

Latest Developments in the Canadian Economic Accounts

The 2020 to 2022 Revisions of the Income and Expenditure Accounts



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The 2020 to 2022 Revisions of the Income and Expenditure Accounts

Introduction

This article presents revisions to the Gross Domestic Product (GDP) by Income and by Expenditure Accounts for the 2020-to-2022 period. These revisions were reflected in the [2022 Provincial and Territorial Economic Accounts estimates](#), released on November 8, 2023.

Along with the [new data released for the third quarter of 2023](#), revised GDP estimates are also being released for the first and second quarters of 2023. However, in accordance with standard revision practice, these estimates will continue to be revised in upcoming cycles, and therefore, are excluded from the analysis in this article.

Revision process

GDP estimates by IEA are subject to several types of revisions that take place with each quarterly release depending on the availability of data and the practicality of implementation. The first-quarter release includes revisions to all quarters of the previous year; the second-quarter release revises only the first quarter of the same year; the third-quarter release (the annual revision) includes revisions to all quarters back three years; and the fourth-quarter release includes revisions to all quarters of the same year. [Appendix A](#) illustrates the revision cycle for GDP, including an explanation of the open period and the vintages.

Occasionally, substantial changes that are made to incorporate new concepts or methods (for example, integration of new System of National Accounts (SNA) concepts) result in comprehensive revisions and can occur with the annual revision.

Sources of revision

Revisions to the 2020-to-2022 period GDP estimates by IEA stem from a number of sources; notably, the following: new Supply-Use Tables; updated data sources; treatment of gold-inventories; treatment of subsidies; re-basing price and volume estimates; and new trade classification and price baskets.

New Supply-Use Tables

The newly released IEA estimates are benchmarked to the supply-use tables (SUTs) for the 2020 reference year. SUTs integrate data from a wide range of sources into a balanced accounting framework. They represent the most detailed, coherent accounting system for the structure of the Canadian economy and are considered the most accurate benchmarks on which to base estimates.

Updated data sources

Revisions for the 2021 and 2022 reference years also reflect updates to data sources and estimation methodologies due to pandemic-related disruptions. Some initial estimates contained assumptions that evolved as more information became available, and revisions were necessary for subsequent releases.

Estimates for the 2021 and 2022 reference years incorporated up-to-date information from various data sources, including the Annual Survey of Manufacturing and Logging, the Annual Survey of Research and Development in Canadian Industry, the Annual Census of Mines, Quarries and Sand Pits, government public accounts, and updated administrative data. Wages and salaries were updated to reflect the final T4 data for 2021 and preliminary T4 data for 2022.

Results from the Annual Capital and Repair Expenditure Survey, Actual, were incorporated for 2021, whereas 2022 was revised to incorporate major project updates from the upcoming Actual 2022 release in February 2024.

[Appendix B](#) contains the timeline for data source integration into the IEA by major component of income-based GDP and expenditure-based GDP, using the first quarter of 2020 as an example.

Treatment of gold inventories

Starting with the 2020 reference year, a new treatment for gold inventories was implemented in the IEA to better align with the production of gold in the SUTs and balance of payments (BOP) adjustments for purchases of gold (that is, gold that did not physically cross the border). The IEA had not been fully accounting for these two sources, with gold inventories displaying larger-than-normal fluctuations during the pandemic. With the implementation of this improved treatment, gold inventory accumulation in nominal and volume terms in the IEA was revised up significantly from 2020 to 2022.

Treatment of subsidies

A review of subsidies in the Canadian System of Macroeconomic Accounts has determined that several entries in the public accounts should be reclassified from subsidies on products to subsidies on production. The reclassification has no impact on the estimates of GDP at market prices, or on the overall estimates of subsidies. These changes have been incorporated into the data starting in 2020.

Re-basing price and volume estimates

Also, this release updated the reference year for price and volume estimates from a 2012 reference year (2012=100) to a 2017 reference year (2017=100). The change in reference year affect the levels but not the overall trend or growth rates of the series (aside from rounding differences), as it is essentially a rescaling of already published data.

New deflator for ownership transfer costs

Starting with reference year 2020 the Home Price Index (HPI) from Canadian Real Estate Association (CREA) is used to deflate ownership transfer costs within residential structures capital formation. While previously a simple average of home prices based on CREA was used, the HPI is a weighted index based on five housing types, and therefore is an improved deflation method.

