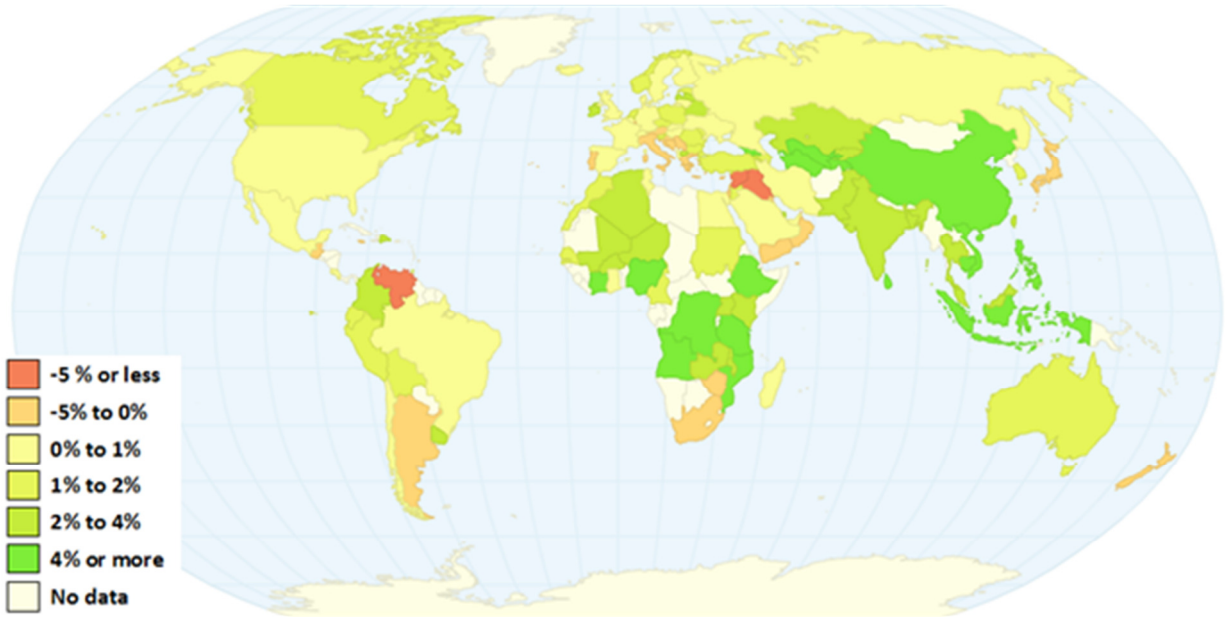
THE CONFERENCE BOARD
Trusted Insights for Business Worldwide

Productivity Brief 2015

Global Productivity Growth Stuck in the Slow Lane with No Signs of Recovery in Sight

Labor productivity growth in 2014



Note: GDP per person employed
Source: The Conference Board Total Economy Database™, May 2015

CONTENTS

INTRODUCTION: LOOKING BACK AND LOOKING AHEAD AT GLOBAL PRODUCTIVITY

This release of the annual Productivity Brief by The Conference Board provides the latest estimates of labor and total factor productivity for 122 nations around the world from 1999 to 2014, as well as a projection for 2015.

The full dataset, The Conference Board Total Economy Database™, can be accessed via The Conference Board website: https://www.conference-board.org/data/economydatabase/. More information about the database can be obtained from ted.geo@conference-board.org.

For the first time, our annual Productivity Brief, also includes information on manufacturing productivity and unit labor cost growth, as derived from The Conference Board International Labor Comparisons database, which The Conference Board took over from the U.S. government's Bureau of Labor Statistics in 2013. The Conference Board International Labor Comparisons database can be accessed here: https://www.conference-board.org/ilcprogram/.

This release precedes the publication of a new report by The Conference Board, *Prioritizing Productivity to Drive Growth, Competitiveness, and Profitability*, to be published on 16 June 2015. Information about this report, which is a complementary benefit for member companies of The Conference Board, can also be obtained through ted.geo@conference-board.org.

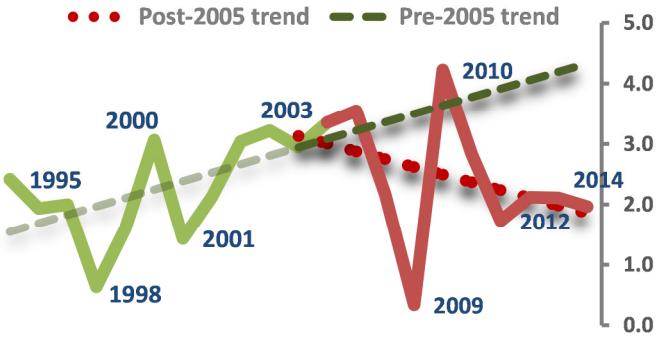
Acknowledgments

Authors: Bart van Ark and Abdul Erumban
Editor: Charles Mitchell

The Conference Board Total Economy Database: Abdul Erumban and Klaas de Vries
The Conference Board International Labor Comparison Database: Elizabeth Crofoot and Eric Hayek

OVERVIEW

- As the global economy continued its tepid performance in 2014, so too has world productivity growth. Global labor productivity remained stuck at 2.1 percent in 2014, while showing no sign of strengthening to its pre-crisis average of 2.6 percent (1999-2006). Labor productivity growth, measured as the average change in output (GDP) per person employed improved from 1.7 percent in 2012 to 2.1 percent in 2013, but stayed at the same rate in 2014.



- The lack of improvement in global productivity growth in 2014 is due to several factors, including a dramatic weakening of productivity growth in the ***United States*** and ***Japan***, a longer-term productivity slowdown in ***China***, an almost total collapse in productivity in ***Latin America***, and substantive weakening in ***Russia***. Notable productivity improvements in ***India*** and ***Sub-Saharan Africa*** were insufficient to compensate for the weakening performance elsewhere.

- Labor productivity in ***mature economies*** grew by 0.6 percent in 2014, slightly down from 2013 when it was 0.8 percent.[1] The slowdown in the ***United States*** (with growth in GDP per worker down from 1.2 to 0.7 percent) was primarily due to an expansion in employment that wasn't carried by as much improvement in output. The dramatic drop in ***Japan*** (down from 1 to -0.6 percent) was caused by a drop in GDP growth to zero. The ***Euro Area*** saw a very small improvement in productivity —from 0.2 percent in 2013 to 0.3 percent in 2014 as both output and employment came out of recessionary territory. However, when adjusted for an increase in working hours, Europe's labor productivity also slowed from 0.6 percent in 2013 to 0.2 percent in 2014.

- Despite the slowdown in productivity growth in the ***United States***, its level of output per hour remains among the highest in the world, at 66 US$ per hour (corrected for relative price levels between countries by way of purchasing power parities) –about 25 percent above the average of the mature economies. Only ***Luxembourg***, ***Norway*** and ***Belgium*** posted higher productivity levels in 2014 than the United States. In the ***Euro Area***, output per hour in in 2014 was only 5 percent above

[1] Mature economies include the United States, the European Union-28 and Japan, as well as Australia, Canada, Iceland, Israel, Hong Kong, Norway, South Korea, Switzerland, New Zealand, Singapore, and Taiwan.

the mature economies' average, and in ***Japan*** it was more than 15 percent lower reflecting the very labor intensive nature and low productivity in the services sector.

- On average, ***emerging and developing economies*** saw a very small improvement in labor productivity growth, from 3.3 percent in 2013 to 3.4 percent in 2014.[2] Emerging markets' productivity performance is substantially lower than the growth rates experienced during the first decade of the century, when average growth rates ranged between 5 and 7 percent.

- There are significant differences across individual countries in the emerging and developing group. Productivity growth in ***China*** continued on a longer-term slowing path to 7 percent in 2014 compared to 7.3 percent in 2013, and 9.5 percent average from 2007-2012. ***India*** witnessed a significant improvement from 2.8 in 2013 to 3.8 in 2014, as GDP growth strengthened by almost a full percentage point. ***Brazil*** saw a dramatic decline with productivity growth at 0.3 percent, down from 1.8 percent in 2013, while productivity growth in ***Mexico*** was only 0.6 percent in 2014 (compared to 0.5 percent in 2013). Labor productivity growth in ***Russia*** also weakened to 0.4 percent in 2014, down from 1.5 percent in 2013.

