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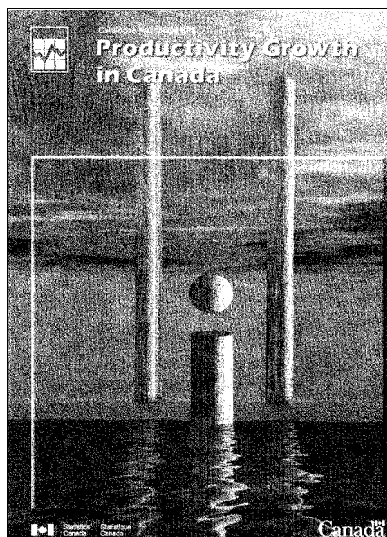
MAJOR RELEASES

● Productivity growth in Canada, 1961 to 1999

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A new study outlines how productivity growth has affected the relative price and wage structure of the business sector from 1961 to 1999. It also notes that changes in technology and macro-economic fluctuations have made productivity growth more volatile. Other changes at the firm level have also had important effects on productivity growth. Some foreign firms have been more adept at boosting productivity than have domestic firms.

(continued on page 2)



Productivity growth in Canada 1961 to 1999

Productivity growth in Canada, a comprehensive analytical guide for analysts, researchers, students and consultants researching productivity measures, is now available.

This study includes an overview of standard productivity growth measures and data-construction procedures. It considers in detail several underlying theoretical concepts and measurement issues. It also illustrates how productivity measures and related economic performance indicators can be used and interpreted. In addition, a number of empirical studies illustrate the uses for productivity measures.

One chapter compares productivity growth in Canada to that in the United States based on data collected prior to the recent historical revision made by the U.S. National Income and Product Accounts, which made the two countries' gross domestic product estimates less comparable. The study stresses that, like any other statistics, productivity estimates are subject to measurement error. It underlines the care that needs to be taken when making international comparisons of productivity performance, and quantifies the size of the confidence interval that should be used around point estimates of productivity growth when drawing inferences about international productivity differences.

Productivity growth in Canada (15-204-XIE, \$35; 15-204-XPE, \$46) is now available. See *How to order products*.

For more information, contact John Baldwin (613-951-8588; baldjoh@statcan.ca), Microeconomic Analysis Division.

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MAJOR RELEASES

Productivity growth in Canada

1961 to 1999

Economic shocks with long-lasting effects, common in many industries, changed the landscape of the Canadian business sector in the post-1973 period, according to a major new study.

The study, a comprehensive analysis of many aspects of productivity performance, examines how productivity growth responded to these shocks and the mechanisms by which the benefits of productivity growth were passed on to Canadians.

Over the 1961-to-1999 period, labour productivity, or output per hour worked, grew an average 2% per year. Multifactor productivity grew 1.2% per year. These gains were passed on to consumers in the form of lower relative prices. Productivity grew more quickly in the early part of the period than it did in the latter part. Labour productivity has also seen larger fluctuations, with longer-lasting effects. Some of these fluctuations were the result of industry-specific shocks. But, increasingly, they are the result of a common factor that has affected whole groups of industries, either from technological change, whose influence is becoming more pervasive, or from severe macro-economic shocks that are affecting more industries simultaneously.

Structural changes in the economy have also altered the composition of investment. Total investment as a percentage of gross domestic product (GDP) has fallen in the last two decades. Although investment in machinery and equipment as a percentage of GDP remained relatively constant, investment in industrial plant and commercial structures — office towers and shopping malls — as a percentage of GDP dropped significantly.

While productivity growth of the business sector and its constituent industries slowed since 1973, not all firms saw the same rate of productivity growth. In the manufacturing sector, foreign businesses operating in Canada generally realized a larger increase in their labour productivity than did their Canadian counterparts.

Productivity is one of the key indicators of the health of an economy in the long run. It provides an indication of the productive capability of the economy by measuring how much output an economy produces for a specific amount of resources that it devotes to production. Productivity growth is important because it largely determines the increase in living standards, as measured by GDP per capita.

