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The Canadian productivity accounts - Data

2003



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Statistics Canada
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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^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- P preliminary
- r revised
- x confidential to meet secrecy requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published

Acknowledgements

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Foreword

This new electronic publication, The Canadian Productivity Accounts-Data, is designed to provide information to analysts, researchers, students and the general public who wish to monitor, analyse and interpret annual trends in productivity and related measures in Canada.

The Canadian Productivity Accounts produce a variety of productivity measures and related variables for the business sector and its constituent sub-sectors and industries.

The Canadian Productivity Accounts were initiated in late 1940's. They were the result of recommendations from an interdepartmental committee on productivity analysis, who reviewed the conceptual, and measurement problems involved and the available data sources in Canada.

Except for exchange rate series stored in Table 176-0064, the remaining series of this publication are available in CANSIM tables 383-0008, 383-0013, 383-0014 and 383-0015. Industry data available in the last three tables begin in 1997; they will be made available back to 1961 later this year. U.S. data are from the Bureau of Labor Statistics, Productivity and Costs, published in NEWS.

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Highlights

- Labour productivity in the manufacturing sector slowed markedly in 2003. Productivity growth in manufacturing advanced at 1.2% in 2003, compared with 2.8% in 2002. Ten of the 20 industries forming the manufacturing sector recorded a decline in productivity, while another quarter recorded a slowdown in productivity growth.

Introduction

Canadian Productivity Accounts is an electronic publication that contains a series of tables on productivity growth and related variables for the business sector and its 15 major sectors based on the North American Classification System. These tables allow users to have a broader perspective on the Canadian economic performance. They complement the information available on CANSIM which offers more details, particularly, at the industry level.¹

Canadian Productivity Accounts covers four series of statistical tables:

1. The annual trend of value-added, capital cost and labour cost in current dollars,
2. Annual indexes and growth rates of productivity and related measures,
3. Annual indexes and growth rates of prices and unit costs, and
4. Comparison of labour productivity growth and related measures in the business sector between Canada and the United States.

Productivity measures the efficiency with which inputs (labour and capital in particular) are utilized in production. Productivity measures can be applied to a single input, such as output per hour (labour productivity), as well as to combined labour and capital inputs (multifactor productivity). Statistics Canada produces these two main measures of productivity, but other productivity ratios can also be measured (e.g. output per unit of capital services).

For the overall business sector, productivity measures exclude all non-business production activities as well as the rents of owner-occupied dwellings.

For the business sector productivity measures, output is measured as real GDP—deliveries in constant chained dollars of final goods and services by the business sector to domestic households, government and non-profit institutions, as well as public and private investments and net exports to other countries. At the industry level, output is defined in terms of constant chained dollars of value added. Real value added series reflect both the real contribution of both capital and labour that transforms intermediate inputs into finished products for each industry. The estimates of output reflect the capitalization of software expenditures.

Annual estimates of productivity provided in these tables are consistent with the concepts of the System of National Accounts. They are derived from a Fisher chained index of GDP, or of value added.

The reader will find a glossary in Appendix I of this publication. It provides basic definitions of the terms used in the statistical tables and it constitutes a useful tool to understand productivity measures and related statistics.

1. Data based on the 1980 Standard Industrial Classification for the period 1961-1997 are available on CANSIM.

Analysis

Labour productivity performance by industry

2003

Labour productivity in the manufacturing sector slowed markedly in 2003. Productivity growth in manufacturing advanced at 1.2% in 2003, compared with 2.8% in 2002. Ten of the 20 industries forming the manufacturing sector recorded a decline in productivity, while another quarter recorded a slowdown in productivity growth.

The stronger Canadian dollar in 2003 had a negative impact on the output of manufacturing industries, which decreased by 0.5% in 2003. At the same time, hours worked in this sector declined at a more pronounced pace (-1.7%). During this period, the rapid appreciation of the Canadian dollar pressured Canadian exporters of manufacturing goods to adjust their operating costs.

Much like the manufacturing sector, the majority of other industries (11 of 15) in the business sector recorded a decline or a slower productivity growth. In contrast, sectors such as agriculture, forestry, fishing and hunting; professional services; as well as arts, entertainment and recreation; and other commercial services, experienced an acceleration of productivity growth in 2003.

The year 2003 was marked by several negative shocks that affected economic activity and contributed to a lacklustre 0.1% growth in the business sector's productivity growth. This is the smallest gain of the last six years, during which productivity grew at 1.9% on average.

Productivity growth is an essential contributor to the prosperity of Canadians over the long run. It measures the efficiency with which labour is employed in the production process.

Nearly all industries experienced a slowdown in productivity

In 2003, labour productivity growth varied significantly across industry groups, ranging from a 6.3% decline in the mining and oil and gas extraction sector to an 8.8% increase in the agriculture, forestry, fishing and hunting sector.

Following the 2.2% drop in 2002, labour productivity rebounded in 2003 in agriculture, forestry, fishing and hunting, where it grew at 8.8%. This is the largest increase of any sector and is attributable to better harvests in Western Canada.

With a 3.9% productivity growth in 2003, wholesale trade ranked second, down from the 6.6% recorded in 2002. They were followed by other industry groups, including other services (+3.6%), professional services (+2.9%), arts, entertainment and recreation (+2.2%), and retail trade (+1.6%).

With the exception of the agriculture, forestry, fishing and trapping industry, manufacturing was the only other industry group in the goods-producing sector that recorded a productivity increase in 2003. Over the last three years, the average annual growth of labour productivity in manufacturing advanced at 2.0%, about half of the 4.4% experienced between 1997 and 2000.

The increase in manufacturing productivity in 2003 was mainly driven by the productivity recovery in the computer and electronic products (+8.4%) and the electrical equipment, appliance and component manufacturing industries (+1.3%). These two industries had reported a productivity decline during the two previous years.

In the manufacturing sector as a whole, output per hour worked increased in 7 of the 20 three-digit industry groups; the annual gains ranging from 0.8% to 5.7%. Within this group, non-metallic mineral products, printing and related support activities and primary metal manufacturing all experienced productivity gains of at least 3.5%.

