Industry Canada Industrie Canada

Micro

Winter/Spring 2005 Micro-Economic Policy Analysis Branch Bulletin Volume 10, Issue 1

In this issue

Meeting the Challenges of a Services Economy

Services industries account for almost three-quarters of both gross domestic product (GDP) and employment in Canada. Furthermore, the services sector (i.e. services industries) has been responsible for most of Canada's employment creation and much of its productivity growth over the past decade, and the sector's importance to the Canadian economy continues to increase. During the past 15 years, Canada's services sector has become more outward-oriented, more innovative, more productive, and more skills-intensive. To better understand the dynamics of the services economy and to identify the types of policies most likely to sustain the development of a knowledge-based economy, Industry Canada embarked on a research program on services. This *Micro* features highlights from a major component of this research exercise — Industry Canada's conference on Services Industries and a Knowledge-Based Economy, held in Winnipeg on October 16-18, 2003. A research volume comprising the conference papers and commentaries is planned for release in 2005.

A growing services economy that is innovative and productive increases the importance of skills. The skills challenge can be addressed only by improving our understanding of related issues such as the impact of an aging population on the Canadian labour market or the increasing international mobility of highly skilled workers. To contribute to policy research on the skill-related issues raised by such trends, Human Resources and Skills Development Canada, Industry Canada and the Social Sciences and Humanities Research Council formed a joint *Skills Research Initiative* (SRI). This *Micro* reports on SRI's progress to date in four research areas: skills and labour market implications of population aging; employer-sponsored training; adjustments in markets for skilled workers; and the international mobility of highly skilled workers.

Canada

Services Industries in a Knowledge-Based Economy

Micro is a newsletter highlighting micro-economic research findings published by the Micro-Economic Policy Analysis Branch of Industry Canada. Summaries of Industry Canada research volumes and the full text of working papers, occasional papers, discussion papers, and *Micro* can be accessed via Strategis, the Department's online business information site, at http://strategis.gc.ca/research. For more information about our research publications or to place an order, contact the Micro-Economic Policy Analysis Branch, Industry Canada, 10th Floor, East Tower, 235 Queen Street, Ottawa, ON, K1A 0H5. Telephone: (613) 952-6411; e-mail: mepa.apme@ic.gc.ca; or facsimile: (613) 991-1261. ISSN 1198-3558. Industry Canada Registry No. 54257B Canada Post Agreement 181-5199.

Role of Services in a Knowledge-Economy

This issue of *Micro* reports on Industry Canada's conference, held in Winnipeg on October 16-18, 2003, to address the topic of *Services Industries and a Knowledge-Based Economy.* Research papers were presented and panel discussions were held on policy issues such as: How different are knowledge-based services from other markets in the economy? What are the contours of trade, innovation, productivity, skills and knowledge spillovers in Canadian services industries? What are the economic opportunities and challenges in services industries and their contribution to the Canadian economy? What policy implications derive from services characteristics such as greater factor mobility, higher regulatory intensity and the diversity of market failures?

Services industries generate close to three quarters of Canadian output and jobs, a trend that Canada shares with other G-7 countries. Services industries are attracting increasing research and development (R&D) spending and have become a source of major product and process innovation. Services also rank amongst the country's most dynamic capital-exporting sectors. Gaining a better understanding of the services economy and identifying the types of policies most likely to sustain the development of a knowledge-based economy are widely seen as holding the key to Canada's longer-term prosperity. Industry Canada's conference on services-related issues was intended to focus and stimulate analysis of services in public policy research.

Knowledge-Economy and Services in Perspective

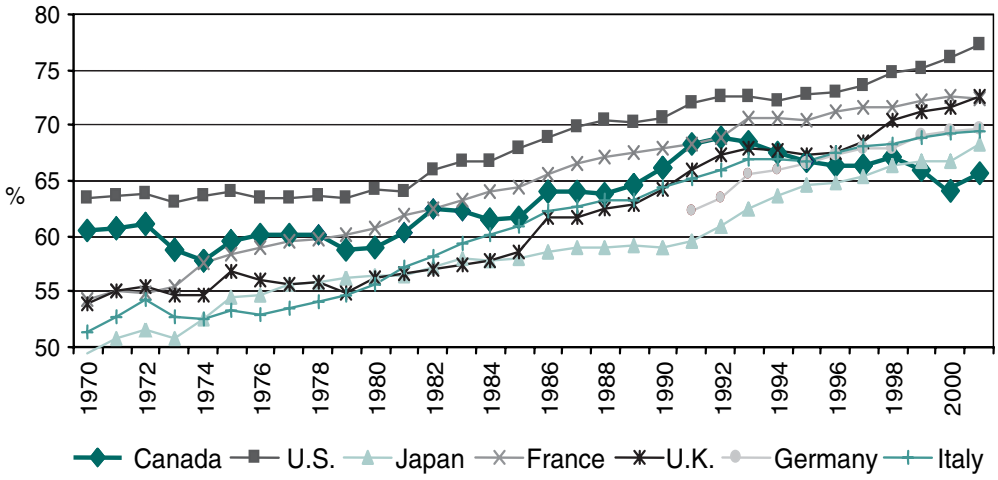
Professor Richard G. Lipsey of Simon Fraser University made a presentation on *Policy Challenges in the New Economy* as a keynote dinner speaker at the opening of the conference. He talked about general-purpose technologies (GPTs), which he described as "transforming technologies" that start by addressing only a single or a few purposes but increase in

sophistication and efficiency as they diffuse throughout most of the economy. Such economy-wide transformation occurred with the discovery of agriculture, electricity and computers. Lipsey used the term "new economy" to refer to the wide-ranging economic, social and political changes brought about by the rapid recent evolution of information and communication technologies (ICTs). He argued that the impact of new GPTs, such as ICTs should not be evaluated by productivity numbers alone. ICTs will ultimately change daily life in unforeseen ways and thus we should not seek to judge economic change solely on the basis of measured productivity figures.

Professor Lipsey's policy message is that in a world of great uncertainty, market forces may do a poor job of picking and nurturing the GPTs that will provide huge benefits to society over a long period of time. Therefore, government support, working in collaboration with the private sector, might do a better job of promoting GPTs and maximizing the pay-off from them.

> The fact that technological change is endogenous to the system creates scope for influencing it. The fact that there is no unique set of non-distorting, scientifically-determined policies shows that policy must be based on a mixture of empirical knowledge, theory and judgment.
>
> — *Richard G. Lipsey*

Services Sector in Total Value Added at Current Prices for G-7 Countries (percent)



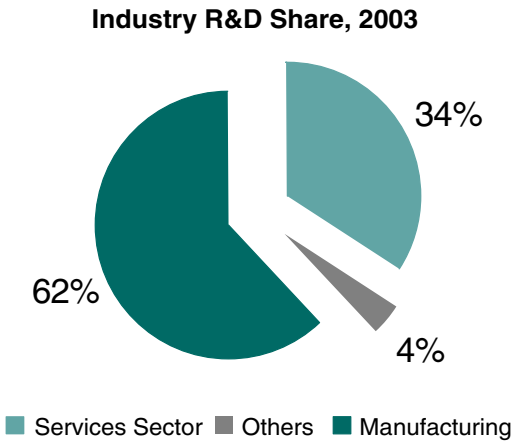
Source: Ram C. Acharya, *The Services Economy in Canada: An Overview.*