- Despite one-decade-and-a-half of rapid catching up, productivity levels in emerging and developing economies remain considerably lower than in mature economies. In 2014, output per person employed for the average of this group of countries was at 19 percent of the U.S. level. In ***China*** the average level was also 19 percent of the U.S. level, but in ***India*** only 11 percent. Despite slower productivity, ***Latin American countries*** still show higher levels of productivity at 29 percent of the U.S. level, reflecting the more capital intensive nature of growth in those economies compared to Asia.

- An alarming result from this year's estimates in The Conference Board Total Economy Database™ is that the growth rate of total factor productivity (TFP), which measures the productivity of labor and capital together, continues to hover around zero for the third year in a row, compared to average rate of more than 1 percent from 1999-2006 and 0.5 percent from 2007-2012. The challenge on TFP growth is very widespread across the globe. Most mature economies including the ***United States***, the ***Euro Area*** and ***Japan*** show near zero or even negative TFP growth. In ***China***, TFP growth has turned negative, and in ***India*** it is just above zero, at 0.2 percent. Both in ***Brazil*** and ***Mexico*** TFP growth continues to be negative, respectively at -2.3 and -1.7 percent.

[2] Emerging and developing economies include all other countries of the world, except the mature economies as defined in footnote 1.

- Zero or even negative total factor productivity growth suggests that improvements in the efficiency by which labor and capital are used have stalled. The slowdown in TFP growth can also be indicative of weak demand and regulatory challenges that prevent businesses from maximizing their potential through investments in technology and innovation. Ultimately declining TFP prevents companies from improving their competitiveness and profitability, and threatens the ability of countries to maintain or better people's living standards.

- For 2015, a further weakening in labor productivity is projected, down to 2 percent, continuing a longer-term downward trend which started around 2005. Despite a small improvement in the productivity growth performance in ***mature economies*** (up to 0.8 percent in 2015 from 0.6 percent in 2014), **emerging and developing economies** are expected to see a fairly large slowdown in labor productivity growth from 3.4 percent in 2014 to 2.9 percent in 2015. The decline is primarily a reflection of the continuing fall in growth and productivity in China, but also includes the negative growth rate of Brazilian and Russian productivity.

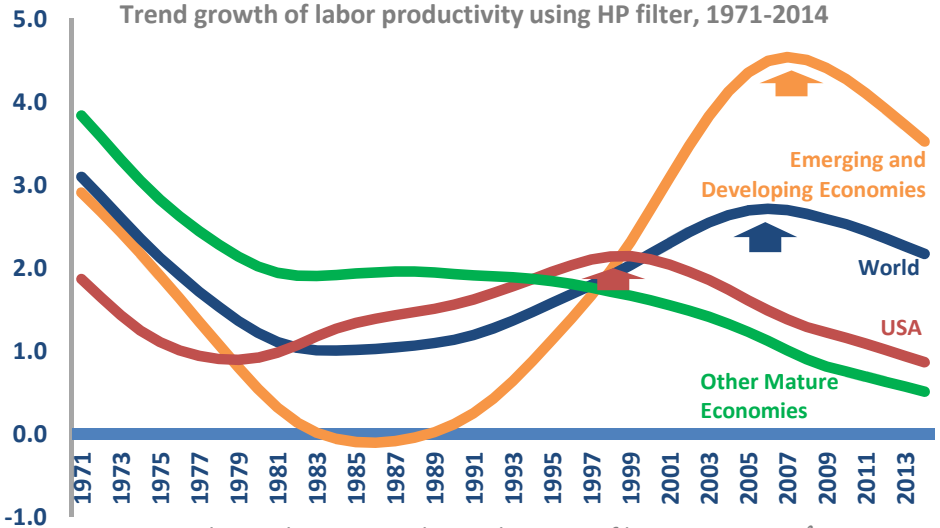
- Slowing productivity growth also has an impact on the international competitiveness of economies by increasing the cost of production. However, the effects can differ significantly by sector, and there are many indications that, at least in 2014, manufacturing productivity has grown more strongly than productivity in the services sector of the economy in most mature economies. In 2014, overall manufacturing output per hour for mature economies grew at 1.3 percent versus 0.5 percent for the aggregate economy. In 2014, manufacturing competitiveness, measured as labor cost per unit of output, improved slightly in most ***mature economies***, dropping by -0.7 percent. This improvement is partly due to productivity holding up relative to 2013 and a weakening of the currency in most mature economies relative to the U.S. dollar.

GLOBAL DEVELOPMENTS

Global labor productivity, measured as output per person employed, increased at 2.1 percent in 2014—the same rate as 2013. The stagnation in global productivity growth was the result of virtually no change in both global output and employment growth rates (Table 1).[3] Growth of real GDP (GDP adjusted for inflation and referred to in this report as "output") globally improved by only 0.1 percentage point from 3.1 percent in 2013 to 3.2 percent in 2014, while employment growth slowed from 1.3 percent to 1.1 percent.

The average labor productivity growth rate in ***mature economies*** declined from 0.8 percent in 2013 to 0.6 percent in 2014, despite an increase in the average growth rate of output for ***mature economies*** by almost half a percentage point from 1.4 percent in 2013 to 1.8 percent in 2014. The reason for the productivity slowdown is that employment growth improved much more rapidly from 0.4 percent in 2013 to 1.2 percent in 2014, driven primarily by the ***United States*** and ***Europe***.

The productivity slowdown in ***mature economies*** is a longer-term phenomenon which started well before the 2008/09 economic and financial crisis. Mature economies saw a strong recovery effect on productivity growth in 2010, but quickly returned to the slowing growth trend. Labor productivity growth in the ***United States*** started its decline around 2005, when the first-round productivity effects from the boom in information technology investment dating back to the second half of the 1990s faded. ***European economies*** and ***Japan*** have shown slower growth than the United States, a trend that started in the early 1990s, and is mostly related to a slower pace of technology adoption and innovation in the former economies, especially in the services sector.



Note: Trend growth rates are obtained using HP filter, assuming a λ=100.
Source: Source: The Conference Board Total Economy Database™, May 2015

[3] The tables which are referred to in this brief can be found in the accompanying document *The Conference Board **Total Economy Database™**, Summary Tables 1999-2015*, May 2015, available on http://www.conference-board.org/data/economydatabase/.

Productivity growth in ***emerging and developing economies*** reached its peak around 2007, and since then also embarked on a slowing trend. This slowdown appears to be a result of the end of a substantial catch-up growth period that began in the late 1990s. Emerging economies that are the furthest behind countries with the highest levels of productivity and technology (the "productivity frontier") have more scope to grow faster by adopting technologies, processes, and strategies developed and already deployed by the leading countries. The 1990s and 2000s was indeed a period of such rapid catch-up which was facilitated by both domestic reforms in some of the emerging economies such as ***China*** and ***India***, increased globalization such as China's entry into the World Trade Organization, and the rapid investment in new information and communication technology. The slowing trend in productivity growth in emerging markets is therefore, at least in part, a reflection of past success.

However, in transitioning to a more mature and sustainable growth path, emerging and developing economies need to make drastic reforms in labor, capital, and product markets to continue to drive growth and competitiveness. This has significantly impacted the growth performance of those economies in recent years. Output growth in ***emerging and developing economies*** fell from 4.7 percent in 2013 to 4.4 percent in 2014. However, the employment growth rate also dropped in emerging economies so that, on average, labor productivity actually improved slightly from 3.3 percent in 2013 to 3.4 percent in 2014, but still far below the average growth rate of 4.7 percent between 2007 and 2012.

