



The Daily

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Companies that invest heavily in technology generally have employees who are more highly educated than workers in other businesses, according to a new study examining the link between technological investments and the education levels of employees.

NEW PRODUCTS



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MAJOR RELEASES

Building permits

March 2002

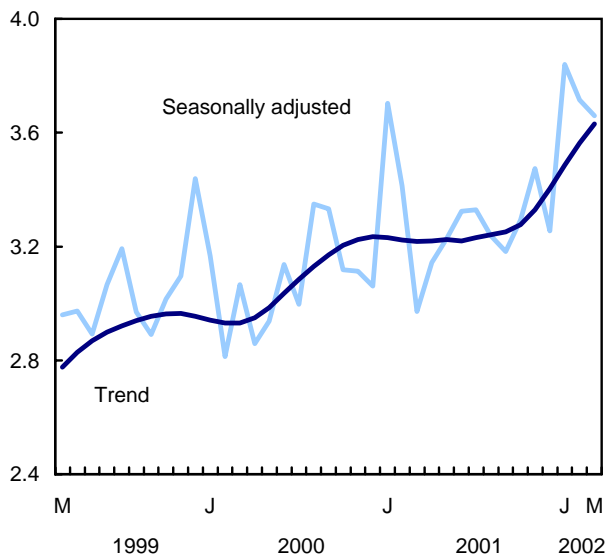
The phenomenal demand for new housing in Canada cooled only slightly in March as builders maintained their torrid pace in taking out residential building permits.

Contractors took out \$2.4 billion in permits for housing in March, down 1.2% from the highest monthly record in February. Permits for single-family housing accounted for three-quarters of the total.

Housing permits reached \$7.2 billion for the first three months of 2002, up 30.0% from the same period a year earlier. Nearly 53,000 new dwellings were authorized from January to March, the highest quarterly level since the first quarter of 1990.

Total value of permits remained high in March

\$ billions



The value of building permits, an early indicator of construction activity, points to a hot summer for home builders. The housing market has been booming across Canada in the wake of low mortgage rates, high consumer confidence and the scarcity of existing dwellings for rent or resale.

In contrast, the trend was still downward in the non-residential sector. Pulled down by a substantial drop in industrial permits, the value of non-residential permits fell 2.1% to \$1.3 billion in March — the lowest

Note to readers

Unless otherwise stated, this release presents seasonally adjusted data, which ease comparisons by removing the effects of seasonal variations.

The Building and Demolitions Permits Monthly Survey covers 2,350 municipalities representing 95% of the population. It provides an early indication of building activity. The communities representing the other 5% of the population are very small, and their levels of building activity have little impact on the total.

The value of planned construction activities shown in this release excludes engineering projects (e.g., waterworks, sewers or culverts) and land.

level since April 2000. It was the sector's third decline in four months.

Municipalities issued \$3.7 billion in building permits, down 1.5% from February. Despite the decline, this level was still 11.0% higher than the average monthly level in 2001.

Municipalities issued permits totalling \$11.2 billion in the first quarter, up 11.2% from the same period last year. The massive gain in the residential sector contrasted with an 11.7% decline in non-residential permits.

Regionally, the census metropolitan areas of Edmonton and Calgary posted the largest gains (in dollars) in 2002 — mainly the result of proposed housing construction. All census metropolitan areas recorded increases in the value of residential permits on a year-to-date basis except Ottawa, which posted a record level last year.

Hot summer likely for home builders in most provinces

Builders took out \$1.8 billion in single-family permits in March, down 0.6% from February. Despite this minor retreat, the level of construction intentions for single-family dwellings was still 34.3% higher than the average monthly level in 2001.

