

Canada's apprenticeship system reviewed

Spurred by concerns that Canada may face an impending skills shortage and that too few entrants are completing apprenticeships, Industry Canada in 2004 commissioned the Centre for the Study of Living Standards to study the apprenticeship system.

The Apprenticeship System in Canada by Andrew Sharpe and James Gibson, recently released, identified a number of significant trends and issues in apprenticeship training.

Growth rates respectable

Since 1977, apprenticeship registrations in Canada have grown at a respectable rate, keeping pace with other forms of post-secondary education, although remaining a small part of the post-secondary education system.

Nearly 235,000 people were registered in apprenticeship programs in 2002, representing about two per cent of labour force participants between ages 15 and 44 years.

Apprenticeships as a share of post-secondary education enrollment also increased between 1985 and 1998 – nearly

reaching the 1977 rate of almost 13 per cent.

Trends follow employment patterns

Apprenticeship registration growth is highly cyclical and closely associated with the unemployment rate. The number of apprentices grew sharply between 1985 and 1991, but contracted over the next five years. Apprenticeship registration picked up again in 1997 and started to accelerate — growing more than six per cent per year from 1997 to 2002. These trends strongly suggest that apprenticeship registration in the early 1990s was affected by the economic downturn, and increases since 1997 are due to strong economic growth.

Differences across the country

Apprenticeship registration trends varied considerably by trade group, province and gender during the 1991 to 2002 period. There was strong growth in smaller trade groups, including food and services and miscellaneous trades, and within the largest trade group of metal fabrication. But growth in registration in other trades, including building construction and electrical and electronics,

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CSLS Tenth Anniversary Event

The Centre for the Study of Living Standards (CSLS) was established in September 1995. To celebrate our tenth anniversary this fall, the CSLS is organizing a public event on policies to improve productivity and the economic well-being in Canada. All persons interested in these topics are welcome to attend.

The event will take place on Friday, November 4, 2005 at the National Arts Centre in Ottawa. It will consist of two panels followed by a reception. Panelists are being asked to put forward the one policy or set of policies that they believe would make the greatest contribution to productivity growth or improved economic well-being.

Persons interested in attending the event may make a reservation by calling 613-233-0268 or emailing info@csls.ca. Space is limited. There is no charge. Details on the program are found on Page 5.

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was nearly stagnant.

Apprenticeship enrollment grew fastest between 1991 and 2002 in Newfoundland, followed by Alberta and Saskatchewan, but it fell slightly in Quebec and New Brunswick.

Women flock to traditional female trades

While the number of women apprentices increased substantially from 1991 to 2002, they became increasingly concentrated in traditional female areas of apprenticeship such as food services. Rates of female registration fell in non-traditional areas like building construction, electrical, motor vehicle and heavy equipment trades. Overall, the share of female apprentices grew between 1991 and 2002 from just over four per cent to more than nine per cent of all apprentices.

Completion rates troubling

From 1977 to 2002, apprenticeship registration nearly doubled, but completions increased very slowly. Fewer than 40 per cent of registrants completed their apprenticeships in 2002, compared to more than 60 per cent in 1982.

Reasons for the trends

The reasons behind the decline in apprenticeship completion rates in Canada are still poorly understood. Factors may include a fall in the financial returns to completion relative to non-completion, changes in

completion requirements, and changes in the average quality of apprentices.

Studies have also found that high schools focus on preparing and encouraging students to enter university rather than apprenticeships. As a result, employers often lament the quality of apprenticeship candidates, and find less return to offset their costs of investment.