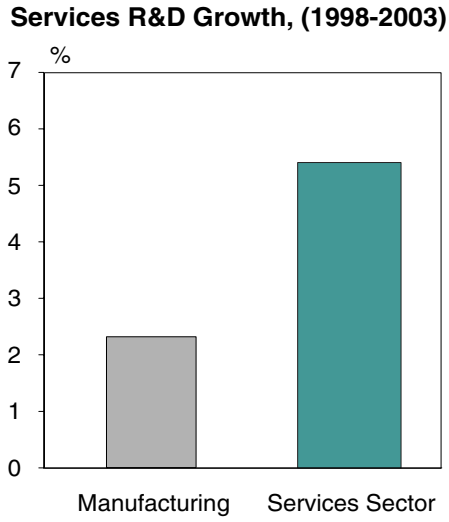
The opening panel at the conference brought out diverse perspectives on the role of services in the knowledge economy. Jayson Myers of Canadian Manufacturers & Exporters saw a strong link between manufacturing and services activities, especially when firms forge a competitive edge by customizing quality products and servicing them. Pierre Sauvé of the Institut d'études politiques de Paris agreed that services were a building block of a knowledge-based economy, but argued that most international rule making and trade liberalization work has been on the goods side. He thought that Canada was not facing this

Because of the growing interdependence between manufacturing and services, productivity improvements in services will loom increasingly larger in the competitive position of Canadian manufacturing firms.

— Pierre Sauvé

The Significance of the Services Sector and its R&D Growth to the Canadian Economy (1998-2003)





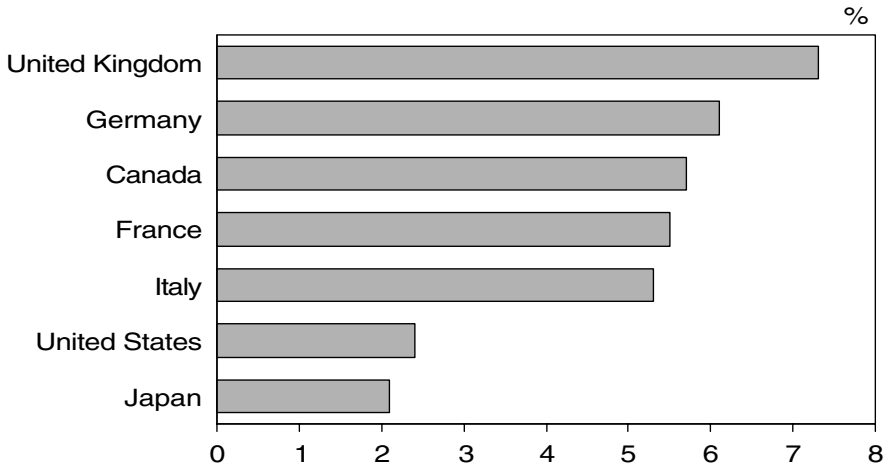
Source: Petr Hanel, *Innovation in the Canadian Services Sector.*

issue squarely and needed to do more research work on issues such as international standards in services, the contours of labour market adjustments in services and international labour mobility. Professor William Watson of McGill University and the *National Post* advocated policy neutrality towards services and manufacturing industries, something that has already been happening to some extent as a result of recent tax changes at the federal level. He emphasized that comparative advantage should determine how the industrial structure of the Canadian economy evolves.

Are Services Exceptional?

The traditional view of the services economy often portrays it as consisting of low value-added activities that are mired in a vicious low productivity growth cycle. Despite recognizing numerous knowledge gaps, most of the papers presented at the conference mounted a strong challenge to this traditional view by presenting significant and growing evidence of a services economy that is highly skilled, highly productive, innovative and attractive to foreign direct investment (FDI). Before turning to policy considerations, the authors of the papers presented addressed issues ranging from the specific nature of services to the sectoral perspectives that are summarized below.

Services Trade Intensity*, 2001



Source: OECD.

Note: * Trade intensity: sum of services imports and exports divided by services GDP.

Even though employment grew much faster during the last two decades in high-knowledge industries, trends in relative wages and real wages of university and high-school graduates have displayed remarkably similar patterns across industries in Canada.

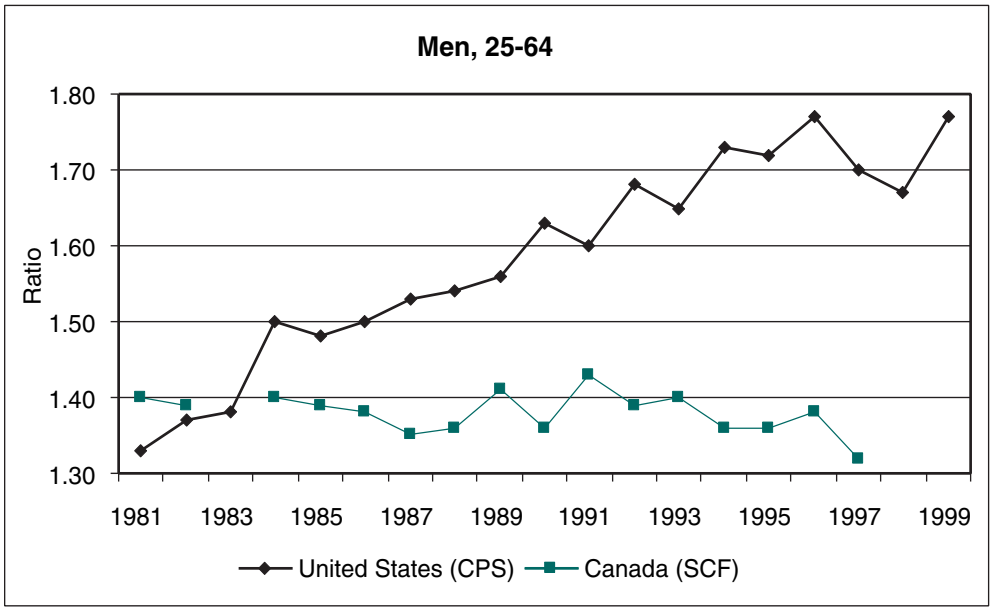
— Garnett Picot

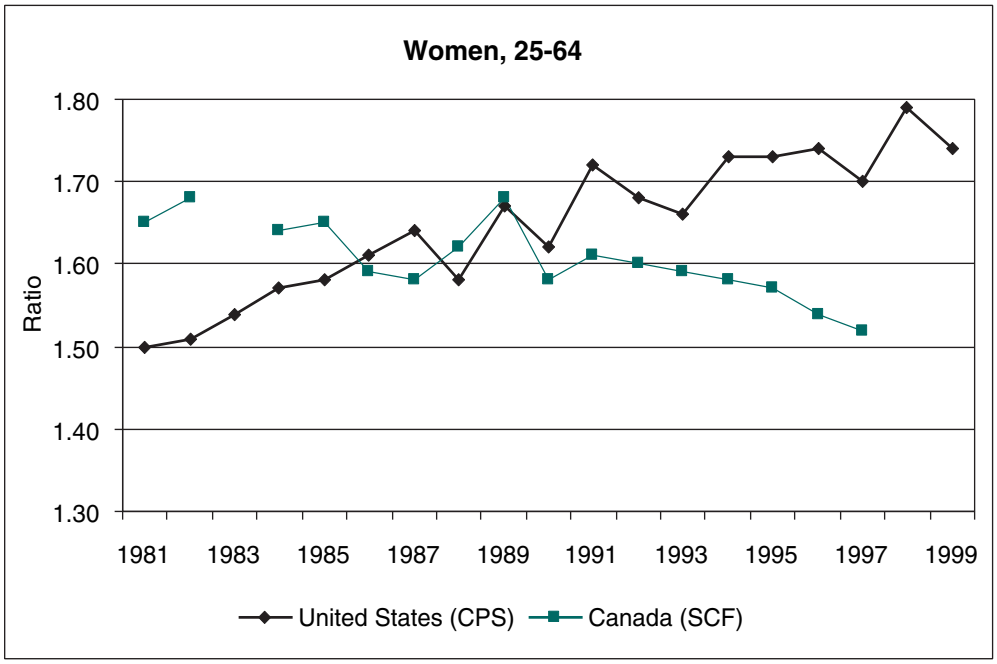
Labour Market and Locational Outcomes in the Services Economy

