

# Editor's Overview

THE NINTH ISSUE OF THE *International Productivity Monitor* published by the Centre for the Study of Living Standards contains six articles. Topics covered are: the magnitude of the Canada-U.S. productivity gap at the industry level; productivity puzzles facing researchers; the link between technology use, human capital, productivity and wages; the effect of organization innovation and information and communications technologies on firm performance; the effect of adjustment costs on aggregate productivity in Canada; and the role of micro-institutions in fostering productivity growth and reducing poverty in developing countries.

Readers are reminded that in addition to the hard-copy version of the *Monitor* available in English and French, all articles are available online at [www.csls.ca](http://www.csls.ca) under the *International Productivity Monitor*. Unabridged versions of most articles are also posted. Comments are welcome.

A key objective of economic policy in Canada is to reduce the productivity gap with the United States. The development of appropriate policies to attain this goal requires a thorough understanding of the nature of the gap, including its industry dimensions. Unfortunately, statistical agencies do not currently produce estimates of Canada-U.S. productivity gaps by industry. To fill this data lacuna, **Someshwar Rao, Jianmin Tang, and Weimin Wang** of Industry Canada in the first article present benchmark estimates of the Canada-U.S. labour productivity and total factor productivity gap for 29 industries for 1999 and extend the industry estimates back to 1997 and forward to 2001.

They report that in 2001 output per hour in the business sector in Canada was 82 per cent and total factor productivity was 87 per cent of the U.S. level. Lower capital intensity was responsible for about 30 per cent of the business sector labour productivity gap. Three of four major sectors in Canada had a labour productivity level below its U.S. counterpart – manufacturing (80 per cent), the service sector (81 per cent), and primary industries (87 per cent) – while the level of labour productivity in the con-

struction industry was well above that in the United States (129 per cent). Within manufacturing, the largest productivity gaps were found in electronic and electrical products, fabricated metal, and machinery and computers. Within the service sector, finance, insurance and real estate and information and cultural industries had particularly large productivity gaps. In contrast, labour productivity levels in a number of Canadian natural resource industries exceeded U.S. levels.

Puzzles intrigue and motivate researchers and focus research effort, and the productivity area is fortunate in having many unresolved issues. In the second article, **Andrew Sharpe** of the Centre for the Study of Living Standards puts forward and briefly discusses what he sees as the ten most important productivity puzzles facing researchers in Canada and in other countries. In terms of the international puzzles, he considers the causes of the post-1973 productivity slowdown that affected virtually all industrial countries the grand daddy. He also identifies the post-2000 productivity growth acceleration in the United States, labour productivity levels in a number of European countries that exceed U.S. levels, and the absence of a post-1995 productivity growth acceleration in Europe as developments that are currently not well understood. In terms of productivity puzzles related to Canada, he identifies the considerable difference in labour productivity growth in the non-business

sector between Canada and the United States as a topic meriting investigation. He also sees the Canada-U.S. productivity gap and Canada's relatively low machinery and equipment capital intensity as puzzles meriting in-depth research.

Arguably the most important development in the Canadian workplace in recent years has been the massive introduction of information and communications technologies (ICT). The impact of this development on a range of variables, including productivity and wages, are manifold, but are still poorly understood. The third, fourth and fifth articles in this issue shed light on different aspects of this phenomenon.

In the third article, **Julie Turcotte** and **Lori Whewell Rennison** of Finance Canada examine the effects of education, training and technology use on productivity and wages at the firm level. They make innovative use of Statistics Canada's Workplace and Employee Survey, which allows the linking of the characteristics of workers in a firm to firm performance measures. They find that productivity is higher: the more intensively technology is used in the firm; the greater the proportion of university educated workers; the greater the participation of workers in formal training programs; the greater the proportion of workers who receive computer training; and the greater the firm's export orientation. A key finding with important policy implications is that computer skills training can augment the qualifications of lower-skilled workers and consequently boost firm productivity.

A key lesson from the U.S. literature on the impact of ICT on productivity is that ICT can only be effective if appropriate organizational structures are in place. The fourth article by **Surendra Gera** of Industry Canada and **Wulong Gu** of Statistics Canada provides Canadian evidence to support this view. Again using the Workplace and Employee Survey, the authors find evidence that firms that implement

organizational changes and introduce ICT have a higher incidence of productivity improvement, increased sales and profits, and product and process innovation than firms that do not follow this path. Their findings suggest that to be successful firms typically need to adopt ICT as part of a system or cluster of mutually reinforcing organizational approaches.

The fifth article by **Danny Leung** of the Bank of Canada also provides support for the hypothesis that organizational change is a necessary condition for the full realization of the productivity gains associated with ICT. Using aggregate data, the author finds econometric evidence that the impact of computer investment is not fully realized until three years after the initial investment. Firms appear to need a learning period during which they make the necessary adjustments to their organizational structures in order to benefit from the productivity-augmenting potential of ICT. One implication of this analysis is that despite the current lull in investment, productivity growth in Canada should continue to remain fairly robust as firms continue to integrate new technologies into their production processes.

The key for poverty reduction in developing countries is economic growth, with most of economic growth accounted for by productivity growth. In the sixth and final article **Pierre-Olivier Pineau** from the University of Victoria focuses on the micro-level institutions that can foster productivity growth in developing countries, an area he argues has been neglected in the development literature. Based on field research, he documents the ways in which a Peruvian community-based organization, the "comedor popular" or community kitchen, contributes to productivity growth and poverty reduction. These include the provision of subsidized meals to the poor, raising nutrition levels, and the on-the-job training of poorly educated female workers, boosting their earning potential.