Editors' Overview

The 32nd issue of the *International Productivity Monitor* is a special issue produced in collaboration with the OECD. All articles published in this issue were selected from papers presented at the First Annual Conference of the OECD Global Forum on Productivity held in Lisbon, Portugal, July 7-8, 2016.

The Forum was established by a large group of OECD member countries in 2015 to provide a platform for the mutual exchange of information and international cooperation between public bodies with a responsibility for promoting productivity-enhancing policies. The primary purpose of the Forum is to shed light on the structural and policy drivers of productivity, especially in the context of the generalized slowdown in productivity growth affecting OECD countries. It helps generate synergies in policy-oriented research; share data, results and insights; and facilitate the diffusion of best policy practices leveraging on both cross-country analysis and country-specific experiences. To this end, the Forum organizes conferences and workshops connecting policy-makers, academics and other stakeholders and proposes and coordinates research programs in areas related to productivity, notably by encouraging collaboration with national experts, to extend and support work done at the OECD.

The issue contains 11 articles by leading productivity researchers from eight countries on a range of topics: long-term productivity trends, decoupling of wage/productivity growth, productivity in global value chains, insights for productivity analysis from firm-level productivity data, productivity trends and drivers in Portugal, the contribution of agglomeration economies to productivity, public sector productivity measurement issues, and pro-productivity institutions.

Productivity growth is by far the most important source of long-term improvements in living standards, but trend productivity growth has been slowing down markedly over the past decades and especially since the beginning of the century. Trend productivity growth is a long-run phenomenon largely driven by the underlying pace of technological advance. The first article in the issue by Banque de France economists **Antonin Bergeaud**, **Gilbert Cette** and **Rémy Lecat** provides background for the articles that follow by presenting new estimates for long-term total factor productivity (TFP) growth in four advanced economies (United States, Japan, the United Kingdom and the Euro area) over the 1890-2015 period. Based on a long-period productivity database that the authors have constructed, the new TFP estimates take account of the improved quality of inputs: labour, as proxied by educational attainment, and capital, as proxied by the average age of equipment. The role of two General Purpose Technologies (electricity and information and communication technologies (ICT)) in long-term productivity growth is explored. Even after adjustment for changes in the quality of inputs, the authors find that much of TFP remains unaccounted for and confirm the secular trend decline in TFP growth. A third key finding is that the diffusion of ICT in recent decades has had a much weaker impact on TFP than the diffusion of electricity in earlier decades.

While productivity growth creates the conditions for improving real incomes, recent experience shows that productivity gains do not

automatically translate into higher wages for all workers. Indeed, in recent years many OECD countries have seen a decoupling of wage growth from productivity growth, particularly for the median worker. This trend has negative implications for the development of inclusive economies and societies.

The second and third articles in the issue, by **Cyrille Schwellnus**, **Andreas Kappeler** and **Pierre-Alain Pionnier** from the OECD and **Andrew Sharpe** and **James Uguccioni** from the Centre for the Study of Living Standards (CSLS) respectively, examine in depth this decoupling phenomenon from different perspectives.

The OECD authors focus on two factors to account for decoupling - trends in the labour share in GDP and the ratio of median to average wages, a wage inequality measure. They also argue that the most appropriate definition of the aggregate economy for decoupling analysis should exclude the primary, housing and non-market sectors. Based on this definition, they find that median compensation growth lagged labour productivity growth in 15 of 24 OECD countries over the 1995-2013 period. Growing wage inequality was the main reason for this decoupling, as median compensation grew at a slower pace than average compensation in 22 of 24 countries. In contrast, the labour share fell in only 15 countries.

The CSLS authors develop a methodology that decomposes the relationship between productivity and wages into four factors. In addition to the labour share and wage inequality, they add the relationship between consumer and producer wages which they call labour's terms of trade, and changes in the importance of employer contributions to social programs in labour compensation. Data limitations restrict the analysis to 11 countries for the 1986-2013 period. In 9 of the 11 countries median real hourly earnings lagged labour productivity, with the largest gap in the United States. Of the four factors, rising wage inequality was again the most important taking place in 10 countries.