Our economy has become more intensive in terms of technologies, skills and knowledge. The extent of this intensification can be gleaned from changes in wages and employment observable in the market for skilled versus unskilled workers. Garnett Picot of Statistics Canada reported that employment in Canada (both in aggregate terms and within the services economy itself) grew much faster in high-knowledge industries than in other sectors over the past two decades. Even so, trends in relative wages and real wages of university and high school graduates have displayed remarkably similar patterns across industries. Since rising demand for highly educated workers was met by an equally rapid rise in supply, there was virtually no increase in the university wage premium in Canada. Among immigrant university graduates, Picot noted that real wages and wages relative to those of Canadian-born graduates had both declined significantly.

The proliferation of ICTs throughout the services economy offers wider scope for the possibility of supplying services from remote locations without the traditional constraints of time and distance. Steven Globerman of Western Washington University and his co-authors, Daniel Shapiro and Aidan Vining of Simon Fraser University, found that information technology companies located in Toronto enjoy strong growth advantages (measured in terms of sales volumes) and that growth performance lessens with distance from Toronto. Broad agglomeration economies appear to be at play in Toronto, including the benefits arising from proximity to available university research infrastructure. In a lively debate, led by the paper discussant, Ajay Agrawal of the University of Toronto, conference participants questioned the methodology used by Globerman et al., looking specifically at sample bias. The discussion also focused on the misallocation of resources during the era of the dotcom boom that later turned to dotcom bust.

Ratios of Weekly Earnings of University to Non-university Educated, "Full-Time" Workers in Canada and the United States





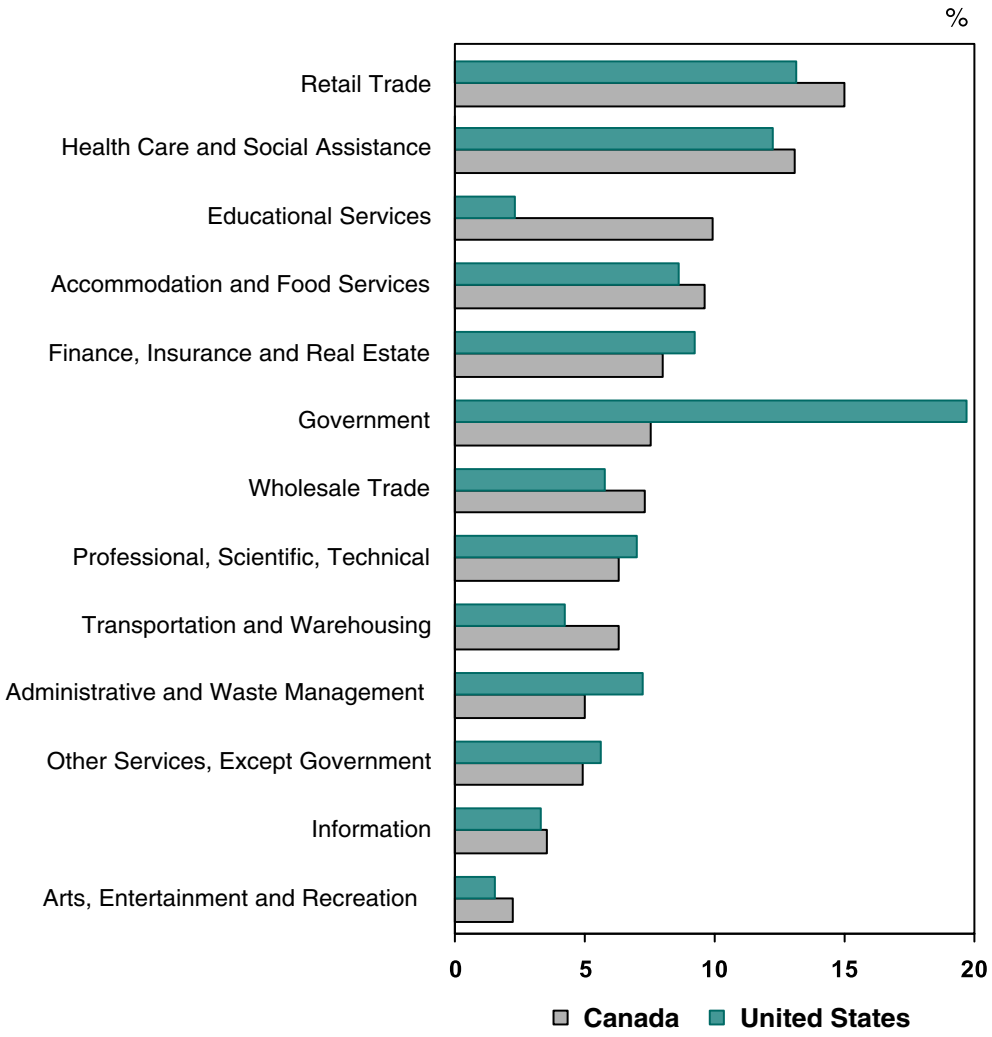
Source: René Morissette, Yuri Ostrovsky and Garnett Picot, *Relative Wage Patterns Among the Highly Educated in a Knowledge-Based Economy.*

Note: CPS: Current Population Survey; SCF: Survey of Consumer Finances.

High-tech firms that are located closer to Toronto grow faster than firms located further away, all else equal.

— Steven Globerman

The Structure of Services Employment in Canada is Similar to that of the United States: Composition of Services Employment, Averaged 1998-2002*



Source: Bureau of Economic Analysis and Statistics Canada.

Note: * Differences are mostly due to the relative importance of defence employment and the inclusion of state and local education employment under government, as was the case for services GDP.

