



The Daily

Statistics Canada

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MAJOR RELEASES

- **Study: Effect of changing technology use on plant performance in the manufacturing sector, 1993 to 1998** 2
According to a new study, manufacturing companies that increased their use of advanced technology during the mid-1990s also experienced greater growth in labour productivity during the same period. The growth in labour productivity in turn led to gains in market share.

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NEW PRODUCTS



MAJOR RELEASES

Study: Effect of changing technology use on plant performance in the manufacturing sector 1993 to 1998

According to a new study, manufacturing companies that increased their use of advanced technology during the mid-1990s also experienced greater growth in labour productivity during the same period.

The study also found a significant link between productivity growth and growth in market share. In other words, advanced technology use led to growth in labour productivity, which in turn led to growth in market share.

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

This study investigated the extent to which the adoption of advanced technologies by manufacturing plants between 1993 and 1998 was associated with superior growth and productivity performance.

The study linked data from the 1993 Survey of Innovation and Advanced Technology and the 1998 Survey of Advanced Technology in Canadian Manufacturing so that the technology profiles of manufacturing plants could be compared over time.

These two surveys made it possible to not only profile the technology use of each plant, but to also examine whether or not plants perform research and development, or whether they are foreign-owned. The surveys also showed the emphasis that plants place on several competencies, from human resources to implementing new technology.

Investment in advanced technology key for productivity growth

Adoption of advanced technology can result in gains in labour productivity for a number of reasons. Use of these technologies can result in improvements in production efficiencies, as firms are able to produce more with less. Or they may allow firms to produce higher quality products. Furthermore, they may even result in an increase in the capital intensity of the firm.

This study found that growth in capital intensity was the single most important factor contributing to growth in labour productivity between 1993 and 1997, which is consistent with previous studies. The more capital-intensive a firm is, the greater the productivity growth.

Note to readers

This release is based on the study The Effect of Changing Technology Use on Plant Performance in the Canadian Manufacturing Sector, which is available today.

The advanced technologies considered in this study go beyond the computers, software and communications equipment (information and communications technologies or ICTs) that are covered in much of the recent literature.

This report examines a much wider range of advanced technology investments, including such technologies as robots, flexible-manufacturing systems, and automated retrieval systems, in addition to the ICTs. The explosion of new technologies, especially in the manufacturing sector, is much bigger than just investments in ICTs.

The technology information for each plant that reported on the technology surveys is supplemented with financial information from the Annual Survey of Manufactures. This allows analysts to track the size of each plant, as well as its labour productivity. It also allows analysts to measure whether plants are becoming more productive and gaining market share.

The study develops and employs a dynamic structural model that suggests that technology choice affects productivity growth which, in turn, affects market-share growth. It involves the estimation of a two-equation system. The first equation estimates the factors related to productivity growth, while the second equation estimates the factors related to market-share growth.

However, this was partly the result of the ever-increasing share of capital coming from investments in information and communications technologies (ICTs). Plants that had invested heavily in advanced technologies were more likely to enjoy higher productivity growth.

Between 1993 and 1998, the use of advanced manufacturing technologies in Canadian manufacturing plants increased dramatically. Plants using network communications technologies increased from 18% to 47% of the population. Plants using integration and control technologies increased from 24% to 49%.

The study finds that Canadian manufacturing plants that increased their use of these advanced technologies during this period had higher productivity growth than those plants that did not increase their technology use.

Use of ICTs during production ordering process leads to productivity gains

This study also sheds light on how ICTs contribute to success. The study found that the highest growth was in the adoption of network communications technologies (local area networks, company-wide networks and inter-company networks).

Information and communications equipment can be used for a variety of purposes, such as keeping databases for analysis, engaging in financial transactions, selling products over the Internet and facilitating the ordering process.

According to the study, firms that used their electronic communications networks to improve the efficiency of their ordering processes were more likely to have improved their productivity.

This is consistent with previous studies that found that an emphasis on just-in-time inventory practices could be found in those firms that were more successful.

Growth in labour productivity key factor behind market-share growth

Over the period studied, plants exchanged substantial amounts of market share as some plants grew and others declined. About 15% of market share in an average four-digit industry was transferred from continuing plants that lost market share to plants that gained market share. At the beginning of the period, plants that subsequently increased their market share were 16% less productive than those about to lose market share; by the end of the period, they had become 17% more productive.

Growth in market share is strongly linked to growth in labour productivity. Firms with greater labour productivity growth typically experienced increases in their market share.