Despite the housing market bubble, finance, insurance, real estate, rental and leasing experienced no productivity gain in 2003. The seven remaining two-digit industries registered a productivity decline in 2003.

Unit labour cost increases in most of the industries

Unit labour cost, an indicator that measures how hourly compensation changed relative to labour productivity, deteriorated in most industries in 2003. As a result of the lacklustre labour productivity, 11 of the 15 major industrial groups recorded increases in unit labour costs in 2003.

Industries that posted the best performance in terms of unit labour cost—agriculture, forestry, fishing and hunting—were generally the ones with the highest productivity gains.

Following the 9.7% increase in their unit labour cost in 2002, the agriculture, forestry, fishing and hunting experienced a significant 16.5% drop in its unit labour cost in 2003. Crop and animal production, and forestry and logging were the sectoral sources of this reduction.

Other declines were observed in arts, entertainment and recreation (-3.6%), followed by accommodation and food services (-2.8%) and wholesale trade (-0.7%).

In contrast, unit labour cost growth accelerated in most of the other two-digit industries of the business sector. In manufacturing, unit labour cost increased by 2.3% in 2003, following a slight 0.2% decline in 2002.

When the exchange rate is taken into account, the appreciation of the Canadian dollar led to a strong increase in the unit labour cost in manufacturing. Manufacturing unit labour costs increased by 14.7% in 2003 for US dollars. This strong appreciation in such a short period has contributed to the deterioration in the competitiveness of manufacturing exports to the United States.

Related products

Selected publications from Statistics Canada

15-002-MIE	The Canadian productivity accounts: methods and concepts
15-204-XIE	Productivity growth in Canada
15-206-MIE	Canadian productivity review

Selected CANSIM tables from Statistics Canada

383-0001	Fisher indexes of multifactor productivity, by business sector industries
383-0003	Labour productivity and related variables, by industry according to the Canadian System of National Accounts
383-0004	Labour statistics, non-commercial sector industries according to the Canadian System of National Accounts
383-0005	Indexes of labour productivity and related variables, by industry according to the Canadian System of National Accounts
383-0009	Labour statistics consistent with the System of National Accounts, by job category and North American Industry Classification System (NAICS)
383-0010	Labour statistics consistent with the System of National Accounts, by North American Industry Classification System (NAICS)
383-0013	Indexes of productivity and related variables consistent with the System of National Accounts (SNA), business sector, by output type and North American Industry Classification System (NAICS)
383-0014	KLEMS inputs and outputs consistent with the System of National Accounts (SNA), business sector, by North American Industry Classification System (NAICS)
383-0015	Fisher volume indexes consistent with the System of National Accounts (SNA), KLEMS database, business sector, by North American Industry Classification System (NAICS)

Selected surveys from Statistics Canada

1402 Productivity Measures, Inputs and Outputs by Industry in Current and Constant Prices

Selected tables of Canadian statistics from Statistics Canada

- *Canadian Statistics - Productivity and related measures, business sector*

Statistical Tables

Selected surveys from Statistics Canada

1402	Productivity Measures, Inputs and Outputs by Industry in Current and Constant Prices
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Selected tables of Canadian statistics from Statistics Canada

- *Canadian Statistics - Productivity and related measures, business sector*

Table 1-5

Value-added, capital cost and labour cost at current dollars: Construction

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	35,717	7,278	42,995
1998	36,808	7,350	44,158
1999	38,309	7,916	46,225
2000	41,677	8,140	49,818
2001	45,428	9,613	55,041
2002	48,901	9,139	58,040

Table 1-6

Value-added, capital cost and labour cost at current dollars: Manufacturing

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	80,827	61,439	142,265
1998	84,848	65,228	150,076
1999	90,060	80,246	170,306
2000	96,512	92,641	189,153
2001	98,062	83,130	181,192
2002	100,626	86,015	186,641

Table 1-7

Value-added, capital cost and labour cost at current dollars: Wholesale trade

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	30,158	13,532	43,691
1998	31,566	13,882	45,447
1999	33,443	14,814	48,257
2000	35,697	15,249	50,946
2001	37,426	15,017	52,443
2002	38,556	17,013	55,569

Table 1-8

Value-added, capital cost and labour cost at current dollars: Retail trade

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	33,873	8,349	42,222
1998	36,734	8,827	45,561
1999	38,064	9,751	47,815
2000	40,284	10,996	51,280
2001	42,608	10,911	53,519
2002	44,577	12,172	56,749

Table 1-9

Value-added, capital cost and labour cost at current dollars: Transportation and warehousing

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	25,069	13,055	38,124
1998	26,709	13,034	39,743
1999	28,252	13,527	41,778
2000	29,801	13,908	43,710
2001	30,630	14,858	45,488
2002	31,287	15,313	46,600

Table 1-10

Value-added, capital cost and labour cost at current dollars: Information and cultural industries

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	11,821	14,265	26,086
1998	13,507	14,760	28,268
1999	15,274	15,046	30,320
2000	17,020	15,103	32,123
2001	18,168	17,745	35,913
2002	18,875	18,610	37,484

Table 1-11

Value-added, capital cost and labour cost at current dollars: Finance, real estate and company management

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	40,541	118,692	159,233
1998	42,086	123,630	165,716
1999	44,402	128,994	173,396
2000	51,123	132,764	183,887
2001	53,059	140,342	193,401
2002	55,129	148,484	203,613

Table 1-12

Value-added, capital cost and labour cost at current dollars: Professional, scientific and technical services

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	24,281	5,831	30,112
1998	28,162	6,309	34,471
1999	31,234	6,491	37,725
2000	34,714	6,801	41,515
2001	36,438	7,334	43,772
2002	37,761	8,230	45,991

Table 1-13

Value-added, capital cost and labour cost at current dollars: Administrative and support, waste management and remediation services

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	11,575	3,750	15,325
1998	12,890	3,779	16,669
1999	14,723	3,994	18,717
2000	16,107	4,327	20,434
2001	17,354	4,648	22,002
2002	18,757	4,919	23,676

