the GFS.

30. *GFSM 2014* recommends social contributions for pensions not be treated as a revenue item, but rather as the acquisition of an asset (currency) in exchange for a liability (future pension entitlements). "... transactions that create a recognized liability are not part of revenue. In GFS, social contributions exclude contributions to autonomous and non-autonomous pension funds and to unfunded employment-related schemes that provide pension and other retirement benefits. These transactions should be recorded in GFS as incurrence of liabilities for future pension and other retirement benefits payable. *SNA 2008* records them both as social contributions and incurrence of liabilities, with the double recording being neutralized by an adjustment in the use of income account for the change in pension entitlements." (*GFSM 2014*, p. 102). Canada has not followed this approach in its GFS accounts.

31. The distinction between current and capital transfers is discussed in Chapter 3, 5 and 8.

32. [Finance Canada](#) website.

33. Slack, Enid, "Provincial-Local Fiscal Transfers in Canada: Provincial Control Trumps Local Accountability," paper prepared for the *Conference on 'General Grants vs. Earmarked Grants: Theory and Practice'*, Copenhagen, September 2009.

34. The [Canadian Government Finance Statistics](#) classification of expense is available on the Statistics Canada website.

35. Consumption of fixed capital is discussed extensively in Chapter 3 and also in Chapter 7.

36. As discussed in the section on consolidation, it is also important, when making inter-governmental comparisons between countries or between governments within Canada, to use consolidated rather than unconsolidated statistics. This is especially true for expenditures on large expense categories such as health and education where inter-governmental transfers are substantial.

37. The word cash refers to both currency and deposits.

38. Recall that an **enterprise** is the view of an institutional unit as a producer of goods and services. The term enterprise may refer to a corporation, a quasi-corporation, a non-profit institution, or an unincorporated enterprise.

39 The GFS accounting structure is not and indeed cannot be identical to that of any particular public sector institutional unit, since each of these units is free, within limits, to define its accounting architecture as it see fit. But the structure is quite similar to that of most public sector units.

40. John Maynard Keynes, *The General Theory of Employment, Interest and Money*, Macmillan, London, Melbourne, Toronto, 1967. Originally published in 1936.

41. For more details on the Equalization formula see "[Canada's Equalization Formula](#)," Library of Parliament Research Publications, September 2013.

42 See Organization for Economic Cooperation and Development, [Subnational Governments Around the World: Structure and Finance](#), 2016. See also Organization for Economic Cooperation and Development, [OECD Regions at a Glance](#) 2016.

43. *Ibid*, page 20.

44. Statistics Canada, *Financial Management System (FMS)*, catalogue number 68F0023X, 2009.

45. Revised Statutes of Canada, 1985, c. F-8, last amended on June 22, 2016.

46. *GFSM 2014*, page 67.

47. For more information see *GFSM 2014*, Chapter 6, section C.

48. The operational expenditure classification, in contrast, is more about the **means** by which governments pursue different objectives, whether by employing public servants, making social benefit transfers, using capital equipment, etcetera.