Technology growth was found to have both a direct and an indirect effect on market-share growth. First, it was linked to productivity growth, which in turn has strong positive ties with market share growth. In addition, technology growth has a direct effects on

market-share growth, most likely because of its impact on product innovation.

By the end of the period, the market rewarded those who managed to improve their efficiency or the quality of their product and hence their labour productivity, with an increase in market share.

Research and development important for market-share growth

Complementary investments in firm competencies were also shown to be important. Firms did particularly well if they stressed a strategy that focussed on the use of advanced technologies.

Research and development was also found to be related to the growth of a plant's market share. Research and development strategies, as well as advanced innovation strategies, are complementary factors that contribute to the development of new products.

The economic analysis study *The Effect of Changing Technology Use on Plant Performance in the Canadian Manufacturing Sector* (11F0027MIE2004020, free) is now available online. From the *Our Products and Services* page, under *Browse our Internet publications*, choose *Free*, then *National Accounts*.

More studies on technology and innovation can be found on the *Update on Economic Analysis* page (11-623-XIE, free) of our website.

For more information, or to enquire about the concepts, methods or data quality of this release, contact David Sabourin (613-951-3735; david.sabourin@statcan.ca), Industrial Organization and Finance Division. ■

OTHER RELEASES

Employment Insurance

May 2004 (preliminary)

The estimated number of Canadians (seasonally adjusted) receiving regular Employment Insurance benefits in May 2004 was 546,680, down 0.8% from April. This continues a steadily declining trend since August 2003 with the downward movement most pronounced in Ontario, British Columbia and Alberta. During this nine-month period, the number of beneficiaries has declined by 6.8% nationally.

Employment Insurance statistics

	May 2004	April 2004	May 2003	April to May 2004	May 2003 to May 2004
seasonally adjusted					
	% change				
Regular beneficiaries	546,680 ^P	551,230 ^P	569,590	-0.8	-4.0
Regular benefits paid (\$ millions)	772.7 ^P	734.9 ^r	755.9	5.1	2.2
Initial and renewal claims received ('000)	235.9 ^P	233.9 ^r	261.9	0.9	-9.9
unadjusted					
All beneficiaries ('000) ¹	766.6 ^P	905.8 ^P	782.5		
Regular beneficiaries ('000)	494.1 ^P	614.8 ^P	516.0		
Initial and renewal claims received ('000)	177.6	179.6	187.9		
Payments (\$ millions)	1,292.4	1,332.4	1,082.6		
year-to-date (January to May)					
	2004	2003	2003 to 2004	% change	
Claims received ('000)		1,099.1	1,149.4	-4.4	
Payments (\$ millions)		7,128.5	6,857.8	3.9	

^r Revised figures.^P Preliminary figures.

1. "All beneficiaries" includes all claimants receiving regular benefits (i.e., as a result of layoff) or special benefits (i.e., as a result of illness) and are representative of data for the Labour Force Survey reference week, which is usually the week containing the 15th day of the month.

Also on a seasonally adjusted basis, regular benefit payments in May totalled \$772.7 million, while the number of people making initial and renewal claims was 235,880.

Note: Employment Insurance Statistics Program data are produced from an administrative data source

and may, from time to time, be affected by changes to the *Employment Insurance Act* or administrative procedures.

The number of beneficiaries is a measure of all persons who received Employment Insurance benefits for the week containing the 15th day of the month. The regular benefit payments series measures the total of all monies received by individuals for the entire month.

Number of beneficiaries receiving regular benefits

	May 2004 ^P	April to May 2004	May 2003 to May 2004
seasonally adjusted			
	% change		
Canada	546,680	-0.8	-4.0
Newfoundland and Labrador	38,270	2.5	2.6
Prince Edward Island	7,830	-0.8	-7.4
Nova Scotia	29,630	-3.0	-0.8
New Brunswick	33,470	-2.6	-8.6
Quebec	185,980	-0.1	-0.1
Ontario	136,260	-1.1	-4.3
Manitoba	14,130	1.3	5.2
Saskatchewan	12,310	-4.1	4.4
Alberta	27,800	-3.0	-21.1
British Columbia	59,140	-1.0	-10.5
Yukon Territory	950	-2.1	-5.9
Northwest Territories and Nunavut	1,230	0.0	8.8
unadjusted for seasonality			
	% change		
Northwest Territories	890	-3.3	7.2
Nunavut	410	2.5	17.1

^P Preliminary figures.

Note: The number of beneficiaries includes all claimants who received regular benefits for the Labour Force Survey reference week, which is usually the week containing the 15th day of the month.