Michael Wernerheim and Chris Sharpe of Memorial University of Newfoundland examined the role of advanced producer services (APS) in sustaining their own growth poles outside of metropolitan areas. A well-known example of this is the remarkable growth of export-led software industry clusters around Bangalore and Hyderabad in southern India. The Wernerheim-Sharpe paper found that dispersion tends to dominate agglomeration forces for rural APS firms. In his comments on this paper, Mario Polèse of the Institut national de la recherche scientifique at the Université du Québec à Montréal questioned their underlying optimism by noting that most producer services in non-metropolitan areas serve highly-localized markets, where the overwhelming majority of service jobs were either public or non-tradable in nature. As a result, their greater dispersion is to be expected. Wernerheim clarified that their tentative analysis of employment and establishment data for Canada and a

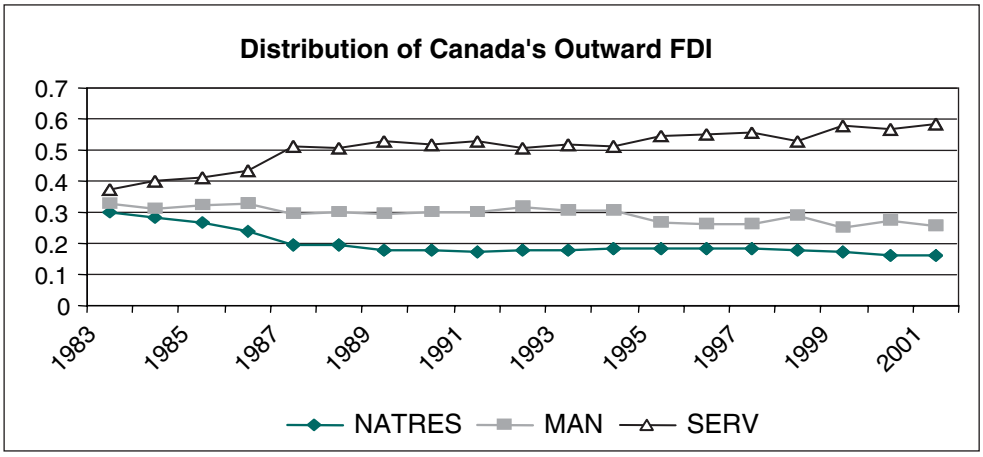
review of evidence for the United States, the United Kingdom and France all suggested that there were real limits to the potential role of APS in non-metropolitan areas. Conference participants agreed that these issues and results are relevant to regional economic development policy in Canada.

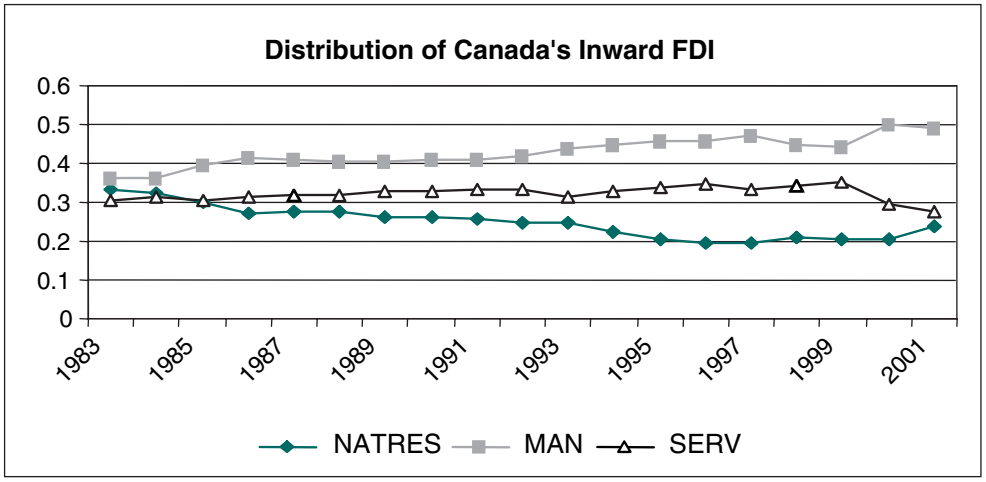
The FDI Performance of Services Sector Firms

An important distinguishing feature of much services trade is that transactions are completed through the movement of factors of production such as capital and labour, a feature that can affect either their suppliers or their consumers. Over the past three decades, international capital mobility has increased much more than international labour mobility. Walid Hejazi of the University of Toronto pointed out that Canada

> Over the past decade, employment growth in professional, scientific and technical services in Canada has been especially robust in rural localities close to urban agglomerations.
>
> — Michael Wernerheim

Distribution by Industrial Sector of Canada's Foreign Direct Investment (FDI), 1983-2001





Source: Walid Hejazi, *Canada's Experience with Foreign Direct Investment: How Different Are Services?*

Note: NATRES: Natural Resources; MAN: Manufacturing; SERV: Services.

The data indicate that the surge in outward FDI is largely attributable to a surge in services FDI. Corporate taxes paid in Canada are an important factor in explaining the surge in Canada's outward FDI. The source of Canada's increased inward FDI in the last half of the 1990s is the investment flowing into manufacturing.

— Walid Hejazi

has changed from the classic host economy of the 1970s, with one dollar of outward foreign direct investment (FDI) for every four dollars of inward FDI, into a capital exporting country by the end of the 1990s, with four dollars of outward FDI for every three dollars of inward FDI. This was seen within the context of the two landmark trade agreements - the 1987 Canada-U.S. Free Trade Agreement and the 1994 North American Free Trade Agreement. The surge in Canada's inward FDI in the last half of the 1990s was driven by inward FDI destined for Canada's manufacturing sector. According to Hejazi, the surge in the outward FDI side was largely attributable to the surge in services FDI. Ultimately, however, his paper was not able to determine if Canadian firms are increasingly locating abroad for efficiency reasons such as access to unskilled labour, or because of a lack of skilled labour, high taxes, or a poor R&D environment in Canada.

Opening Baumol's Box of Lower Services Productivity

In the 1960s, William Baumol of New York University and Princeton University postulated that services (and public services in particular) would be saddled with lower productivity because of their less intensive use of capital, a lower rate of innovation, the (smaller) average size of firms and their limited exposure to international competition. Two papers addressed this topic. One was by Someshwar Rao of Industry Canada and his co-authors, Andrew Sharpe of the Centre for the Study of Living Standards and Jianmin Tang of Industry Canada. The other was by Anita Wölfl of the Organisation for Economic Co-operation and Development (OECD). Both made it clear that productivity trends in the services sectors and not manufacturing are and will increasingly be the driving force behind aggregate productivity growth and, hence, real income growth in Canada. Both papers stressed that labour productivity levels vary greatly across services industries.

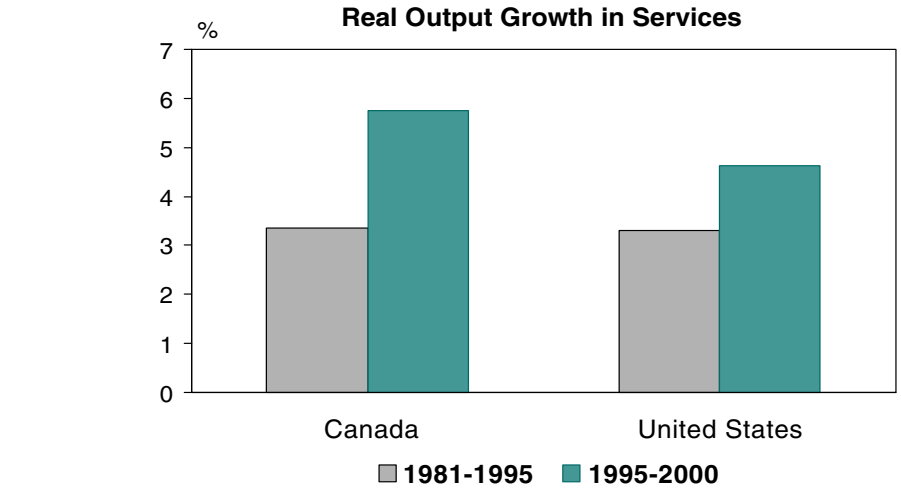
The paper by Rao et al. found that retail trade accounted for close to half of the observed growth in services sector productivity in both Canada and the United States over the past two decades. The Baumol conjecture is not completely overthrown, however,