Table 1-14

Value-added, capital cost and labour cost at current dollars: Arts, entertainment and recreation

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	3,942	1,736	5,678
1998	4,310	1,435	5,745
1999	4,720	1,552	6,272
2000	5,070	1,707	6,776
2001	5,547	1,864	7,411
2002	5,830	2,053	7,883

Table 1-15

Value-added, capital cost and labour cost at current dollars: Accommodation and food services

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	15,104	4,367	19,471
1998	15,956	4,597	20,553
1999	16,907	5,021	21,928
2000	18,289	4,994	23,284
2001	18,885	5,417	24,302
2002	19,518	5,023	24,541

Table 1-16

Value-added, capital cost and labour cost at current dollars: Other services (except public administration)

Year	Labour cost	Capital cost	Value added
millions of dollars			
1997	11,085	2,320	13,405
1998	11,627	2,386	14,013
1999	12,563	2,794	15,357
2000	13,431	3,141	16,572
2001	13,741	4,091	17,832
2002	14,483	4,067	18,550

Table 2-1

Productivity and related measures: Business sector

Year	Real GDP	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	104.7	100.7	101.6	99.9	103.0	104.8	103.3	103.9	101.7
1999	111.4	103.0	104.4	101.3	106.7	110.0	107.6	108.5	103.1
2000	118.2	105.4	108.3	103.1	109.1	114.6	111.6	112.8	105.1
2001	120.0	105.7	109.6	102.8	109.5	116.7	112.1	113.9	106.6
2002	124.3	107.8	112.0	105.7	111.0	117.6	114.3	115.6	105.9
2003	126.2	..	112.5	..	112.2	..	..	..	..
Percentage change									
1998	4.7	0.7	1.6	-0.1	3.0	4.8	3.3	3.9	1.7
1999	6.4	2.3	2.8	1.4	3.6	5.0	4.2	4.4	1.4
2000	6.1	2.3	3.7	1.8	2.2	4.2	3.7	4.0	1.9
2001	1.5	0.3	1.2	-0.3	0.4	1.8	0.4	1.0	1.4
2002	3.6	2.0	2.2	2.8	1.4	0.8	2.0	1.5	-0.7
2003	1.5	..	0.4	..	1.1	..	..	..	..

Table 2-2

Productivity and related measures: Agriculture, forestry, fishing and hunting

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	106.5	106.1	107.2	106.2	99.4	100.3	100.4	100.4	100.9
1999	114.3	113.8	116.0	113.5	98.5	100.7	99.9	100.4	102.3
2000	114.0	116.1	123.4	112.9	92.4	101.0	94.4	98.2	109.3
2001	108.7	114.8	129.4	107.5	84.0	101.1	86.7	94.7	120.3
2002	104.8	111.4	128.0	102.5	81.9	102.2	84.6	94.1	124.8
2003	115.6	..	139.2	..	83.0	..	..	..	..
Percentage change									
1998	6.5	6.1	7.2	6.2	-0.6	0.3	0.4	0.4	0.9
1999	7.3	7.3	8.2	6.9	-0.9	0.4	-0.5	0.0	1.4
2000	-0.3	2.0	6.4	-0.6	-6.2	0.3	-5.5	-2.2	6.8
2001	-4.6	-1.1	4.9	-4.7	-9.1	0.1	-8.2	-3.6	10.1
2002	-3.6	-3.0	-1.1	-4.6	-2.5	1.1	-2.4	-0.6	3.7
2003	10.3	..	8.8	..	1.3	..	..	..	..

Table 2-3

Productivity and related measures: Manufacturing

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	104.9	101.5	101.7	101.7	103.1	103.1	103.7	103.4	100.0
1999	113.5	106.7	107.5	106.4	105.6	106.7	106.4	106.5	101.1
2000	124.7	113.1	113.9	112.6	109.5	110.7	110.8	110.7	101.1
2001	120.3	108.6	111.9	106.6	107.5	112.8	109.7	111.2	104.9
2002	123.8	112.0	115.0	111.2	107.7	111.3	110.5	111.0	103.4
2003	123.2	..	116.4	..	105.9	..	..	..	..
Percentage change									
1998	4.9	1.5	1.7	1.7	3.1	3.1	3.7	3.4	0.0
1999	8.2	5.1	5.7	4.5	2.4	3.5	2.6	3.0	1.1
2000	9.9	6.0	6.0	5.9	3.7	3.7	4.1	3.9	0.0
2001	-3.5	-4.0	-1.8	-5.3	-1.8	1.9	-1.0	0.5	3.8
2002	2.9	3.1	2.8	4.3	0.2	-1.3	0.7	-0.2	-1.4
2003	-0.5	..	1.2	..	-1.7	..	..	..	..

Table 2-4

Productivity and related measures: Wholesale trade

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	107.9	107.3	111.5	100.5	96.8	107.4	97.6	100.6	111.0
1999	115.3	109.6	113.6	101.2	101.6	113.9	101.7	105.4	112.2
2000	122.7	111.0	116.3	102.8	105.6	119.4	107.0	110.8	113.1
2001	126.2	111.2	117.1	102.8	107.8	122.8	109.8	113.7	113.9
2002	136.4	119.1	124.8	110.7	109.3	123.2	111.1	114.8	112.7
2003	143.6	..	129.6	..	110.8	..	..	..	..
Percentage change									
1998	7.9	7.3	11.5	0.5	-3.2	7.4	-2.4	0.6	11.0
1999	6.9	2.1	1.9	0.8	5.0	6.1	4.2	4.8	1.1
2000	6.4	1.3	2.4	1.5	3.9	4.8	5.2	5.1	0.8
2001	2.9	0.2	0.7	0.0	2.1	2.8	2.6	2.6	0.7
2002	8.1	7.1	6.6	7.7	1.4	0.3	1.2	1.0	-1.1
2003	5.3	..	3.8	..	1.4	..	..	..	..

