

Catalogue no. 15-206-X — No. 028

ISSN 1710-5269

ISBN 978-1-100-17012-1

## Research Paper

# The Canadian Productivity Review

## Productivity Trends of Unincorporated Enterprises in the Canadian Economy, 1987 to 2005

by John R. Baldwin and Luke Rispoli

Economic Analysis Division

R.H. Coats Bldg., 18<sup>th</sup> floor, 100 Tunney's Pasture Driveway  
Ottawa, Ontario K1A 0T6

Telephone: 1-800-263-1136



Statistics  
Canada

Statistique  
Canada

Canada

## How to obtain more information

Specific inquiries about this product and related statistics or services should be directed to the Media Hotline, Communications and Library Services Division, Statistics Canada, Ottawa, Ontario K1A 0T6 (telephone: 613-951-4636).

For information about this product or the wide range of services and data available from Statistics Canada, visit our website at [www.statcan.gc.ca](http://www.statcan.gc.ca) or contact us by e-mail at [infostats@statcan.gc.ca](mailto:infostats@statcan.gc.ca) or by telephone from 8:30 a.m. to 4:30 p.m. Monday to Friday:

## Statistics Canada National Contact Centre

Toll-free telephone (Canada and the United States):

Inquiries line	1-800-263-1136
National telecommunications device for the hearing impaired	1-800-363-7629
Fax line	1-877-287-4369

Local or international calls:

Inquiries line	1-613-951-8116
Fax line	1-613-951-0581

## Depository services program

Inquiries line	1-800-635-7943
Fax line	1-800-565-7757

## Information to access the product

This product, Catalogue no. 15-206-X, is available for free in electronic format. To obtain a single issue, visit our website at [www.statcan.gc.ca](http://www.statcan.gc.ca) and browse by "Key resource" > "Publications."

## Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, the Agency has developed standards of service which its employees observe in serving its clients. To obtain a copy of these service standards, please contact Statistics Canada toll free at 1-800-263-1136. The service standards are also published on [www.statcan.gc.ca](http://www.statcan.gc.ca) under "About us" > "The agency" > "Providing services to Canadians."

## The Canadian Productivity Review

**The Canadian Productivity Review** is a series of applied studies that address issues involving the measurement, explanation, and improvement of productivity. Themes covered in the review include, but are not limited to, economic performance, capital formation, labour, prices, environment, trade, and efficiency at both national and provincial levels. The Review publishes empirical research, at different levels of aggregation, based on growth accounting, econometrics, index numbers and mathematical programming. The empirical research illustrates the application of theory and techniques to relevant public policy issues.

The primary distribution medium for this series is the Internet. These studies can be downloaded from the Internet at [www.statcan.gc.ca](http://www.statcan.gc.ca) for free.

All papers in **The Canadian Productivity Review** series go through institutional and peer review to ensure that they conform to Statistics Canada's mandate as a government statistical agency and adhere to generally accepted standards of good professional practice.

The papers in the series often include results derived from multivariate analysis or other statistical techniques. It should be recognized that the results of these analyses are subject to uncertainty in the reported estimates.

The level of uncertainty will depend on several factors: the nature of the functional form used in the multivariate analysis; the type of econometric technique employed; the appropriateness of the statistical assumptions embedded in the model or technique; the comprehensiveness of the variables included in the analysis; and the accuracy of the data that are utilized. The peer group review process is meant to ensure that the papers in the series have followed accepted standards to minimize problems in each of these areas.

# Productivity Trends of Unincorporated Enterprises in the Canadian Economy, 1987 to 2005

John R. Baldwin and Luke Rispoli

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2010

All rights reserved. The content of this electronic publication may be reproduced, in whole or in part, and by any means, without further permission from Statistics Canada, subject to the following conditions: that it be done solely for the purposes of private study, research, criticism, review or newspaper summary, and/or for non-commercial purposes; and that Statistics Canada be fully acknowledged as follows: Source (or "Adapted from", if appropriate): Statistics Canada, year of publication, name of product, catalogue number, volume and issue numbers, reference period and page(s). Otherwise, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, by any means—electronic, mechanical or photocopy—or for any purposes without prior written permission of Licensing Services, Client Services Division, Statistics Canada, Ottawa, Ontario, Canada K1A 0T6.

October, 2010

Catalogue no. 15-206-X, no. 028  
Frequency: Occasional

ISSN 1710-5269  
ISBN 978-1-100-17012-1

Ottawa

Authors' names are listed alphabetically.

La version française de cette publication est disponible (n° 15-206-X au catalogue, n° 028).

---

## Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

## Acknowledgements

The authors thank Dan Leung, Wulong Gu and Jean-Pierre Maynard for comments.

### Symbols

The following standard symbols are used in Statistics Canada publications:

- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0<sup>s</sup> value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- <sup>p</sup> preliminary
- <sup>r</sup> revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- <sup>E</sup> use with caution
- F too unreliable to be published

# Table of content

Abstract.....	6
Executive Summary .....	7
1 Introduction .....	8
2 Overview of Methodology, Concepts and Data Sources.....	10
3 GDP per hour worked.....	11
4 Changes in labour productivity .....	15
5 Diverging trends across Industries .....	20
6 Conclusion .....	25
Appendix A – GDP and hours worked of unincorporated enterprises .....	27
Appendix B – Deriving the Hours Worked of the Paid Employees of the Unincorporated Self-employed .....	28
References .....	31

## **Abstract**

This study uses new GDP estimates for the unincorporated sector in order to examine labour productivity in the unincorporated sector and to compare it to that in the corporate sector over the period 1987 to 2005. The level of nominal GDP per hour worked is significantly lower for unincorporated enterprises (\$23.20 in 2005) than it is for corporations (\$43.40 in 2005). In 2005, GDP per hour worked in the unincorporated sector was just 53% of GDP per hour worked in the corporate sector.

## Executive Summary

This study uses new GDP estimates for the unincorporated sector in order to examine labour productivity in this sector and its contribution to total labour productivity over the period 1987 to 2005.

In 2005, there were over 1.5 million self-employed who were unincorporated, generating \$93.2 billion, or 9.4% of GDP.

Labour productivity (as measured by output per hour worked) is an indicator of the efficiency with which producers make use of labour in the production process. Differences in labour productivity arise from differences in the scale of production, in the amount of capital available per worker, in the skills possessed by owners, and in other organizational characteristics (including technology) possessed by firms in the different sectors.<sup>1</sup>

Unincorporated enterprises are typically smaller enterprises than those in the corporate sector and use less capital per worker. In 2002, the typical Canadian corporation employed eight times as many workers on average as the average unincorporated firm and had about twice the capital per worker. The human capital in unincorporated firms was about the same as found in paid workers and less than managers in general. Partly as a consequence, output per hour worked is significantly smaller for unincorporated enterprises (\$23.20 in 2005) than it is for corporations (\$43.40 in 2005). In 2005, output per hour worked in the unincorporated sector was just 53% of output per hour worked in the corporate sector.

The difference between the unincorporated and the corporate sectors is much more pronounced for goods-producing industries than it is for services industries. In 2005, output per hour worked in the goods-producing unincorporated sector was 34% of output per hour for the goods-producing corporate sector: \$21.50 per hour versus \$63 per hour. In the services industries, the differences were smaller, with GDP per hour worked in the unincorporated sector approaching 70% of the GDP per hour worked in the corporate sector in 2005.

Relative labour productivity growth in the unincorporated and corporate sectors differed significantly over time. From 1987 to 1997, unincorporated labour productivity declined slightly, averaging -0.3% per year, while corporate labour productivity increased, averaging 1.3%. From 1997 to 2005, unincorporated labour productivity grew much faster (3.2% per year) than corporate labour productivity (1.5% per year).

This change in relative growth was due less to differences in the growth of output than to differences in the growth of hours worked.

The decline in the relative productivity of the unincorporated sector in the 1990s was associated with the increase in the number of those self-employed who hired no workers; likewise, the increase in productivity of the unincorporated group post-2000 was associated with declines in the unincorporated self-employed with no paid workers.

---

1. See Baldwin et al. (2005) for a discussion of the determinants of differences in labour productivity.

# 1 Introduction

This paper examines the course of productivity growth for unincorporated enterprises over the period 1987 to 2005 and compares it to productivity growth of firms in the corporate sector. It also compares the level of labour productivity in the corporate and unincorporated sectors across goods-producing and services industries for the period 1987 to 2005.

The importance of unincorporated self-employed entrepreneurs has changed considerably in recent years. The number of unincorporated self-employed grew by 2.7% per year from 1987 to 1999, but then declined by 0.5% per year between 2000 and 2005 (Rispoli 2009b). From 1990 to 1997, over half (53%) of job growth in the whole economy came from the unincorporated sector. In contrast, unincorporated self-employment actually declined in the post-2000 period.

In 2005, there were over 1.5 million self-employed who were unincorporated, generating \$93.2 billion, or 9.4% of GDP.<sup>2</sup>

The increase in self-employment in unincorporated enterprises that took place during most of the 1990s and the declines from the late 1990s to the mid-2000s were driven by those self-employed who had no employees (own-account self-employed). The employment rate for these self-employed individuals and the hours they worked increased when unemployment rates were higher in the 1990s and then declined as unemployment rates fell after 2000, when Canada experienced a resource boom.