In the face of these challenges, many provincial governments have reformed their apprenticeship systems in the past decade, shifting more responsibility to sectoral committees composed of employer and labour associations. Some provinces, notably Alberta, have had particular success in increasing employer participation in apprenticeship programs. Ontario and British Columbia are

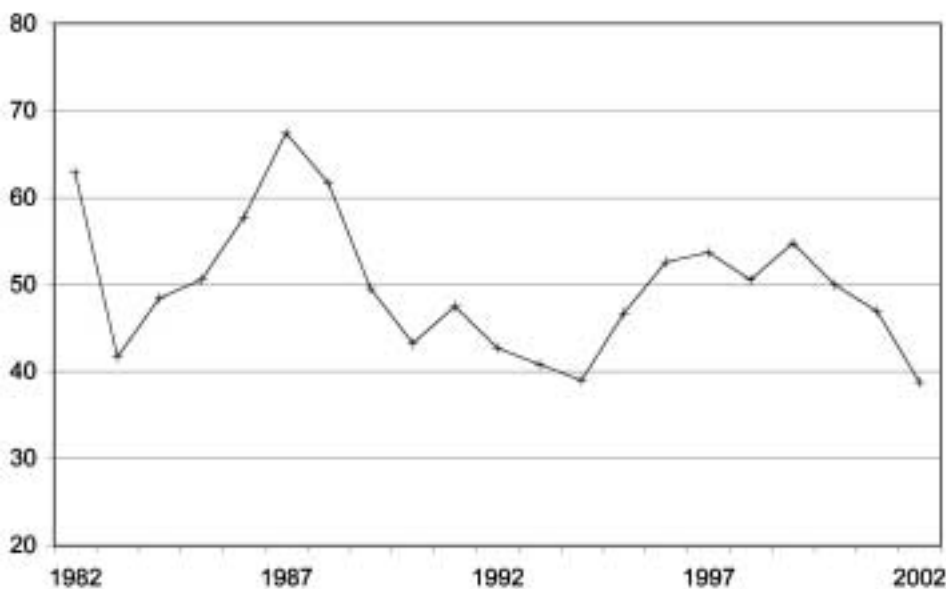
introducing changes that may also increase apprenticeship entry and completion rates.

Policy reforms needed

The CSLS report suggests that three main principles should guide policy makers in improving apprenticeship systems in Canada. First, promotion of apprenticeship programs should focus on improving the quality, rather than the quantity of potential apprentices, to increase the value of their labour to employers. Second, financial incentives should be primarily directed towards firms, rather than apprentices. Finally, strong apprenticeship sectoral committees are important in improving apprenticeship training and helping employers make investments in apprentices.

Full report available at www.csls.ca

Apprenticeship Completion Rates in Canada, 1982-2002



Note: The completion rates are calculated from formula: $100 \times (C_t / (R_{t-3} + R_{t-4} + R_{t-5}) / 3)$, where C_t is the number of completion at the year t , R_t is the number of new registrations at the year t .

Source: Calculated by CSLS from Statistics Canada and HRDC Apprenticeship Database.

CSLS measures innovation in natural resource industries

A new CSLS report prepared for Natural Resources Canada, *Innovation in Natural Resource Industries in Canada*, by Andrew Sharpe and Olivier Guilbaud, finds that levels of innovation in Canadian natural resource industries is not below the national business sector average, as is sometimes thought. Canadian natural resource industries also turn in an average performance compared to their counterparts in other countries.

The report examines innovation indicators for natural resource industries in Canada to assess trends over time and compare their performance to the all-industries' average. It also compares them to similar industries in other OECD countries.

Among the report's findings:

R&D spending

R&D spending in the resource sector was half of the business sector average in 2004, but it was above average for most of the pre-1992 period. But the authors note that it is misleading to assume that the innovative capacity and performance of Canadian resource industries is substandard because of this indicator.

One reason is that when statistics are gathered on R&D, the expenditures on research and development of capital equipment used in natural resource industries are considered to belong within the capital good producing sector.

While R&D intensity may be below average in natural

resource industries, R&D personnel per 1,000 workers is almost identical to the all-industries average. R&D personnel may in fact be more important for the innovative performance of this sector than R&D spending, as it is scientists who develop and apply ideas.

