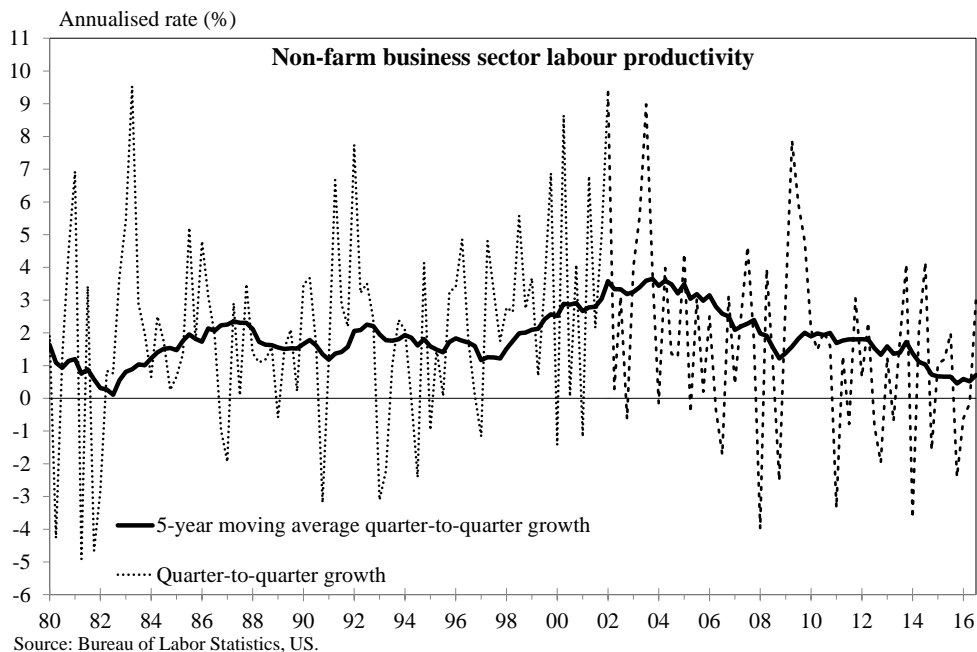


**Box 2.1****Productivity growth slowdown in the US and its economic implications**

The labour productivity growth slowdown in the US has worsened after the Global Financial Crisis (GFC), raising concern about its medium- to long-term economic growth prospects, particularly in light of its prominence in the global economic arena. This note briefly reviews the US labour productivity situation and some plausible explanations for its recent growth slowdown, as well as its implications for the US economic outlook and monetary policy.

Labour productivity here is referred to as output produced per hour worked. Taking a five-year moving average to smooth out the short-term quarterly growth fluctuations, it can be seen that labour productivity growth in the US has moderated in the past decade or so (*Chart*). In fact, on an average annual growth basis, labour productivity slowed from a hefty 3.3% in 1998-2002 to 2.3% in 2003-2007. Yet, the slowdown has become more acute after the GFC, averaging only 0.6% per year in 2011-2015, marking the slowest five-year growth since the recession in the early 1980s.

**Chart : US labour productivity growth slowdown became more acute in recent years**



There are different explanations for the slowdown in US labour productivity growth. Some economists<sup>(1)</sup> argued that the protracted impact on private investment from the deep recession in 2008 and 2009 was the main culprit. In decomposing the US labour productivity growth, they found that weaker capital deepening since 2010 had posed the key drag. They pointed out that cautious business sentiment and subdued demand amid an uncertain economic outlook had reduced the need to expand production capacity, while widespread deleveraging in the wake of the GFC as well as the blow from the oil price plunge to energy-related sectors also exacerbated investment weakness. All these had depressed investment and hence productivity growth. Yet, noting that the deceleration in US labour productivity growth trend has lasted for quite a while, it is natural to hypothesise that some deeper structural influences may also be at work.

(1) Furman, 2015. "Productivity Growth in the Advanced Economies: The Past, the Present, and Lessons for the Future", Speech at the Peterson Institute for International Economics.

European Central Bank, 2016. "The slowdown in U.S. labour productivity growth – stylised facts and economic implications", Economic Bulletin, Issue 2.

**Box 2.1 (Cont'd)**

On structural forces, several plausible explanations have been put forward. One of them relates the productivity growth slowdown to the change in the US economic structure. Some economists noted that production in the US was increasingly specialised in upstream processes and the high-tech sector, which are more services-oriented, higher in value added and include discovering and developing new technologies, thereby entailing a slower rate of productivity growth<sup>(2)</sup>. However, productivity in different production stages in general could not be observed directly. Thus, this explanation lacks direct quantitative evidence for verification.

An alternative hypothesis contends that the US economy has been in a state of secular stagnation<sup>(3)</sup>, where a multitude of structural factors have led to a deficiency in aggregate demand, with excessive savings over investment. For example, with a rise in the average age of population, households on balance may increase their propensity to save for retirement. Also, the lack of investment could be due to a reduction in the capital intensity of the US economy, as fewer tangible capital is needed in a service-oriented economy, and the cost of start-ups has fallen visibly amid the rising prominence of technology and internet-driven businesses. Given the possible side effect of nominal interest rates being below zero and low inflation expectations, real interest rates may not be able to adjust sufficiently downward in the negative territory to balance savings and investment. Consequently, the economy may be stuck in a liquidity trap and negative output gap for a prolonged period.