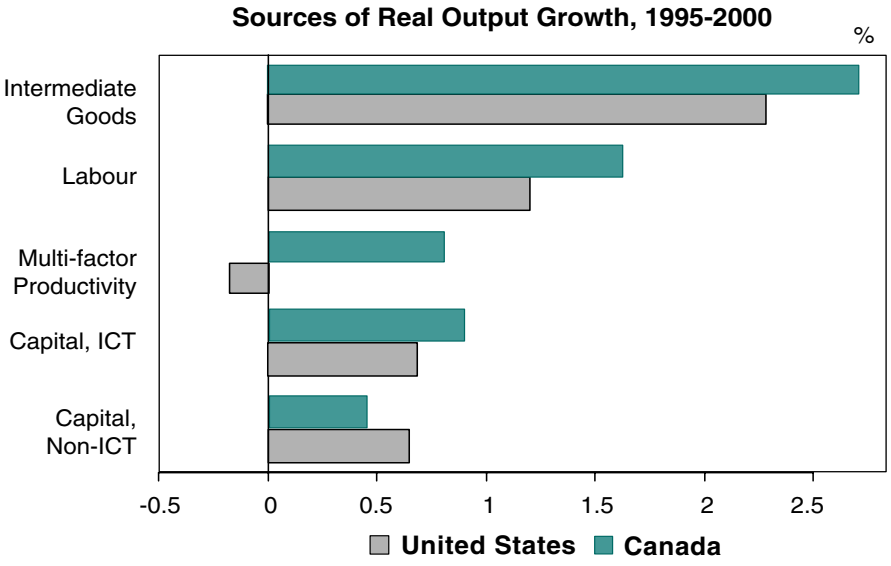
since Rao et al. reported that there were services industries experiencing negative labour productivity growth in both Canada and the United States and that there were some public services among them including land transportation, audio-visual, health and education services. They also showed that U.S. services-sector workers were some 16 percent more productive on average than their Canadian counterparts in 2000. This gap has remained even as the Canadian services sector outperformed its U.S. counterpart over the past two decades in terms of growth in both output and labour productivity. The services productivity gap was largely due to lower Canadian levels of capital intensity, human capital, the share of information and communication technology capital in total capital, and R&D intensity in services. Striking an optimistic chord, Rao et al. concluded that the Canadian services sector has been a success story in terms of productivity

In the Canadian services sector, both labour and multi-factor productivity showed an impressive acceleration in growth between the 1981-1995 and 1995-2000 periods. However, the level of Canada's services sector labour productivity in 2000 was still 16 percent below that in the United States.

— Someshwar Rao

Real Output Growth and its Sources in Canada and the United States



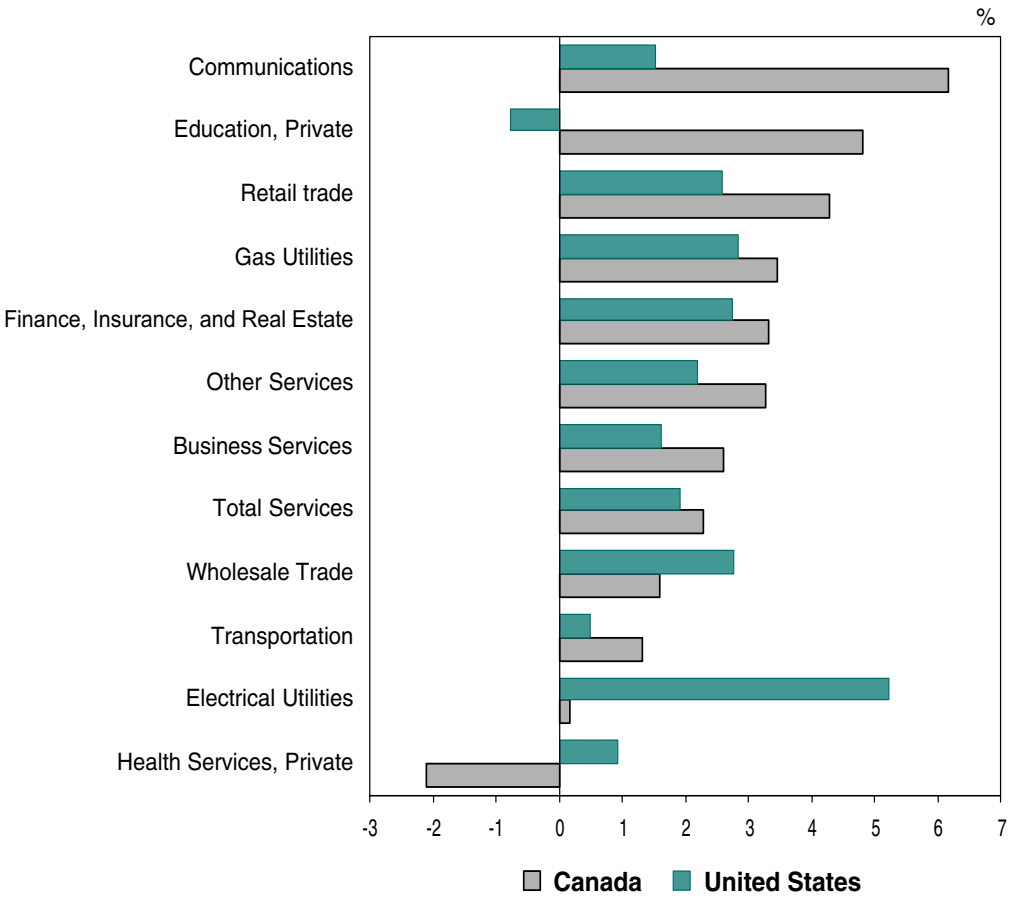


Source: Someshwar Rao, Andrew Sharpe and Jianmin Tang, *Productivity Growth in Services Industries: A Canadian Success Story.*

Measured productivity growth tends to be low or negative in many services industries, including social and personal services as well as some business services.

— Anita Wölfl

Labour Productivity Growth Rates, 1995-2000*



Source: Someshwar Rao, Andrew Sharpe and Jianmin Tang, *Productivity Growth in Services Industries: A Canadian Success Story*.

Note: * Average annual growth rate.

growth and a process of broad convergence toward U.S. services productivity levels is under way in Canada.