Labour productivity (as measured by output per hour worked) is an indicator of the efficiency with which producers make use of labour in the production process. Differences in labour productivity arise from differences in the scale of production, in the amount of capital available per worker, and in other organizational characteristics (including technology) possessed by firms in the different sectors.<sup>3</sup>

Unincorporated enterprises are typically smaller enterprises than those in the corporate sector and use less capital per worker. Excluding the self-employed in health and professional services, the unincorporated self-employed are much more likely to have just a high school education or less than managers in general (Table 1). In this respect, they resemble paid workers more than they do managers of businesses. They are more heavily concentrated in the services industries. Self-employed owners of unincorporated enterprises work mainly on their own or with few staff. The staff may consist of paid workers or unpaid workers, and may include family members. Unincorporated enterprises are present across a wide range of industries—their ranks include lessors of real estate in the finance industry, physicians and dentists in the health industry, lawyers and accountants in professional services, and construction and agricultural workers.<sup>4</sup>

Larger businesses dominate the corporate sector. They are better suited to take advantage of the factors that contribute to labour productivity—by exploiting economies of scale and devoting large amounts of capital per worker to the production process. In 2002, the average corporation employed eight times as many workers as an unincorporated firm and had about twice the capital per worker (Rispoli 2009a). While the underlying characteristics of firms in the two

---

2. For an overview of the relative contribution of the unincorporated and incorporated sectors to the Canadian economy, see Rispoli (2009a, 2009b). Output in this paper is represented by GDP at basic prices.

3. See Baldwin et al. (2005) for a discussion of the determinants of differences in labour productivity.

4. The decision by the self-employed to incorporate depends on a number of factors (Rispoli 2009a). These include taxation and liability considerations, as well as overhead related to record keeping requirements (corporations must file annual financial reports). Moreover, at the time of this study, some professionals (such as lawyers, doctors and dentists) in several provinces were not permitted to incorporate.



sectors point to differences in productivity, few studies have investigated these differences because there is a dearth of measures of output and of GDP with respect to the two sectors.

**Table 1**  
**Educational attainment of the self-employed**

Type of employment	Education level					
	High school or less		Certificate or diploma below bachelor		Bachelor degree or higher	
	All industries	Selected industries <sup>1</sup>	All industries	Selected industries <sup>1</sup>	All industries	Selected industries <sup>1</sup>
	percent					
Unincorporated self-employed	40	47	36	39	23	15
Incorporated self-employed	37	43	37	40	26	17
Paid workers	44	48	36	34	20	18
Managers						
Senior management occupations	23	26	31	32	46	42
Specialist managers	24	25	35	35	41	40
Managers in retail trade, food and accommodation services	47	47	36	36	17	17
Other managers not elsewhere classified	27	28	36	35	37	37

1. All industries excluding health and professional services.

Source: Standard Occupational Classification 1991. Statistics Canada. Minister of Industry, Science and Technology. 1993.

A previous study by Baldwin and Chowhan (2003) found that the unincorporated self-employed lagged corporations in terms of productivity *growth* from 1987 to 1997. As own-account self-employment grew, the owners of these enterprises earned on average less than did employees of corporations. This had a negative impact on productivity growth in the unincorporated sector and therefore held back productivity growth in the entire economy.

Baldwin and Chowhan used the mixed income component of unincorporated GDP to approximate growth rates of total income produced by this sector.<sup>5</sup> Mixed income is an imperfect estimate of levels of GDP, although it may provide a reasonable estimate of growth rates over periods of time if the ratio of mixed to total income is relatively constant.

This study uses new more comprehensive GDP estimates for the unincorporated sector to examine labour productivity in the unincorporated sector and to compare it to the corporate sector for the period 1987 to 2005. This study uses the estimate of unincorporated GDP derived by Rispoli (2009b), which, in addition to mixed income, includes labour income of those who worked for unincorporated enterprises, and operating surpluses (primarily consisting of interest payments and depreciation) as a measure of output. This study separates aggregate business-sector GDP into the portion coming from the unincorporated and the corporate sectors. It also estimates hours worked for both unincorporated enterprises and corporations.

The paper is structured in the following manner. Section 2 describes the methodology and data used to derive labour productivity for unincorporated enterprises and corporations. Section 3 presents comparisons of labour productivity levels by sector from 1987 to 2005. Section 4 focuses on *growth*. In Section 5, differences are examined at the industry level to explain overall trends. Section 6 concludes.

5. Mixed income of the owners of the unincorporated self-employed includes payments for labour services and a rate of return for capital employed. Mixed income accounted for 58% of unincorporated-sector GDP in 2005. The use of mixed income by Baldwin and Chowhan did not seriously affect the accuracy of their results since they focused on growth rates and almost all of the increase in unincorporated self-employment during the 1990s was from those that did not hire workers. As a result, the growth of mixed income of this group of unincorporated self-employed owners much more closely approximates the growth of unincorporated-sector GDP since they pay no wages.

## 2 Overview of Methodology, Concepts and Data Sources

Labour productivity is defined as GDP per unit of labour input.<sup>6</sup> It is estimated here for unincorporated enterprises and for corporations by dividing GDP by hours worked. This study further extends the methodology used by Baldwin and Chowhan (2003). The estimates of GDP for the unincorporated and corporate sectors are based on the methodology developed by Rispoli (2009 a and b).<sup>7</sup> Nominal business-sector GDP calculated at basic prices is separated into two portions—the unincorporated and corporate sectors.

Labour productivity is estimated for both unincorporated enterprises and corporations and for goods-producing and services-producing industries. GDP per hour worked is generally reported here in nominal terms when the level of productivity is being compared across sectors. Growth rates are calculated at aggregate sectoral levels using estimates of real GDP per hour worked.

The hours-worked series are estimated for both the unincorporated and corporate sectors. For unincorporated enterprises, hours worked is the sum of the hours worked by self-employed owners and the hours worked by those who work for them as paid employees. Hours-worked data for self-employed owners are obtained directly from Statistics Canada's Labour Productivity Program (LPP) from the component defined as the self-employed working owners of unincorporated farms, businesses or professional practices. Hours worked of their employees are estimated using wages of employees in general.<sup>8</sup> If wages are lower in the unincorporated sector than elsewhere, this assumption biases estimates of hours worked downward and productivity upward in the unincorporated sector.<sup>9</sup>

The hours worked of the unincorporated paid employees were estimated by multiplying the unincorporated share of labour income by the total hours worked of paid workers in the business sector (see Appendix B). The two components (self-employed individuals in unincorporated enterprises and paid workers of unincorporated enterprises) were added together to arrive at the hours worked for the unincorporated sector.<sup>10</sup>

The estimate of hours worked for the corporate sector includes both self-employed owners of corporations and paid employees of corporations. The first group was obtained directly from the Statistics Canada's LPP. The second group was derived residually by subtracting the estimate of hours worked of paid workers in the unincorporated sector from the hours worked for all paid employees in the business sector, which is obtained from the LPP. The components were then summed to arrive at hours worked for corporations.

---

6. The study estimates GDP at basic prices. It examines the business sector and excludes all activity generated by government, non-commercial-sector, and owner-occupied dwellings, which accounted for about 24% of GDP in 2005. Since the source used for hours worked in this study does not include all the hours worked for lessors of real estate (landlords), this industry was removed from the unincorporated business sector's estimate of hours worked and nominal GDP that is used in this study. Similarly, this industry was removed from the estimate of hours worked and the estimate of nominal GDP for the corporate sector.

7. In this paper, the overall nominal GDP is based on KLEMS data.

8. Prior to 1997, wages are not available directly from tax files. They were imputed by assuming that the wage bill share of employees moved in tandem with the share of self-employed who hired workers (see Appendix B).

9. If paid workers in the unincorporated sector were paid less, then the conclusions reported in this paper that productivity in this sector is below that of the corporate sector would be strengthened.

10. Since unincorporated enterprises are smaller, they likely pay their employees less per hour than do corporations. Therefore, the share of labour income may underestimate the hours worked in the unincorporated sector and overstate labour productivity in this sector.

### 3 GDP per hour worked

In 2005, the level of nominal GDP per hour worked was much lower for unincorporated enterprises (\$23.2) than for corporations (\$43.4). GDP per hour worked in the unincorporated sector was just 53% of GDP per hour worked in the corporate sector (Table 2).