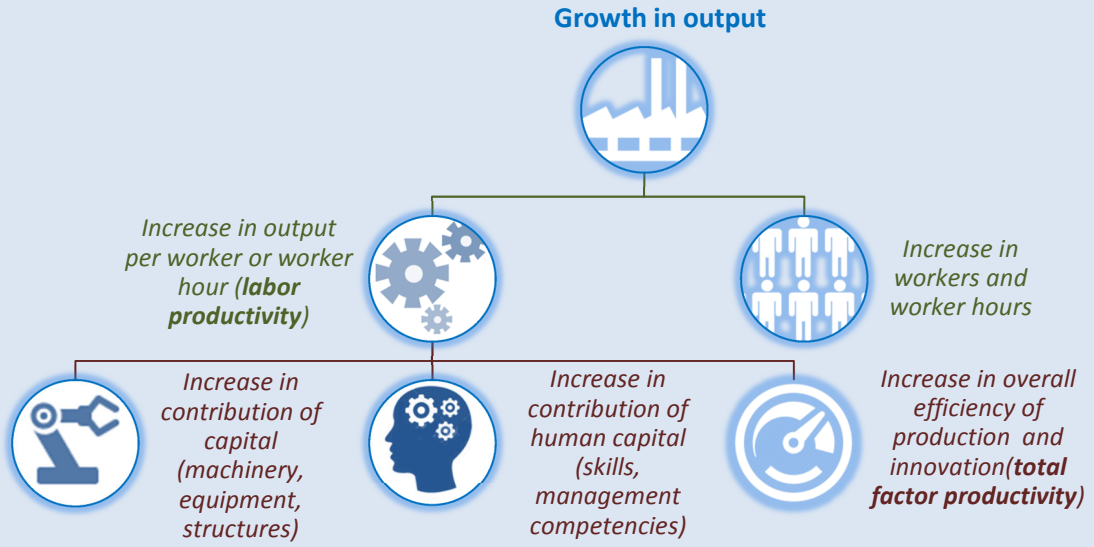
Because of the moderation in productivity growth in most global regions, the relative contribution of emerging and developing economies to world productivity growth increased marginally from 1.7 in 2013 to 1.8 percentage points in 2014, while the contribution of the mature economies declined from 0.4 percentage points in 2013 to 0.3 percentage points in 2014 (Table 2). As the emerging and developing economies have higher productivity growth rates, their larger output share in the global economy has a positive impact on global productivity growth rates. However, as those economies still have lower *levels* of productivity compared to mature economies, the ongoing shift in economic activity also has a slightly negative influence on the otherwise positive impact of faster productivity growth in emerging markets on the world productivity growth. For example, in 2013 this negative reallocation effect from lower productivity levels in emerging and developing economies was -0.2 percentage point, but in 2014 it dropped to a negligible -0.04 percentage point because of the output growth slowdown in emerging markets.

A detailed analysis of the causes and consequences of this long decline in productivity is available in a new report by The Conference Board on *Prioritizing Productivity to Drive Growth, Competitiveness, and Profitability*, to be published on June 16th, 2015.

How is productivity measured?

Productivity provides a simple but powerful indicator of the ability of a country, sector or company to optimally use its resources to drive growth. Labor productivity measures output per employed worker or, if working hours can be measured (mostly only in mature economies), output per hour worked. At country level, output is typically measured as the economy's Gross Domestic Product (at sector level called value added) adjusted for inflation.

A more sophisticated productivity measure, total factor productivity (TFP), represents output from all inputs in the production process, not just labor. Total factor productivity growth is the result of a combination of improvements in efficiency (fewer inputs are needed for a given output) as well as technology and innovation (more output is achieved from a given input).



All growth rates in the Productivity Brief 2015 are measured in real terms, that is, after adjustment for inflation. The comparative levels of productivity in this report are based on US dollar measures, which are obtained by converting output in national currencies by purchasing power parities (PPPs) for 2014. These PPPs provide an adjustment for differences in relative price levels between the outputs produced in different countries.

REGIONAL DEVELOPMENTS

UNITED STATES

2014 productivity

In the ***United States***, productivity growth continued to slow in 2014, with output per person employed declining to 0.7 percent from 1.2 percent in 2013, and averaging only 0.8 percent over the period 2012-2014 (Tables 1 and 9). This productivity slowdown is largely the result of strong improvements in the labor market with employment growing at 1.5 percent on average between 2012 and 2014. Employment actually increased at a 1.7 percent clip in 2014, while the increase in GDP was a modest 2.4 percent up from 2.2 percent in 2013. The average American worker also worked slightly more hours, contributing to a decline in the growth of output per hour worked from 0.9 in 2013 to 0.5 percent in 2014 (Table 3).

The slowdown in labor productivity growth in recent years is due to a combination of slow investment growth, low rates of innovation, and a lack of efficiency gains as measured by total factor productivity growth. Total factor productivity growth in the United States weakened from 0.6 percent in 2013 to a dismal 0.1 percent in 2014 (Table 10). Weak demand growth and lack on investment by corporate technology users has contributed to this continuing TFP slowdown in recent years.

2015 projection

Projections for 2015 suggest an even further decline in output per person employed to 0.6 percent and output per hour to 0.4 percent (Tables 1 and 3). Even though employment growth is expected to moderate somewhat, we expect a continued solid growth in working hours as businesses find it harder to recruit people from the open labor market once unemployment approaches 5 percent.

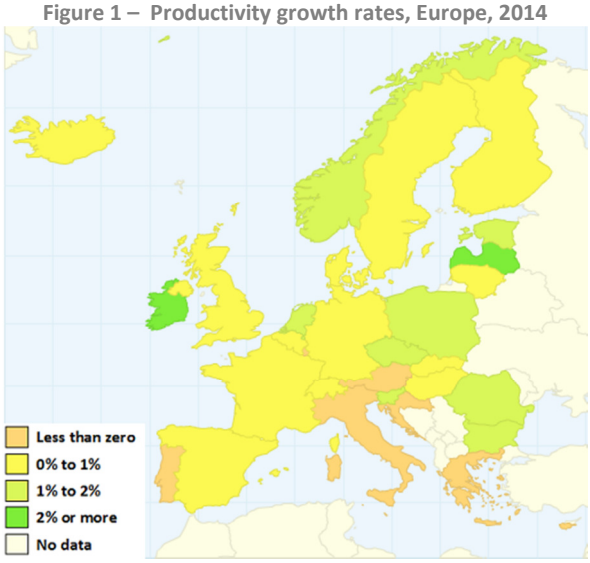
Manufacturing performance

The sluggish recovery of the world economy since the beginning of the global economic and financial crisis has also affected the U.S. economy, especially U.S manufacturing demand and the competitiveness of American manufacturing in the global economy. For example, labor productivity growth in U.S. manufacturing, measured as output per hour, slowed from 6.3 percent between 1999 and 2006 to only 2.3 percent between 2007 and 2012 and was still at only 1.4 percent in 2014, up from 0.7 percent in 2013 (Table 13). Unit labor cost in manufacturing increased slightly in 2014 at 0.5 percent as total labor cost in manufacturing went up faster (3.8 percent) than manufacturing output (3.3 percent) (Table 14).

EUROPE & EURO AREA

Europe - Productivity performance in 2014

Figure 1 – Productivity growth rates, Europe, 2014



***Region average (Europe):* 0.5%**
***Region average (Euro Area):* 0.3%**
Ranging from 3.8% (Latvia) to -3.0% (Croatia)

***Region level (Europe):* 70% of US level**
Ranging from 110% (Luxembourg) to 47% (Latvia)
***Region level (Euro Area):* 75% of US level**
Ranging from 110% (Luxembourg) to 32% (Bulgaria)

Fastest growing (GDP per person employed)
1 Latvia *(3.8%)*
2 Ireland *(3.0%)*
3 Slovenia *(2.0%)*

Slowest growing (GDP per person employed)
1 Croatia *(-3.0%)*
2 Malta *(-0.6%)*
3 Austria *(-0.5%)*

Notes: See table 9 for more detail. Percent change in GDP per employed person.
Source: The Conference Board Total Economy Database™, May 2015.

2014 productivity

In the ***Euro Area***, labor productivity growth (measured as output per person employed) increased marginally from 0.2 percent in 2013 to 0.3 percent in 2014 (Table 1). However, when measured as output per hour worked, Euro Area productivity growth dropped from 0.6 percent in 2013 to 0.2 percent in 2014 (Table 3) because of a faster increase in total hours worked compared to employment. Though output growth recovered from −0.5 percent in 2013 to 0.9 percent in 2014, total hours growth improved more from – 1.2 percent in 2013 to 0.7 percent in 2014, signaling that businesses did not only create more jobs coming out of the 2011-2012 recession but also added more work time per job.