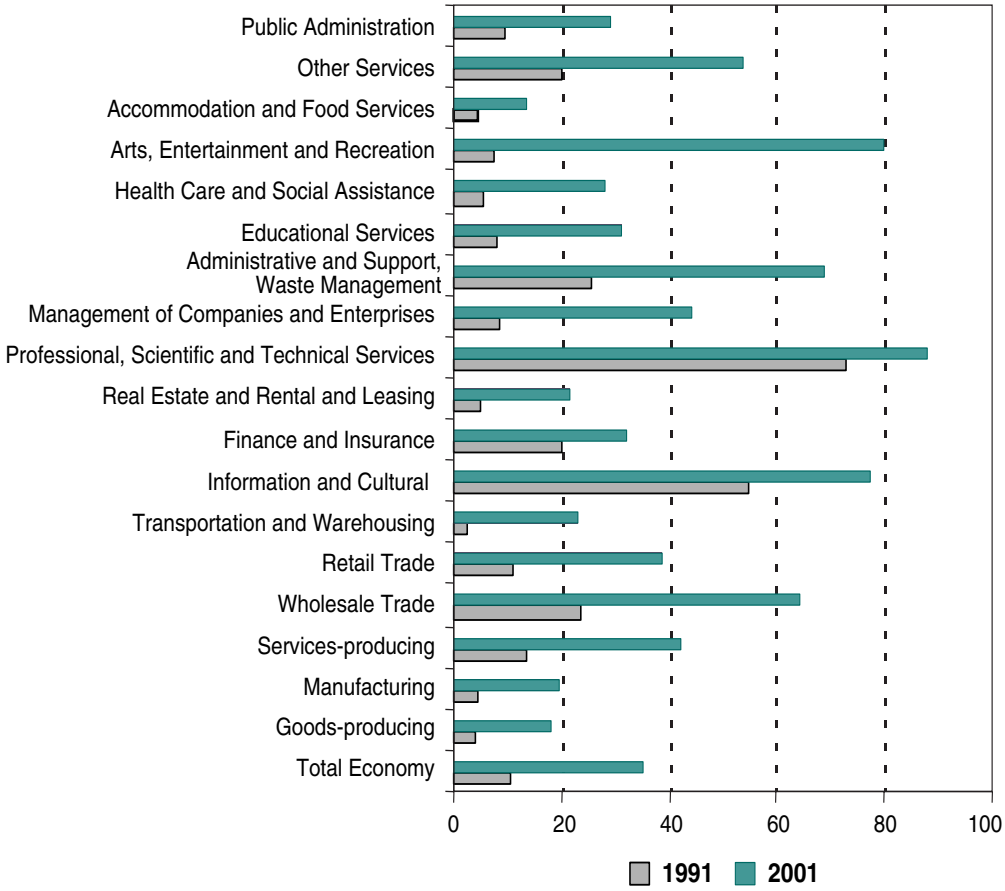
The paper presented by Anita Wölfl showed that between 1990 and 2000, the contribution of services to aggregate productivity growth in a large number of OECD countries rose to unprecedented levels. Virtually everywhere in the OECD area, the average annual productivity growth chalked up robust figures in services sectors such as finance, storage, post and telecommunications, transport, wholesale and retail trade. By contrast, low or even negative rates were observable in services such as health care, education and social work. Most OECD countries have seen their services sectors become increasingly capital-, knowledge- and skill-intensive, as measured respectively by the ratio of physical capital to total employment; the percentage share of services in total business R&D; and the share of high-skilled employment in total employment. Wölfl also provided evidence on the extent of changes in the use of services directly and as intermediate inputs over the past two decades, which has been accompanied by growth in services industries exports that has outpaced that of manufac-

turing exports. In commenting on Wölfl's paper, Alice Nakamura of the University of Alberta cautioned against drawing strong policy implications from these observations inasmuch as they likely involved the underestimation of labour productivity growth in specific services sectors because of significant biases arising from different national definitions and data sources used to determine employment and hours worked. It was widely felt that further policy research efforts should be directed to addressing this problem of measurement.

Many services cannot be separated from the competence of the persons who provide them. Personal contact, training and tacit knowledge are also important aspects of innovation in the services sector.

— Petr Hanel

Investment in ICT as a Percentage of Total Investment, 1991 and 2001



Source: Statistics Canada.

Innovation and R&D in Services

In his survey of the literature on innovations, Petr Hanel of the Université de Sherbrooke pointed out that the services economy has become a source of significant product and process innovation. As a result, a process of convergence in innovation levels between skill-intensive service and manufacturing firms is now under way. Data on the incidence of product and process innovations since 1996, in three dynamic Canadian services industry groups, shows that the finance sector leads in this area, fol-

It is feasible to initiate a multi-year program in which the relatively easy to measure sectors would be attacked first ... allowing services sector industrial real output to be calculated, ... which could be fed into the consumer price index on a monthly basis. At the same time, Statistics Canada should cooperate with other statistical agencies.

— Erwin Diewert

lowed by communications and technical (or business) services. Moreover, the rate of adoption of both organizational and technological change appears significantly higher in larger service firms than in smaller ones. Hanel reported that public sector organizations introduced organizational and technological change twice as often as private sector firms, an observation that is linked to their larger size. In addition to the importance of management, sales and marketing, the crucial input to innovation is provided by information and communication technologies. In his comment, Steven Globerman recommended that policy makers pay closer attention to removing various impediments to services-sector innovation. Such impediments were suggested by Hanel's paper and included: its high cost, especially for smaller firms; the critical need for qualified personnel; the need for broadening access to venture capital; promoting pro-competitive regulation (especially in communications); and the need to broaden eligibility for public support programs to include more firms that may be less prone to performing R&D activities.

The Data Needs of the New Economy

While acknowledging that Statistics Canada provides reasonably good measures of services sector outputs, Erwin Diewert of the University of British Columbia pointed out that roughly half of the 506 services sector industries in the North American Industrial Classification System (NAICS) currently have no price deflators. Similarly, less than a quarter (37 out of 154) of the industries for which Statistics Canada measures productivity performance are in the services sector. Diewert noted that no accurate measurement of overall productivity performance is possible without accurately measuring the real output of services industries, nor can we measure the impact of innovation on new products and on the price of existing goods and services without services price deflators. The accurate measurement of prices and quantities, including those of services, is crucial for conducting monetary policy and is a necessary input into any kind of general economic model that attempts to gauge the effects of changes in economic policies.

Conference participants agreed strongly with Diewert's assessment that rich dividends are likely to flow from better economic measurement of services

sector activity and that Statistics Canada should prioritize its efforts along the lines suggested by Diewert. In responding to Diewert, Philip Smith of Statistics Canada informed the conference that Statistics Canada is committed to a multi-year program of enhanced services sector statistics.

> The performance of Canada's telecommunication services industry during the 1990s was very respectable in absolute terms; it was poor relative to the OECD average in a number of areas.
>
> — Zhiqi Chen

Canada's Telecommunications Services Sector in the 1990s

Zhiqi Chen of Carleton University reported that in the 1990s, employment in the Canadian telecommunications industry fell in both absolute and relative terms and that Canada's penetration rate (a proxy measure of infrastructure growth) fell from second to twenty-third place among OECD countries. Chen identified two important explanatory factors: (a) Canada's highly developed fixed-line network and payphone system may have dampened demand for cellular mobile services; and (b) relatively high barriers to entry (notably foreign ownership restrictions) and operation appear to have hindered the growth of cellular telephony. Chen estimated that Canada's gross domestic product per working-age person stands to increase by 1.7 percent over a ten-year period if Canada were to remove all remaining barriers to foreign direct investment in telecommunication services. In his comments, Sumit Kundu of Florida International University suggested that Chen complement his analysis by adding firm-level data to better measure the competitive performance of leading Canadian services providers relative to their U.S. and foreign competitors. Kundu also called for a more comprehensive discussion of the origin and nature of the spillover effects of telecommunications infrastructure on growth that are described in Chen's paper.

The Internet and other technological advances have lowered barriers to entry and thus increased competition in delivering certain financial services. However, for services characterized by sunk costs and low commoditization potential, there have been fewer new entrants.