**Table 2**  
**GDP per hour worked of unincorporated enterprises and corporations**

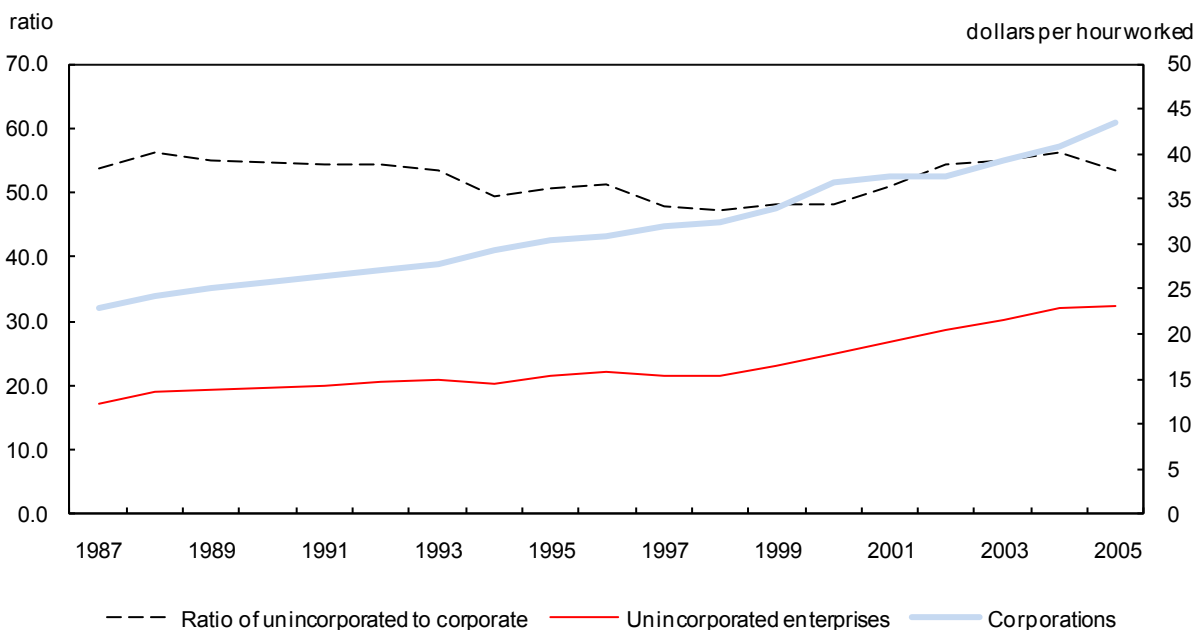
	Level			Average annual growth		
	1987	1997	2005	1987 to 2005	1987 to 1997	1997 to 2005
	millions			percent		
<b>Business sector</b>						
Unincorporated enterprises						
Nominal GDP	36,942	55,545	76,731	4.1	4.2	4.1
Hours worked	3,004	3,626	3,309	0.5	1.9	-1.1
Nominal GDP per hour worked	12.3	15.3	23.2	3.6	2.2	5.3
Corporations						
Nominal GDP	342,979	527,232	871,455	5.3	4.4	6.5
Hours worked	14,972	16,517	20,085	1.6	1.0	2.5
Nominal GDP per hour worked	22.9	31.9	43.4	3.6	3.4	3.9
	percent					
Ratio of nominal GDP per hour worked of unincorporated enterprises to corporations	54	48	53	...	...	...
	millions					
<b>Goods-producing industries</b>						
Unincorporated enterprises						
Nominal GDP	14,036	17,196	21,851	2.5	2.1	3.0
Hours worked	1,293	1,200	1,016	-1.3	-0.7	-2.1
Nominal GDP per hour worked	10.9	14.3	21.5	3.9	2.8	5.2
Corporations						
Nominal GDP	169,885	247,267	405,360	5.0	3.8	6.4
Hours worked	5,749	5,736	6,431	0.6	0.0	1.4
Nominal GDP per hour worked	29.5	43.1	63.0	4.3	3.8	4.9
	percent					
Ratio of nominal GDP per hour worked of unincorporated enterprises to corporations	37	33	34	...	...	...
	millions					
<b>Service industries</b>						
Unincorporated enterprises						
Nominal GDP	22,905	38,349	54,880	5.0	5.3	4.6
Hours worked	1,711	2,426	2,293	1.6	3.5	-0.7
Nominal GDP per hour worked	13.4	15.8	23.9	3.3	1.7	5.3
Corporations						
Nominal GDP	173,094	279,965	466,095	5.7	4.9	6.6
Hours worked	9,222	10,782	13,654	2.2	1.6	3.0
Nominal GDP per hour worked	18.8	26.0	34.1	3.4	3.3	3.5
	percent					
Ratio of nominal GDP per hour worked of unincorporated enterprises to corporations	71	61	70	...	...	...

Note: The nominal GDP is expressed in millions of dollars and the nominal GDP per hour worked, in dollars.  
Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

The difference in GDP per hour worked between the corporate sector and incorporated enterprises is much more pronounced for goods-producing industries than for services industries. In 2005, GDP per hour worked in the unincorporated goods-producing industries sector was 34% of the GDP per hour worked in the goods-producing corporate sector—\$21.50 per hour for unincorporated enterprises compared to \$63 per hour for corporations. In the services-producing industries, the differences were smaller, with GDP per hour worked in the unincorporated sector approaching 70% of GDP per hour worked in the corporate sector in 2005: \$23.90 per hour versus \$34.10 per hour.

GDP per hour worked in the unincorporated sector as a ratio of GDP per hour in the corporate sector followed a U shape from 1987 to 2005 (Chart 1). It peaked at 56.2% in 1988, while declining during most of the 1990s to reach 47.3% in 1998. The ratio then rose after 2000 and reached 56.2% in 2004.

**Chart 1**  
**Nominal GDP per hour worked of unincorporated enterprises and corporations**



Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

The ratio of nominal GDP per hour worked of unincorporated to corporate enterprises was lower for the goods-producing industries than for services industries throughout the period (Table 3). In the goods-producing industries, the ratio peaked in 1988, fell throughout the 1990s, and rose post-2000. In the services industries, the ratio fell throughout most of the 1990s then increased post-2000 to almost the same levels reached in the late 1980s.

Differences in output per hour worked are partially accounted for differences in capital intensity. In the goods-producing industries, corporations use more capital per worker—in particular, in areas where unincorporated enterprises play a small role (including manufacturing, and mining and oil and gas). In the service sector, differences arise because of differences in industry representation. Unincorporated enterprises tend to be concentrated primarily in services that use less capital per worker (including financial services, health services [doctors and dentists], and professional services [lawyers and accountants] while corporations are more concentrated in services that use more capital per worker (including transportation [shipping, rail and air] and telecommunications [cable and telephone]).

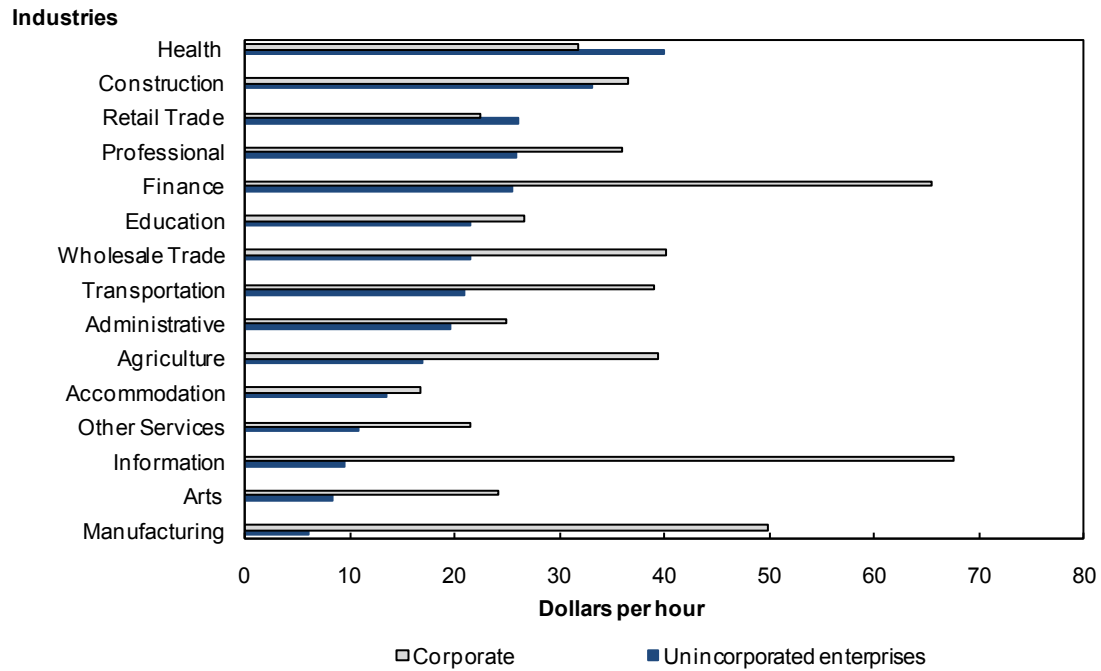
**Table 3**  
**Nominal GDP per hour worked of unincorporated enterprises and corporations**