With production of final products increasingly fragmented across countries, global value chains (GVC) represent a new and important feature of the world economy. These new production networks have implications for productivity, a topic addressed in the fourth article by **Chiara Criscuolo** and **Jonathan Timmis** from the OECD. GVCs is a broader concept than offshoring as it also includes indirect linkages along the supply chain network and reflects the destination of firm production, that is whether this production is embodied in the exports of third countries. The authors quantify GVC participation in terms of the share of gross exports comprised by the backward and forward components of GVCs. They calculate that this share varied significantly in OECD countries in 2011, from 70 per cent in Luxembourg to 30 per cent in New Zealand and 32 per cent in the United States. Between 1995 and 2011 all OECD countries saw increased GVC participation in gross exports, with the largest increase taking place in Iceland, Korea, Hungary, Poland and Turkey.

GVCs can foster productivity growth in a number of ways - greater specialization in tasks, increased competition in factor input markets, and knowledge spillovers to local firms from multinational corporations, the main drivers of GVCs. The authors conclude that that the international fragmentation of production as represented by GVCs may have stagnated since 2011, throwing into doubt whether the productivity gains from GVCs will continue to be realized.

Aggregate productivity is the result of a myriad of firm-level productivity outcomes and partly depends on the ability of the highest productivity firms to gain market shares and attract the resources they need to grow. In recent years, productivity studies based on micro-level data have flourished, thanks to the increasing avail-

ability of firm-level datasets. These data can provide important new insights into the behaviour of firms and the determinants of productivity growth.

This issue of the *International Productivity Monitor* contains three articles that uses firm-level datasets to shed light on productivity issues. The first uses transaction data to quantify the integration into the world economy of firms in the Belgium production network. The second uses a unique dataset covering the universe of Italian firms to estimate the role of allocative efficiency in productivity growth. The third highlights the insights on productivity, and especially the increasing dispersion of domestic productivity outcomes, based on the new OECD's firm-level Multifactor Productivity (Multiprod) project.

Exploiting a unique database that captures the domestic and international transactions of nearly 900,000 firms in the Belgium production network, **Emmanuel Dhyne** and **Cédric Duprez** of the National Bank of Belgium provide a detailed account of the participation of these firms in global and local value chains. They find that the number of exporting firms is relatively small, at less than 5 per cent of total firms. But 80 per cent of firms supplied inputs to the rest of the world, either directly or through third companies. They also find that almost all Belgium firms use foreign inputs, either directly or indirectly through importers. Based on an econometric analysis of the dataset, the authors show that the most productive firms are the ones most deeply integrated into the global economy.

Italy has experienced very poor productivity performance in recent years. But this situation does not appear to be due to a lack of dynamism in resource reallocation by Italian firms, **Andrea Linarello** and **Andrea Petrella** from the Bank of Italy use a unique dataset covering the universe of Italian firms to estimate the role of allocative efficiency in productivity growth. They find that that the net entry of firms contributed positively to aggregate labour productivity growth every year from 2005 to 2013. Rather it was the productivity growth of surviving firms that was negative and hence responsible for Italy's fall in labour productivity over the period. The authors also find that reallocation of labour was strongest in industries more exposed to import competition.

A key stylized fact that has emerged in recent years with the increasing availability of firm-level databases is the existence of large differences in multifactor productivity (MFP) levels across firms, a finding with important policy implications. **Giuseppe Berlingieri**, **Sara Calligaris** and **Chiara Criscuolo** from the OECD and **Patrick Blanchenay** from the University of Toronto shed light on productivity heterogeneity using data from the OECD's firm-level Multifactor Productivity (Multiprod) project. This project, implemented in close cooperation with micro data providers in OECD countries, has assembled aggregate indicators drawn from confidential micro data to provide a comprehensive picture of productivity patterns at the firm level over the past two decades. The authors document the high dispersion of MFP levels in both manufacturing and non-financial services in 16 OECD countries and find that this dispersion has been increasing over time, especially in services.