Table 2-5

Productivity and related measures: Retail trade

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	106.1	104.2	104.9	102.0	101.1	104.0	101.4	101.9	102.9
1999	111.1	108.3	109.4	103.4	101.6	107.4	101.6	102.7	105.8
2000	118.1	112.6	114.7	104.1	102.9	113.4	103.0	105.1	110.2
2001	122.4	113.3	115.6	103.5	105.9	118.3	105.8	108.3	111.8
2002	129.2	116.7	119.0	106.1	108.6	121.8	108.3	111.0	112.2
2003	132.0	..	120.9	..	109.3	..	..	..	..
Percentage change									
1998	6.1	4.2	4.9	2.0	1.1	4.0	1.4	1.9	2.9
1999	4.7	3.9	4.3	1.4	0.5	3.3	0.2	0.8	2.8
2000	6.3	4.0	4.8	0.7	1.3	5.6	1.4	2.3	4.2
2001	3.6	0.6	0.8	-0.7	2.9	4.3	2.7	3.0	1.5
2002	5.6	3.0	2.9	2.5	2.5	3.0	2.4	2.5	0.4
2003	2.2	..	1.6	..	0.6	..	..	..	..

Table 2-6

Productivity and related measures: Transportation and warehousing

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	102.1	96.3	98.2	95.1	104.0	107.4	105.0	105.8	103.3
1999	108.3	96.7	99.2	93.8	109.3	115.4	110.1	111.8	105.7
2000	113.7	97.9	102.6	92.1	110.8	123.4	112.6	116.0	111.4
2001	113.3	97.3	104.7	88.0	108.2	128.7	110.7	116.3	118.9
2002	115.3	98.7	107.3	88.6	107.4	130.2	110.5	116.6	121.2
2003	115.2	..	106.3	..	108.4	..	..	..	..
Percentage change									
1998	2.1	-3.7	-1.8	-4.9	4.0	7.4	5.0	5.8	3.3
1999	6.1	0.4	1.0	-1.3	5.1	7.4	4.9	5.7	2.3
2000	5.0	1.2	3.4	-1.8	1.4	6.9	2.3	3.8	5.4
2001	-0.4	-0.6	2.0	-4.5	-2.3	4.3	-1.7	0.3	6.7
2002	1.8	1.4	2.5	0.6	-0.7	1.2	-0.2	0.3	1.9
2003	-0.1	..	-0.9	..	0.9	..	..	..	..

Table 2-7

Productivity and related measures: Information and cultural industries

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	107.8	100.3	97.6	102.7	110.5	105.0	110.3	107.5	95.1
1999	121.4	103.7	97.8	108.6	124.2	111.8	123.8	117.4	90.0
2000	131.2	104.1	99.5	107.5	131.8	122.1	131.4	126.4	92.6
2001	141.1	107.0	101.9	110.4	138.5	127.8	137.9	132.5	92.3
2002	150.2	113.8	110.5	115.8	135.8	129.7	136.0	132.6	95.5
2003	152.9	..	110.0	..	138.9	..	..	..	..
Percentage change									
1998	7.8	0.3	-2.4	2.7	10.5	5.0	10.3	7.5	-4.9
1999	12.6	3.4	0.2	5.8	12.4	6.5	12.2	9.2	-5.4
2000	8.1	0.4	1.7	-1.0	6.1	9.2	6.1	7.7	2.9
2001	7.5	2.8	2.4	2.7	5.1	4.7	4.9	4.8	-0.3
2002	6.4	6.4	8.4	4.9	-1.9	1.5	-1.4	0.1	3.5
2003	1.8	..	-0.5	..	2.3	..	..	..	..

Table 2-8

Productivity and related measures: Professional, scientific and technical services

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	112.5	102.8	101.8	104.2	110.5	108.0	110.1	109.7	97.7
1999	123.8	105.1	105.5	103.7	117.2	119.4	118.0	118.2	101.8
2000	132.9	109.0	112.4	94.7	118.2	140.3	119.1	122.6	118.7
2001	138.8	112.5	117.8	90.8	117.9	152.8	118.7	124.1	129.6
2002	143.2	119.1	120.9	115.7	118.5	123.8	119.6	120.8	104.5
2003	147.6	..	124.3	..	118.7	..	..	..	..
Percentage change									
1998	12.5	2.8	1.8	4.2	10.5	8.0	10.1	9.7	-2.3
1999	10.0	2.2	3.6	-0.5	6.1	10.6	7.2	7.7	4.2
2000	7.4	3.7	6.5	-8.6	0.9	17.5	0.9	3.7	16.6
2001	4.4	3.2	4.8	-4.1	-0.3	8.9	-0.3	1.2	9.2
2002	3.2	5.9	2.6	27.3	0.5	-19.0	0.8	-2.7	-19.4
2003	3.1	..	2.8	..	0.2	..	..	..	..

Table 2-9

Productivity and related measures: Administrative and waste management services

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	106.8	97.8	98.3	98.9	108.6	108.0	109.3	109.0	99.5
1999	119.2	98.0	97.1	103.5	122.8	115.2	123.2	121.4	93.8
2000	126.6	100.6	100.5	103.9	126.0	121.9	126.9	125.8	96.8
2001	132.8	102.5	102.5	107.2	129.5	123.9	131.1	129.5	95.7
2002	139.5	99.8	100.9	103.4	138.2	134.9	140.8	139.5	97.7
2003	144.8	..	96.9	..	149.4	..	..	..	..
Percentage change									
1998	6.8	-2.2	-1.7	-1.1	8.6	8.0	9.3	9.0	-0.5
1999	11.6	0.2	-1.2	4.6	13.1	6.7	12.7	11.4	-5.7
2000	6.2	2.7	3.5	0.4	2.6	5.8	3.0	3.6	3.2
2001	4.9	1.9	2.0	3.2	2.8	1.6	3.3	2.9	-1.1
2002	5.0	-2.6	-1.6	-3.5	6.7	8.9	7.4	7.7	2.1
2003	3.8	..	-4.0	..	8.1	..	..	..	..