	Unincorporated enterprises			Corporations			Ratio of unincorporated enterprises to corporations		
	All industries	Goods	Services	All industries	Goods	Services	All industries	Goods	Services
	dollars per hour			dollars per hour			percent		
1987	12.3	10.9	13.4	22.9	29.5	18.8	53.7	36.7	71.3
1988	13.6	12.2	14.6	24.1	30.9	19.9	56.2	39.3	73.5
1989	13.8	11.5	15.5	25.1	31.9	20.8	54.9	35.9	74.6
1990	14.1	11.5	15.9	25.7	32.9	21.5	54.6	35.0	74.2
1991	14.3	11.3	16.4	26.4	33.7	22.2	54.2	33.7	73.5
1992	14.7	11.9	16.6	27.0	35.0	22.7	54.4	33.9	73.0
1993	14.9	12.4	16.5	27.9	36.6	23.1	53.5	33.9	71.2
1994	14.4	12.4	15.6	29.3	39.3	23.9	49.3	31.5	65.5
1995	15.4	14.5	15.9	30.3	41.4	24.4	50.8	35.0	65.2
1996	15.8	16.1	15.6	30.8	42.3	24.8	51.1	38.1	62.9
1997	15.3	14.3	15.8	31.9	43.1	26.0	48.0	33.2	60.9
1998	15.3	14.6	15.7	32.5	43.8	26.7	47.3	33.2	58.9
1999	16.4	15.4	16.8	34.0	47.9	27.0	48.2	32.0	62.3
2000	17.7	16.2	18.4	36.9	53.9	28.4	48.0	30.0	64.8
2001	19.1	18.6	19.4	37.5	53.5	29.7	51.1	34.8	65.3
2002	20.4	19.3	20.9	37.6	53.2	30.2	54.4	36.4	69.2
2003	21.6	20.9	21.9	39.2	56.2	31.3	55.1	37.3	70.0
2004	22.9	22.7	23.0	40.8	58.7	32.4	56.2	38.8	70.9
2005	23.2	21.5	23.9	43.4	63.0	34.1	53.4	34.1	70.1

Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

In 2005, in the unincorporated sector, eight among the first ten with the highest GDP per hour were services industries (Chart 2). Health (\$40.0), retail trade (\$26.0), professional services (\$25.9) and finance (\$25.5) contributed over half of the total GDP produced by the entire unincorporated business sector.

**Chart 2**  
**Nominal GDP per hour worked of unincorporated enterprises and corporations by industry, 2005**



Note: Agriculture includes agriculture, forestry, fishing and hunting.  
 Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

## 4 Changes in labour productivity

Changes in labour productivity are measured by changes in the volume of output produced per unit of labour inputs.

The growth in output is normally measured by increases in real gross domestic product in the business sector. Changes in real, as opposed to nominal, GDP permit comparisons to be made of volume changes that abstract from price changes over time. Estimates of real GDP require estimates of price indices that are used to deflate nominal GDP.

**Table 4**  
**Labour productivity of unincorporated enterprises and corporations**

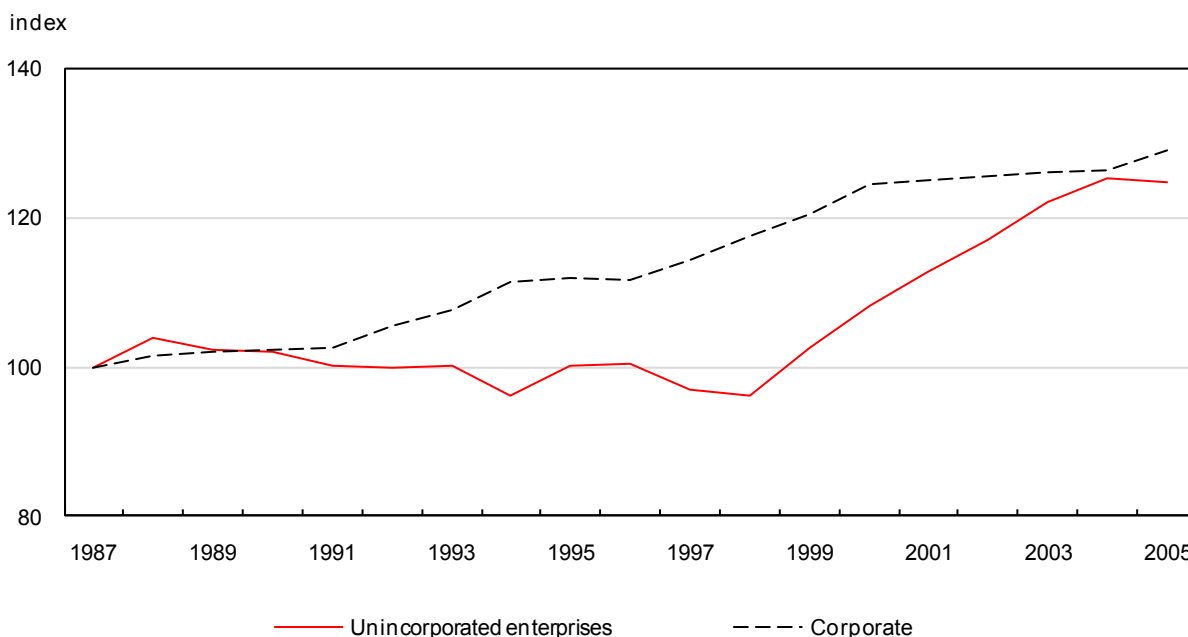
	Average annual growth		
	1987 to 2005	1987 to 1997	1997 to 2005
	percent		
Business sector			
Unincorporated enterprises			
Real GDP	1.8	1.6	2.0
Hours worked	0.5	1.9	-1.1
Labour productivity	1.2	-0.3	3.2
Corporations			
Real GDP	3.1	2.3	4.0
Hours worked	1.6	1.0	2.5
Labour productivity	1.4	1.3	1.5
Goods-producing industries			
Unincorporated enterprises			
Real GDP	0.9	0.1	1.9
Hours worked	-1.3	-0.7	-2.1
Labour productivity	2.3	0.9	4.1
Corporations			
Real GDP	2.3	1.8	3.0
Hours worked	0.6	0.0	1.4
Labour productivity	1.7	1.8	1.5
Service industries			
Unincorporated enterprises			
Real GDP	2.2	2.3	2.1
Hours worked	1.6	3.5	-0.7
Labour productivity	0.6	-1.2	2.8
Corporations			
Real GDP	3.8	2.8	5.0
Hours worked	2.2	1.6	3.0
Labour productivity	1.6	1.2	2.0

Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

Separate price deflators are not available for the unincorporated and corporate sectors that take into account the different commodities that are produced by each sector. But deflators are available for each subindustry (i.e., agriculture, retail) that can be used to produce different aggregate price indices for each of the unincorporated and corporate sectors by weighting each of the individual industry price indices by the share of GDP of each of the corporate and

unincorporated sectors in each industry.<sup>11</sup> At the sector level, the aggregate business-sector deflator was obtained by chained (Tornqvist) aggregation of each industry's price deflator using the industry's two-period average share of GDP as weights. These aggregate price indices, in turn, were used to deflate the aggregate nominal GDP of the unincorporated and corporate sectors to generate a volume series for each.

**Chart 3**  
**Business sector labour productivity by sector (1987=100)**



Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

Growth of labour productivity for unincorporated enterprises and corporations was derived using indices of growth in the real gross domestic product and hours worked in each sector.

Labour productivity in unincorporated and corporate enterprises grew at similar rates from 1987 to 2005, averaging 1.2% per year and 1.4% per year, respectively (see Table 4). However, from 1987 to 1997, unincorporated labour productivity declined slightly, averaging -0.3% per year, while corporate labour productivity increased, averaging 1.3%. From 1997 to 2005, unincorporated labour productivity grew much faster (3.2% per year) than corporate labour productivity (1.5% per year) (Chart 3).

The differences in the profiles of productivity growth of the corporate and unincorporated sectors after 1997 are due less to differences in the growth of output (Chart 4) than they are to differences in the growth of hours worked (Chart 5).

11. Rispoli (2009b) shows that unincorporated enterprises are more concentrated in the service industries (76.5% in 2005) compared to goods-producing industries (23.5% in 2005). On the other hand, corporations are evenly split between goods-producing (45.4% in 2005) and service industries (54.6% in 2005).