Countries with low productivity levels have the potential to catch-up with countries with high productivity levels if they can successfully adopt the technology of the most advanced countries. This technological convergence process explains the faster productivity growth of many countries in recent years relative to the technology leaders. Portugal experienced this catch up process until the early 1990s, with productivity growth exceeding that in the United States and the EU average. Since then, however, the country's productivity growth has underper-

formed. In the eighth article in this issue, **Ricardo Pinheiro Alves** from the GEE and IADE-UE provides a comprehensive overview of Portugal's productivity performance and drivers. He identifies a number of barriers to productivity growth, including weak business sector R&D, excessive labour market segmentation, a high mortality rate for new firms, a low share of workers in more productive medium-sized and large firms relative to the EU average, and an insufficient level of openness of the economy. The author puts forward a number of policies that can reduce the level of resource misallocation and boost productivity growth, including greater product market competition, the development of a tax system that rewards risk takers, and the establishment of an independent productivity commission to promote pro-productivity policies.

It has long been recognized that urban areas have higher levels of productivity than non-urban areas, with the productivity premium increasing with the size of the city. In the ninth article in this issue, **Rüdiger Ahrend**, **Alexander C. Lembcke** and **Abel Schuman** from the OECD document this relationship using an international harmonized definition of urban areas not based on administrative units. They then explore the mechanisms for the relationship between urbanization and productivity. One obvious reason is that average levels of education are higher in urban areas than in non-urban areas through self-selection. Second, different types of agglomeration economies, including knowledge spillovers, the sharing of infrastructure costs over a larger population base, and better labour market matching due to the larger numbers of workers and jobs, boost productivity. The authors estimate that a 10 per cent increase in the population of an urban area is associated with an increase in productivity of 0.2 to 0.5 per cent. An important new finding of the authors is that a region's closeness to an urban area, as measured by road-based travel distances and travel times, has a significant positive effect on its productivity.

The measurement of productivity in the public or non-market sector has long been a challenge for economists. In the market sector, output is priced and price indexes can then be constructed and used to deflate the nominal value of output to produce a real output series essential for measurement of productivity growth. In the non-market sector, output is not priced and inputs are used as a proxy for real output, often with the assumption of zero productivity growth.

In the tenth article in the issue, **Edwin Lau**, **Zsuzsanna Lonti**, and **Rebecca Schultz** from the OECD provides a comprehensive overview of issues related to public sector productivity measurement. The authors surveyed OECD members to obtain information on their practices related to public sector productivity measurement. They found that only seven countries reported measures of productivity for the whole public sector, indicating much room for improvement. The authors recommend that OECD countries focus attention on improving both public sector productivity measures and performance. They suggest a number of ways forward, including standardization of government inputs and output, benchmarking of government activities relative to best practices, and the development of productivity-enhancing strategies related to human resource management and digitization.

A recent development in OECD countries has been the establishment of organizations with a mandate to promote productivity-enhancing reforms. The Australian Productivity Commission is likely the best known example of such organizations. In the eleventh and final article of this issue, **Sean Dougherty** from the OECD and **Andrea Renda** from the Centre for European Policy Studies and Duke University, ana-

lyze and compare ten of these organizations, which include government advisory councils, standing inquiry bodies, and ad hoc task forces. The authors find that pro-productivity institutions can indeed contribute to productivity growth by facilitating public debate on policy issues and evidence-based policy-making. They identify the characteristics needed for such institutions to be successful, including sufficient resources to fulfill their tasks, a broad mandate oriented toward long-term well-being of the population, and the ability to reach out to the general public.

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June, 2017