Labour productivity

Natural resource industries do well on many innovation indicators. Probably the most important is the sector's labour productivity performance. Labour productivity levels in natural resource industries tend to be about double the economy-wide average, reflecting in part the high capital intensity of the sector. The report notes that, "This superior productivity performance is not the sign of an innovation laggard."

Other indicators

Natural resource industries make above average use of the Internet, have higher levels of machinery and equipment per worker and of foreign direct investment, compared to other Canadian industries.

International ranking

Based on limited comparable data with other OECD countries, the authors conclude that Canadian resource industries are in the middle of the pack. Some countries, notably Sweden and Finland, tend to outperform Canada on a number of indicators.

The authors identify two possible areas of concern. One is the drop in R&D as a proportion of all spending within natural resource industries since the

early 1990s. The other is the decline in the proportion of university-educated workers in resource industries, compared to other parts of the business sector. They suggest that both trends merit further research.

Full report available on-line at www.csls.ca.

Look for the 10th issue of the *International Productivity Monitor*

The latest issue of the *Monitor* was released in June. Published in hard copy and available on-line at www.csls.ca/ipm.asp in English and French, the *Monitor* includes articles on productivity issues, trends and developments in Canada and other countries. Articles in the latest issue are:

An Analysis of the Post-2000 Labour Productivity Slowdown in Canada, Someshwar Rao, Andrew Sharpe and Jeremy Smith

Canada's Productivity Performance in International Perspective, Dirk Pilat

Explaining Productivity Growth: The Role of Demographics, Paul Beaudry, Fabrice Collard and David Green

Are Productivity Levels Higher in Some European Countries than in the United States? Gilbert Cette

Productivity Trends in Asia Since 1980, Noriyoshi Oguchi

In Search of the Silver Bullet for Productivity Growth: A Review Article of The Power of Productivity and Transforming the European Economy by Bart van Ark

Seasonal employment hurts Atlantic region most: CSLS study

A CSLS study published in March 2005 called *Labour Market Seasonality in Canada: Trends and Implications* examined the challenges and realities of seasonal employment, which forms the backbone of many communities in Canada, particularly on the East Coast.

CSLS Executive Director and study co-author Andrew Sharpe says the study shows that, “policy efforts to correct the gaps in unemployment need to be focused on the creation of full-time employment. Ideally, the policy approach would be to look at what kind of incentives can be introduced to make it more attractive to firms to create full-year opportunities rather than continue their practice of relying on part-year and insecure seasonal jobs.”

“A strong case can be made that dependence on long-term EI benefits is not at all in the interest of the recipients or of the communities and regions in which they live, but the Catch 22 is that politically, it is very difficult to use reductions in benefits as the catalyst for change,” says Sharpe.

Among the report’s findings:

- Seasonal unemployment represents an important public policy issue. The basic problem is a lack of employment opportunities in rural and remote areas where seasonal unemployment is concentrated.
- There has been a decline in the dependence of the labour force on seasonal employment in Canada since 1976. However,

since 1996 the seasonality of unemployment has increased.

- Atlantic Canada has higher levels of seasonal unemployment than the other regions. This in part reflects a greater propensity for employers to hire part-year workers in this region.
- In relation to other OECD countries, Canada has an average seasonal unemployment rate, but a high rate of employment seasonality. Relative to the United States, Canadian employment seasonality is three times greater.

Report available on-line at www.csls.ca

Work in progress

The CSLS has a number of projects under development:

