Editor's Overview

THIS 30TH ISSUE OF THE *International Productivity Monitor* contains eight articles on a range of productivity issues: the challenges of measuring productivity in the digital economy; productivity trends and policies in Mexico; a comparison of Australian and Canadian productivity growth; productivity growth in U.S. agriculture; productivity in Canadian freight railways; global productivity growth; productivity convergence; and productivity strategies.

The emergence of disruptive technologies associated with digitalization raises the question of whether the conceptual basis and compilation methods of GDP are adequate to capture the output of the new forms and modes of production. In the lead article, **Nadim Ahmad** and **Paul Schreyer** from the OECD address these statistical challenges in a comprehensive manner. They discuss peer-to-peer services such as Uber and AirBnB, the blurring boundary between consumption and production, distinctions between consumer durables and investment, free and subsidized consumer products, cross-border flows of intellectual property and knowledge-based assets, measurement of e-commerce, and the measurement of prices and volumes for goods and services affected by digitization. They conclude that on balance the GDP accounting framework is up to the task posed by digitalization, but that practical measurement remains a challenge in such areas as the cross-border flows of intellectual property within firms and e-commerce transactions.

Mexico's productivity performance has been very poor in recent decades, with total economy multifactor productivity in 2014 8 per cent below its 1990 level. Given that productivity levels in Mexico are well below those in advanced countries, the potential for productivity convergence has not been realized. In the second article, **José Ernesto López Córdova** and **Juan Rebolledo Márquez Padilla** from the Ministry of Finance and Public Credit of Mexico provide a diagnosis of this performance and present the institutional framework the Government of Mexico has put in place to promote productivity. The authors stress the misallocation of both labour and capital as the main reasons for this situation, pointing to the large proportion of workers in low-productivity informal activities and the financially-underserved private sector.The pace of the reallocation of resources in the Mexican economy to high-productivity activities has been inadequate. The Government of Mexico recognizes this problem and has consequently placed productivity at the heart of its policy agenda. In addition to enacting productivity enhancing reforms, it has established an institutional framework to promote productivity, including the establishment of a National Productivity Commission with the power to make binding recommendations to government.

Canada and Australia have much in common, but one major difference in recent years has been their productivity performance. Between 1994 and 2013, business sector labour productivity in Australia grew 2.3 per cent per year, compared to 1.3 per cent in Canada. In the third article, **Evan Capeluck** from the Centre for the Study of Living Standards provides a detailed comparison of labour productivity performance in the two countries, with particular attention to the role of public policy in Australia's superior performance. He identifies five factors as contributing to Australia's faster productivity

growth: more rapid growth in capital intensity, a better macroeconomic environment, a stronger record on innovation, a somewhat greater market orientation in product market regulation, and a larger positive effect from inter-industry employment shifts. In terms of lessons from the Australian productivity experience, Capeluck highlights the need for Canada to pay greater attention to emerging markets as a source of export growth, to examine, and adopt where appropriate, the policies that Australia has implemented to boost BERD intensity to a level well above that of Canada, and to consider establishing an institution similar to the Australian Productivity Commission to address the nation's productivity woes.

Productivity growth varies greatly across sectors, with agriculture traditionally having enjoyed particularly impressive growth rates. In the fourth article, **Eldon Ball**, **Richard Nehring**, and **Sun Ling Wang** from the U.S. Department of Agriculture confirm this finding for the United States through a comprehensive analysis of the sources of growth in agriculture in that country. They estimate that total factor productivity grew in the sector at a 1.47 per cent average annual rate from 1948 to 2013, accounting for 97 per cent of output growth of 1.52 per cent. Declining employment in the sector meant that labour contributed -0.49 percentage points to output growth. Greater use of materials added 0.60 points to output growth while falling capital inputs contributed -0.06 points to output growth. The authors find that quality improvements had only minor effects on the growth rates of inputs over the period.

Economists increasingly recognize the insights that firm-level data can bring to productivity analysis. In the fifth article, **James Uguccioni** from the Centre for the Study of Living Standards uses company data to compare the productivity performance of Canada's two major railways, Canadian National (CN) and Canadian Pacific (CP). From 1986 to 2009, the last year firm-level data are available from Statistics Canada, output per worker advanced at a very robust 6.5 per cent average annual rate at CN and 4.8 per cent at CP. The higher growth at CN meant that its labour productivity level rose from 78 per cent of that of CP in 1986 to 113 per cent in 2009, with all the improvement taking place before 1999. The same story occurred for TFP, with CN enjoying a 4.4 per cent average annual increase versus 3.1 per cent at CP, boosting CN's relative MFP level from 83 pent cent of that of CP in 1986 to 111 per cent in 2009, again with all the improvement before 1999. Uguccioni attributes CN's stronger productivity performance relative to CP in the late 1980s and 1990s to the elimination of operating inefficiencies.

Economic growth is determined by growth in labour input and labour productivity. It is well known that falling birth rates are reducing, with a 15 year lag, the growth rate of the working age population and employment throughout the world. If past economic growth rates are to be maintained, then productivity growth must pick up. That is the premise of the report *Global Growth: Can Productivity Save the Day in an Aging World?* by the McKinsey Global Institute (MGI). In the sixth article in this issue **Andrew Sharpe** from the Centre for the Study of Living Standards provides a synthesis and critical assessment of this important report. He concurs that there is indeed potential for an acceleration of labour productivity growth in countries well below the technological or productivity frontier, as the MGI report effectively documents. But he argues that the likelihood of significantly faster productivity growth in advanced economies, as projected in the report, is low.

Continuing with the productivity catch-up theme, in the seventh article **Jonathan Haskel** of Imperial College London provides an assessment of the book *Productivity Convergence: The-*

ory and Evidence by Edward Wolff. Based on Maddison's data set, Haskel points out that in the year 1000 today's rich countries had on average a lower level of GDP per capita than the rest of the world (ratio of 0.93 between rich countries and rest of the world). By 1500 the rich countries had pulled ahead (1.30), with an even greater advance by 1820 (1.91). The Industrial Revolution then produced a massive increase in productivity and income divergence between the rich countries and the rest of the world, with the former achieving 6.92 times the per capita income of the latter by 1990. Rapid growth in populous China and India has led to some productivity and income convergence from 1990 to 2008 (5.19). Haskel notes that Wolff has identified strong and weak forces that contribute to convergence. Strong forces include technological catch-up, capital formation, education, R&D, and social institutions. Weak forces include trade, foreign direct investment, inequality, and natural resources.

Boosting economic growth, and especially productivity growth, has become a primary objective of public policy in Canada. Innovative policies need to be identified. In the final article, **Don Drummond** of Queen's University and the Centre for the Study of Living Standards evaluates the recently released book *Think Like an Enterprise: Why Nations Need Comprehensive Productivity Strategies* by Robert Atkinson, President of the Washington-based Information Technology and Innovation Foundation. Atkinson proposes a more active role for government. He recommends such measures as lowering the cost of capital, moral suasion to encourage firms to think more strategically, and greater government involvement to develop and disseminate new technologies and to facilitate interactions across firms and sectors. Drummond expresses some sympathy for this approach, but cautions that stringent tests for net social benefit are needed for new policy interventions.