New trade classification and price baskets

The international trade product classification was updated to the North American Product Classification System (NAPCS) 2022 and new price baskets were introduced for international merchandise trade as well as government final consumption expenditure and engineering investment. As is usually the case with the release of third quarter data, seasonal factors for international merchandise trade have been reviewed. These changes tend to be minimal, but the impacts this year were more significant owing to widespread changes to the raw estimates from the implementation of the new product classification and price basket.

This article summarizes the combined impact of revisions from all sources on annual and quarterly GDP, on a nominal and a real basis.

Revisions to growth of nominal gross domestic product

Table 1
Revisions to growth in nominal GDP, annual

| | Revised nominal GDP | Previously published | Revision | Revised average growth in annual GDP | Previously published average growth in annual GDP | Mean absolute revision to the growth in annual GDP |
|--------------|---------------------|----------------------|----------|--------------------------------------|---|--|
| | billions of dollars | | | percentage | | percentage points |
| 2020 to 2022 | 2,516.98 | 2,500.65 | 16.33 | 7.04 | 6.65 | 0.39 |
| 2020 | 2,220.53 | 2,209.68 | 10.85 | -4.02 | -4.49 | 0.47 |
| 2021 | 2,517.12 | 2,509.62 | 7.50 | 13.36 | 13.57 | 0.21 |
| 2022 | 2,813.29 | 2,782.65 | 30.64 | 11.77 | 10.88 | 0.89 |

Source: Statistics Canada.

With incorporation of new benchmark data from the supply-use tables, the level of nominal GDP was revised up by \$10.85 billion in 2020. The nominal GDP growth rate was revised up 0.47 percentage point. A substantial upward revision to inventories was partly offset by downward revisions in capital investment by businesses and governments.

In 2021, nominal GDP was revised up by \$7.5 billion, and the growth rate by 0.21 percentage points. Upward revisions in inventories, exports and business capital investment were offset by a downward revision to government final consumption expenditure and an upward revision to imports.

In 2022, the revised nominal GDP growth rate (+11.8%) was stronger than the previously published 10.9%; nominal GDP was revised up by \$30.6 billion. Upward revisions in inventories, business capital investment, household final consumption expenditure was again mitigated by a downward revision to net international trade.

The absolute revision to the growth rate—the difference between the revised average growth rate and the previously published average growth rate—was 0.39 percentage points for the 2020-to-2022 period.

Table 2
Revisions to growth in nominal GDP, quarterly

| | Revised average growth in quarterly GDP | Previously published average growth in quarterly GDP | Mean absolute revision to the growth in quarterly GDP |
|--------------|---|--|---|
| | percentage | | percentage points |
| 2020 to 2022 | 1.73 | 1.57 | 0.16 |
| 2020 | 0.17 | 0.06 | 0.11 |
| 2021 | 3.17 | 3.11 | 0.06 |
| 2022 | 1.85 | 1.54 | 0.31 |

Source: Statistics Canada.

On a quarterly basis, the absolute revision to the growth rate was 0.16 percentage points for the 2020-to-2022 period, with 2022 recording the largest upward revision of 0.32 percentage points. Throughout the period, the revised and previously published quarterly trends remained similar.

Revisions to growth of real gross domestic product

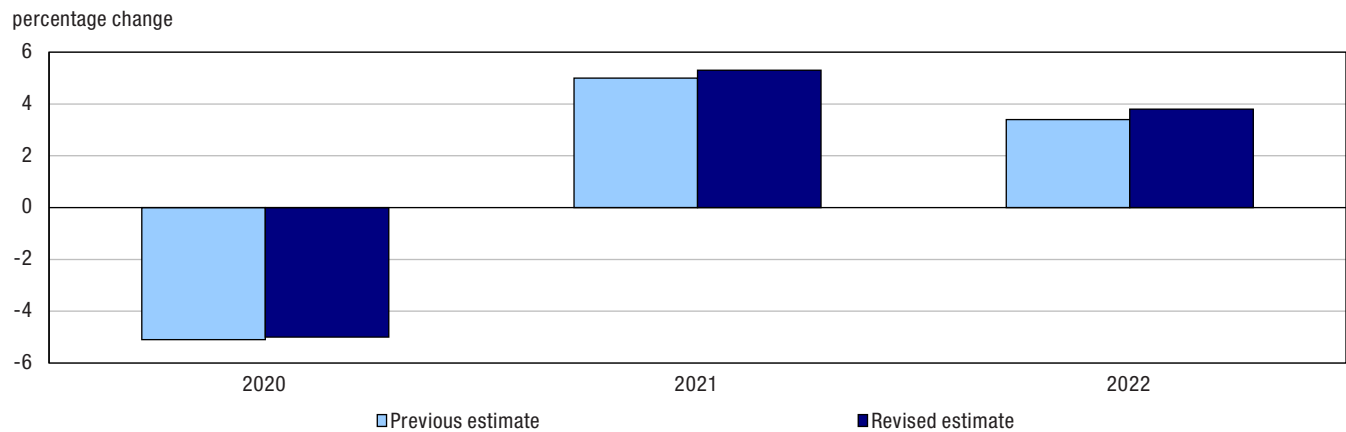
Table 3
Revisions to growth in real GDP, annual