- The CSLS is nearing completion of a major study of productivity in Atlantic Canada for the Atlantic Canada Opportunities Agency.
- The CSLS is constructing the living standards domain of the new Canadian Index of Wellbeing (CIW) being developed by the Atkinson Charitable Foundation. Information on the CIW can be found at www.atkinsonfoundation.ca
- At the request of Human Resources and Skills Development Canada, the CSLS is nearing completion of a report on the lessons for Canada from the productivity experiences of Australia, Ireland, Sweden, Finland, the United Kingdom, and the United States.
- At the request of the Prime Minister’s Advisory Council on Science and Technology, the CSLS prepared a paper on the diffusion of technology in Canada for a roundtable discussion on this topic.
- At the request of the Construction Sector Council, the CSLS is undertaking a study on the measurement of productivity in the construction sector.
- The CSLS is undertaking a study of the link between labour market information and labour market adjustment for Industry Canada.
- The CSLS is nearing completion of a study examining the relationship between subjective well-being or happiness and objective indicators of economic well-being in Canada.
- At the request of the Information Technology Association of Canada, the CSLS is undertaking a study on the factors behind the lower levels of ICT investment and capital stock per worker in Canada compared to the United States.
- The secretariat of the Telecommunications Policy Review Panel has commissioned the CSLS to conduct a review of the literature of the impact of ICT on productivity.

How does research affect well-being? CSLS study examines links

In an attempt to better understand the link between research investments and Canadians' well-being, the CSLS earlier this year completed for the Prime Minister's Advisory Council on Science and Technology a survey and assessment of various indicators used by organizations, both in Canada and abroad, to measure economic, health, environmental, social and cultural aspects of societal well-being.

The report, *Measuring the Impact of Research on Well-being: A Survey of Indicators of Well-being*, concludes that it is entirely feasible to assess the impact of research investments in Canada on various dimensions of well-being, given the wealth of measurement indicators that have been developed both in Canada and abroad. It provides an overview of Canada's research effort, and surveys a large number of indicators and composite measures that have been developed to quantify well-being in Canada, the United States and at the international level.

The report also develops a preliminary framework for measuring the impact of research on well-being, discusses the role of indicators in public policy initiatives to improve the well-being of Canadians, the links between these indicators and research, and outlines directions for further work.

Some of the report's findings include the following:

- Canada has greatly increased its research effort in recent years, with the share of GDP devoted to research and development rising from 1.31 per cent in 1971 to 1.91 per cent in 2003.
- The business sector has been responsible for virtually all the increase in the R&D/GDP ratio.
- Canada has recently moved from sixth to fifth best performer among the G-7 countries regarding R&D/GDP share, surpassing the United Kingdom and Italy.
- The field of well-being measurement is experiencing a renaissance. Governments and non-governmental organizations in developed countries are undertaking massive amounts of work in this area.
- In recent years, the importance of subjective well-being, also called happiness or life satisfaction, has grown and a number of national indexes in this area, such as the *Australian Unity Well-Being Index*, have been developed.
- Certain basic indicators such as income, employment, poverty, health status and pollution levels are found in almost all of the 38 measures examined for the study.

- A number of Canadian measures are notable, including the Newfoundland Community Accounts, GPI Alberta and the Conference Board of Canada Performance and Potential Indicators because of the very large number of well-being variables or indicators they include.
- Internationally, notable measures include the Dutch and Swedish social reporting exercises because of their size and long history; the Human Development Index (HDI) developed by the United Nations Development Program because it is probably the best known composite measure of well-being; and the Atkinson report on EU social indicators because of the meticulous care that has been given to the development of an appropriate set of indicators.

The report notes examples of ways that research has been used by governments to improve the well-being of Canadians.

Report available on-line at www.csls.ca

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Improving productivity growth in Canada

This article is based on testimony by CSLS Executive Director Andrew Sharpe at hearings on productivity conducted by the Senate Standing Committee on Banking, Trade and Commerce on May 11, 2005.

Productivity is our economic destiny. At one per cent productivity growth, living standards double in 70 years. If we can raise productivity growth to three per cent, we can double living standards in 24 years. If we can attain two per cent productivity growth over the next 30 years, financial problems caused by the cost of health care and pensions for an aging population will largely evaporate.

So how is Canada doing on the productivity front? At the moment, not well. Measured on an output per hour basis, in 2003, our business sector productivity growth rate was 0.1 per cent. In 2004, it was zero.