**Chart 4**  
**Cumulative growth of Canadian real GDP by sector, 1987 to 2005 (1987=100)**

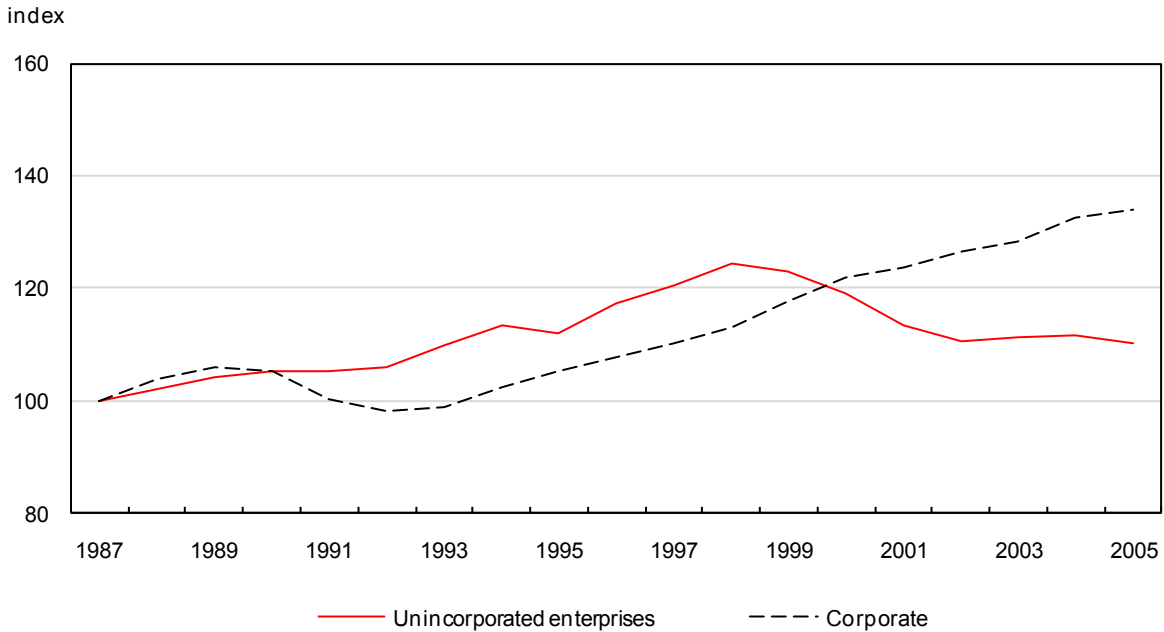


Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

The growth in real GDP in the unincorporated sector increased slightly post-2000 relative to the 1990s but was below the corporate sector throughout this period. Real GDP of unincorporated enterprises grew at an average annual rate of 1.6% between 1987 and 1997 and at an average annual rate of 2.0% from 1997 to 2005. In contrast, corporate real GDP grew at an average annual rate of 2.3% between 1987 and 1997 and at an average annual rate of 4.0% between 1997 and 2005.

The major cause of the post-2000 increase in the relative productivity of the unincorporated sector was the decline in hours worked in this sector. Hours worked in the corporate sector, whose employees consist primarily of paid workers, continued to increase over the entire time period.

**Chart 5**  
**Cumulative growth of hours worked by sector, 1987 to 2005 (1987=100)**



Source: Statistics Canada, authors' own calculations and Labour Productivity Program.

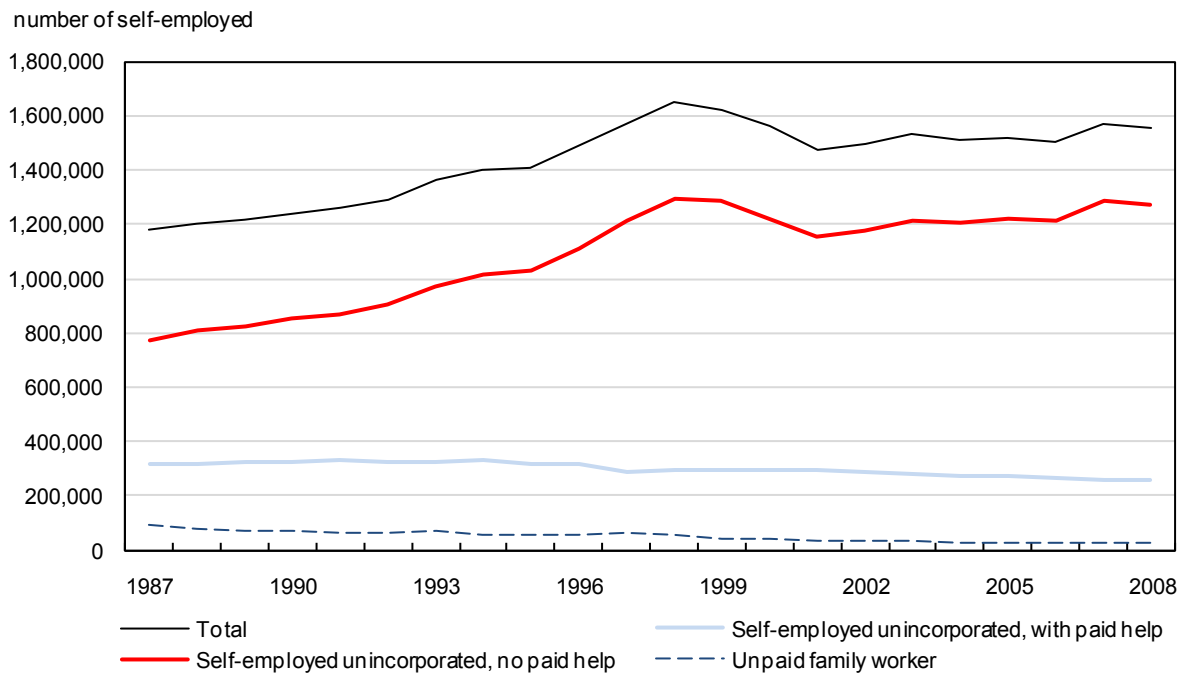
The trend with respect to growth in unincorporated hours worked differed before and after 1998. Growth in unincorporated hours worked averaged 1.9% per year between 1987 and 1997, but it averaged -1.1% between 1997 and 2005. In contrast, growth in corporate hours worked was much weaker from 1987 to 1997, averaging 1.0% per year, while it increased 2.5% annually between 1997 and 2005.

In the 1990s, a large portion of all jobs created in the business sector came from the self-employed. Between 1990 and 1997, 53% of job growth in the Canadian economy was created by the unincorporated sector; this growth came exclusively from own-account self-employment (mainly owners with no paid workers) (Chart 6).<sup>12</sup> After 1999, the corporate sector led the way in job growth.

The earlier period was also associated with a decline in the number of unincorporated self-employed owners with paid workers and with a decline in their income (as measured by the value of mixed income per self-employed worker relative to the remuneration of all paid workers (Baldwin and Chowhan 2003)). This was also the period when the relative productivity of the unincorporated sector fell. When the size of the unincorporated sector declined post-2000, the relative productivity of the unincorporated self-employed increased.

12. The own account self-employed are those who do not hire paid employees.

**Chart 6**  
**Number of unincorporated self-employed, 1987 to 2008**



Source: Labour Force Survey, Table 282.

The unincorporated self-employed consist of three groups—those who have no employees, those with employees, and those who employ family members. Growth in the self-employed during the 1990s came entirely from the self-employed who did not have paid help.

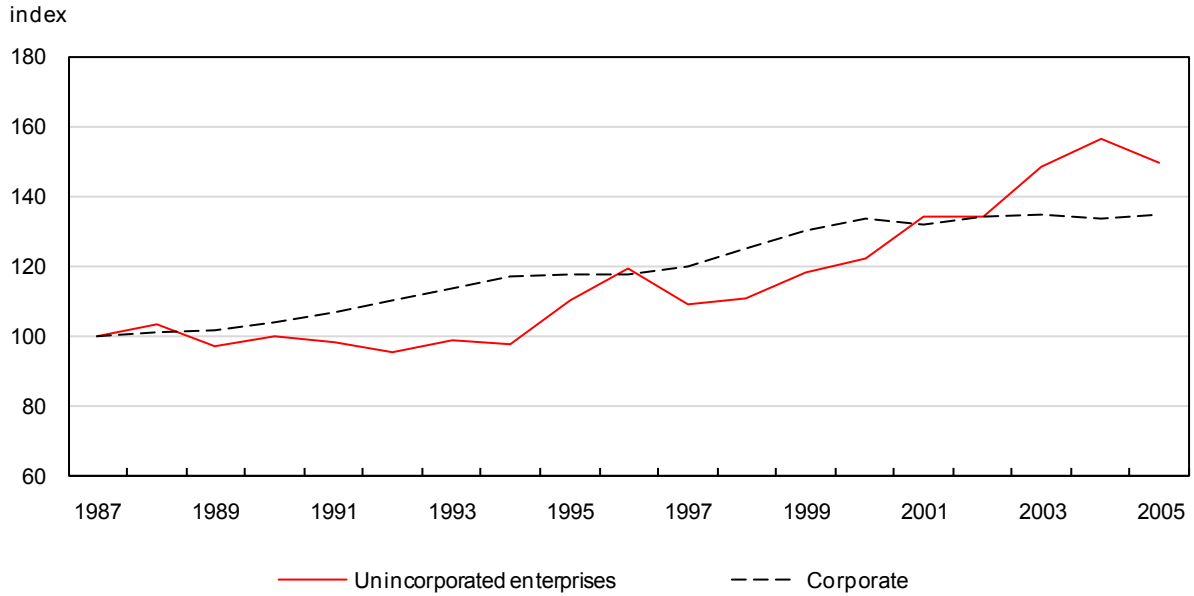
The decline in the relative productivity of the unincorporated sector in the 1990s was associated with the increase in the number of those self-employed who hired no workers; likewise, the increase in productivity of the unincorporated group post-2000 was associated with declines in the unincorporated self-employed with no paid workers.