| | Revised average growth in annual real GDP | Previously published average growth in annual real GDP | Mean absolute revision to the growth in annual real GDP |
|--------------|---|--|---|
| | percentage | | percentage points |
| 2020 to 2022 | 1.36 | 1.13 | 0.23 |
| 2020 | -5.04 | -5.07 | 0.03 |
| 2021 | 5.29 | 5.01 | 0.28 |
| 2022 | 3.82 | 3.44 | 0.38 |

Source: Statistics Canada.

The mean absolute percentage-point revision to the annual average growth rate of real GDP for the 2020-to-2022 period was 0.23. The revision was lowest in 2020 (+0.03 percentage points) and highest in 2022 (+0.38 percentage points). The growth rate was revised up (+0.28 percentage points) in 2021.

Chart 1
Revisions to real gross domestic product by year, chained (2017) dollars



Source: Statistics Canada, Latest Developments in the Canadian Economic Accounts, catalogue number 13-605-X.

Based on chained dollars, the growth rate of real GDP was revised up 0.10 percentage points in 2020: up 0.30 percentage points in 2021 and up by 0.40 percentage points in 2022.

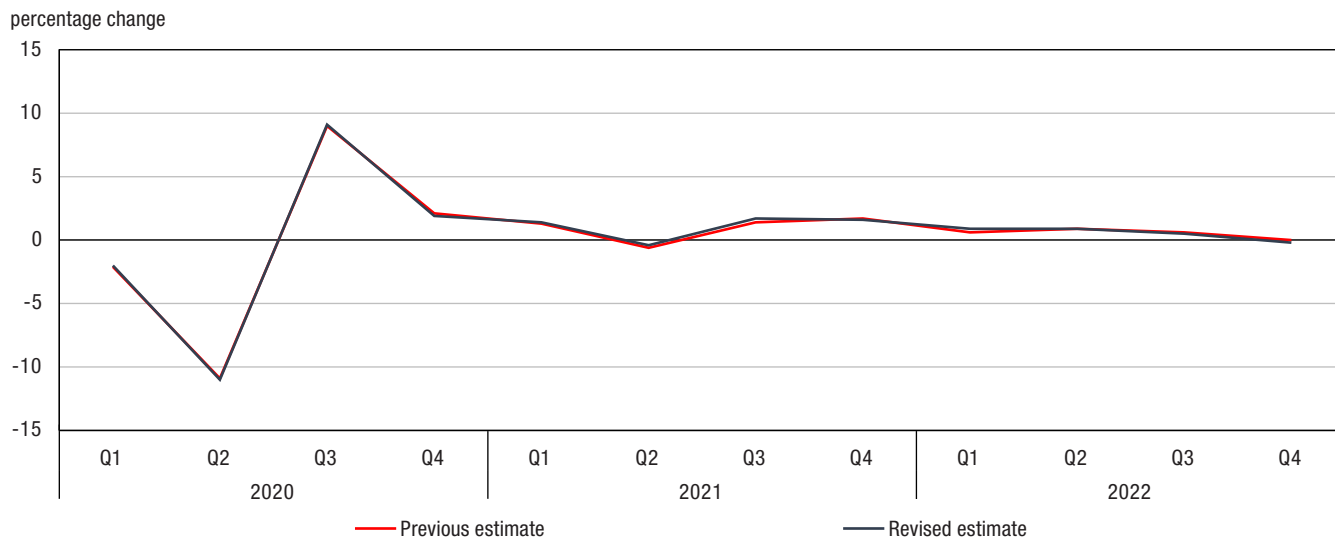
Table 4
Revisions to growth in real GDP, quarterly

| | Revised average growth in quarterly real GDP | Previously published average growth in quarterly real GDP | Mean absolute revision to the growth in quarterly real GDP |
|--------------|--|---|--|
| | percentage | | percentage points |
| 2020 to 2022 | 0.38 | 0.33 | 0.05 |
| 2020 | -0.50 | -0.48 | 0.02 |
| 2021 | 1.11 | 0.96 | 0.15 |
| 2022 | 0.52 | 0.52 | 0.00 |

Source: Statistics Canada.