But growth in productivity is not always synonymous with growth in the standard of living. Although growth in the standard of living has generally mirrored growth in labour productivity between 1961 and 1999, the gap

Note to readers

Productivity growth — the efficiency with which the economy transforms inputs into output — is important because it largely determines growth in real income. Productivity can be measured in different ways: labour productivity measures the growth of output per hour worked; multifactor productivity, a broader indicator, measures the productive efficiency of labour input and capital input in combination. A measure of labour productivity reflects not only changes in the efficiency of labour but also changes in the availability of capital per hour worked — a result of capital accumulation. In contrast, multifactor productivity growth represents the increase in output beyond that explained by the mere increases in inputs, and therefore more closely captures an increase in output attributable to technological and organizational advance.

between the two measures widened in the mid-1980s and again in the 1990s.

This study also includes an overview of the standard productivity growth measures, data construction procedures, measurement issues and the accuracy of the estimates. It shows how productivity measures and related economic performance indicators can be used and interpreted. The study also pays special attention to the issue of capital formation, which many researchers see as a key determinant of economic growth.

Relative importance of investment in terms of output and composition of investment changed dramatically

Growth in output stems from productivity growth as well as from employment growth and capital accumulation. But total investment as a percentage of GDP has fallen over the last two decades. Most of the decline has been in government and housing investment. A lesser decline has occurred in investment in industrial plant and commercial structures. Investment in machinery and equipment relative to GDP has remained relatively constant by historical standards.

Comparing Canada with the United States reveals that both countries saw a similar drop in government investment and non-residential investment in structures (i.e., buildings and engineering construction) relative to GDP. The investment in machinery and equipment relative to GDP has been lower in Canada and falling farther behind the United States.

Foreign-controlled plants outperformed their Canadian counterparts

Aggregate measures of productivity depend on the performance of individual firms. Not all firms are equally

productive. In 1973, foreign-controlled plants had 66% higher labour productivity than did their domestically controlled counterparts.

The differences between the labour productivity of foreign and domestic plants arise from several sources: different technologies, more capital, different plant sizes, and variations in products produced by each industry.

When account is taken of size and industry differences between foreign-controlled and domestically controlled plants, the 1973 gap in labour productivity shrinks to 57%, but is still wide.

More importantly, the overall gap between the two groups widened substantially from 1973 to 1993, even after differences in size and industry structure were taken into account. The increase in relative labour productivity occurred in several different industrial sectors. The largest increases were in food and beverages and in the natural resource sector that includes industries such as wood and non-metallic minerals (glass).

Productivity gains reflected in lower relative output prices for consumers, not higher relative wage increases for workers

Productivity growth influences the standard of living. This can occur either because firms pass on productivity gains to workers via higher wage increases or because they pass them on to consumers via either lower output price increases or greater price declines.

Inter-industry productivity gains are primarily reflected in relative output price changes. In turn, an industry that sees declining relative output prices sees rising relative output.

The decline in the relative prices is by and large greater than the increase in the relative output quantities. As a result, productivity gains are negatively correlated with changes in output share. Therefore, the output share of industries with high productivity gains did not increase over the reference period.

While they affected relative output prices, productivity gains were not closely related to changes in relative wage rates. At the industry level, the benefits of productivity growth are diffused through lower relative prices, not through higher relative wages.

Manufacturing was biggest contributor to productivity growth

During the past 40 years, productivity growth has been most rapid in agriculture, manufacturing,

communications and transportation. The contribution of a particular sector to overall productivity growth depends on both its size and its productivity performance.

Because of both its good productivity performance and its relatively large size, the manufacturing sector has made the most important contribution to aggregate productivity growth, accounting for 48% of the total increase.

Other sectors with high productivity growth — agriculture, transportation, communications, wholesale trade and retail trade — contributed less to total productivity growth, mainly because they are relatively smaller sectors.