## 5 Diverging trends across Industries

Pre-1997, average annual productivity growth was higher for corporations compared to unincorporated enterprises with respect to both goods-producing and services industries (Table 2, Table 3, Table 4, Chart 7 and Chart 8). From 1987 to 1997, the average annual labour productivity growth rate in the corporate goods-producing sector (1.8%) was higher than that in the unincorporated goods-producing sector (0.9% per year). Similarly, the average annual productivity growth rate in the corporate services sector (1.2%) was higher than the average annual productivity growth rates for unincorporated services (-1.2% per year).

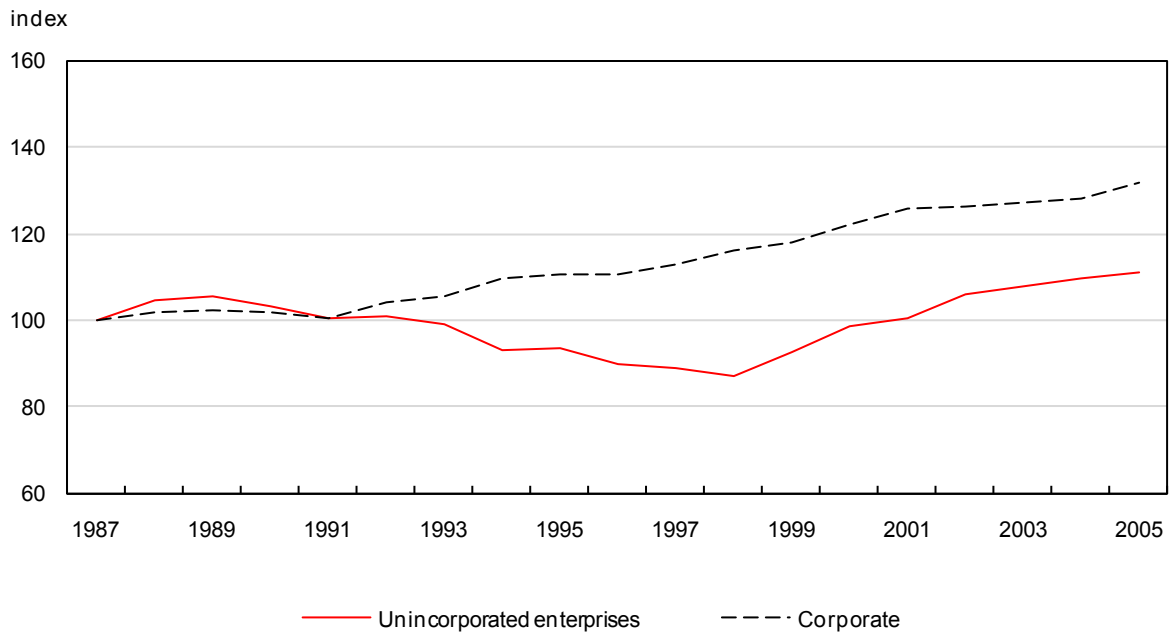
The improved productivity performance after 2000 in the unincorporated sector relative to corporate sector came from both the goods-producing and services industries. From 1997 to 2005, corporate productivity grew at a slower pace in services (2.0%) than did unincorporated productivity growth (2.8%). After 1997, productivity growth for goods-producing industries was much lower for corporations (1.5%) relative to unincorporated enterprises (4.1%).

**Chart 7**  
**Goods-producing labour productivity by sector (1987=100)**



Source: Authors' own calculations and Statistics Canada Labour Productivity Program

**Chart 8**  
**Services industries labour productivity by sector (1987=100)**



Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

**Table 5**  
**Hours worked of unincorporated enterprises, 1987 to 2005**

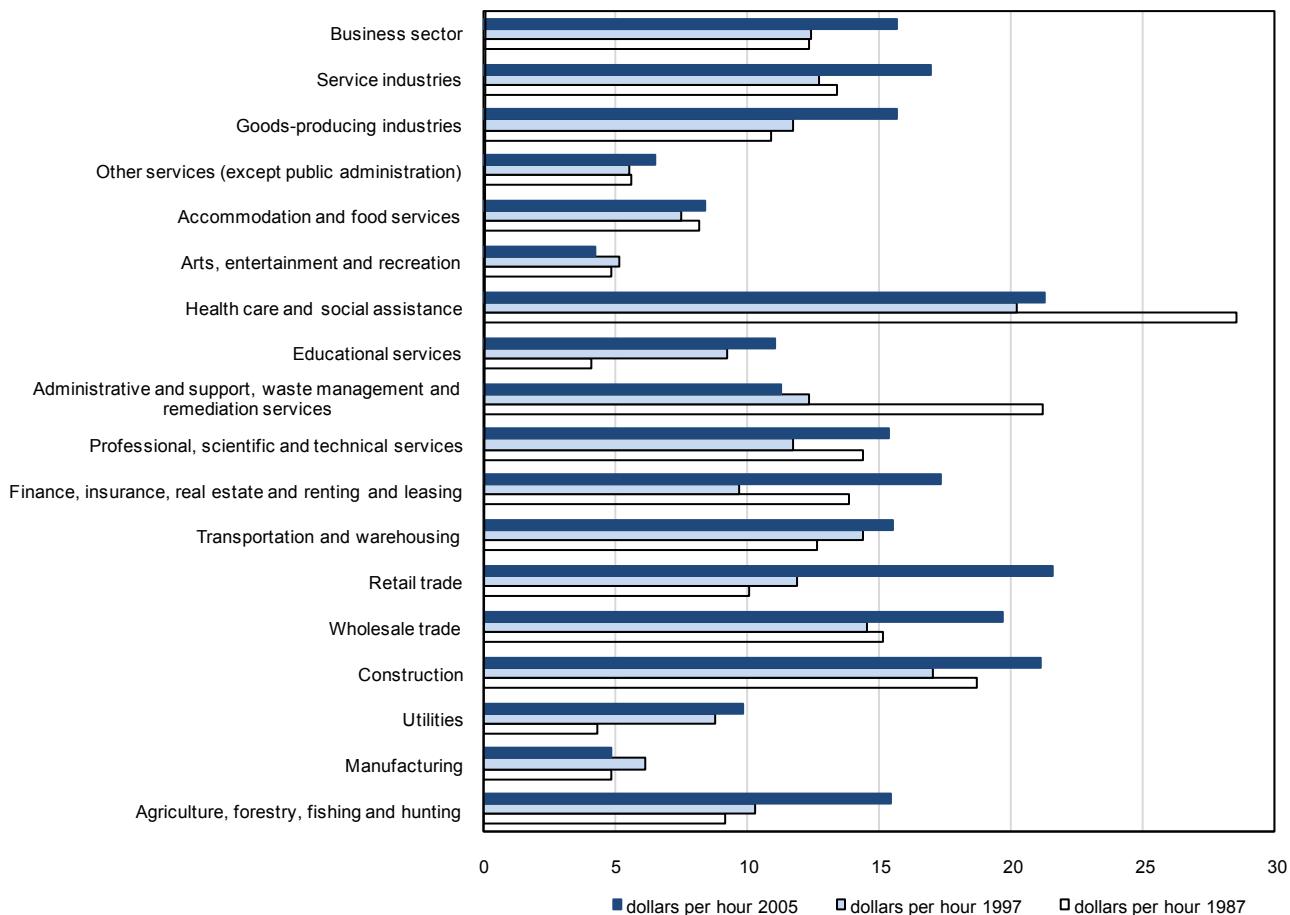
	1987	1997	2005	First difference		Growth rates		
				1987 to 1997	1997 to 2005	1987 to 2005	1987 to 1997	1997 to 2005
	millions of hours			percent				
<b>Business sector</b>	3,004	3,626	3,309	622	-317	10	21	-9
<b>Goods-producing industries</b>	1,293	1,200	1,016	-93	-184	-21	-7	-15
Agriculture, forestry and fishing	937	776	502	-160	-275	-46	-17	-35
Mining and oil and gas extractions	3	12	10	8	-1	200	239	-11
Utilities	1	1	1	0	1	17	-37	86
Construction	260	311	369	51	59	42	20	19
Manufacturing	91	100	134	9	33	46	10	33
<b>Services</b>	1,711	2,426	2,293	714	-133	34	42	-5
Wholesale trade	56	85	71	29	-13	28	52	-16
Retail trade	320	357	224	37	-133	-30	12	-37
Transportation	146	205	189	59	-16	29	40	-8
Information services	31	57	32	26	-25	5	85	-44
Finance	67	151	171	84	20	156	125	14
Professional services	279	464	449	185	-15	61	67	-3
Administrative	47	116	182	69	67	290	147	58
Educational services	50	50	60	1	9	21	2	19
Health	285	426	424	141	-1	49	50	0
Arts and entertainment	61	76	97	15	20	58	25	26
Accommodation and food services	161	173	133	13	-41	-17	8	-23
Other services	210	266	261	56	-5	24	26	-2

Source: Statistics Canada, authors' own calculations and Labour Productivity Program.

The decline in hours worked occurred across a wide range of services industries, despite an increase in unincorporated GDP generally (see Table 5 and Appendix A Text table 1).