The mean absolute percentage-point revision to the annual average growth rate of quarterly real GDP for the 2020-to-2022 period was 0.05. The largest revision was in 2021 (+0.15 percentage points) and the smallest in 2020 (-0.02 percentage point). The growth rate was unchanged in 2022. The extent of these revisions was minimal and well within historical limits, ranging from -0.33 to 0.43 percentage points over the last decade.

Chart 2
Revisions to real gross domestic product by quarter, chained (2017) dollars



Source: Statistics Canada, Latest Developments in the Canadian Economic Accounts, catalogue number 13-605-X.

Appendix A

Figure 1
GDP revision cycle

| Reference year | Year-3 | | | | Year-2 | | | | Year-1 | | | | Current year | | | | Year+1 | | | | Year+2 | | | | Year+3 | | | | | | | |
|------------------------|--------|----|----|----|--------|----|----|----|--------|----|----|------|--------------|------|------------------------|------|--------|------|------|------|--------|----|----|------|--------|----|----|------|-----|----|------|------|
| Reference quarter | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Main production period | | | | | | | | | | | | | May | Aug | Q3 Apr to Nov | Feb | | | | | | | | | | | | | | | | |
| | | | | | | | | | [] | | | v1] | | | | | | | | | | | | | | | | | | | | |
| May release | | | | | | | | | [] | | | v2] | v1] | | | | | | | | | | | | | | | | | | | |
| August release | | | | | | | | | | | | | [v2] | v1] | | | | | | | | | | | | | | | | | | |
| November release | [] | | | | | | | | | | | v3] | v3] | v2] | v1] | | | | | | | | | | | | | | | | | |
| February release | | | | | | | | | | | | | [v4] | v3] | v2] | v1] | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | [v5] | v4] | v3] | v2] | v1] | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | [v2] | v1] | | | | | | | | | | | | | | |
| | | | | | [] | | | | | | | v4] | v6] | v5] | v4] | v3] | v3] | | v1] | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | [v4] | | | v1] | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | [v5] | | | | v1] | | | | | | | | | | | |
| | | | | | | | | | [] | | | v5] | v7] | v6] | v5] | v4] | v6] | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | [] | | | v1] | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | [] | | | | v1] | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | [] | | | v1] | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | [] | | v1] | |
| | | | | | | | | | | | | | [v8] | v7] | v6] | v5] | v7] | | | | | | | | | | | | | | | v1] |

Notes:

Revision cycles

- [] On first-quarter releases, all four quarters in previous year are revised.
- [] On second-quarter releases, first quarter in same year is revised.
- [] On third-quarter releases, first and second quarters in same year and all quarters back to Supply-Use year are revised (annual revision)*.
- [] On fourth-quarter releases, first, second, and third quarters in same year are revised.

Vintages

- v1. First vintage, released with revisions to all quarters previous year.
- v2. Second vintage of first quarter, released with second-quarter release.
- v3. Third vintage of first quarter, released with third-quarter release (annual revision).
- v4. Fourth vintage of first quarter, released with fourth-quarter release.
- v5. Fifth vintage of first quarter, released with first-quarter of following year.
- v6. Sixth vintage of first quarter, released with third-quarter release of following year (annual revision).
- v7. Seventh vintage of first quarter, released with third quarter of two years after (annual revision).
- v8. Eighth vintage of first quarter, third-quarter release three years after, incorporation of SUT benchmark for this year.

* Comprehensive revisions (back to 1961) can occur with the annual revision if substantial changes are made to concepts or methods, such as integration of new SNA concepts.

Appendix B

Table B.1
GDP by income components, example reference period first quarter of 2020

