

Editor's Overview

This second issue of the *International Productivity Monitor* produced by the Centre for the Study of Living Standards contains six articles largely related to the general theme of productivity growth in the new economy. Topics covered are the determinants of trends in the living standards of Canadians in the 1990s; the role of innovation in productivity growth; the role of information technology in driving the productivity revival in the United States; the characteristics of the new economy; the new OECD productivity manual; and two important recent contributions to the productivity literature in Canada.

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. In addition, unabridged versions of most of the articles are also posted. Comments on the articles are welcome and will be posted on the website.

The foundation for real income growth is productivity growth. This basic principle of economics is well illustrated in the first article by Andrew Sharpe of the Centre for the Study of Living Standards on the determinants of trends in living standards in Canada in the 1990s. He shows that over the 1989-2000 period 80 per cent of the widening of Canada's income gap with the United States can be accounted for by our slower labour productivity growth. In the first half of the period our falling employment-population ratio contributed to the decline in our standard of living relative to that in the United States. With the recovery in the labour market in the second half of the decade much of this decline was reversed. The acceleration of productivity growth in the United States after 1995 was responsible for our relative deterioration in living standards during this period.

Innovation is widely recognized as a key ingredient of productivity success. The second article by Someshwar Rao, Ashfaq Ahmad, William Horsman, and Phaedra Kaptein-Russell of Industry Canada provide support for this view by finding a strong positive relationship between measures of fundamental innovation, labour productivity and GDP per capita across OECD countries. The authors paint a nuanced portrait of Canada's innovation performance. The existence of an innovation gap with the United States is evidenced by our lower R&D/GDP ratio and the lower rate of patenting by Canadians in the United States, although Canada, perhaps surprisingly, has a greater relative number of R&D personal in the total economy than does the United States. But the innovation gap with the United States appears to have narrowed in the 1990s, due to faster growth in this country in the number of patents by Canadians in the United States and in R&D expenditures relative to GDP.

Has the economy fundamentally changed in the 1990s because of the introduction of information technology or is the impact of IT not so much "new" as larger than before? In the third article, Barry Bosworth and Jack Triplett of the

Brooking Institution examine this issue with a detailed analysis of productivity developments in the U.S. economy in the 1990s. Their main message is that although IT is the driving force behind the recent acceleration of labour productivity growth, its impact can indeed still be understood within the standard growth accounting framework. They argue that there is little reason to believe productivity gains arising from IT will end in the near future.

Since 1995, productivity growth has accelerated significantly in the United States. Information technology has always been thought to be the driving force behind this development. The fourth paper in this issue by Kevin Stiroh of the Federal Reserve Bank of New York provides strong empirical support for this view. Stiroh finds that the industries that made the largest investments in information technology (IT) in the early 1990s show the largest productivity gains in the late 1990s and that IT capital investment has a large impact of productivity gains. His evidence also supports the view that the U.S. productivity revival is not cyclical in nature, but a long-term or structural phenomenon.

The measurement of productivity is a complex task. The OECD has recently released a comprehensive manual or guide to the measurement of industry-level and aggregate productivity. In the fifth article, Paul Schreyer from the OECD and the author of the OECD productivity manual provides an overview of the manual. He highlights a number of the key issues addressed in the manual, including: the choice of gross output versus value added productivity measures; the need for independence of output from input measures; the importance of adjusting for quality change in existing goods and

accounting for new goods in price indices; methods of capturing the skill composition of labour; measurement of capital input; and the interpretation of productivity measures. In terms of the research and development agenda for productivity statistics, Schreyer identifies four priorities: better price indices for output measures by industry, particularly for high technology industries and difficult-to-measure services industries; better data on hours worked by industry; improvement in the quality of data on capital input; and improved input-output tables.

Early 2001 has seen the publication of two important contributions to the literature on productivity in Canada. In February, Statistics Canada released a research study entitled *Productivity Growth in Canada*, and in March, Industry Canada published a research monograph entitled *Industry-level Productivity and International Competitiveness Between Canada and the United States*. In the final article, Andrew Sharpe of the Centre for the Study of Living Standards reviews these publications and finds that they greatly augment our knowledge base. The studies do an excellent job in exploring the data and conceptual issues related to productivity and in identifying the proximate sources of productivity growth such as capital accumulation and labour quality improvements. Sharpe argues that the priority for productivity research in Canada should now turn from measurement issues to attempts to shed light on the big questions concerning Canadian productivity growth, such as whether productivity growth in Canada is likely to follow the recent U.S. acceleration, the factors behind Canada's lower productivity levels relative to those in the United States, and the policy mix that provides the biggest boost to productivity growth.