Yet, the argument for the above hypothesis of secular stagnation also has its limitations. Indeed, a reduction in start-up costs could actually encourage more entrepreneurial activity, while the positive effects of population ageing on savings should in theory reverse at some point as more people reach the retirement age. Moreover, a recent study<sup>(4)</sup> showed that the returns on productive capital in the US rebounded quickly after the fall-off during the GFC, with the after-tax returns on business capital already exceeding the pre-crisis levels, way above the negative real rates predicted by the secular stagnation view.

Some economists focused on the supply-side impediments confronting the US economy, pointing out that such structural headwinds as diminishing gains from technological progress, population ageing, plateauing education attainment and overhang of private and public debt have lowered US potential growth<sup>(5)</sup>. A core part of this view is that the boost to labour productivity from the computer and internet revolution have petered out since 2000, while recent technological breakthroughs are not as transformative as those from before.

Nonetheless, since the innovative process is a series of discrete inventions followed by incremental improvements, it is premature to judge at this stage that recent technological innovations, such as robotics, big-data and bio-medical advances are necessarily less transformative and have smaller boosts to productivity growth<sup>(6)</sup>. Moreover, the extent to which an economy could make advances in technology and diffuse the benefits will also depend on policy choices, the regulatory environment and the underlying market dynamism.

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(2) Sposi and Virdi, 2016. "U.S. Productivity Growth Flowing Downstream", Federal Reserve Bank of Dallas, Economic Letter, Vol. 11, No. 12.

(3) Summers, 2014. "U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound", Business Economics, Vol. 49, No. 2.

(4) Gomme et al., 2015. "Secular Stagnation and Returns on Capital", Federal Reserve Bank of St. Louis, Economic Synopses, No. 19.

(5) Gordon, 2012. "Is U.S. economic growth over? Faltering innovation confronts the six headwinds", Centre for Economic Policy Research, Policy Insight, No. 63.

(6) Mokyr, 2013. "Is technological progress a thing of the past?"  
(<http://voxeu.org/article/technological-progress-thing-past>)

**Box 2.1 (Cont'd)**

Besides, there are conjectures that the impact of innovation gains on productivity could have been understated, as statistics may not have fully captured quality improvements and new products over time. Yet, some observers argued that such measurement issues had existed long before the US labour productivity growth slowdown. In addition, there are also doubts about the significance of mis-measurements of innovation gains if any<sup>(7)</sup>.

In sum, it remains unclear whether the slowdown in the US labour productivity growth is structural in nature, or whether it is purely transitory; hence the outlook for labour productivity growth will remain a key uncertainty facing the US economy<sup>(8)</sup>. Slow productivity growth, if protracted, would reduce US potential growth, especially given that labour force is expected to grow more slowly in the future. This would add impediment to the revival of international trade flows and the global economy in the period ahead. A wider issue is whether the slowdown in labour productivity growth may also be happening in other advanced and emerging economies.

As far as the formulation of monetary policy in the US is concerned, slower US labour productivity growth would entail a lower equilibrium real neutral rate of interest in the long run, which is the real interest rate consistent with output at its potential level and stable inflation over time.

**Table : Longer-run real GDP growth and Federal funds rate projections  
by US Fed FOMC participants in various periods**

Projections in	Real GDP growth (%)		Federal funds rate (%)	
	Central tendency	Median	Central tendency	Median
March 2014	2.2 – 2.3	n.a.	n.a.	4.0
June 2014	2.1 – 2.3	n.a.	n.a.	3.8
September 2014	2.0 – 2.3	n.a.	n.a.	3.8
December 2014	2.0 – 2.3	n.a.	n.a.	3.8
March 2015	2.0 – 2.3	n.a.	n.a.	3.8
June 2015	2.0 – 2.3	2.0	3.5 – 3.8	3.8
September 2015	1.8 – 2.2	2.0	3.3 – 3.8	3.5
December 2015	1.8 – 2.2	2.0	3.3 – 3.5	3.5
March 2016	1.8 – 2.1	2.0	3.0 – 3.5	3.3
June 2016	1.8 – 2.0	2.0	3.0 – 3.3	3.0
September 2016	1.7 – 2.0	1.8	2.8 – 3.0	2.9

Such view is gaining traction, as evident by repeated downward adjustments in longer-run US real GDP growth and Federal funds rate forecasts by the US Federal Reserve (Fed) in recent years<sup>(9)</sup> (*Table*). The median projection for longer-run GDP growth has been trimmed to 1.8% in September 2016, slower than the trend growth of 2.4% per annum in 1996-2015, and the median projection for longer-run Federal funds rate has also been scaled back. Moreover, uncertainties associated with the productivity growth slowdown also make the current state of the US economy and its growth prospects more difficult to assess, complicating the Fed's decision on the timing and pace of interest rate hikes.

(7) Byrne et al., 2016. "Does the United States Have a Productivity Slowdown or a Measurement Problem?", Brookings Papers on Economic Activity, Spring 2016.

Syverson, 2016. "Challenges to Mismeasurement Explanations for the U.S. Productivity Slowdown", The National Bureau of Economic Research, Working Paper 21974.

(8) Yellen, June 2016. "Current Conditions and the Outlook for the U.S. Economy", Speech at The World Affairs Council of Philadelphia (<https://www.federalreserve.gov/newsevents/speech/yellen20160606a.htm>).

(9) Yellen, August 2016. "The Federal Reserve's Monetary Policy Toolkit: Past, Present, and Future", Speech at the Jackson Hole Economic Symposium (<http://www.federalreserve.gov/newsevents/speech/yellen20160826a.htm>).