| | Initial quarterly estimate | First annual revision | Second annual revision | Third annual revision | Fourth annual revision |
|-----------------------------------|--|--|--|--|-----------------------------------|
| Release | 2020Q1 (May 2020) | 2020Q3 (November 2020) | 2021Q3 (November 2021) | 2022Q3 (November 2022) | 2023Q3 (November 2023) |
| General notes | Incorporation of monthly surveys | Revisions to monthly surveys | - | Incorporation of annual surveys | Incorporation of Supply-use table |
| Compensation of employees | Survey of Employment, Payroll and Hours (SEPH), Labour Force Survey (LFS), Employment and Social Development Canada data | - | T4 preliminary (RY2020) for provincial/territorial (PT) aggregates | T4 final (RY2020) by PT and by industry | SUT industry refinements (RY2020) |
| Gross operating surplus | Quarterly Survey of Financial Statements (QSFS), Regulatory data (for banks); GFS for Government Business Enterprises | - | Third party data | Annual Financial and Taxation Statistics | SUT benchmark |
| Gross mixed income: | SEPH, LFS, Monthly Retail Trade Survey, Monthly Survey of Manufacturing, gross output by industry | - | Tax data (T1 and T5013) | Tax data updates | SUT benchmark |
| Rent portion | Consumer Price Index, Stock in units | - | - | - | - |
| Farm portion | Farm cash receipts | Crop data | - | - | SUT benchmark |
| Taxes less subsidies ¹ | Government Finance Statistics (GFS): preliminary/modelled | Updated GFS: late filers, Public Accounts (PA) | Revised GFS: late PA, local government first estimate | Revised GFS: local government updates | SUT benchmark |

1. Indigenous general governments are estimated using Financial Statements, the estimates are refined as more statements become available

Source: Statistics Canada, "The 2020 to 2022 revisions of the Income and Expenditure Accounts", *Latest Developments in the Canadian Economic Accounts* (13-605-X), 2023.

Table B.2
GDP by expenditure components, example reference period first quarter of 2020

| | Initial quarterly estimate | First annual revision | Second annual revision | Third annual revision | Fourth annual revision |
|---|--|---|---|---|-----------------------------------|
| Release | 2020Q1 (May 2020) | 2020Q3 (November 2020) | 2021Q3 (November 2021) | 2022Q3 (November 2022) | 2023Q3 (November 2023) |
| General notes | Incorporation of monthly surveys | Revisions to monthly surveys | - | Incorporation of annual surveys | Incorporation of Supply-use table |
| Household Final consumption expenditure: | | | | | |
| Goods | Monthly retail trade (MRTS), New motor vehicle survey, trade in goods, vehicle registrations | Retail commodity survey | - | Survey of Household Spending (SHS) ¹ | SUT benchmark by product |
| Services | GST remittances, trade in services, Canadian Radio-television and Telecommunications Commission, monthly GDP by industry | - | - | SHS; Food services & drinking places; accommodation services | SUT benchmark by product |
| Government Final Consumption | Government Finance Statistics (GFS): preliminary/modelled | Updated GFS: late filers, Public Accounts (PA) | Revised GFS: late PA, local government first estimate | Revised GFS: local government updates | SUT benchmark |
| NPISH Final Consumption | Forecast | - | - | Tax data (T3010 and Non-Profit Organizations) | - |
| Business Capital Investment: | | | | | |
| Residential: new, renovations, ownership transfer costs | Labour estimates, Investment in Building Construction (IBC), CMHC, Wholesale/retail sales, Survey of Building Permits, Canadian Real Estate Association (CREA) | - | - | SHS ¹ | - |
| Non-residential buildings | IBC, CREA | Annual Capital and Repair Expenditures (CAPEX) intentions | CAPEX preliminary | CAPEX actual | SUT benchmark by asset |
| Non-residential engineering | Quarterly Oil and Gas CAPEX, labour indicators, drilling and rigging activities, financial reports | | | | |
| Machinery and equipment | Imports, inventories, Monthly Survey of Manufacturing (MSM) | | | | |
| Intellectual Property Products | Labour estimates, Research and development intentions, imports, drilling and rigging activities | - | Gross Domestic Expenditures on Research and Development | Research and Development in Canadian Industry | |
| Government capital investment | Similar to business for first vintage, by asset | CAPEX intentions: provincial government | CAPEX preliminary: provincial government; GFS: federal | CAPEX actual: provincial; GFS local government; Provincial housing corporations | |
| Change in inventories: | | | | | |
| Non-farm | MSM, MRTS, Monthly Wholesale Trade, energy surveys, QSFS | - | - | Annual Survey of Manufacturing and Logging, Annual Wholesale Trade Survey, Annual Census of Mines, Annual Retail Trade Survey | SUT benchmark |
| Farm | Farm cash receipts | Crop data | - | - | SUT benchmark |
| International trade: | | | | | |
| Goods | Canadian International Merchandise Trade, Canadian Energy Regulator | - | - | - | SUT benchmark |
| Services | Preliminary Balance of Payments (BOP) surveys | BOP commercial services surveys | Tourism/education surveys | - | |

1. For reference years that SHS is available

Source: Statistics Canada, "The 2020 to 2022 revisions of the Income and Expenditure Accounts", *Latest Developments in the Canadian Economic Accounts* (13-605-X), 2023.