Editor's Overview

THIS 25TH ISSUE OF THE *International Productivity Monitor* contains revised versions of papers, as well as discussant comments, presented at a session on productivity organized by the Centre for the Study of Living Standards at the annual meeting of the American Economic Association in San Diego, California January 4-6, 2013. The first two papers focus on the productivity outlook for the United States, the third on the relationship between employment and productivity, and fourth on European productivity performance.

It is now well recognized that the productivity growth resurgence that took place in the United States after 1996 was fuelled by the information technology (IT) revolution. Going forward, the key question is whether this revolution will continue to boost productivity growth dramatically, or have a much more limited impact.

In the lead article, **Martin N. Baily** from the Brookings Institution and the McKinsey Global Institute, **James Manyika** from the McKinsey Global Institute and the Brookings Institution and **Shalabh Gupta** from McKinsey & Company provide an optimistic perspective on future U.S. productivity growth. Drawing on sector case studies done by the McKinsey Global Institute, they identify and document opportunities for productivity advance arising from specific technologies, such as robotics, 3D printing, big data, and the 'internet of things' that will drive future productivity growth in the manufacturing, energy, health care and life sciences, and infrastructure sectors. They forcefully reject the idea that growth opportunities have vanished, noting that necessity can be the mother of invention if pressures on budgets force business and governments to find ways to cut costs and raise efficiency.

In response to Baily, Maniyka and Gupta, **Robert J. Gordon** from Northwestern University presents a less optimistic view of future U.S. productivity growth. While recognizing that productivity growth in manufacturing has been and will likely continue to be rapid, he argues that the remaining 90 per cent of the economy will not see impressive productivity gains, which were fuelled by information technology, enjoyed in the 1996-2004 period. Rather he sees a continuation of the modest productivity gains experienced between 2004 and 2012. Gordon identifies a number of "headwinds" that will reduce future productivity and income growth. Once the negative impact of the demographic, education, inequality and debt headwinds are factored in, together with the likelihood that future inventions will be less important than those of the second Industrial Revolution, disposable income growth for the bottom 99 per cent of the population may be as low as 0.5 per cent per year or even lower.

In the second article, **David M. Byrne** from the Federal Reserve Board, **Stephen D. Oliner** from the American Enterprise Institute and the University of California at Los Angeles and **Daniel E. Sichel** from Wellesley College show through a detailed growth accounting exercise that since 2004 IT has continued to make a significant contribution to U.S. labour productivity growth – 0.73 percentage points per year. While this is down from 1.50 points per year in 1995-2004, it is comparable to the 0.77 points of the 1974-1995 period. They develop a baseline projection of growth in trend labour productivity in the U.S. non-farm business sector of 1.8 per cent per year. While this would represent a

period of subpar gains from a long-term historical perspective (though better than recent history), they see a reasonable prospect – particularly given the ongoing advance in semiconductors – that the pace of labour productivity growth could revert to its long-run average of 2¼ per cent. They conclude that the IT revolution is not yet over.

In his comments on Byrne, Oliner and Sichel, **Chad Syverson** from the University of Chicago compares the path of labour productivity growth since the IT revolution began in 1970 with that of labour productivity from 1890, the beginning of the electrification era. He notes in both cases a lag of about 25 years before these two general purpose technologies affected productivity significantly, followed by a period of rapid productivity advance and then a subsequent productivity slowdown (1924-1932 and 2004-2012). The immediate post-1932 period saw a rebound in labour productivity growth. Such a development is possible for the post-2012 period. History shows that productivity growth driven by general purpose technologies can arrive in multiple waves. It need not simply arrive, give what it has and fade away forever thereafter.

In the third article, **Andrea De Michelis** from the Federal Reserve Board, **Marcello Estevão** from the International Monetary Fund and **Beth Anne Wilson** from the Federal Reserve Board provide an innovative, and provocative, analysis of the relationship between productivity and employment growth. Economists have traditionally seen total factor productivity (TFP) growth as exogenous. But the authors make the case that positive labour supply shocks can reduce the efforts of firms to increase efficiency, making TFP endogenous. They present cross-country evidence of a strong negative correlation between TFP growth and labour inputs over the medium to long run among OECD countries. They highlight potential welfare implications of this tradeoff between TPF growth and labour input as policies that increase efficiency at the expense of hours of work and/or employment may result in greater unemployment, income loss, and reduced well-being.

In comments on Michelis, Estevão and Wilson **Barbara Fraumeni** from the University of Southern Maine expresses caution regarding the results and recommends further investigation of the relationship between productivity and employment growth before definitive conclusions are reached. In particular, she recommends that the authors attempt to take account of the age and educational attainment distribution of the workforce within a country in attempting to explain TFP growth.

In the fourth article **Bart van Ark** from the Conference Board and the University of Groningen and **Vivian Chen** and **Kirsten Jäger** from the Conference Board provide a detailed analysis of productivity developments in European countries since 2000 and present productivity forecasts to 2025. They note that the weakness of productivity growth has now moved beyond the services sector to include the goods sector. For the 2013-2025 period they project total factor productivity growth to advance at only a 0.2 per cent average annual rate in both the euro zone countries and at the level of all 27 EU countries.

In comments on Van Ark, Chen and Jäger, **Pascal Petit** from the Université de Paris-Nord provides historical and institutional context for their analysis. He identifies what he calls the "financialization" phenomenon, whereby easy and creative finance led to speculative booms and busts in a number of countries such as Spain. He also notes that labour market reform in Germany, which improved competitiveness, appears to have made that country more recession-proof.