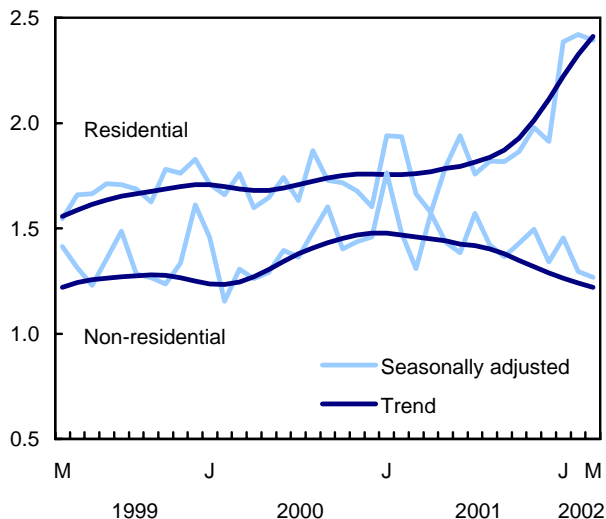
The value of building permits for multi-family dwellings fell 2.9% to \$615 million in March.

After a record-setting February, housing permits in Alberta fell 9.6% to \$381 million — the largest decline among the provinces in absolute dollars. In contrast, housing permits were at a 15-year high in March in Quebec, which posted the largest advance (+4.8% to \$462 million).

On a year-to-date basis, all 10 provinces recorded double-digit advances in the residential sector compared with the same period in 2001. The largest increases (in dollars) occurred in Alberta (+56.4%) and Quebec (+45.7%).

Both residential and non-residential sectors retreated

\$ billions



Industrial and institutional sectors decline

The value of building permits in the non-residential sector declined in the wake of a sharp drop in industrial projects and a smaller decline in the institutional component.

The value of permits for industrial projects fell 35.7% to \$197 million, largely because of a decrease in the utility and transportation category. This followed two sharp monthly increases. Ontario recorded the largest decline (-62.7% to \$73 million) following a tremendous increase in February.

Institutional building intentions fell 6.5% to \$375 million, the third straight monthly decline, as a gain in education projects was more than offset by retreats in welfare home projects. These three monthly declines follow a strong performance during the last six months of 2001. Manitoba recorded the largest decline after two strong increases.

Permits for proposed commercial construction jumped 18.4% to \$695 million, driven by a strong gain in permits for hotel and restaurant and office building categories. This gain follows a large decline in February. Ontario recorded the largest advance.

At the provincial level, the most significant monthly decline occurred in Manitoba (-54.3% to \$31 million). However, this decline should be put in perspective as a large permit was issued in February for a hospital. Alberta recorded the largest increase (+25.5% to \$195 million) due to projects in the hotel and restaurant category.

Non-residential building permits totalled \$4.0 billion in the first three months of 2002, down 11.7% compared with the same period a year earlier. The decline was a result of decreases in the industrial and commercial components. Industrial building permits dropped 28.9% to \$752 million, while commercial intentions fell 19.0% to \$2.1 billion. Only the institutional component recorded a higher level than the same period last year, up 28.6% to \$1.2 billion.

The continuing downward trend in the non-residential sector is in line with some indicators. Declining industrial capacity utilization rates and corporate operating profits in 2001 may have hurt the sector.

Of the 28 census metropolitan areas, 16 showed a decrease on a year-to-date basis. The largest loss was in the Toronto area, due to a decline in proposed office building construction.

Provincially, Manitoba recorded the largest year-to-date increase (+59.1% to \$131 million). The strongest drop was recorded in Quebec (-19.5% to \$900 million), driven by declines in all three components in Montreal.

Available on CANSIM: tables 026-0001 to 026-0008, 026-0010 and 026-0015.

The March 2002 issue of *Building permits* (64-001-XIE, \$14/\$145) will be available soon. See *How to order products*.

The April 2002 building permit estimate will be released on June 4.