In stark contrast, productivity growth in the United States has soared. There, business sector output per hour advanced by 4.3 per cent in 2003 and 3.9 per cent in 2004. Accelerated technological change appears to have fuelled the very rapid productivity growth in the United States.

In Canada, three key factors are slowing our productivity growth. First, productivity growth in the information and communications technology (ICT) sector has fallen significantly. Second, aggregate demand has slowed since 2000 so that we are now experiencing lower levels of capacity utilization than during the late 1990s. Finally, since 2000, the rate of investment

growth in Canada in machinery and equipment (M&E) and ICT has been lower.

I believe that productivity growth in Canada will rebound in the future to at least the two per cent range. This pick-up will be largely driven by technological developments, as appears to have been the case in the United States. It would be an exaggeration to say that we are currently experiencing a productivity crisis in this country. But we should be doing much better, and we need policies to do better.

Although productivity is primarily the responsibility of the business sector, government needs to create a favourable framework for businesses to improve productivity. Government needs to help convince businesses to continue to invest, innovate and strengthen human resources — the three key drivers that largely determine business sector productivity growth.

Here are six policies that could improve productivity in Canada.

Stimulating full employment

So long as inflation is stable, the Bank of Canada should keep interest rates low to stimulate employment. Full employment means there is no slack in the system, or unused potential. These conditions give rise to increasing returns through economies of scale, learning by doing, and elimination of operating inefficiencies.

Diffusing new technologies

Canada contributes only a small percentage of the world supply of new innovations. Why? Because

our population is relatively small, and the vast majority of Canadian companies do not do research and development.

Businesses in Canada need to know more about best practices throughout the world. Although they have an incentive to do this, businesses may lack the means to keep abreast of technological developments. Government can help through information services, such as the National Research Council's Industrial Research Assistance Program (IRAP) — an example of a successful program that promotes the adoption of new technologies by small and medium sized businesses in Canada.

Competitive markets

Competition is one of the best tonics for productivity growth. In a competitive environment, businesses have an added incentive to introduce new technologies, train workers and generally strive to be cutting edge. Government needs to foster competitive markets, particularly in the product market area.

Worker mobility

Subsidizing declining industries is not in the productivity interests of Canadians. In certain cases, for political reasons, it may be necessary to prop up declining sectors temporarily. But mainly public policy should facilitate the movement of resources from low productivity regions or industries to high ones through, for example, mobility grants and tax incentives, and by providing better information on employment opportunities across the country.



CSLS Tenth Anniversary Event, Friday, November 4, 2005, Panorama Room, National Arts Centre, Ottawa, Ontario

1:00-3:00	Panel One:	Policies to Increase Productivity in Canada
	Chair:	Andrew Sharpe (CSLS)
	Panelists:	Pierre Fortin (UQAM and CSLS) Andrew Jackson (Canadian Labour Congress) Jim Milway (Institute for Competitiveness and Prosperity) Alice Nakamura (University of Alberta and CSLS)
3:00-3:15	Break	
3:15-5:00	Panel Two:	Policies to Improve the Economic Well-being of Canadians
	Chair:	Ian Stewart (CSLS)
	Panelists:	Keith Banting (Queen's University and CSLS) Lars Osberg (Dalhousie University and CSLS) Richard van Loon (CSLS)
5:00-7:00	Reception (cash bar)	

Persons interested in attending the event may make a reservation by calling 613-233-0268 or emailing info@csls.ca. Space is limited. There is no charge.

Post-secondary education

The United States has experienced such strong productivity growth in recent years because it develops the most advanced technologies. And that occurs because it has the best research universities in the world. Our government needs to invest more in both teaching and research at the post-secondary level to boost our productivity.

The U.S. has Silicon Valley, a site of multiple commercial spin-offs from Stanford University. We have far fewer examples, but the potential is there. One excellent example is Research in Motion, one of Canada's leading high-tech firms that grew out of Waterloo University.

Reduced working time

Although the United States leads in technologies, a number

of European countries, including France, report higher levels of productivity output per hour.