Productivity growth is one source of the growth in GDP; the other sources are labour and capital inputs. In the services-producing sectors, labour was the engine of economic growth. By contrast, in the goods-producing sectors, capital was the most important source of growth for most of the period 1961 to 1999, except during the 1990s, when it was supplanted by multifactor productivity growth.

Multifactor productivity performance of Canada, U.S. business sectors not statistically different

Recent attention has been focused on comparisons of productivity growth in Canada and United States. Many studies compare the point estimates of productivity growth in Canada to other countries without taking into account the fact that bounds (confidence intervals) need to be placed around these estimates.

This study outlines several ways in which the size of the intervals may be calculated, and then uses them to compare the productivity performance of Canada and United States. These differences vary, depending upon the methodology used, from being slightly in Canada's favour to being slightly in the United States' favour. But in each instance, the differences are not statistically meaningful. This implies that, on average, the two countries have followed much the same long-run productivity growth path over the last 40 years.

Productivity growth in Canada (15-204-XIE, \$35; 15-204-XPE, \$46) is now available. See *How to order products*.

For more information, or to enquire about the concepts, methods or data quality of this release, contact John Baldwin (613-951-8588; baldjoh@statcan.ca), Tarek M. Harchaoui (613-951-9856; harctar@statcan.ca) and Jean-Pierre Maynard (613-951-3654; maynard@statcan.ca), Microeconomic Analysis Division. ■

OTHER RELEASES

Apartment Building Construction Price Index

Fourth quarter 2000

The composite price index for apartment building construction (1992=100) was 120.6 in the fourth quarter, a rise of 0.8% over the third quarter and a gain of 5.5% compared with the fourth quarter of 1999. This was the highest year-to-year increase since the second quarter of 1989, when the index rose 6.0%.

Toronto registered the highest quarterly change (+1.3%), followed by Ottawa, Calgary and Edmonton (+1.2%), Vancouver (+0.3%), and Halifax and Montréal, both at +0.2%.

Toronto saw the highest year-over-year gain compared with the fourth quarter of 1999 (+9.4%), followed by Ottawa (+8.3%), Calgary (+5.8%), Edmonton (+5.2%), Montréal (+3.9%), Halifax (+2.9%) and Vancouver (+2.8%).

Apartment Building Construction Price Index (1992=100)

	Fourth quarter 2000	Fourth quarter 1999 to fourth quarter 2000	Third to fourth quarter 2000
	% change		
Composite Index	120.6	5.5	0.8
Halifax	111.8	2.9	0.2
Montréal	118.3	3.9	0.2
Ottawa	123.0	8.3	1.2
Toronto	127.2	9.4	1.3
Calgary	122.8	5.8	1.2
Edmonton	121.1	5.2	1.2
Vancouver	118.4	2.8	0.3

Note: The apartment building construction price indexes provide an indication of new construction cost changes in seven major urban areas across Canada (Halifax, Montréal, Ottawa, Toronto, Calgary, Edmonton and Vancouver). Besides each of the urban areas' indexes and the composite index, there are further breakdowns of cost changes by trade groups within the building (structural, architectural, mechanical and electrical). These price indexes are derived from surveys of general and special trade-group contractors who report on the categories of costs (material, labour, equipment, taxes, overhead and profits) relevant to the detailed construction specifications included in the surveys.

Available on CANSIM: matrix 9932.

The fourth quarter 2000 issue of *Construction price statistics* (62-007-XPB, \$24/\$79) will be available in March. See *How to order products*.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Denise Potvin (613-951-3350; fax: 613-951-1539; potvden@statcan.ca), Prices Division. ■

Pipeline transportation of crude oil and refined petroleum products

November 2000

Net receipts of crude oil and equivalent hydrocarbons totalled 14 009 333 cubic metres in November, up 8.1% from November 1999. Year-to-date receipts to the end of November were 146 239 110 cubic metres, up 7.1% over the same period in 1999. Net receipts of liquefied petroleum gases and refined petroleum products in November were 6 892 591 cubic metres, down 0.6% from November 1999. Year-to-date receipts increased 4.6% to 75 482 096 cubic metres.