The largest absolute and percentage decline between 1997 and 2005 with respect to hours worked in the services sector occurred in the retail industry, where hours worked fell by 133 million hours, or 37%. Kamhi and Leung (2005) suggest that self-employment in retail began to decline in the mid-1990s as this industry faced increased competition from the entry of many 'big box' retailers during the latter part of the 1990s. Wholesaling also experienced a decline of 16% in hours worked. Distributive services as a whole saw an increase in the GDP produced by unincorporated self-employed, but a decline in the hours worked by this group.

**Chart 9**  
**Unincorporated self-employed labour productivity by industry**  
**(chained 2002 dollars)**



Note: Information and cultural industries are not included because of insufficient data.  
 Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

Other substantial declines occurred in the services industries, including information services, accommodation and food services, and transportation—with percentage declines from 1997 to 2005 of 44%, 23% and 8%, respectively.

The decline in hours worked after 1997 was accompanied by an increase in the ‘real’ output per worker for the services sector as a whole (Chart 9).<sup>13</sup> This also occurred across most of the individual services industries. In contrast, ‘real’ volume estimates of productivity growth were negative during the earlier decade in the services sector as a whole.

While the declines in hours worked in the services sector were associated with an increase in GDP, this was not the case for the goods-producing industries. On the goods side, the largest decline in hours worked occurred in the agriculture, forestry and fishing industry, where hours worked fell 275 million hours from 1997 to 2005. This continued a decline experienced in the

13. In Chart 9, the respective levels of GDP per hour worked are presented for 1987, 1997, and 2005 calculated in chained 2002 dollars in order to provide ‘real’ volume measures. We used industry deflators taken from the Canadian Productivity Accounts that combine both the corporate and unincorporated sector into one deflator. Business sector GDP deflators and productivity estimates were estimated separately for the unincorporated and corporate sectors. It uses industry weights corresponding to the GDP corporate and unincorporated estimates as derived by Rispoli (2009 a and b).

previous decade. However, GDP produced by the unincorporated goods-producing sector also declined over the 1997-to-2005 period in agriculture, fishing, and forestry. Productivity increased in these industries because hours worked declined even faster than the decline in GDP (Appendix A Text table 1).

Over the last century, Canadian farms have become more productive and have exhibited a growing trend toward fewer, but larger, farms (Sparling, Laughland and Mitura 2008). The Census of Agriculture reported that the total farm area has remained relatively stable over the years (67,825,757 hectares in 1986 to 67,586,739 hectares in 2006). However, the number of farms declined from 293,089 in 1986 to 229,373 in 2006. As a result, the average area in hectares per farm has increased from 231 in 1986 to 295 in 2006.

In contrast to the resource sector of goods-producing industries, substantial gains in hours worked occurred in construction. The strong growth of nominal GDP and hours worked post-1997 in construction was fuelled by the growth of the housing sector and the resource boom that was associated with a rapid rise in metal, and oil and gas prices.



## 6 Conclusion

This paper has examined the levels of nominal GDP per hour worked of the unincorporated and corporate sectors, as well as productivity growth from 1987 to 2005.

The unincorporated sector consists of self-employed businesses, who are, for the most part, small firms. While some hire paid workers, the majority have no employees. They also tend to be less capital-intensive than firms in the corporate universe. They also are likely to have lower levels of education. They are more likely to resemble paid workers in this regard than managers in general.

The unincorporated self-employed accounted for 12.3% of hours worked in the business sector in 1980, 13.0% in 1990, 13.3% in 2000, and 11.6% in 2005.

The productivity performance of the overall economy is dependent upon the performance of each of its parts. Normally, analysis of the productivity performance of different segments of the economy focuses on industries—not on the legal form of organization. Unincorporated enterprises differ from incorporated enterprises by a legal construct—not by any inherent underlying structural characteristic that is associated with the industry in which the firms are located. Differences in legal constructs are designed to facilitate differences in the mode of organization. Incorporation allows for a different form of risk sharing between the providers of capital and the managers of a firm and, therefore, for the potential specialization of function between managers and capital providers. It may therefore be the case that the legal form of organization is associated with different structural characteristics and different performance. Furthermore, societies that concentrate more on one form of organization than on another may experience differences in productivity performance.

Larger businesses dominate the corporate sector and are better suited to take advantage of productivity gains resulting from economies of scale. They manage to achieve the plant and firm size that is normally associated with higher productivity levels. In 2002, Canadian corporations employed 8 times as many workers on average as unincorporated firms and had about twice the capital per worker (Rispoli 2009a).

Knowing how organizational forms map to differences in productivity is therefore useful if we are to understand the underlying determinants of Canada's productivity performance. In the past, this goal has been hampered by the lack of comprehensive data on measures of output in the self-employed sector. Development of GDP estimates for the unincorporated sector has addressed part of this deficiency.

The level of productivity per worker in the unincorporated sector is well below the level of productivity per worker in the corporate sector. It was 54% in 1987, 48% in 1997, and 53% in 2005. Differences in legal form of organization are manifested in very different levels of labour productivity.

This paper has also examined the nature of changes in productivity in the unincorporated sector and how it has evolved relative to the corporate sector. Understanding how differences between the corporate and the unincorporated sector have evolved over time helps us to understand the underlying forces behind aggregate productivity.

Productivity changes in the unincorporated sector were found here to be inversely related to the change in the numbers of self-employed over the period from 1987 to 2005. From 1987 to 1997, the growth of labour productivity fell by 0.3% annually in unincorporated enterprises

compared to a rise of 1.3% annually in corporations. Between 1997 and 2005, growth in labour productivity in the unincorporated sector averaged 3.2%, but only 1.5% in the corporate sector.

This divergence is consistent with the explanation that the changes in unincorporated self-employment that occurred in this period came from 'push' factors that increased self-employment when better opportunities for paid workers were scarce as a result of the state of the labour market. Baldwin and Chowhan (2003) noted that, as the unincorporated segment grew in the 1990s, the net income (as measured by mixed income) that the owners of these enterprises received fell relative to the net income of employees in general. The 1990s were characterized by the 'jobless' recovery in the early 1990s and then a slow but steady increase in the employment to population ratio as the unemployed went back to work.<sup>14</sup>

Post-2000, as the labour market improved, overall employment rates continued to increase, and unincorporated self-employment (particularly for the self-employed with no employees) declined. The self-employed without employees then either exited the labour market, found employment in paid work, where the average income was above that in the self-employed sector or incorporated. Once more, this is consistent with the 'push' explanation of self-employment, since it was in the latter period that the forces drawing workers into the corporate sector were most active.

Accompanying those moves into and out of self employment were fluctuations in labour productivity that are consistent with the argument that the marginal or additional self-employed worker who entered in the 1990s and exited post-2000 was characterized by less than average output per worker, since the average output per worker in the unincorporated sector declined in the 1990s and increased after 2000.

None of this should be used to demean the role that self-employment plays in society. It is from this group that entrepreneurs are born. Some of the new producers born into this group will make the transition to larger, more productive, firms. Moreover, having an outlet that layoffs from the corporate sector or new arrivals into the labour force can use to earn a living and continue to acquire skills when overall conditions in labour markets are weak serves a useful purpose.

Nevertheless, the levels of labour productivity in this sector are below those in the corporate sector of the economy, and this may contribute to the gap between Canada's measured aggregate labour productivity and that of other countries. Future work will examine in greater detail the extent to which this is an important contributor to Canada/U.S. productivity differences.

---

14. See Maynard (2007, Figure 3).

# Appendix A – GDP and hours worked of unincorporated enterprises

**Text table 1**  
**GDP and hours worked of unincorporated enterprises**

S level aggregation based on the North American Industry Classification	GDP			Hours worked			GDP per hour worked		
	1987	1997	2005	1987	1997	2005	1987	1997	2005
	millions of dollars			millions of hours			dollars per hour		
<b>All Industries</b>	36,942	55,545	76,731	3,004	3,626	3,309	12.3	15.3	23.2
<b>Goods-producing industries</b>	14,036	17,196	21,851	1,293	1,200	1,016	10.9	14.3	21.5
Agriculture, forestry, fishing and hunting	8,580	9,248	8,506	937	776	502	9.2	11.9	16.9
Agriculture	7,180	7,863	7,173	875	724	475	8.2	10.9	15.1
Forestry	519	782	775	24	21	15	21.6	36.4	50.3
Fishing	881	603	558	38	32	11	23.4	18.7	48.5
Mining and oil and gas extraction	156	297	278	3	12	10	44.6	25.1	26.5
Utilities	4	7	16	1	1	1	4.3	11.9	14.6
Construction	4,860	6,903	12,239	260	311	369	18.7	22.2	33.1
Manufacturing	437	741	812	91	100	134	4.8	7.4	6.1
<b>Service-producing industries</b>	22,905	38,349	54,880	1,711	2,426	2,293	13.4	15.8	23.9
Wholesale trade	845	1,336	1,538	56	85	71	15.1	15.8	21.6
Retail trade	3,207	4,604	5,822	320	357	224	10.0	12.9	26.0
Transportation and warehousing	1,844	3,441	3,943	146	205	189	12.6	16.8	20.9
Information and cultural industries	10	147	303	31	57	32	0.3	2.6	9.5
Finance, insurance, real estate and rental and leasing	925	1,892	4,366	67	151	171	13.8	12.6	25.5
Professional, scientific and technical services	4,000	7,542	11,622	279	464	449	14.4	16.2	25.9
Administrative and support, waste management and remediation services	991	1,964	3,574	47	116	182	21.2	17.0	19.6
Educational services	200	841	1,291	50	50	60	4.0	16.7	21.6
Health care and social assistance	8,111	12,163	16,981	285	426	424	28.5	28.6	40.0
Arts, entertainment and recreation	295	642	802	61	76	97	4.8	8.4	8.3
Accommodation and food services	1,305	1,759	1,802	161	173	133	8.1	10.1	13.6
Other services (except public administration)	1,172	2,018	2,836	210	266	261	5.6	7.6	10.9

Source: Authors' own calculations and Statistics Canada Labour Productivity Program.