Available on CANSIM: tables 276-0001 to 276-0006, 276-0009, 276-0011, 276-0015 and 276-0016.

Definitions, data sources and methods: survey number 2604.

Data on Employment Insurance for June 2004 will be released on August 24.

For general information or to order data, contact Client Services (1-866-873-8788; 613-951-4090; labour@statcan.ca). To enquire about the concepts, methods or data quality of this release, contact Gilles Groleau (613-951-4091), Labour Statistics Division. ■

Crude oil and natural gas

May 2004 (preliminary)

Preliminary data for crude oil and natural gas for May are available.

Crude oil production in May 2004 rose 7.8%, the 13th consecutive monthly year-over-year increase. Crude oil exports, which accounted for 67.4% of total production, increased 20.4% over May 2003.

The year-to-date production of crude oil rose 8.8% over the same period last year, while crude oil exports were also on the rise, increasing 12.0% over the same period.

Marketable natural gas production rose 3.0% over May 2003. Natural gas exports, which accounted for 61.3% of total marketable production, increased 7.9%, while domestic sales were also on the rise, increasing 1.1%.

Year-to-date marketable natural gas production increased by 2.1% over the same period last year. Natural gas exports rose 3.6% and domestic sales declined 1.6%.

Crude oil and natural gas

	May 2003	May 2004	May 2003 to May 2004
	thousands of cubic metres		% change
Crude oil and equivalent hydrocarbons¹			
Production	11 921.4	12 849.2	7.8
Exports	7 191.6	8 661.0	20.4
Imports ²	4 149.8	4 563.9	10.0
Refinery receipts	8 794.6	8 371.2	-4.8
	millions of cubic metres		% change
Natural gas³			
Marketable production	13 480.2	13 879.4	3.0
Exports	7 890.5	8 513.6	7.9
Canadian domestic sales ⁴	4 817.2	4 872.2	1.1
	Jan. to May 2003	Jan. to May 2004	January–May 2003 to January–May 2004
	thousands of cubic metres		% change
Crude oil and equivalent hydrocarbons¹			
Production	57 207.0	62 220.1	8.8
Exports	34 892.7	39 073.0	12.0
Imports ²	21 401.6	22 739.7	6.3
Refinery receipts	43 815.6	39 468.6	-9.9
	millions of cubic metres		% change
Natural gas³			
Marketable production	71 141.6	72 645.4	2.1
Exports	42 729.0	44 279.5	3.6
Canadian domestic sales ⁴	36 894.3	36 311.4	-1.6

1. Disposition may differ from production because of inventory change, industry own-use, etc.

2. Crude oil received by Canadian refineries from foreign countries for processing. Data may differ from International Trade Division (ITD) estimates because of timing differences and the inclusion of crude oil landed in Canada for future re-export in the ITD data.

3. Disposition may differ from production because of inventory change, usage as pipeline fuel, pipeline losses, line-pack fluctuations, etc.

4. Includes direct sales.

Available on CANSIM: tables 126-0001 and 131-0001.

Definitions, data sources and methods: survey number 2198.

For more information, or to enquire about the concepts, methods or data quality of this release, contact the dissemination officer (1-866-873-8789; 613-951-9497; energ@statcan.ca), Manufacturing, Construction and Energy Division. ■

Placement of hatchery chicks and turkey poults

June 2004 (preliminary)

Placements of hatchery chicks onto farms were estimated at 52.7 million birds in June, down 9.0%

from June 2003. Placements of turkey poults on farms decreased 14.6% to 1.8 million birds.

Available on CANSIM: table 003-0021.

Definitions, data sources and methods: survey number 5039.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Sandy Gielfeldt (613-951-2505; sandy.gielfeldt@statcan.ca), Agriculture Division. ■

NEW PRODUCTS

Infomat: A Weekly Review, July 27, 2004
Catalogue number 11-002-XWE (\$100).

Economic Analysis (EA) Research Paper Series :
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Catalogue number 11F0027MIE2004020 (free).

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MAJOR RELEASES



- **Urban transit, 1995** 2
Despite the emphasis on taking urban transit, Canadians are using it less and less. In 1995, each Canadian took an average of about 40 trips on some form of urban transit, the lowest level in the past 25 years.
- **Productivity, hourly compensation and unit labour cost, 1995** 4
Growth in productivity among Canadian businesses was relatively weak again in 1995, accompanied by sluggish gains in employment and slow economic growth during the year.

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