Table 2-10

Productivity and related measures: Accommodation and food services

Year	Real value-added	Multifactor productivity	Labour productivity	Output per unit of capital services	Hours worked	Capital input	Labour input	Primary inputs	Capital per hour
Indexes 1997=100									
1997	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1998	105.9	97.8	96.7	104.4	109.5	101.4	110.0	108.1	92.6
1999	110.0	99.4	97.7	107.0	112.6	102.8	112.8	110.6	91.3
2000	115.1	104.1	102.6	110.5	112.2	104.2	112.2	110.4	92.9
2001	117.7	108.7	107.9	112.6	109.1	104.5	109.0	108.0	95.8
2002	118.3	109.9	109.6	113.4	108.0	104.3	108.2	107.4	96.6
2003	115.2	..	107.0	..	107.6	..	..	..	..
Percentage change									
1998	5.9	-2.2	-3.3	4.4	9.5	1.4	10.0	8.1	-7.4
1999	3.9	1.6	1.0	2.5	2.8	1.4	2.5	2.3	-1.4
2000	4.6	4.7	5.0	3.2	-0.4	1.4	-0.5	-0.2	1.8
2001	2.3	4.4	5.2	2.0	-2.8	0.3	-2.9	-2.2	3.1
2002	0.5	1.1	1.6	0.7	-1.0	-0.2	-0.7	-0.6	0.8
2003	-2.6	..	-2.4	..	-0.4	..	..	..	..

Table 3-1

Prices and unit costs: Business sector

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	103.0	97.0	101.4	102.7	96.9	99.3	1.48
1999	105.7	100.5	101.3	104.8	101.8	100.9	1.49
2000	112.2	106.8	103.6	109.7	110.1	105.1	1.49
2001	116.8	106.5	106.6	114.1	109.6	106.6	1.55
2002	120.1	105.7	107.2	116.7	111.8	106.6	1.57
2003	..	..	109.0	..	..	..	1.40
Percentage change							
1998	3.0	-3.0	1.4	2.7	-3.1	-0.7	7.1
1999	2.6	3.6	-0.1	2.1	5.0	1.6	0.1
2000	6.1	6.3	2.3	4.6	8.2	4.1	0.0
2001	4.1	-0.3	2.9	4.0	-0.5	1.4	4.3
2002	2.8	-0.8	0.6	2.2	2.0	0.0	1.4
2003	..	..	1.7	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-2

Prices and unit costs: Agriculture, forestry, fishing and hunting

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	101.9	103.7	95.2	100.9	110.2	100.1	1.48
1999	113.0	96.5	97.4	111.4	109.5	96.9	1.49
2000	122.8	96.9	99.5	120.2	109.4	98.0	1.49
2001	146.4	92.7	113.2	141.8	99.7	101.2	1.55
2002	158.9	92.4	124.1	153.8	94.8	105.8	1.57
2003	..	..	103.5	..	..	..	1.40
Percentage change							
1998	1.9	3.7	-4.8	0.9	10.2	0.1	7.1
1999	10.8	-6.9	2.3	10.4	-0.6	-3.3	0.1
2000	8.7	0.4	2.2	7.9	-0.1	1.2	0.0
2001	19.2	-4.3	13.8	18.0	-8.9	3.3	4.3
2002	8.6	-0.3	9.6	8.5	-4.8	4.5	1.4
2003	..	..	-16.6	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-3

Prices and unit costs: Manufacturing

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	101.8	101.2	100.1	101.2	103.0	100.6	1.48
1999	105.5	115.1	98.2	104.7	122.4	105.5	1.49
2000	109.0	120.9	95.7	107.8	136.2	106.6	1.49
2001	112.9	112.5	100.8	110.6	120.0	105.9	1.55
2002	115.6	113.1	100.6	112.7	125.8	106.0	1.57
2003	..	..	102.9	..	..	..	1.40
Percentage change							
1998	1.8	1.2	0.1	1.2	3.0	0.6	7.1
1999	3.6	13.7	-1.9	3.4	18.9	4.9	0.1
2000	3.3	5.0	-2.5	2.9	11.3	1.1	0.0
2001	3.5	-6.9	5.3	2.6	-11.9	-0.7	4.3
2002	2.4	0.5	-0.2	1.9	4.9	0.1	1.4
2003	..	..	2.3	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-4

Prices and unit costs: Wholesale trade

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	108.1	95.1	97.0	107.2	95.5	96.4	1.48
1999	109.1	94.9	96.1	109.0	96.1	95.8	1.49
2000	112.1	91.8	96.4	110.6	94.4	95.0	1.49
2001	115.1	87.9	98.3	113.0	90.4	95.1	1.55
2002	117.0	92.2	93.7	115.1	102.0	93.2	1.57
2003	..	..	93.1	..	..	..	1.40
Percentage change							
1998	8.1	-4.9	-3.0	7.2	-4.5	-3.6	7.1
1999	0.9	-0.2	-0.9	1.7	0.6	-0.6	0.1
2000	2.7	-3.3	0.3	1.5	-1.8	-0.8	0.0
2001	2.7	-4.2	2.0	2.2	-4.2	0.1	4.3
2002	1.6	4.9	-4.7	1.8	12.9	-2.0	1.4
2003	..	..	-0.6	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-5

Prices and unit costs: Retail trade

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	107.3	99.6	102.2	106.9	101.7	101.7	1.48
1999	110.6	105.1	101.2	110.6	108.7	101.9	1.49
2000	115.6	111.5	100.7	115.5	116.1	102.8	1.49
2001	118.8	106.8	102.8	118.9	110.5	103.6	1.55
2002	121.2	112.9	101.9	121.5	119.7	104.0	1.57
2003	..	..	104.0	..	..	..	1.40
Percentage change							
1998	7.3	-0.4	2.2	6.9	1.7	1.7	7.1
1999	3.1	5.5	-1.0	3.4	7.0	0.2	0.1
2000	4.5	6.1	-0.5	4.4	6.8	0.9	0.0
2001	2.8	-4.2	2.1	3.0	-4.9	0.7	4.3
2002	2.0	5.7	-0.9	2.2	8.4	0.5	1.4
2003	..	..	2.1	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-6