Pipeline exports of crude oil totalled 6 154 602 cubic metres, up 4.2% from November 1999, and pipeline imports were 2 421 568 cubic metres, an increase of 25.2%. Year-to-date exports totalled 66 952 817 cubic metres, up 10.1% from 1999. Year-to-date imports stood at 24 115 938 cubic metres, a rise of 28.0%.

November deliveries of crude oil by pipeline to Canadian refineries totalled 6 048 829 cubic metres, up 7.5% from 1999. November deliveries of liquefied petroleum gases and refined petroleum products decreased 14.3% to 518 586 cubic metres. Year-to-date deliveries of crude oil to refineries at the end of November totalled 64 955 381 cubic metres, up 4.1% from the same period in 1999.

Available on CANSIM: matrices 181 and 591-595.

The November 2000 issue of *Pipeline transportation of crude oil and refined petroleum products* (55-001-XIB, \$9/\$86) is now available. See *How to order products*.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Eleonore Harding (613-951-5708; hardele@statcan.ca), Manufacturing, Construction and Energy Division. ■

Shipments of solid fuel-burning heating products

Fourth quarter 2000

Shipments of solid fuel-burning heating products totalled \$25.7 million in the fourth quarter, a decrease of 10.5% from the \$28.7 million shipped during the fourth quarter of 1999.

The quantities for these shipments are also available.

The fourth quarter 2000 issue of *Shipments of solid fuel-burning heating products* (25-002-XIB, \$6/\$19) is now available. See *How to order products*.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Don Grant (613-951-5998; grantdo@statcan.ca), Manufacturing, Construction and Energy Division. ■

Steel pipe and tubing

December 2000

Steel pipe and tubing production totalled 176 988 metric tonnes in December, a 14.4% decrease from 206 759 tonnes in December 1999.

Year-to-date production for all of 2000 was 2 640 207 tonnes, up 6.2% from 2 486 776 tonnes for all of 1999.

Available on CANSIM: matrix 35.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Greg Milsom (613-951-7093; milsomg@statcan.ca), Manufacturing, Construction and Energy Division. ■

Architectural services

1998

Data on architectural services (NAICS 54131) for 1998 are now available. The statistics will be available on CANSIM at a later date.

To obtain data, for more information, or to enquire about the concepts, methods or data quality of this release, contact Randy Smadella (613 951-3472; randy.smadella@statcan.ca), Service Industries Division. ■

NEW PRODUCTS

Productivity growth in Canada, 1961-1999
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Productivity growth in Canada, 1961-1999
Catalogue number **15-204-XPE** (\$46).

Shipments of solid fuel burning heating products,
fourth quarter 2000, Vol. 19, no. 4
Catalogue number **25-002-XIB** (\$6/\$19).

Production and shipments of steel pipe and tubing,
December 2000
Catalogue number **41-011-XIB** (\$5/\$47).

**Pipeline transportation of crude oil and refined
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Catalogue number **55-001-XIB** (\$9/\$86).

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MAJOR RELEASES

- **Urban transit, 1995** 2
Despite the emphasis on taking urban transit, Canadians are taking it less and less. In 1996, about 1.5 billion trips were taken on some form of urban transit, the lowest level in the past 25 years.
- **Productivity, hourly compensation and unit labour cost, 1996** 4
Growth in productivity among Canadian businesses was relatively weak again in 1996 accompanied by sluggish gains in employment and slow economic growth during the year.

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Editor: Tom Vradenburg (613-951-1103, vradtom@statcan.ca)

Head of Official Release: Madeleine Simard (613-951-1088), simamad@statcan.ca

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