To obtain data, contact Vere Clarke (1-800-579-8533; 613-951-6556; clarver@statcan.ca). For more information, or to enquire about the concepts, methods or data quality of this release, contact Étienne Saint-Pierre (613-951-2025; saineti@statcan.ca), Investment and Capital Stock Division. □

Value of building permits

	February 2002 ^r	March 2002 ^p	February to March 2002	January to March 2001	January to March 2002	January–March 2001 to January–Mar. 2002
Census metropolitan area	seasonally adjusted					
	\$ millions		% change	\$ millions		% change
St. John's	15.8	19.2	22.0	33.6	50.7	50.7
Halifax	39.7	30.1	-24.1	59.8	110.3	84.5
Saint John	6.4	6.4	0.6	15.6	20.6	32.4
Chicoutimi–Jonquière	6.0	17.1	185.6	51.0	28.5	-44.0
Québec	53.7	71.5	33.1	175.9	158.7	-9.8
Sherbrooke	28.9	18.1	-37.5	34.4	62.6	82.3
Trois-Rivières	5.2	15.7	203.6	20.1	32.6	61.7
Montréal	349.9	374.5	7.0	1,131.4	1,202.6	6.3
Hull	26.4	31.6	20.0	107.7	116.2	7.9
Ottawa	131.9	104.6	-20.7	464.4	312.8	-32.7
Kingston	10.0	7.8	-22.3	35.4	32.0	-9.7
Oshawa	68.2	47.9	-29.8	121.9	152.6	25.3
Toronto	583.3	665.0	14.0	2,477.1	2,079.2	-16.1
Hamilton	118.9	130.2	9.5	227.3	320.9	41.2
St. Catharines–Niagara	30.0	102.2	240.9	87.7	168.9	92.7
Kitchener	105.2	75.8	-28.0	159.7	252.3	58.0
London	48.8	45.8	-6.3	144.9	153.3	5.8
Windsor	86.1	60.3	-30.0	125.5	188.9	50.5
Sudbury	3.9	5.2	34.6	12.6	11.0	-12.7
Thunder Bay	47.0	26.7	-43.2	24.2	79.4	228.1
Winnipeg	40.6	34.5	-15.0	106.9	116.8	9.3
Regina	10.0	7.9	-20.9	40.4	34.0	-16.0
Saskatoon	47.7	19.1	-60.0	66.9	91.0	35.9
Calgary	212.7	222.9	4.8	513.0	627.6	22.3
Edmonton	120.1	135.6	12.9	303.1	434.1	43.2
Abbotsford	19.3	14.7	-24.0	44.8	44.1	-1.6
Vancouver	279.1	297.9	6.7	735.9	778.6	5.8
Victoria	50.5	45.7	-9.5	92.7	124.7	34.6

^r Revised data.

^p Preliminary data.

Note: Figures may not add to totals due to rounding.