Within the Euro Area, there was an unusually large variation in productivity growth rates between economies, reflecting the different states of economic and financial health as well as the intensity and effects of austerity measures in various countries (Table 5). Among the economies in the Euro Area that were most affected by the crisis, ***Italy*** had the lowest growth rate of productivity (measured as output per hour worked) in 2014 (-0.6 percent), with the contraction in GDP growth (-0.4 percent) accompanied by a marginal increase in hours growth (0.1 percent) (Tables 6 and 7). Italy's policy makers have been widely criticized for slow progress in their reform agenda which has caused both output and employment growth to stall. In contrast, following the deep crisis in 2008/09, ***Spain*** finally saw its output growth recover in 2014 at 1.4 percent and hours at 0.6 percent, thus achieving positive productivity growth of 0.7 percent. However, the overall slowdown in the growth in output per hour in the Euro Area as a whole in 2014 reflects of developments in the largest economies especially ***Germany*** (down from 0.4 to 0.1 percent) and ***France*** (down from 0.5 to 0.2 percent).

The productivity of labor and capital together, as measured by total factor productivity, continued to fall in the Euro Area, dropping by −0.4 percent in 2014, following a decline of 0.5 percent in 2013 (Table 10). This means that, during this latest recession, labor and capital in the Euro Area have become increasingly inefficiently allocated for three years in a row (Table 11). After the substantial contraction in TFP growth during the global crisis years 2008 and 2009, the Euro Area had a positive TFP growth only in 2010 and 2011. Total factor productivity declined by −0.3 percent in both ***Germany***, at -0.6 percent in ***France*** and ***Italy*** and, despite the recovery in labor productivity by a modest -0.1 percent in ***Spain*** (Table 12). The widespread weakness of TFP growth among major European countries points to an inability to translate technology and innovation to productivity growth, weak demand and low investment as well as an increased negative impact of structural rigidities in labor, capital, and product markets. This is reflected, for example, in the failure to forge a true single market in Europe, especially for services and digital content, and remaining potential for increased mobility of labor within and between European economies.[4]

Overall, the Euro Area is less productive than the United States. The productivity level in the Euro Area, measured as output per hour in US dollars (after adjustment for differences in relative price levels using purchasing power parities), was just 84 percent of the US level in 2014,—a gap of 16 percentage points with the United States. However, within the Euro Area there is considerable variation among countries that reflects their different levels of development and economic structure (such as the share of manufacturing in the economy) (Table 8). Major European economies such as ***France*** and ***Germany*** show higher productivity levels than the Euro Area average at 96 and 95 percent of the United States, respectively, while economies such as ***Spain*** and ***Italy*** only reach 77 percent and 76 percent, respectively. The productivity levels of ***Greece*** (54 percent of the US level) and ***Portugal*** (51 percent) are even lower than those of Spain and Italy.

The productivity trend in the larger ***European Union*** has been roughly similar to that in the Euro Area (which includes 19 of the 28 EU member states), although several ***Central and Eastern European (CEE) economies***, which have somewhat less directly affected by the fallout from the Euro Area sovereign debt crisis, showed less of a decline in productivity growth.[5] The largest economy in the region, ***Poland***, showed one of the strongest improvements in output growth (from 1.7 percent in 2013 to 3.3 percent in 2014). However, hours growth which contracted at -0.3 percent in 2013 recovered to 1.9 percent growth in 2014, thus causing half a percent decline in productivity growth from 1.9 percent to 1.4 percent (Tables 5-7). At a level of output per hour of only 45 percent of the US productivity level, there is still much scope for improvement in Poland's productivity performance, as well as in most other CEE economies (Table 8).

[4] Bart van Ark, Mary O'Mahony and Marcel Timmer (2008), "The Productivity Gap between Europe and the U.S.: Trends and Causes", *Journal of Economic Perspectives*, Vol. 22 (1), Winter, pp. 25-44.

[5] Latvia, which became a member of Euro Area on January 1, 2014, is not included in the estimates. Croatia, which has been an EU member since July 1, 2013, is not included in the EU-28 measures.

The ***United Kingdom*** showed a strong improvement in GDP growth (up from 1.7 percent in 2013 to 2.8 percent in 2014), but this did not translate into labor productivity growth as the economic recovery in the UK was primarily fuelled by the creation of more jobs and longer working hours. Growth in total hours in 2014 increased significantly from 1.8 percent to 2.7 percent, resulting in only negligible improvement in labor productivity growth of 0.1 percent after a substantial contraction in 2012 (−1.3 percent) and 2013 (-0.1 percent) (Table 3). As in the Euro Area, total factor productivity in the U.K was also negative in 2014 at -0.1 percent. One of the concerns is that many of the U.K.'s companies are comparatively unproductive. At 75 percent of the US level, the UK's level of output per hour remains well below that of its main continental counterparts, France and Germany, and even below that of Italy and Spain (Table 8).

2015 projection

For 2015, we expect a moderate improvement in output per hour growth for most European economies, to 0.5 percent on average for the ***Euro Area*** (up from 0.2 percent in 2014) and 0.7 percent for the ***EU-27*** (up from 0.3 percent in 2014). The productivity recovery is a result of a fairly strong recovery in GDP growth to 1.4 percent for the Euro Area (up from 0.9 percent in in 2014) and 1.8 percent for the EU-27 (up from 1.4 percent 2014), with an improvement in hours growth slightly trailing the recovery in GDP (Table 3). However, in the ***United Kingdom*** and ***Germany***, the productivity improvement is supported by a slowdown of extraordinary employment growth in earlier years.

Manufacturing performance

The manufacturing sector in Europe, often seen as a relative stronghold compared to the less productive service sector, suffered severely from the recent economic and financial crisis in Europe. Average labor productivity growth in manufacturing in the Euro Area more than halved between 1999-2006 (3.5 percent) and 2007-2012 (1.4 percent)—rates that were actually worse than in the United States during both periods (Table 13).

In 2014, manufacturing labor productivity growth in the Euro Area increased marginally from 0.5 percent in 2013 to 0.9 percent, together with significant improvements in underlying output and employment trends. Strikingly, ***France*** saw one of the faster productivity improvements in manufacturing in 2014, and posted much stronger labor productivity growth (1.8 percent) than ***Germany*** (0.6 percent) in 2014, despite much slower output growth (0.2 percent in France versus 2.2 in Germany). Indeed, France made those productivity gains largely through restructuring resulting from a drop in total hours worked in manufacturing (-1.5 percent) compared to Germany, where total manufacturing hours actually grew at 1.6 percent. Among other larger Euro Area economies, ***Spain*** also showed strong manufacturing productivity growth in 2014 (1.9 percent), while ***Italy's*** labor productivity growth in manufacturing dropped off to -1.5 percent .

Despite its slight improvement in average manufacturing productivity growth, the Euro Area still saw a slight deterioration in cost competitiveness, with unit labor cost increasing at 0.9 percent on a national currency basis, because labor compensation increased faster at 2.2 percent than output growth at 1.3 percent (Table 14). However, when the rise in labor compensation is adjusted for the rapid devaluation in the Euro-US dollar exchange rate, the slowdown in unit labor cost in the Euro Area from 5.1 percent in 2013 to 0.8 percent in 2014 is rather spectacular (Table 15).

The ***United Kingdom***, which has a relatively small manufacturing sector, posted strong productivity growth at 2.1 percent in 2014, up from -1 percent in 2013, largely the result of strong output growth (2.3 percent) since total hours increased at a very modest 0.2 percent. This result stands in strong contrast with the aggregate economy, suggesting that Britain's employment growth has been mainly concentrated in services, and that the labor productivity slowdown can be blamed on that sector of the economy in particular.

Despite the strengthening in manufacturing labor productivity growth and an improvement in manufacturing unit labor cost in terms of national currency, the cost competitiveness of the UK manufacturing sector rapidly worsened once labor compensation is adjusted for the appreciation of relative to the U.S. dollar in 2014 over 2013, on a year-over-year basis. Manufacturing ULC (on a US dollar basis) rose significantly, with the increase more than doubling from 3 percent in 2013 to 6.2 percent in 2014.

ASIA-PACIFIC

Asia-Pacific - Productivity performance in 2014

Figure 2 – Productivity growth rates, Asia-Pacific, 2014

Region average: 4.5%
Ranging from -0.6% (Japan) to 7.4% (Sri Lanka)
***Region level:* 19% of US level**
Ranging from 5% (Cambodia) to 112% (Singapore)

Fastest growing (GDP per person employed)
1 Sri Lanka (7.4%)
2 China (7.0%)
3 Philippines (5.6%)

Slowest growing (GDP per person employed)
1 Japan (-0.6%)
2 New Zealand (-0.2%)
3 Singapore (0.3%)

Notes: See table 9 for more detail. Percent change in GDP per employed person.
Source: The Conference Board Total Economy Database™,May 2015.

