

Editor's Overview

THIS 29TH ISSUE OF THE *International Productivity Monitor* features six articles on the following topics: the role of productivity in long-term economic projections for the Canadian provinces and territories; productivity trends in the residential care sector in Canada; agricultural productivity in Australia, Canada and the United States; a mathematical reconciliation of gross output-based total factor productivity (TFP) growth with value added-based TFP growth; an empirical illustration with Australian industry data of the relationship between the two TFP measures; and a review article on the OECD report *The Future of Productivity*.

Productivity growth is a key determinant of the fiscal position of governments through its effect on economic growth and tax revenues. In the lead article in this issue, **Don Drummond** from Queen's University and **Evan Capeluck** from the Centre for the Study of Living Standards present economic and fiscal projections for the 2014-2038 period for the Canadian provinces and territories based on a range of assumptions. In what they consider the most realistic scenario, one with rising real per capita health spending, most provinces and territories are expected to experience faster growth in government spending than in nominal GDP, resulting in rising deficits. The authors recognize that this situation can be addressed by higher taxes or spending cuts, but point out that more rapid GDP growth through improved productivity growth is an easier, and more politically palatable, way to deal with fiscal imbalances.

Statistical offices traditionally have used inputs as proxies for output in many non-business sector industries, resulting in a downward bias to productivity growth. In the second article, **Wulong Gu** and **Jiang Li** from Statistics Canada develop experimental estimates for labour productivity growth in the residential care sector in Canada by estimating real output measures independently of inputs. They start with resident days as the output measure, and then make adjustments for shifts toward more

intensive, and costly, residential care services and for the quality of the labour input. These adjustments progressively increase real output growth. The authors find that output per hour in the residential care sector in Canada increased at an average annual rate of 0.2 per cent between 1984 and 2009, well below the 1.2 per cent growth rate for the business sector. However, they do not see this situation as evidence of Baumol's disease related to productivity stagnation in service sectors where one-on-one interaction is important. This is because they find that residential care sector productivity growth varied significantly across provinces, with certain provinces recording considerable productivity gains.

Agriculture has historically been known as a sector where productivity gains can be substantial. The third article by **Yu Sheng** from the Australian Department of Agriculture, **Eldon Ball** from the U.S. Department of Agriculture, and **Katerina Nossal** from the International Trade Centre confirms this result. Using consistent production accounts, the authors estimate that total factor productivity (TFP) was in the 1.7-2.1 per cent per year range in Canada, the United States and Australia over the 1980-2000 period. In terms of TFP levels, since the early 1960s the U.S. agriculture sector has always been highest. In 2006, Canada's TFP level in agriculture was 77 per cent of the U.S. level and

Australia's was 65 per cent. The authors conduct an econometric analysis that shows that public R&D investment is closely related to TFP in the three countries.

Total factor productivity can be measured using either gross output or value added as the output measure, with important implications for the TFP estimates. In the fourth article, **Erwin Diewert** from the University of British Columbia and the University of New South Wales provides a mathematical reconciliation of the two approaches in a simpler manner than has existed to date in the literature. The author shows that as the share of intermediate goods in gross output increases (or alternatively, the share of value added decreases), the value-added based measures of TFP become larger, both in absolute terms and relative to gross output-based TFP estimates. The key message of the article is that industry TFP growth is sensitive to the choice of output measure, with gross output-based TFP measures exhibiting slower growth than value added-based measures. In this regard, it is crucial that TFP comparisons be based on the same output measure.

The fifth article by **Matthew Calver** from the Centre for the Study of Living Standards provides an empirical illustration using data from Australian industries of the relationships Erwin Diewert laid out in the previous article. He finds that value added-based TFP growth rates were 2 to 3 times greater than those for gross output-based TFP growth for most Australian industries.

The OECD has been a leading centre for productivity research for many years. In 2015, it released a report entitled the *Future of Productivity* that provides a synthesis of recent OECD research and thinking on the productivity issue. In the sixth and last article in the issue, **Don Drummond** from Queen's University provides a critical assessment of the OECD publication. He notes that it is refreshing to see that the OECD now sees productivity research as part of its sustainable and inclusive growth agenda. Drummond also approves of the greater emphasis on labour markets and firm behavior in the OECD productivity work program. Drummond concludes that the OECD appears to be going in the right direction in its productivity work, even if it has still not cracked the mystery of productivity growth.