— Edwin Neave

Canada's Financial Sector

Edwin Neave of Queen's University examined how Canada's financial industries adopted ICTs to improve their operating efficiency while reducing transaction charges for consumers (both households and firms) and enhancing access to credit by all classes of borrowers through new techniques of risk measurement coupled with a growing recourse to securitization. Neave's paper noted that a process of consolidation is common throughout the banking sector today. Both domestic and cross-border mergers are occurring, not only within the banking sector, but between banking and insurance or securities firms. He noted that such changes call for heightened and novel forms of regulatory cooperation at the international level. In discussing Neave's paper, Eric Santor of the Bank of Canada questioned the extent to which financial markets had become truly global in scope. Santor pointed out the many new challenges presented by this transformation. For example, citizens without access to the e-economy were shut out of some market segments. There is also an increase in the offshoring of white-collar, back-office software design and management operations to developing countries such as China or India.

Opening of China's Services Market After Accession to the World Trade Organization

John Whalley of the University of Western Ontario provided an assessment of the path-breaking nature of China's commitments as part of its accession to the World Trade Organization (WTO). This includes undertakings to open its market to full international competition from foreign service providers in a series of key areas: distribution, telecommunications, financial services, accounting, law, architecture, construction, travel and tourism services. China has agreed to remove all barriers that take the form of discriminatory licences to operate and conduct businesses or that provide for differential regulation of domestic and foreign entities. Whalley pointed to studies suggesting that large positive gains for both China and the global economy will flow from the services liberalization envisaged for the

> From 2002 to 2007, China will open all of its markets to full international competition from foreign service providers in key areas such as: distribution, telecommunications, financial services, professional business and computer services, motion pictures, environmental services, accounting, law, architecture, construction, and travel and tourism.
>
> — John Whalley

2002-2007 period. For such benefits to materialize, China will have to implement far-reaching changes in its financial structure so as to lessen the economy's reliance on bank loans as a source of financing. It will have to address the problem of the non-performing assets of state-owned banks and allow for much needed consolidation in the banking sector. It will also have to deal with the situation of loss-making, state-controlled enterprises in both the goods and services producing sectors.

Whalley suggested that China's likely difficulties in implementing its services commitments could place it on a collision course with retaliation sanctioned by the WTO or with heightened judicial activism after 2007. In his discussion of Whalley's paper, John McHale of Queen's University argued that the WTO provided an essential external anchor for pursuing such reforms. McHale nonetheless saw significant opportunities arising from the opening of China's services markets. China's leaders, in his view, had fully accepted the crucial contribution that an efficient services infrastructure could make to economy-wide performance.

Professor Richard Lipsey of Simon Fraser University and Professor Alice Nakamura of the University of Alberta are general editors of an Industry Canada research volume on "Services Industries and a Knowledge-Based Economy" that will include conference papers and commentaries. Watch for the release of this volume in the summer/fall of 2005.

A Summing-Up

The services sector accounts for over 70 percent of Canada's GDP and three quarters of its employment. Its importance to the Canadian economy is still increasing. Moreover, the services sector has been responsible for most of the employment creation and much of the productivity growth in Canada over the past 10 years. A large part of the growth in the services sector came from commercial and business services such as financial services, trade, transportation, telecommunication and information services, and other business services.

The services sector in Canada has become more outward-oriented, more skill-intensive, more innovative and more productive during the past 15 years. Its linkages with the goods producing sectors, especially the manufacturing sector, also have grown stronger. In short, contrary to previous impressions, the services sector has been a Canadian success story. Other OECD countries have experienced a similar evolution in their services sectors.

The ability to sustain the recent productivity growth record in the services sector will have a critical impact on future prospects for productivity and employment growth, as well as competitiveness-related improvements in real incomes that can close the Canada-U.S. gap in real income levels. The continued dynamism of Canada's services industries can be enhanced by more open and competitive service markets at home and abroad, a flexible labour market, relevant education and training, more effective innovation policies, and the removal of impediments to the adoption, diffusion and effective use of ICTs by services firms.

"The Government will pursue a five-point strategy to build an even more globally competitive and sustainable economy. The first element is to invest in people, Canada's greatest source of creativity and economic strength."

— *Speech from the Throne, October 5, 2004*

The Skills Research Initiative

Building a 21st century economy depends on addressing a series of questions around how to meet the skills challenge. What are the implications of population aging for the supply of skills needed by a rapidly changing, knowledge-based economy? What is the role of employer-sponsored training in supplying the skills needed? What are the implications for Canada's supply of skills arising from the increased international mobility of highly skilled workers? What are the obstacles to adjustment in labour markets for skilled workers and what policies can overcome these obstacles?

To support medium-term policy research on issues raised by the skills challenge, Human Resources and Skills Development Canada (HRSDC), Industry Canada (IC), and the Social Sciences and Humanities Research Council (SSHRC) have formed a joint *Skills Research Initiative* (SRI). Under this innovative agreement, SSHRC is funding academic research on the themes of the SRI, while HRSDC and Industry Canada are carrying out research on these themes, using both internal and external expertise. The four research themes of the SRI are:

- Skills and Labour Market Implications of Population Aging;
- Employer-Sponsored Training;
- Adjustments in Markets for Skilled Workers;
- International Mobility of Highly Skilled Workers.

Following consultations on these themes within their departments, the partners organized four one-day roundtables, one on each theme. The roundtables brought together government officials, academics, personnel from research organizations and other stakeholders to identify policy issues that medium-term research might help to resolve. Based on the results of these roundtables, the partners prepared, and SSHRC posted, calls for research proposals from academic researchers for each theme. The program of SRI research at Industry Canada and HRSDC is also guided by the results of the roundtables.

The final stage of the SRI will be reached in 2005-2006 when research results will be presented to the policy and research communities in a series of workshops at which the policy implications of these results will also be discussed.

The SRI Working Papers Series

SRI-funded research is initially published in the SRI Working Papers series. The series presently includes the papers prepared for the issues roundtables, a paper containing the synthesis reports of the academic rapporteurs at the four roundtables as well as three papers prepared for IC on International Mobility of Highly Skilled Workers. Abstracts in English and French for all SRI working papers are available on Strategis and can be ordered through this site:

http://strategis.ic.gc.ca/epic/internet/ineas-aes.nsf/en/h_ra01877e.html

- Evaluate whether an aging workforce will result in high adjustment costs for the Canadian economy and/or for individual Canadians.
- Identify the barriers to greater participation in the labour force by older Canadians.

Research Issues and the Roundtables

This section presents an overview of the research themes and issues discussed at the roundtables.

Labour Market and Skills Implications of Population Aging

Canada's workforce, like its population in general, is aging rapidly. Beginning about 2010, large numbers of "baby boomers" will reach retirement age. Growth in workforce skills will encourage innovation performance, but changing demographics may lead to skills shortages. Moreover, unless the growth rate of productivity increases sufficiently, slower growth in the workforce will likely lead to lower rates of growth in per capita output.

The issues roundtable on this research theme was held in Ottawa on October 20, 2003. In order to better understand the effects of population aging on the Canadian economy, three general areas of relevant research were discussed:

- Determine how the aging workforce will affect Canada's ability to continue developing an innovative, knowledge-based economy built on a highly skilled workforce.