In ***Japan***, one of the six economies from Asia-Pacific that are included in our mature economy group (the other five are Australia, Hong Kong, New Zealand, Singapore, and South Korea), the drop in labor productivity growth, measured as GDP per hour, in 2014 is alarming, from 1.6 percent in 2013 to –0.6 percent in 2014 (Table 3). Output growth stalled in 2014, dropping to zero from 1.6 percent growth in 2013, while total hours improved somewhat from zero growth in 2013 to 0.6 percent in 2014. At –1.2 percent, Japan's total factor productivity growth decelerated substantially in 2014, compared to 1 percent growth in 2013, posting one of the largest declines among mature economies (Table 10). In addition, Japan's productivity level is still lower than either the Euro Area's or European Union's, at only 63 percent of the US level, reflecting the weak performance of Japan's services sector which is more highly labor intensive relative to other major mature economies. For 2015 we expect a modestly positive growth rate for productivity in Japan at 0.3 percent, as the economy is slowly emerging from recession (Table 3)

Most emerging and developing economies in the ***Asia-Pacific*** region experienced a relatively moderate slowing of productivity growth. At 7 percent annual labor productivity growth in 2013, the official estimates of output and employment suggest that ***China*** continues to show one of the highest labor productivity growth rates in the world, which has made it by far the largest contributor to overall global productivity growth. Recent independent analysis by The Conference Board, however, shows that China's actual output and productivity growth rates could be substantially lower, putting it at only 3.9

percent for output and 3.6 percent for labor productivity in 2014.[6] However, regardless of the metric employed the key factor is that Chinese productivity growth has shown a declining trend for several years now—even officially— from almost 9.5 percent average during 2007-2012 to 7.3 percent in 2012 and 2013 and 7 percent in 2014, which is the lowest productivity growth the Chinese economy has experienced during the last decade (Table 4).

The productivity slowdown in China, which largely results from slower GDP growth, may represent an adjustment to a growth rate more in line with its current level of development. Although the statistical information for the latest years is sketchy, the indications are that sustained investment growth in China has not been accompanied by the efficiency gains (measured by total factor productivity growth) similar to those of the previous decade. In 2014, total factor productivity growth in China, again even when using official estimates, decelerated, registering a negative growth rate at -0.1 percent, compared to 2.7 percent from 2007 to 2012 and 0.4 percent in 2012 and 0.1 percent in 2013 (Table 10).[7]

Obviously, Chinese productivity is on a declining path, as rapid declines in the efficient use of capital and the returns on capital are adversely affecting productivity.[8] This clearly suggests that China can climb the value chain only by focusing on higher productivity activities through technological change and innovation. However, the results of those efforts typically take a significant time to materialize. Given the challenges China faces in implementing a reform agenda, especially in product and capital markets to drive sustainable growth, a significant strengthening in productivity growth in China may be elusive especially in the short term. We therefore expect a further slowdown for 2015 in China's labor productivity growth to 6.7 percent, resulting from a slowing of output growth to 6.5 and a reduction in employment growth of 0.2 percent (Table 4).

Productivity growth in ***India***, increased a full percentage point from 2.8 percent in 2013 to 3.8 percent in 2014, following dramatic productivity slowdowns earlier in the decade (Table 4). The recent increase in productivity growth resulted solely from an increase in output growth of 1 percent, from 4.7 percent in 2013 to 5.7 percent in 2014. In the past year, India's economy has shown some improvement in tackling many of its most troublesome macroeconomic challenges including high inflation, slowing exports, and current account deficits. The productivity gain was fully realized because of the recovery in output came without any improvement in employment growth, which actually dropped slightly from 1.9 percent in

[6] Private estimate by Harry X. Wu, The Conference Board and Hitotsubashi University, Tokyo. For estimates up to 2012, see Harry X. Wu, Re-Estimating Chinese Productivity. How Strong Has Productivity Growth Really Been?, Special Briefing Paper, The Conference Board, August 2014, https://www.conference-board.org/china-growth/.

[7] According to Wu's estimates, TFP growth in China in 2014 might have contracted by 1.9 percent. See footnote 6.

[8] See, The Conference Board, *The Long Soft Fall in Chinese Growth: Business Realities, Risks, and Opportunities*, October 2014, https://www.conference-board.org/china-growth/.

2013 to 1.8 percent in 2014. According to provisional estimates of total factor productivity growth, the efficiency of resource use in 2014 was 0.2 percent (Table 10)—an improvement over 2013's -0.5 percent.

To realize its full productivity potential, India needs to recommit to its structural reform agenda by improving the flexibility of the labor market and opening up more sectors of the economy to foreign direct investment— both of which have a direct impact on productivity growth. In addition, business firms in India face a severe lack of skilled employees leading to wage inflation, especially among the most highly skilled, which underscores the need for productivity improvements. For 2015, we expect a modest improvement in labor productivity growth from 3.8 to 4.2 percent, again primarily driven by stronger increase in output.[9]

Other developing Asia, excluding China and India, continued to show a strengthening in productivity growth from 3.5 percent in 2013 to 4.5 percent in 2014 (Table 9). Within the ***ASEAN*** group, ***Indonesia*** showed a significant improvement in productivity growth from 3.8 percent in 2013 to 5.9 percent in 2014, even though this was largely the result of a weakening in employment growth to -0.8 percent in 2014 (Table 4). ***Malaysia*** and ***Vietnam*** also saw an improvement in productivity growth in 2014, but the ***Philippines*** and ***Thailand*** both showed a modest a decline. For 2015, the Developing Asia region is projected to show a modest slowdown in productivity to 3.3 percent, as there is no sign of stronger acceleration in output growth (from 4.8 percent in 2014 to 5 percent in 2015). Meanwhile employment growth is projected to increase from its relatively slow growth rate of 0.7 percent in 2014, to the long-term average of 1.8 percent in 2015. (Table 1)

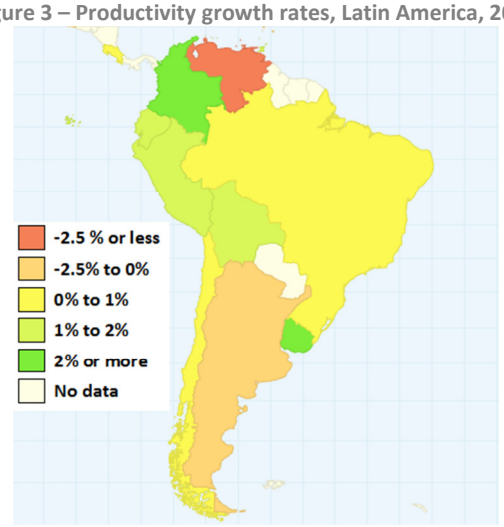
Productivity growth in ***Singapore***, which is the only ASEAN member that is included in the mature economies group in this report, saw a small dip in performance in 2014 with a productivity rate of 2.6 percent, slightly down from 2.7 percent in 2013 (Table 5). GDP growth slowed from 4.4 percent in 2014 to 2.9 percent in 2013, while total hours worked also weakened substantially from 1.7 to 0.3 percent (Tables 6 and 7). However, the level of productivity in Singapore is still among the highest in the world at 91 percent of the US level, just behind France, Germany and Switzerland (Table 8).

[9] The estimates in this report do not incorporate the recent changes to India's national accounts, which significantly increased output growth from 4.7 percent in 2013/2014 (financial year) to 6.6 percent. The debate on the sources of the adjustment, especially for the private corporate sector, is still ongoing. See, for example, R. Nagaraj, Seed of Doubt on New GDP Numbers. Private Corporate Sector Overestimates?, Economic and Political Weekly, March 28, 2015; Central Statistical Office, No Room for Doubts on New GDP Numbers, Economic and Political Weekly, April 18, 2015. Moreover, for now we lack adequate adjusted estimates for employment growth to come to a revised productivity estimate.