Prices and unit costs: Transportation and warehousing

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	102.4	97.8	104.4	101.5	93.0	102.1	1.48
1999	103.1	95.6	104.0	102.4	89.8	101.2	1.49
2000	107.3	93.7	104.5	105.6	86.3	100.8	1.49
2001	112.9	100.4	107.8	110.4	88.4	105.3	1.55
2002	116.2	101.7	108.3	112.9	90.1	106.0	1.57
2003	..	..	110.2	..	..	..	1.40
Percentage change							
1998	2.4	-2.2	4.4	1.5	-7.0	2.1	7.1
1999	0.6	-2.2	-0.4	0.9	-3.4	-0.9	0.1
2000	4.1	-2.0	0.5	3.1	-3.8	-0.3	0.0
2001	5.3	7.2	3.2	4.5	2.4	4.4	4.3
2002	2.9	1.3	0.5	2.3	1.9	0.7	1.4
2003	..	..	1.8	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-7

Prices and unit costs: Information and cultural industries

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	103.4	96.0	106.0	103.6	98.5	100.5	1.48
1999	104.0	86.9	106.5	104.4	94.3	95.7	1.49
2000	109.2	80.7	109.7	109.6	86.7	93.9	1.49
2001	111.0	88.2	108.9	111.5	97.3	97.6	1.55
2002	117.6	86.9	106.3	117.4	100.6	95.7	1.57
2003	..	..	106.3	..	..	..	1.40
Percentage change							
1998	3.4	-4.0	6.0	3.6	-1.5	0.5	7.1
1999	0.6	-9.5	0.5	0.8	-4.3	-4.8	0.1
2000	5.0	-7.1	3.0	5.0	-8.1	-2.0	0.0
2001	1.6	9.3	-0.7	1.7	12.3	4.0	4.3
2002	6.0	-1.5	-2.4	5.3	3.3	-1.9	1.4
2003	..	..	0.0	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-8

Prices and unit costs: Professional, scientific and technical services

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	105.0	96.2	103.1	105.3	100.2	101.8	1.48
1999	109.8	90.0	103.9	109.0	93.2	101.2	1.49
2000	121.0	87.8	107.6	120.0	83.1	103.7	1.49
2001	127.3	90.6	108.1	126.4	82.3	104.7	1.55
2002	131.2	98.6	108.6	130.0	114.0	106.7	1.57
2003	..	..	108.9	..	..	..	1.40
Percentage change							
1998	5.0	-3.8	3.1	5.3	0.2	1.8	7.1
1999	4.6	-6.4	0.8	3.5	-6.9	-0.5	0.1
2000	10.2	-2.4	3.6	10.1	-10.8	2.5	0.0
2001	5.2	3.2	0.5	5.3	-1.0	1.0	4.3
2002	3.1	8.8	0.5	2.9	38.5	1.8	1.4
2003	..	..	0.3	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-9

Prices and unit costs: Administrative and waste management services

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	102.5	94.4	104.3	101.9	93.3	101.8	1.48
1999	103.6	89.4	106.7	103.2	92.5	102.5	1.49
2000	110.4	91.2	109.9	109.7	94.7	105.3	1.49
2001	115.8	93.3	112.9	114.4	100.0	108.1	1.55
2002	117.3	94.0	116.2	115.1	97.2	110.7	1.57
2003	..	..	122.7	..	..	..	1.40
Percentage change							
1998	2.5	-5.6	4.3	1.9	-6.7	1.8	7.1
1999	1.0	-5.3	2.3	1.3	-0.9	0.6	0.1
2000	6.6	2.0	3.0	6.2	2.4	2.8	0.0
2001	4.8	2.3	2.7	4.3	5.7	2.6	4.3
2002	1.3	0.8	2.9	0.6	-2.8	2.4	1.4
2003	..	..	5.6	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 3-10

Prices and unit costs: Accommodation and food services

Year	Hourly compensation	Unit capital cost	Unit labour cost	Labour price	Capital price	Output price	Exchange ¹ rate
Indexes 1997=100							
1997	100.0	100.0	100.0	100.0	100.0	100.0	1.38
1998	96.5	99.4	99.8	96.0	103.8	99.7	1.48
1999	99.4	104.5	101.7	99.2	111.8	102.4	1.49
2000	107.9	99.4	105.2	107.9	109.7	103.9	1.49
2001	114.6	105.4	106.2	114.7	118.7	106.0	1.55
2002	119.7	97.2	109.2	119.4	110.3	106.5	1.57
2003	..	..	106.1	..	..	..	1.40
Percentage change							
1998	-3.5	-0.6	-0.2	-4.0	3.8	-0.3	7.1
1999	3.0	5.1	1.9	3.3	7.7	2.7	0.1
2000	8.6	-4.9	3.4	8.8	-1.9	1.5	0.0
2001	6.2	6.0	1.0	6.3	8.2	2.1	4.3
2002	4.4	-7.8	2.8	4.1	-7.1	0.5	1.4
2003	..	..	-2.8	..	..	..	-10.8

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Table 4

Business sector: Labour productivity and related measures for Canada and the United States

	1999	2000	2001	2002	2003
	percentage change				
Canada					
Labour productivity	3.2	3.9	1.0	1.9	0.0
Real Gross Domestic Product (GDP)	6.9	6.2	1.3	3.3	1.6
Hours worked	3.5	2.2	0.3	1.4	1.5
Total number of jobs	3.4	2.7	0.6	2.5	2.0
Total compensation per hour worked	3.0	6.0	4.2	2.9	1.2
Unit labour cost	-0.2	2.0	3.2	0.9	1.1
Exchange rate ¹	0.1	0.0	4.3	1.4	-10.8
Unit labour cost in US\$	-0.4	2.0	-1.0	-0.4	13.3
Unit non-labour payments	5.1	8.2	-2.2	0.0	7.9
Implicit price deflator	1.8	4.5	0.9	0.6	3.8
	percentage change				
United States					
Labour productivity	2.9	2.8	2.3	4.8	4.5
Real Gross Domestic Product (GDP)	5.1	3.9	0.1	2.3	3.7
Hours worked	2.1	1.1	-2.1	-2.5	-0.8
Total number of jobs	1.9	1.8	-0.7	-2.1	-0.3
Total compensation per hour worked	4.8	6.9	4.2	2.2	3.3
Unit labour cost	1.8	4.0	1.9	-2.5	-1.1
Unit non-labour payments	-0.6	-1.8	2.1	6.8	5.4
Implicit price deflator	0.9	1.9	2.0	0.8	1.3

1. The exchange rate corresponds to the U.S. dollar value expressed in Canadian dollars.

Description

Productivity—the efficiency with which the economy transforms inputs into outputs—is important because it largely determines real income changes. Canadian living standards are high not only because workers have more equipment and resources to work with, but also because Canadian businesses use labour and other resources more efficiently.