Value of building permits

	February 2002 ^r	March 2002 ^p	February to March 2002	January to March 2001	January to March 2002	January-March 2001 to January-March 2002
seasonally adjusted						
	\$ millions	\$ millions	% change	\$ millions	\$ millions	% change
Canada	3,715.5	3,659.8	-1.5	10,089.0	11,214.9	11.2
Residential	2,420.5	2,392.3	-1.2	5,538.6	7,198.9	30.0
Non-residential	1,295.1	1,267.5	-2.1	4,550.4	4,016.1	-11.7
Newfoundland and Labrador	24.2	26.5	9.4	54.6	71.3	30.5
Residential	15.6	19.2	23.1	38.6	51.3	32.8
Non-residential	8.6	7.2	-15.7	16.0	19.9	24.9
Prince Edward Island	6.1	12.6	107.5	22.5	26.8	18.9
Residential	5.5	10.5	91.3	13.2	21.5	62.6
Non-residential	0.6	2.1	254.4	9.3	5.3	-43.3
Nova Scotia	70.8	61.9	-12.6	141.6	206.8	46.0
Residential	54.1	48.1	-11.3	93.1	159.1	70.9
Non-residential	16.7	13.9	-16.8	48.5	47.7	-1.7
New Brunswick	54.7	53.9	-1.5	105.3	154.5	46.8
Residential	46.7	43.7	-6.4	64.4	122.2	89.8
Non-residential	8.1	10.2	26.8	40.9	32.3	-20.9
Quebec	692.7	721.2	4.1	2,035.1	2,235.9	9.9
Residential	440.8	461.9	4.8	916.9	1,335.7	45.7
Non-residential	251.9	259.2	2.9	1,118.2	900.2	-19.5
Ontario	1,652.4	1,645.2	-0.4	4,819.1	5,015.0	4.1
Residential	1,034.0	1,042.6	0.8	2,833.6	3,193.2	12.7
Non-residential	618.4	602.6	-2.5	1,985.5	1,821.8	-8.2
Manitoba	101.5	64.7	-36.3	163.6	236.9	44.8
Residential	34.4	34.0	-1.1	81.0	105.6	30.3
Non-residential	67.1	30.7	-54.3	82.6	131.4	59.1
Saskatchewan	75.0	41.8	-44.2	166.3	177.7	6.9
Residential	18.1	18.9	4.2	50.2	61.2	21.9
Non-residential	56.8	22.9	-59.6	116.1	116.5	0.4
Alberta	576.4	575.5	-0.2	1,319.9	1,722.2	30.5
Residential	421.3	380.7	-9.6	754.3	1,179.8	56.4
Non-residential	155.2	194.8	25.5	565.6	542.4	-4.1
British Columbia	458.9	454.2	-1.0	1,246.8	1,351.0	8.4
Residential	347.9	330.7	-5.0	685.1	963.6	40.6
Non-residential	111.0	123.5	11.2	561.7	387.4	-31.0
Yukon	1.6	1.5	-4.5	9.0	5.0	-44.4
Residential	1.4	1.4	-1.6	5.8	4.4	-24.9
Non-residential	0.2	0.1	-31.1	3.2	0.7	-79.5
Northwest Territories	1.1	0.3	-68.6	3.8	11.2	194.3
Residential	0.5	0.2	-61.4	0.9	0.9	-9.1
Non-residential	0.5	0.1	-76.4	2.9	10.3	260.8
Nunavut	0.1	0.5	320.2	1.4	0.6	-60.4
Residential	0.1	0.5	320.2	1.4	0.6	-60.4
Non-residential	0.0	0.0	...	0.0	0.0	...

^r Revised data.

^p Preliminary data.

... Figures not applicable.

Note: Figures may not add to totals due to rounding.

Working smarter: The skill bias of computer technologies

1999

Companies that invest heavily in technology generally have employees who are more highly educated than workers in other businesses, according to a new study examining the link between technological investments and the education of employees.

The study, based on data from the 1999 Workplace and Employee Survey (WES), establishes a clear association between investments in computer technology by companies and the educational levels of their work force.

Workers with a university education are more likely to be found in the most technology-intensive workplaces. Conversely, employers with university-educated employees are more likely to invest in computer technology implementations.

Since computer use on the job has expanded so rapidly — doubling from one-third to two-thirds of all workers during the 1990s — the links among computers, training and education could have a large impact on the demand for labour. Some analysts have linked computerization to increasing demand for highly educated or skilled workers, a process termed skill-biased technological change.

Due to rapidly changing computer hardware and software, technological leaders may favour workers who possess the educational credentials that demonstrate they have learned how to learn. This notion is further supported by the elevated training levels observed for more highly educated workers and their greater self-reliance in learning software applications.

Computers now have an enormous presence in Canadian workplaces. In 1999, 70% of Canadian workplaces accounting for 90% of employment had at least one computer user. Moreover, 6 out of 10 workers regularly used a computer on the job, double the proportion of just 3 out of 10 in 1990.

The WES is an ongoing survey of 24,600 employees at 6,300 workplaces. It follows workplaces for at least four years and employees within those workplaces for two years. This unique survey structure enables studies that relate detailed information on employers to detailed information on employees.

Computer investment strongest where employee education levels are highest

The link between education and computer technologies is strongest at the highest levels of educational attainment and computer investments, according to the study.