LATIN AMERICA

Latin America - Productivity performance in 2014

Figure 3 – Productivity growth rates, Latin America, 2014



Region average: 0.03%
Ranging from -8.1% (Venezuela) to 2.9% (Uruguay)
Region level: 29% of US level
Ranging from 12% (Bolivia) to 59% (Trinidad & Tobago)

Fastest growing (GDP per person employed)
1 Uruguay (2.9%)
2 Dominican Republic (2.7%)
3 Colombia (2.3%)

Slowest growing (GDP per person employed)
1 Venezuela (-8.1%)
2 St. Lucia (-2.1%)
3 Jamaica (-1.3%)

Notes: See table 9 for more detail. Percent change in GDP per employed person.
Source: The Conference Board Total Economy Database™, May 2015.

Labor productivity growth in ***Latin America*** decelerated drastically from 1.4 percent in 2013 to almost zero percent in 2014 (Table 9). The largest economy in the region, ***Brazil*** witnessed a decline in productivity growth from 1.8 percent in 2013 to 0.3 percent in 2014, reflecting a recession which led to a stalling in output growth and even a slight drop in employment growth (Table 4). Results for the other large economies in the region were mixed with ***Mexico*** seeing a marginal increase of 0.1 percentage point in productivity growth over the previous year to 0.6 percent in 2014, ***Chile*** showing a fall in its productivity growth rate from 2 percent in 2013 to 0.3 percent in 2014, and ***Argentina*** experiencing a drop from 0.9 percent in 2013 to -1.1 percent in 2014 (Table 9).

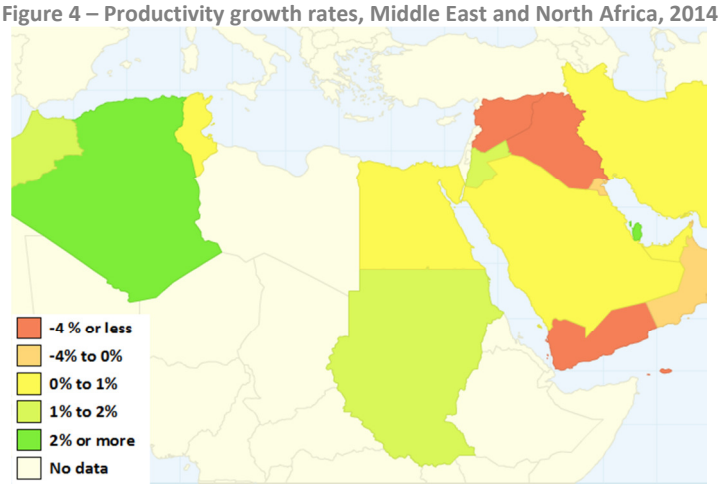
Overall Latin American TFP growth has deteriorated from -1.2 percent in 2013 to -2.8 percent in 2014 (Table 12). The efficiency of resource use, as measured by total factor productivity, worsened for both Brazil (−2.3 percent) and Mexico (−1.7 percent). In ***Mexico***, reforms in various product markets, such as energy and telecom, have yet to translate into faster TFP growth while the large informal economic sector also drags down aggregate productivity growth. In ***Brazil***, the lack of innovation and the slow pace of gains in the level of employee skills and management practices contributed to the continuing productivity slowdown in Brazil. Both economies and Latin America in general, suffer from inadequate infrastructure and invest too little in new machinery and equipment to improve productivity growth in the short term.

For 2015, the region's labor productivity growth rate is projected to deteriorate further to -0.6 percent, as output continues to weaken without sufficiently large adjustments in employment to offset the slowdown (Table 1). In Brazil labor productivity could slow to -2 percent, but Mexico is likely to see a recovery in productivity to 1.2 percent, driven by the positive effects from reforms on output and employment growth (Table 4).

MIDDLE EAST AND NORTH AFRICA

Middle East and North Africa - Productivity performance in 2014

Figure 4 – Productivity growth rates, Middle East and North Africa, 2014



Region average: 0.4%
Ranging from -9.5% (Syria) to 3.1% (Bahrain)
Region level: 46% of US level
Ranging from 11% (Syria) to 168% (Qatar)

Fastest growing (GDP per person employed)
1 Bahrain (3.1%)
2 Qatar (2.3%)
3 Algeria (2.3%)

Slowest growing (GDP per person employed)
1 Syria (-9.5%)
2 Iraq (-5.5%)
3 Yemen (-4.4%)

Notes: See table 9 for more detail. Percent change in GDP per employed person.
Source: The Conference Board Total Economy Database™, May 2015.

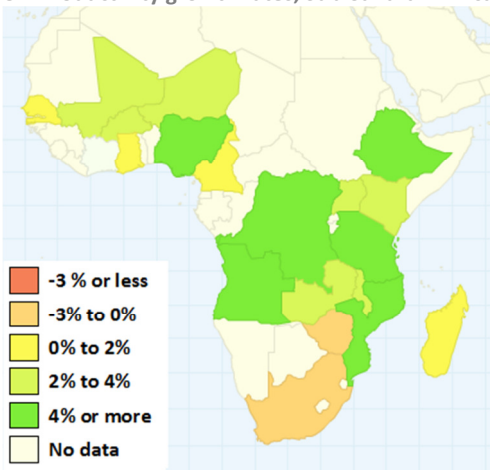
Labor productivity growth in the ***Middle East and North Africa*** improved from -1.5 percent in 2013 to 0.3 percent in 2014. However there are significant differences on a country by country basis. Iraq, Sudan, and Yemen which are suffering from political and social unrest, experienced a substantial productivity slowdown. In contrast, most Gulf States generally showed improvements in labor productivity growth (Table 9). However, overall, the region continued to see decelerating total factor productivity growth. TFP growth which stayed negative at -1.7 percent in 2014 compared to -2.7 percent in 2013 (Table 12). The weakening of oil prices during the second half of 2014 resulted in a substantial decline in total factor productivity growth in Saudi Arabia, the largest oil producing country in the region, which registered a decline in TFP growth to -2.7 percent.

For 2015 the Middle East and North Africa region, which faces significant downside risk from political risk and lower oil prices, is projected to show a moderate improvement in labor productivity growth to 0.7, even though it will be disappointing relative to its own recent history (for example, 1.1 percent from 1999-2006) and compared to emerging economies in Asia (Table 9).

SUB-SAHARAN AFRICA

Sub-Saharan Africa - Productivity performance in 2014

Figure 5 – Productivity growth rates, Sub-Saharan Africa, 2014



Region average: 2.8%
Ranging from -2.5% (Zimbabwe) to 5.1% (Côte d'Ivoire)
Region level: 8% of US level
Ranging from 2% (Malawi) to 36% (South Africa)

Fastest growing (GDP per person employed)
1 Democratic Republic of Congo (5.9%)
2 Ethiopia (5.4%)
3 Côte d'Ivoire (5.1%)

Slowest growing (GDP per person employed)
1 Zimbabwe (-2.5%)
2 South Africa (-0.4%)
3 Ghana (0.2%)

Notes: See table 9 for more detail. Percent change in GDP per employed person.
Source: The Conference Board Total Economy Database™, May 2015.

Labor productivity growth in ***sub-Saharan Africa*** increased from 1.8 percent in 2013, to 2.3 percent in 2014, accompanied by stable output and employment growth rates. The average productivity performance of the region, which gained significant traction in the previous decade due to positive effects from rising commodity prices with an average labor productivity growth rate of 2.9 percent from 1999-2012, has recently showed some moderation. The gradual diversification of the economy away from commodities has helped to expand new sectors in manufacturing and services albeit with slower productivity growth.

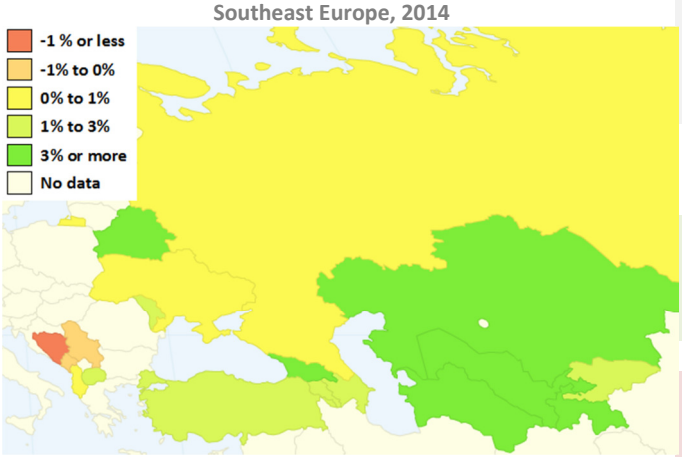
There are large differences in productivity performance between countries in the region. Notably, ***South Africa*** showed a weakening of productivity growth to -0.4 percent in 2014, while total factor productivity growth declined at an even higher rate of -3.3 percent (Tables 9 and 11). There are also large variations in labor productivity growth between other economies in the region, ranging from more than 4 percent in large economies such as ***Ethiopia, Congo***, and ***Côte d'Ivoire*** to contractions in economies such as ***Zimbabwe*** and ***Madagascar***.

