## Does Disappointing Productivity Growth Reflect a Slowing Trend? Weighing the Evidence and Assessing the Future

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Assessing future productivity prospects requires understanding the past. In this regard, the challenge is to understand why productivity growth in advanced economies has universally disappointed since the financial crisis. Some observers have taken this disappointing pace as prima facie evidence that the financial crisis was the cause of the weakness. However, considerable research has highlighted the pre-recession origins of slow productivity growth. In this paper, I aim to extend this work to understand how broadly across advanced countries the recent productivity experience is best considered as a continuation of previous (slowing) trends as opposed to a crisis-induced break. For example, even if the trend were slowing, it is possible that in some or many countries, the recession itself was then an important additional contributor to the disappointment.

Specifically, previous work for the United States has argued that the 21st century saw a deep recession superimposed on a sharply slowing underlying trend in GDP per capita (Fernald, Hall, Stock, and Watson, 2017). The forces behind that slowing trend include total factor productivity (TFP) growth, where the slowdown appears to be largely independent of the recession and financial crisis itself (Fernald, 2014).

For many other countries, however, it does appear plausible that something changed for the worse since the 2007 onset of the recession (e.g., IMF, 2016). Notably, virtually all European economies have had negative TFP growth since 2007 (Conference Board, 2016). Nevertheless, taking a somewhat longer-term convergence perspective, Cette et al. (2016) point out that the really notable break occurred around the mid-1990s. Prior to that time, productivity performance in many advanced economies is well described by productivity convergence. Since then, however, relative productivity in continent Europe and Japan has diverged from the United States, with productivity levels falling relative to U.S. levels. The divergence was modest in some cases, but sharp in others.

I plan to explore the empirical importance of some of the mechanisms for why the recession and financial crisis might cause measured productivity to slow or even decline. First, labor hoarding and capital utilization—traditional and well-documented channels for procyclical measured TFP growth—do not appear to be important channels in U.S. data after 2011 or so. However, the double-dip/sovereign-debt crisis in Europe could have caused factor utilization to be a more persistent issue there, which could drive a wedge between measured TFP growth and actual technology growth. Second, in some models, business-cycle fluctuations propagate through

endogenous-growth mechanisms by affecting incentives for research and development spending. Taken literally, it is not clear that this an empirically important channel in recent data, given that R&D spending in OECD countries has increased as a share of GDP since the crisis. However, innovative intangible spending more broadly could have slowed, weighing on growth prospects. Third, it is possible that credit or other frictions have led to a worsening in the allocation of resources. Indeed, some papers argue that resource misallocation has increased in many countries.

Looking ahead, this analysis will shed light on what to expect in the future. To the extent that trend growth has been slow for reasons unrelated to the recession and financial crisis, the best guess is that slow trend growth at the frontier will continue. Even in that case, however, uncertainty remains high regarding future trends. On the other hand, to the extent that some of the weak performance in non-U.S. advanced economies reflects temporary cyclical factors that will reverse, productivity growth could pick up for a time. However, if the widespread divergence from the frontier reflects underlying structural factors such as misallocation, it may take more than a business-cycle recovery to reverse the tide.