Employer-Sponsored Training

With globalization and the rapid pace of technological change, knowledge and skills have become crucial to a country's competitiveness. The labour force is expected to grow at a slower pace over the coming decades because of smaller youth cohorts. As a result, the Canadian economy will not be able to meet new skill demands by continuing to rely on initial education to the same degree as it has in the past. Adjusting to new skill requirements will thus depend increasingly on developing the skills of

those who are already in the workforce. To avoid severe skill shortages in coming years, it is crucial that all workers and their employers invest in continual skills development to meet the changing skills demands of the new economy.

However, there are concerns that Canadian firms are not supporting the training of their employees to the same degree as their U.S. counterparts. There are also concerns about significant barriers that prevent firms from making optimal investments in training. Under-investment in training could eventually reduce the ability of companies to adjust to an aging population and undermine our productivity relative to other countries.

Do Canadian firms invest enough in the training of their workforce? The expert roundtable on this theme was held on October 3, 2003. Three areas for research were discussed:

- Benchmark employer support of training by Canadian firms with that observed in the United States, our main trading partner, and possibly with other competitors.
- Improve our understanding of the factors affecting employers' decisions to support workplace training.
- Assess the impact of potential market failures affecting training.

The list of working papers for this theme includes two issues papers presenting key research gaps in our understanding of this theme, as well as a synthesis of the roundtable discussions:

"Labour Market Implications of an Aging Population" by Daniel Boothby, Julie Dubois, Maxime Fougère and Bruno Rainville;

"Effects of Population Aging on Labour Market Flows in Canada: Analytical Issues and Research Priorities" by Peter Kuhn;

"Rapporteurs' Comments: Summary of Roundtables" by Dwayne Benjamin, Arthur Sweetman, Craig Riddell and Lorraine Eden.

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The working papers for this theme included two issues papers prepared for the roundtable and a summary of the roundtable discussions:

"Employer-Supported Training in Canada: Policy-Research Key Knowledge Gaps and Issues" by Zhengxi Lin and Jean-François Tremblay;

"Employer-Sponsored Training by Firm Size" by Richard Chaykowski and George Slotsve;

"Rapporteurs' Comments: Summary of Roundtables" by Dwayne Benjamin, Arthur Sweetman, Craig Riddell and Lorraine Eden.

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Both issues papers and the roundtable summary are published in the Working Paper Series for this theme:

"Adjustments in Labour Markets for Skilled Workers in Canada" by Daniel Boothby and Bruno Rainville;

"Post-Secondary Educational Institutions' Adjustment to Labour Market Changes: Major Concerns and Key Research Issues" by Claude Montmarquette and David Boisclair;

"Rapporteurs' Comments: Summary of Roundtables" by Dwayne Benjamin, Arthur Sweetman, Craig Riddell and Lorraine Eden.

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Adjustment in Markets for Skilled Workers in Canada

The 21st century Canadian economy will demand rapid expansion of the highly skilled labour force that is involved in innovation. This, in turn, will require important labour market adjustments. An innovative economy requires a sufficiently large labour force with the right mix of skills to support the development and expansion of innovative industries and services. The supply of such skilled workers will require adjustment in response to changes in demand from advanced, high-growth industries. Such adjustments will be crucial to sustaining innovation and the standard of living.

The expert roundtable for this theme was held on March 22, 2004, to discuss the knowledge gaps reported in two issues papers and identify promising research directions. Three areas of research were discussed:

- Develop a better understanding of the relationship between the availability of skilled workers and the process of innovation together with identifying the data needed for accurate measurement of the quantity, quality and types of skilled workers available to support innovation.
- Institutional and regulatory barriers to adjustment in sectoral and regional markets for skilled workers.
  Develop a better understanding of how institutions and regulations may impede adjustment in such markets, thereby leading to persistent skills imbalances.
- Adjustment of the post-secondary educational system in response to signals from and trends in the labour market.
  Since the post-secondary educational system plays a crucial role in supplying skilled workers and thereby in enabling the labour force to respond to employers' requirements, we need a better understanding of how the post-secondary system responds, or fails to respond, to labour market signals.

International Mobility of Highly Skilled Workers

The Working Paper Series includes four papers presented at the roundtable for this theme, a summary of the roundtable discussions as well as one paper commissioned by Industry Canada:

"International Mobility of Skilled Labour: Analytical and Empirical Issues, and Research Priorities" by Surendra Gera, Samuel A. Laryea and Thitima Songsakul;

"Labour Mobility and the Global Competition for Skills: Dilemmas and Options" by Richard G. Harris;

"Canadian Business Perspectives on the International Mobility of Skilled Labour" by Sandra Lopes;

"Is There Scope for Enhancing the Mobility of Labour Between Canada and the United States?" by Michael Hart;

"A Critical Review of the Microeconomic Migration Literature" by Benoit Dostie and Pierre Thomas Léger;

"Rapporteurs' Comments: Summary of Roundtables" by Dwayne Benjamin, Arthur Sweetman, Craig Riddell and Lorraine Eden.

http://strategis.ic.gc.ca/epic/internet/ineas-aes.nsf/en/h_ra01877e.html

Highly skilled labour is indispensable to an innovative economy. A more innovative Canadian economy requires that the labour force include the right quantities and types of highly skilled workers. However, for some segments of the highly skilled population, the job market is now an international one in which industrialized nations are competing to attract individuals with the skills and experience that are most in demand. This state of affairs implies that both emigration and immigration of highly skilled labour affect the composition of Canada's labour force. If Canada is to adjust to new skills requirements to support a more innovative economy, we must take into account the country's ability to retain domestic talent and to attract highly skilled workers from abroad. In the present context "highly skilled labour" refers, generally, to well-educated individuals in knowledge-intensive professions. These would include, for example, doctors and nurses working in medical research, scientists, engineers and technicians developing new products and processes, graduate students and university professors conducting new research or refining existing work, and high-level administrators and managers.

This theme focuses on three areas:

- Develop methods for more accurate assessment of global trends in the migration of highly skilled labour as well as better ways of determining Canada's position in this global market relative to other industrialized countries;
- Improve our understanding of the fundamental (non-policy) factors underlying the increased migration of highly skilled labour, especially among advanced countries;
- Improve our understanding of the economic costs and benefits associated with the international mobility of highly skilled labour and of the main factors influencing these costs and benefits.

The roundtable on the issues related to this theme was held on February 27, 2004.

Next Steps

The *Skills Research Initiative* is now in its active research phase. SSHRC grants have been awarded to researchers. IC and HRSDC have commissioned research in areas not covered by the SSHRC projects. In addition, IC and HRSDC are conducting their own internal research. The research papers arising from all of these sources will be the basis of four synthesis reports, one for each theme of the SRI. These synthesis reports will bring together research results and policy implications, thereby providing a framework for four follow-up workshops, one on each theme. Policy workshops on each of the research themes will be held in 2005-2006.

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SRI Working Papers Series

Working Paper 2004 Summary: *Rapporteurs' Comments: Summary of Roundtables*, by Dwayne Benjamin, Arthur Sweetman, Craig Riddell and Lorraine Eden

Working Paper 2004 D-03: *Canadian Business Perspectives on the International Mobility of Skilled Labour,* by Sandra Lopes

Working Paper 2004 D-04: *Is there Scope for Enhancing the Mobility of Labour Between Canada and the United States?* by Michael Hart

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