Sub-Saharan Africa has the lowest level of productivity of any global region— just around 8 percent of the US level. South Africa, the largest economy in the region is also the most productive, achieving 36 percent of US productivity levels (Table 9). As a result of its low productivity level, the region has very strong potential for rapid catching-up growth. For 2015, output growth is predicted to continue at around 5 percent, with approximately 3 percent employment growth and 2.5 percent labor productivity which – except for Asia – is the faster among emerging and developing economies. ***South Africa*** is projected to see an improvement in labor productivity to 1.8 percent, as output is expected to recover to 2.3 percent while employment will grow more slowly at 0.5 percent.

RUSSIA, CENTRAL ASIA AND SOUTHEAST EUROPE

Russia, Central Asia and Southeast Europe - Productivity performance in 2014

Figure 6 – Productivity growth rates, Russia, Central Asia and Southeast Europe, 2014



Region average: 1.1%
Ranging from -2.4% (Bosnia & Herzegovina) to 8.3% (Turkmenistan)
Region level: 36% of US level
Ranging from 7% (Kyrgyz Republic) to 50% (Turkey)

Fastest growing (GDP per person employed)
1 Turkmenistan (8.3%)
2 Uzbekistan (6.2%)
3 Georgia (4.8%)

Slowest growing (GDP per person employed)
1 Bosnia & Herzegovina (-2.4%)
2 Serbia & Montenegro (-0.8%)
3 Russian Federation (0.4%)

Notes: See table 9 for more detail. Percent change in GDP per employed person.
Source: The Conference Board Total Economy Database™, May 2015.

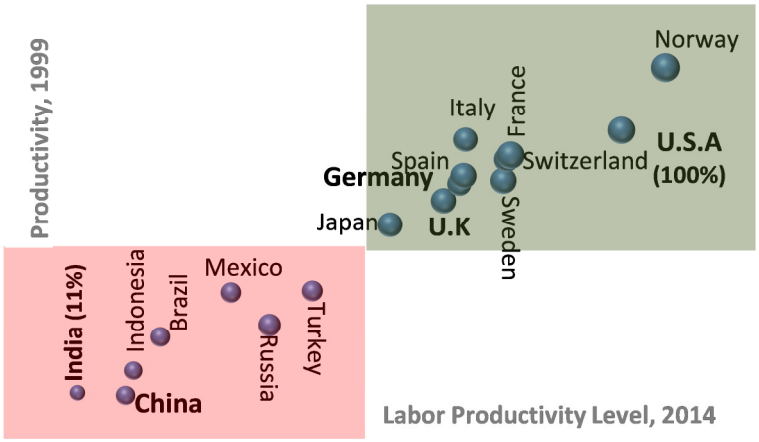
In ***Russia***, the slowdown in labor productivity growth in 2013 continued in 2014 declining from a growth rate of 1.5 percent in 2013 to 0.4 percent in 2014 (Table 3). Output growth declined by about 0.7 percentage points from 1.3 percent in 2013 to 0.6 percent in 2014, while employment expanded by 0.2 percent (up from –0.2 percent in 2013).. Ongoing geopolitical tensions, including sanctions on and from Russia, and the decline in oil prices since the middle of 2014, exacerbated the productivity and output growth declines in the Russian economy in 2014. TFP growth also declined at -0.2 percent. Russia still has a lot of room for productivity improvement—in 2014 it only reached 43 percent of the US output per hour level (Table 9). However, in 2015 Russia's productivity growth is expected to strongly deteriorate at -3.2 percent as an output decline of -4 percent is only partially offset by a slowdown in employment growth at -0.8 percent.

Labor productivity growth in ***Turkey*** declined slightly from 1.3 percent in 2013 to 1.2 percent in 2014. While the country saw a considerable decline in output growth from 4.1 percent in 2013 to 2.9 percent in 2014, employment growth also weakened from 2.8 percent in 2013 to 1.6 percent in 2014. The major concern for Turkey's economy is the efficiency by which its resources, labor and capital, are allocated as total factor productivity growth has been negative for several years in a row, and was −2.3 percent in 2014. Turkey has suffered severely from the European crisis, but it is also struggling with its transition from a low-cost producing economy to a higher position in the value chain and raising its efficiency through productivity-enhancing investments in labor skills, technology, and innovation.

Even though Turkey's productivity at 50 percent of the U.S. level suggest significant room for further growth, in the short term productivity is expected to improve only slowly at just 0.4 in 2015, awaiting larger economic reforms to improve the resource allocation in the economy (Table 4).

COMPARISONS OF OVERALL PRODUCTIVITY LEVELS

In addition to growth rates, The Conference Board Total Economy Database™ also provides comparisons of relative levels of labor productivity, making use of purchasing power parities (rather than official exchange rates) to adjust level of output to US dollars, adjusted for differences in relative price levels between countries.[10]



Productivity levels in ***emerging and developing economies***, measured as output per person employed (converted to US dollars using purchasing power parities), are much lower than in ***mature economies***, but there are large differences between regions (Table 9).[11]

At 19 percent of the U.S. level, output per person employed in ***China*** is much lower than generally assumed given China's rapid productivity growth rate. In ***India*** output per worker is only at 11 percent of the US level, and for other emerging and developing nations in ***Asia-Pacific*** the productivity levels are on average 16 percent of the U.S. level but with large variation from, for example, 48 percent in Malaysia versus 8 percent in Vietnam.

The levels of productivity in developing Asia are, on average, twice as high as productivity levels than in Sub-Saharan Africa, were the average was at 8 percent of US levels in 2014. Like in Asia, there were large differences between countries with South Africa posting a productivity level of 36 percent of the U.S. level in 2014. Both African and Asian economies are generally abundant in labor and scarce in capital, explaining their low starting positions in regards to output per person. However, in those

[10] For this year's release we have changed from base year purchasing power parities (PPPs) for 2005 to PPPs for 2011, as the base year, making use of the latest release by the World Bank International Comparisons Project (ICP). Productivity levels here have been converted to 2014 US dollars. See also footnote 16.

[11] See Table 8 for a presentation of productivity and per capita income levels per country for mature economies, and for a more detailed discussion of results by major region for the mature economies, see the regional section above.

economies that have successfully industrialized, such as Malaysia and South Africa, average productivity levels are significantly higher – even though the relatively high productivity levels in those two economies also reflected the presence of mining activities, which are very capital intensive. Several ***Middle East*** economies also typically score relatively higher productivity levels because of a high share of capital-intensive exploitation and production of oil and natural gas.

Most economies in ***Latin America***, and ***Central Asia and Southeastern Europe*** are characterized by higher levels of output per person compared to Asia and Africa. In the first group, capital is typically more abundant relative to labor, creating higher output per worker. For example, on average the level of labor productivity in Russia, Central Asia and Southeastern Europe was 36 percent in 2014. Still some Central Asian states like the ***Kyrgyz Republic*** and ***Tajikistan*** have productivity levels below 10 percent of the U.S. level, comparable to developing economies in East Asia, such as Vietnam. In Latin America, the average productivity level is 29 percent of the U.S. level, with Brazil at 25 percent of the U.S. level, and Mexico at 36 percent, significantly ahead of developing Asia. However, as developing Asia has on average shown the shown productivity growth rates 3 to 4 times as high as Latin America, the catching up process has rapidly proceeded, and – if continued – Asian economies will gradually begin to overtake Latin America's level of economic performance as measured by productivity.