In part, this is because France has adopted policies, such as high minimum wages, that keep less productive people out of work. But it also introduced a shorter working week, and it seems that workers are less tired and more focused when they put in 35 versus 40 hours per week.

While I am not advocating the heavy-handed bureaucratic French approach to working time reduction, actions that reduce working time through longer vacations and more public holidays, whether initiated by government or through collective or individual workplace bargaining, can both increase economic well-being and raise productivity. 🏠

CSLS Board of Directors welcomes new member

The activities of CSLS are directed by a Board of Directors composed of prominent academic economists and persons with experience in economic policy making at the highest levels. We are pleased to welcome to the Board, **Richard Van Loon**, recently retired President of Carleton University. Following is the complete list of Board members:

Chair: Ian Stewart, former Deputy Minister of Finance

Executive Director: Andrew Sharpe

Secretary/Treasurer: David Slater, past Chair, Economic Council of Canada

Members: Keith Banting, Professor and holder of Stouffer-Dunning Chair in Policy Studies, Queen's University

Paul Davenport, President, University of Western Ontario

Pierre Fortin, Professor, Department of Economics, University of Quebec at Montreal

Morley Gunderson, CIBC Youth Employment Professor, Department of Economics and Centre for Industrial Relations, University of Toronto

Richard G. Harris, Telus Professor of Economics, Simon Fraser University

Alice Nakamura, Winspear Professor, Faculty of Business, University of Alberta

Maureen O'Neil, President, International Development Research Centre

Lars Osberg, McCulloch Professor of Economics, Dalhousie University

Craig Riddell, Department of Economics, University of British Columbia

Richard Van Loon, Past President, Carleton University

Recent additions to the CSLS website



Recently released and forthcoming documents on the CSLS website (www.csls.ca) include:

Labour Market Seasonality in Canada: Trends and Policy Implications, CSLS Report 2005-01, February 2005

Measuring the Impact of Research on Well-being: A Survey of Indicators of Well-being by Andrew Sharpe and Jeremy Smith, CSLS Report Number 2005-02, February 2005.

Indicators of Innovation in Natural Resource Industries in Canada, by Andrew Sharpe and Olivier Guilbaud. Report Number 2005-03, September 2005, available in both English and French.

The Apprenticeship System in Canada: Trends and Issues by Andrew Sharpe and Jamie Gibson. Provides a detailed discussion of trends in the apprenticeship system in Canada and discusses issues affecting the system, September, 2005, Report Number 2005-04.

The Puzzling Behavior of Recent Productivity Developments in Canada and The United States, by Andrew Sharpe and Jeremy Smith, CSLS Report Number 2005-05.

Productivity Trends in the Retail Sector in Canada and the United States, by Jeremy Smith and Andrew Sharpe, CSLS Report Number 2005-06.

Productivity Trends in Computers and Electronics in Canada and the United States, by Jeremy Smith, CSLS Report Number 2005-07.

Productivity Trends in Electrical Products in Canada and the United States, by Matt Kellison, CSLS Report Number 2005-8.


Productivity Trends in the Machinery Industry in Canada and the United States, by Matt Kelison, CSLS Report Number 2005-9.

Productivity Trends in the Chemical Industry in Canada and the United States, by Matt Kelison, CSLS Report 2005-10.

Productivity Trends in the Oil and Gas Sector in Canada and the United States, by Jamie Gibson, CSLS Report 2005-11.

Productivity Trends in the Wood Products Sector in Canada and the United States, by Matt Kellison, CSLS Report 2005-12. 

Productivity data base updates

The CSLS *Aggregate Income and Productivity Tables for Canada and the United States* and the detailed productivity tables by industry and province have been updated to 2004 and are available in the *data section* of the website at www.csls.ca. 



The **Centre for the Study of Living Standards** is a non-profit, national, independent, research organization contributing to a better understanding of productivity, living standards and economic and social well-being.

CSLS News is available in hard copy and on-line at www.csls.ca.

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