The productivity growth rate influences how fast real incomes can rise. If the availability of goods and services were limited entirely by the gradual increase in labour and capital stock, then Canadian living standards today would not be as high as they are. For example, from 1961 through 1999, Canadian agricultural output rose at an average annual rate of 3.7 percent, though overall input use actually declined (-0.02% for capital input and -1.5% for labour input). Rapid productivity gains made the difference. Rapid productivity growth throughout the business sector fueled the boom in real incomes during the 1960's and most of the 1970's. Slow productivity growth since then has been accompanied by lower real wage increases.

Productivity can be measured in different ways: labour productivity measures output per hour worked; multifactor productivity—a broader indicator—measures the productive efficiency of labour, capital, and other inputs in combination. Either way, productivity is a key indicator of technological and organizational efficiency.

The production activity of an industry generates a variety of products and services using a combination of different inputs. The information about this production activity is recorded in great detail in the Productivity Program Database (PPDB). This comprehensive database, which is derived from the input-output tables, provides information by industry over time on the primary inputs (capital and labour), the intermediate inputs (energy, materials and services) and output valued in terms of both current and constant prices.

The primary goal of this database is to allow for the construction of estimates of multifactor productivity, labour productivity and related measures (e.g. unit labour cost and implicit prices of output and inputs). This database can also be used to construct other economic performance measures and to examine the structure and conduct of industries.

The PPDB database has two major characteristics:

1. Most estimates are only available for the business sector and its constituent subsectors and industries. However, estimates for employment and hours are also available for the non-business sector.
2. Estimates are in Fisher chain indexes.

For more discussion on the general concepts of productivity growth and recent trends in productivity performance, see Chapter 1 of *Productivity Growth in Canada*, publication number (15-204-XIE).

Estimation methodology summary

Estimation

Statistics Canada publishes several sets of productivity measures for the Canadian business sector and its major constituent subsectors (subsectors producing goods, subsectors producing services and manufacturing) and industries. Each set of measures involves a comparison of the growth in output and input measures, but each relies on a different methodology. The concept of business sector excludes public administration, non-profit organizations and the Canadian System of National Accounts (CSNA) imputation of the rental value of owner-occupied dwellings. The business sector thereby excludes activities where it is difficult to draw inferences on productivity from the CSNA output measures. Essentially such inferences would be questionable because the CSNA output measures in these areas are based largely on labour inputs in constant prices.

The traditional measure of labour productivity - output per hour worked - constitutes the first measure of productivity introduced by Statistics Canada in the early sixties. Output, measured in constant prices, is compared to labour input, measured as hours worked in the corresponding sector or industry.

The second set of measures covers multifactor productivity. In these measures, output is again measured net of price changes, but the input measure is an aggregate of hours worked and capital service flows. Multifactor productivity estimates have been developed in recognition of the role capital growth plays in output growth.

Statistics Canada's productivity estimates are based on a bottom-up approach. Productivity indices are estimated with the most disaggregated data available. Productivity indices for 147 industries in the case of labour productivity and 123 industries in the case of multifactor productivity are then aggregated step by step to the total business sector. This approach, which takes advantage of homogenous information available at a detailed level, proves to be superior to the aggregated approach as it significantly improves the quality of the measured aggregate productivity indices.

Additional industrial detail (203 industries from 1961 to 1980 and 243 industries from 1981 on) is produced and disseminated for the number of jobs and hours worked series for both the business sector and the non-commercial sector.

In order to produce productivity growth estimates, various data sources from survey areas and the system of national accounts divisions are integrated. In particular, the productivity program requires data from:

1. The Input-Output Division, which provides information on the structure of the economy (in terms of industries, commodities produced and used as intermediate inputs in both current and constant prices and the primary inputs compensation for each calendar year). Please refer to Survey ID 1401.
2. The Labour Statistics Division, which provides employment numbers, labour compensation and hours worked to estimate the labour input; please refer to Survey 3701, 2612.
3. The Investment and Capital Stock Division, which provides estimates of investment series to estimate capital input; please refer to Survey ID 2803, 2805, 2812, 2820.
4. The Industry Measures and Analysis Division, which produces estimates of GDP in chain volume for current years. Please refer to Survey ID 1303.
5. The Income and Expenditure Accounts Division, which provides final demand GDP in current prices and chain Fisher volume. Please refer to Survey ID 1901.

Data that come from these different sources are conceptually adjusted to the CSNA framework and reconciled for accuracy and consistency in the estimates of inputs and outputs. As such, the production of productivity measures serves as an important source of quality control on the various data series that are used in the productivity program.

Formula

Labour Productivity is defined as real value-added per hour worked.

Unit Labour Cost equals total compensation for all jobs divided by a chain Fisher index of volume of value-added. It is also equivalent to the ratio of hourly compensation to labour productivity.

Hourly Compensation is the ratio of the total compensation to the total number of hours worked.

For a given industry, value added is equal to its gross output less its intermediate inputs (energy, raw materials and services) produced by other industries. A double-deflation procedure is used to measure real value added: real intermediate inputs are then subtracted from real gross output.

Multifactor Productivity is the growth rate of real output minus the combined growth rate of the inputs. Four categories of multifactor productivity are available - each is based on a different measure of output and therefore serves a different analytical need:

- multifactor productivity based on gross output;
- multifactor productivity based on gross output net of intra-industry transactions;
- multifactor productivity based on value-added;
- multifactor productivity based on gross output net of all inter-industry transactions.