PRODUCTIVITY AND MANUFACTURING COMPETITIVENESS

Productivity not only impacts economic growth, wages and living standards, but also the competitiveness of economies because of its effect on cost per unit of output produced. While competitiveness can be measured in a variety of ways, cost competitiveness as measured by total labor cost per unit of output, is a useful measure which takes into account the impact of labor compensation, productivity and the currency exchange rate of different economies.[12]

The Conference Board International Labor Comparison (ILC) program, which provides measures of labor cost per unit of manufacturing output, or unit labor cost (ULC), in 21 mature economies, shows a mild strengthening in manufacturing competitiveness of those economies whose ULC declined at, on average, -0.7 percent in 2014 (Table 15).[13] This improvement in ULC in part reflects the fact that average manufacturing productivity growth in those economies has held up at 1.3 percent in 2014 relative to 1.2 percent 2013, while at the same time currencies in most mature economies, notably in the Euro Area weakened relative to the U.S. dollar in 2014. So even while hourly labor costs denominated in national currency continued to rise at roughly 2 percent in most economies, the appreciation of the US dollar

[12] While other cost measures, such as capital cost, cost of energy, materials and service inputs matter as well, labor compensation makes up the bulk of production cost in most businesses, and is therefore an adequate proxy for overall cost competitiveness.

[13] For a detailed review see The Conference Board, International Comparison of Manufacturing Productivity & Unit Labor Cost Trends, 2014 (to be published in June 2015). See also http://www.conference-board.org/ilcprogram/

against many currencies beginning in 2014 offset those labor cost increases and made manufacturing production outside the United States less expensive in US dollar terms.

In ***mature economies*** overall, manufacturing productivity growth remained steady in 2014 at 1.3 percent, although historically this performance wasn't that strong compared to 4.8 percent on average from 1999-2006 and 2.3 percent from 2007-2012 (Table 13). In fact, in 2014 the productivity slowdown intensified in key economies such as ***South Korea*** and ***Japan***. In contrast, productivity growth accelerated over 3 full percentage points in the ***United Kingdom, Canada,*** and ***Taiwan***. In the ***Czech Republic*** and ***Ireland***, substantial productivity losses in 2013 turned into robust gains of over 8 percentage points in 2014.

In the ***United States***, manufacturing productivity growth recovered from 0.7 percent in 2013 doubling to 1.4 percent in 2014, although still well below productivity rates seen prior to the 2008/2009 recession. The U.S. itself had suffered one of the largest productivity slowdowns in manufacturing among the mature economies since 2007, reflecting the slow recovery of investment in the wake of the recession together with a substantial decline in total factor productivity growth. However, as the US labor market began to show some first signs of tightening in 2014, hourly, labor cost increases outpaced productivity gains (Table 14). Coupled with a strengthening dollar, US manufacturing saw a modest rise in ULC that was, greater than ULC increases (or even declines) in two-thirds of the economies studied. In 2014, due to the strengthening U.S. dollar, ***Canada*** and ***Japan*** saw the largest declines in manufacturing ULC and thus gained the largest competitive edge against US manufacturing.

For the ***Euro Area***, manufacturing productivity growth improved marginally from 0.5 percent in 2013 to 0.9 percent in 2014, an increase which is relatively modest compared to the recovering productivity seen in U.S. manufacturing. Interestingly, as the aggregate economy productivity growth has slowed both in the U.S and in Euro Area, the non-manufacturing sector might by implication have witnessed larger productivity set-backs than the overall economy.[14] In the Euro Area, in addition to the failure to adopt new technologies and innovations, fragmented markets and a slow process of completing a European-wide single market for goods and services prevents the scaling of business activity. Overall in 2014, as hourly labor costs in the Euro Area manufacturing sector grew above 2 percent, manufacturing ULC grew faster than that of the US, despite the weakening of the euro against the US dollar. Whether the Euro Area will be able to translate more recent weakening of the euro into enhanced competitiveness and sustained economic recovery depends on the ability of firms in the region to recover productivity quickly.

[14] For a more detailed analysis of industry productivity in the United States, see Chapter 2 on competitiveness and industry productivity in *Prioritizing Productivity to Drive Growth, Competitiveness, and Profitability*, The Conference Board, June 2015.

PRODUCTIVITY AND COMPETITIVENESS: THE WAY FORWARD

The trends in global productivity growth, the most recent estimates for 2014 – both total factor productivity and labor productivity – and the projections for 2015 suggest a continuation of recent downward trends, posing major concern for future economic growth, market expansion, profit growth, and societal welfare.[15] The challenges in terms of labor shortages and wage cost pressures will soon enough underscore the need to tackle the issues. The impact of slowing productivity on profitability will be another wake-up call. The key challenge is for government, business, workers, and other institutions to align their interests in embracing the urgent need to improve productivity, and to deal with difficult trade-offs between who benefits and who loses from the array of actions and strategies available to drive productivity growth. It is not yet too late to address the serious challenges the global economy is facing from slower productivity growth.

Faced with a looming shortage of workers and higher wage bills, firms in mature economies cannot sustain their growth momentum without improving productivity growth. During the mid-1990s, businesses could enhance labor productivity by more intensive use of information and communication technology and its spillover effects on TFP growth. But a longer and sustainable productivity growth path, one which should accrue via improved TFP, critically depends on how much businesses invest in innovation, knowledge, and intangible capital, and how committed governments are to structural reforms. Structural changes to product and labor markets are the lynchpin for enhancing productivity and competitiveness in the long-term.

Emerging economies can still gain from technological advancements – both existing and upcoming – utilized by the mature economies. However their main challenge is to create an economic and policy environment that is friendly to business and improves productivity to stay competitive globally. This includes governments focusing on many of the supply side constraints, such as policy environment, labor market regulations, human capital, and infrastructure bottlenecks. The declining role of TFP in driving productivity, implicitly suggest that, labor productivity growth is achieved by increased use of machines by workers. Indeed, how much an average worker can produce depends substantially on how much businesses invest in the machines they work with. While this channel is reflective of technology 'adoption', the declining growth in TFP that drags labor productivity down, calls for better organizational management, focus on training and engaging human capital, organizational efficiency, as well as the macroeconomic and business regulations to facilitate 'adaptation' of the technology.

Looking ahead, for most economies the combination of a shrinking labor supply, upward pressure on wages, declining labor productivity, and unpredictable currency fluctuations poses a serious threat to overall economic growth, competitiveness, and firm level profitability.

[15] The Conference Board, Prioritizing Productivity: Driving Growth, Competitiveness, and Profitability in Challenging Times, June 2015.

ABOUT THE CONFERENCE BOARD TOTAL ECONOMY DATABASE™

The data for the Productivity Brief 2015 is drawn from The Conference Board Total Economy Database™, which provides a comprehensive overview of growth rates of productivity, GDP, and employment for 122 economies representing 97 percent of the world's population and 99 percent of global output. Widely watched and utilized by analysts, the database is updated and re-benchmarked every year. This productivity brief is followed by more in-depth reports later in the year.

All growth rates in the Productivity Brief 2015 are measured in real terms, that is, after adjustment for inflation. The comparative levels of productivity in this report are based on US dollar measures, which are obtained by converting output in national currencies by purchasing power parities (PPPs) for 2014. These PPPs provide an adjustment for differences in relative price levels between the output produced in different countries.

For this year's release we have changed from base year purchasing power parities (PPPs) for 2005 to PPPs for 2011, as the base year, making use of the latest release by the World Bank International Comparisons Project (ICP). Productivity levels here have been converted to 2014 US dollars.[16]

RELATED MATERIALS

- The full Total Economy Database™ is available on The Conference Board website: http://www.conference-board.org/data/economydatabase/
- The Conference Board Global Economic Outlook, November 2014 is available on The Conference Board website: http://www.conference-board.org/data/globaloutlook.cfm. See also "Are We Asleep at the Wheel," StraightTalk, November 2014.
- The Conference Board, International Comparison of Manufacturing Productivity & Unit Labor Cost Trends, 2014. The Conference Board International Labor Comparisons Program is available on: http://www.conference-board.org/ilcprogram/
- The Conference Board, *Prioritizing Productivity to Drive Growth, Competitiveness, and Profitability*, June 2015.

[16] For details on ICP 2011, see World Bank (2015), *Purchasing Power Parities and the Real Size of World Economies: A Comprehensive Report of the 2011 International Comparison Program*, Washington, DC: World Bank.