Note to readers

This release is based on a study using data from the 1999 Workplace and Employee Survey (WES). The WES provided detailed information on major hardware and software implementations in workplaces across a broad range of industries covering the 12 months leading up to April 1999. It also contains detailed information on computer use, computer training and other types of training and education of a sample of employees within each of those workplaces.

The study available today combines workplace-level technology information with information on the education and training of employees within those workplaces. It adds new observations concerning the micro-level foundations of the skill-biased technological change hypothesis. This hypothesis is grounded in the notion that the increasing prevalence of computer technology is increasing the demand for highly skilled and educated labour relative to lesser skilled and educated labour.

Highly-educated employees, or those with at least a university degree, were more likely to work in companies that spent more than \$2,500 per employee to implement innovations in hardware or software during the previous year.

At the same time, employers with university-educated employees were likely to invest more intensively in new computer technologies.

Another indicator of the link between education and computerization is the level of education of employees hired when the hardware or software is being implemented. Individuals newly hired in computer-implementing workplaces had higher levels of education than their co-workers who had worked at the company longer.

Again this relationship was strongest among workplaces that invested at least \$2,500 per employee in new computer technologies.

Among workplaces that did not invest in new hardware or software in the previous year, there was no difference in the education levels between longer-serving employees and those newly hired. Thus, the hiring of highly educated employees by computer implementers is not simply a reflection of higher levels of education among labour force entrants.

Computer investment coincides with increased training

The study showed that computer investment is associated with increased computer-related training. This is not surprising since employees need to learn how to use new hardware and software. It also makes sense that highly educated workers should be better able to train themselves. A higher education is probably

a good signal to computer-intensive employers that a prospective employee can continue to learn on the job.

But employer-provided computer training is only part of the picture. In fact, just 23% of computer users cited employer-provided formal training as the most important method in learning their main, work-related computer application. Far more employees mentioned self-training (45%) or informal training from co-workers or supervisors (44%) as their most important learning method.

Earlier data from the WES showed that high rates of computer-related training accompanied new hardware and software investment. Looking only at computer users, the computer-training rate was 38% higher in computer-implementing workplaces than in other workplaces.

The reliance on computer self-training was greatest among the highly educated: 57% of university graduates claimed computer self-learning was the most important learning method. The comparable rate for other workers was 40%.

Although this study did establish significant links between computer investments, computer training and

employees' education, it did so at a single point in time. To determine the leading factor in the relationship requires that companies and their employees be followed over time. The WES will provide such data in the future.

The study *Working smarter: The skill bias of computer technologies, 1999, no. 3*, is now available (71-584-MIE, free) from both Statistics Canada's Web site (www.statcan.ca). From the *Our products and services* page, choose *Free publications* and then *Labour*. The study is also available on the Human Resources Development Canada's Applied Research Branch Web site (www.hrdc-drhc.gc.ca/arb). A paper version (71-584-MPE, \$15) will be available soon. See *How to order products*.

For more information, or to enquire about the concepts, methods or data quality of this release, contact Ted Wannell (613-951-3546), Business and Labour Market Analysis Division, or Howard Krebs (613-951- 4090; fax: 613-951- 4087; labour@statcan.ca), Labour Statistics Division. ■

NEW PRODUCTS

Working smarter: The skill bias of computer technologies, 1999, no. 3
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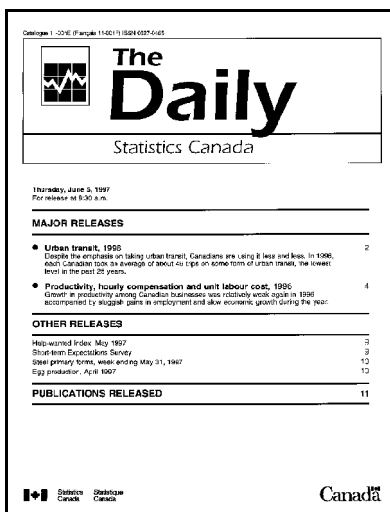
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