## Appendix B – Deriving the Hours Worked of the Paid Employees of the Unincorporated Self-employed

Hours worked are made up of the hours of self-employed owners and individuals who work for self-employed owners as paid employees. Data on hours worked for unincorporated self-employed owners are obtained directly from the LPP, specifically from the component defined as the “self-employed working owners of unincorporated farms, businesses or professional practices.” Hours worked of employees of the self-employed are derived from their wage bill by assuming that wages per employee are the same as for employees in general.

The hours worked by the unincorporated paid employees were estimated by multiplying the unincorporated share of labour income by the number of hours worked of business-sector paid workers. These two components (self-employed and paid workers) were added together to arrive at the hours worked for the unincorporated sector.

### Estimating unincorporated share of labour income

The unincorporated share of labour income was estimated by Rispoli (2009b) for the period 1997 to 2005. For the period 1987 and 1997, the unincorporated share of labour income resulting from paid workers was not available directly and was imputed by assuming that the wage bill share of employees moved in tandem with the share of self-employed who hired workers.

This was implemented using a back-cast projector that was calculated from the ratio of hours worked by the unincorporated self-employed who had paid workers divided by the business sector’s hours worked of paid employees ([workforce], Appendix B Text table 2).

### Backcast Projector

The source used for employment is the labour force survey. The backcast projector is used to calculate an estimate of paid workers in the unincorporated sector for the period 1987 to 1996. The Backcast Projector (1), Backcast Factor (2), and Unincorporated Share of Labour Income (3) were calculated for 1987 to 1996. The 1996 estimate of unincorporated labour income share (3) was estimated by applying the 1996 backcast factor (2) to the 1997 unincorporated share of labour income. The period 1987 to 1995 was calculated in a similar manner:

$$(1) \text{ Backcast Projector (yr)} = \frac{\text{unincorporated self-employment who hired workers (yr)}}{\text{business sector work force (yr)}}$$

where

work force is the unincorporated self-employment plus private sector paid employment plus incorporated self-employment.

yr = 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995 and 1996

$$(2) \text{ Backcast Factor (yr)} = \frac{\text{Backcast Projector (yr)}}{\text{Backcast Projector (yr+1)}}$$

where yr = 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995 and 1996

(3) Unincorporated labour income share (yr) =

Backcast Factor (yr) \* Unincorporated labour income share (yr +1)

where yr = 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995 and 1996

**Text table 2****Ratio of unincorporated self-employed with paid employees as a percentage of private sector work force**

Industry	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Unincorporated share of labour income
	ratio											
Agriculture	0.250	0.261	0.253	0.260	0.241	0.237	0.225	0.218	0.206	0.206	0.154	0.350
Fishing	0.041	0.047	0.047	0.048	0.052	0.051	0.055	0.052	0.048	0.040	0.032	0.252
Forestry	0.041	0.047	0.047	0.048	0.052	0.051	0.055	0.052	0.048	0.040	0.032	0.055
Construction	0.064	0.062	0.060	0.062	0.061	0.060	0.061	0.061	0.065	0.063	0.052	0.031
Manufacturing	0.006	0.007	0.008	0.007	0.008	0.007	0.008	0.009	0.007	0.007	0.006	0.003
Utilities	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Wholesale trade	0.027	0.024	0.028	0.026	0.027	0.025	0.026	0.028	0.024	0.024	0.023	0.014
Retail trade	0.027	0.024	0.028	0.026	0.027	0.025	0.026	0.028	0.024	0.024	0.023	0.036
Transportation and warehousing	0.025	0.027	0.022	0.023	0.024	0.024	0.022	0.027	0.028	0.026	0.021	0.016
Finance	0.011	0.011	0.011	0.012	0.015	0.014	0.013	0.015	0.013	0.017	0.014	0.009
Professional services	0.073	0.061	0.071	0.064	0.077	0.072	0.068	0.067	0.064	0.069	0.050	0.106
Administrative	0.038	0.039	0.039	0.043	0.037	0.043	0.040	0.036	0.038	0.039	0.033	0.023
Educational services	0.024	0.024	0.024	0.018	0.032	0.021	0.023	0.019	0.026	0.014	0.018	0.181
Health	0.072	0.072	0.060	0.060	0.069	0.069	0.073	0.069	0.062	0.062	0.069	0.272
Information, culture and recreation	0.016	0.017	0.013	0.017	0.013	0.011	0.016	0.016	0.011	0.013	0.012	0.001
Accommodation and food services	0.034	0.032	0.030	0.027	0.028	0.036	0.031	0.032	0.027	0.031	0.028	0.038
Other services	0.050	0.048	0.053	0.047	0.046	0.048	0.050	0.050	0.046	0.043	0.046	0.058

Note: Private sector work force includes unincorporated self-employed who hire workers plus incorporated self-employed plus private sector paid employees.

Source: Labour Force Survey, Table 282.

## References

- Baldwin, J.R., W. Gu, and B. Yan. 2008. *Relative Multifactor Productivity Levels in Canada and the United States: A Sectoral Analysis*. Ottawa. Statistics Canada catalogue no. 15-206-X. The Canadian Productivity Review. No. 19.
- Baldwin, J.R., and J. Chowhan. 2003. "The impact of self employment on productivity growth in Canada and the US." *Canadian Economic Observer*. Vol. 16. No. 8. Statistics Canada catalogue no. 11-010-XIB. p. 3.1–3.10.
- Baldwin, J.R., and J.-P. Maynard. 2005. "The Output Gap between Canada and the US: The Role of Productivity 1994-2002." *Canadian Economic Observer*. Vol 18. No. 1. Statistics Canada catalogue no. 11-010-XIB. p. 3.9–3.15
- Baldwin, J.R., J.-P. Maynard, M. Tanguay, F. Wong, and B. Yan. 2005. *A Comparison of Canadian and U. S. Productivity Levels: An Exploration of Measurement Issues*. Statistics Canada catalogue no. 11F0027MIE. Ottawa. Economic Analysis (EA) Research Paper Series. No. 28.
- Bowlby, G. 2002. "Farmers leaving the field." *Perspectives on Labour and Income*. Vol. 3. No. 2. Statistics Canada Catalogue no. 75-001-XIE. p. 13–18.
- Dion, R. 2007. "Interpreting Canada's Productivity Performance in the Past Decade; Lessons from Recent Research." *Bank of Canada Review*. Summer. 19-32.
- Gauthier, J., and R. Roy. 1999. *Diverging Trends in Self-employment in Canada*. Ottawa. Human Resources Development Canada. Applied Research Branch Strategic Policy. Working Paper MP32-29/97-13E.
- Hipple, S. 2004. "Self-employment in the United States: An update," *Monthly Labor Review*. Vol. 127. No. 7. p. 13–23.
- Institute for Competitiveness and Prosperity. 2003. *Investing for Prosperity*. Second Annual Report. November.
- Kamhi, N., and D. Leung 2005. *Recent Developments in Self-Employment in Canada*. Ottawa. Bank of Canada. Bank of Canada Working Paper 2005-8.
- Maynard, J.-P. 2007. *A Comparison of GDP per Capita in Canada and the United States from 1994 to 2005*. Statistics Canada catalogue no. 11-624-MIE. Ottawa. Insights on the Canadian Economy. No. 16.
- Rispoli, L. 2009a. *Measuring the Contribution of the Unincorporated Sector in the Canadian Economy, 1997 to 2002*. Statistics Canada Catalogue no. 11-624-M. Ottawa. Insights on the Canadian Economy. No. 23.
- Rispoli, L. 2009b. *Trends in Gross Domestic Product and Self-Employment of Unincorporated Enterprises in the Canadian Economy, 1987 to 2005*. Statistics Canada Catalogue no. 11-624-M. Ottawa. Insights on the Canadian Economy. No. 24.
- Rispoli, L. 2009c. "Trends in Gross Domestic Product and Self-Employment of Unincorporated Enterprises in the Canadian Economy, 1987-2005." *Canadian Economic Observer*. Vol. 22. No. 9. Statistics Canada Catalogue no. 11-010-X.

Sparling, D., P. Laughland, and V. Mitura. 2008. "Are Canada's large farms really different?" *Vista on the Agri-Food Industry and the Farm Community*. July. Statistics Canada Catalogue No. 21-004-X. Ottawa. Newsletter.