Disclosure control

Statistics Canada is prohibited by law from releasing any data which would divulge information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. The confidentiality provisions of the *Statistics Act* override the provisions of any other Act, including the Access to Information Act, to guarantee the confidentiality of reported data of individual respondents. Various confidentiality rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

Data are suppressed if they have been assigned an unacceptable quality rating.

Data accuracy

All variables in the PPDB have been assigned a quality rating using a three-point scale:

1. acceptable;
2. moderately acceptable;
3. unacceptable.

Appendix I

Glossary

Business sector goods industries. Consists of agriculture, fishing, forestry, mining activities, manufacturing, construction and public utilities.

Business sector services industries. Consists of transportation and storage, communications, wholesale and retail trade, finance, insurance and real estate, and the group formed by community, business and personal services.

Business sector. Productivity measures exclude all non-commercial activities as well as the rental value of owner-occupied dwellings from total activity to define the business sector. Corresponding exclusions are also made to compensation and hours worked. In 1992, business sector GDP accounted for about 71% of the Canadian total. The business sector is further divided into the goods sector and the services sector.

Capital cost. It is defined as the gross output less the labour and intermediate expenses. Thus, it represents the surplus — profits, depreciation and net interest — intended as compensation to the owners of capital.

Capital input. This measures the services derived from the stock of physical assets and software. The assets included are fixed business equipment, structures, inventories, and land.

Capital per hour is the ratio of capital services to hours worked.

Capital services price is the capital cost per unit of capital services.

Capital productivity is measured as output per unit of capital services.

Choice of the productivity measures. In calculating productivity, a variety of measures of production (and thus factors of production) can be used: value added, gross output and gross output less intra-industry sales. The choice of a measure of productivity will naturally depend on the user's analytical needs. For example, a measure based on value added is interesting because it not only allows for international comparisons, but also eliminates double counting when measuring industrial activity.

Combined inputs. A weighted sum of inputs, particularly labour and capital. The weighting used to combine labour, capital and sometimes other factors (such as energy, raw materials and services) corresponds to the cost share for each factor with respect to total revenue for the sector.

Fisher chain index. The geometric mean of the Laspeyres and Paasche chain indices. The Fisher chain index treats two periods symmetrically. The real GDP indices that are used to determine variations in quantity for the measurement of productivity are based on Fisher chain indices. These offer the advantage of reducing the variation in the values recorded by the various fixed-base indices.

GDP per hour worked. See Labour productivity.

Hourly compensation. See Total compensation per hour worked.

Hours worked. The number of hours worked in all jobs is the annual average for all jobs times the hours worked per job for in all jobs. Hours worked is the total number of hours that a person spends working, whether paid or not. In general, this includes regular and overtime hours, breaks, travel time, training in the workplace and time lost in brief work stoppages where workers remain at their posts. It does not include time lost to strikes, lockouts, annual vacation, public holidays, sick leave, maternity leave or leave for personal needs.

Implicit price deflator. See output price.

Inputs. The economic resources used in a firm's production process. A distinction is usually drawn between two primary inputs (labour and capital) and intermediate inputs (energy and raw materials).

Labour cost. See total labour compensation.

Labour input. This measures the services derived from the labour. Labour services are obtained by aggregation of the hours worked by all persons, classified by education and work experience with weights determined by their shares of labour compensation.

Labour price is the ratio of labour cost per unit labour services.

Labour productivity. The ratio of output to hours worked. Economic performance as measured by labour productivity must be interpreted carefully, as these estimates reflect growth in productivity efficiency and changes in other factors of production (such as capital).

Multifactor productivity. A measure of productivity growth, taking into account many of the resources used in the activity of production. Multifactor productivity growth is estimated residually as the difference between the growth rate of output and the growth rate of combined inputs.

Output price is equal to current-dollar output, divided by real output.

Output. The final product of the activity of production obtained from the combination of resources such as labour, capital, materials, services and energy.

Primary inputs. Labour input combined with capital input, using labour's and capital's share of costs as weights to form a Fisher chained index.

Productivity index. The ratio of the output index to the combined inputs index; the output and the combined inputs are evaluated at constant prices. Expressing productivity levels using indices facilitates comparison and analysis with respect to a base year.

Real gross domestic product (GDP). The total value of goods and services produced during a given period within the country, regardless of the nationality of the factors of production. To make comparisons of GDP from one quarter to another, the effect of price variations must be eliminated. Thus, the variation solely in quantities produced is estimated by real GDP, that is, GDP for the period calculated at the price of another period (usually an earlier period), called the base year, such as 1997. The business sector quarterly estimates of real GDP are a Fisher chained index constructed after removing all non-business production as well as the rental on owner occupied dwellings.

Total compensation per hour worked The ratio of the total compensation for all jobs to the number of hours worked.

Total labour compensation. All payments in cash or in kind made by domestic producers to workers for services rendered—in other words, total payroll. It includes the salaries and supplementary labour income of paid workers, plus an imputed labour income for self-employed workers.

Unit capital cost is the capital cost per unit of output. It is also equal to the ratio of capital use per hour worked and capital productivity. Unit capital cost increases when capital use per hour worked increases more rapidly than capital productivity.

Unit labour cost in \$US is the equivalent of the ratio of Canadian unit labour cost to the exchange rate. This latter corresponds to the U.S. dollar value expressed in Canadian dollars.

Unit labour cost is the labour cost per unit of output. It is also equal to the ratio of labour compensation per hour worked and labour productivity. Unit labour cost increases when labour compensation per hour worked increases more rapidly than labour productivity. It is widely used to measure inflation pressures arising from wage growth.

Unit non-labor payments measure the cost of non-labour items such as depreciation, rent, interest, and indirect business taxes, in addition to corporate profits and profit-type income of proprietorships and partnerships.

Value added. A measure of production in the same way as is gross output. However, it has the advantage of eliminating double counting. An industry's value added is equal to its gross output (mainly sales) less its intermediate

consumption (energy, raw materials and services). The double-deflation procedure is used to measure real value added: real intermediate inputs are subtracted from real gross output.