

Perspectives

Fresh economic thinking for business

Reconciling the productivity puzzle and fiscal budget

Ahead of Philip Hammond's November 22nd budget, the Office for Budget Responsibility (OBR) has anticipated reducing its assumption for productivity growth over the next five years. This move is largely in response to the continued divergence between forecasted growth and outturn. Such a downgrade risks undermining the chancellor's economic goals and flexibility with the budget. In this article, SRM Economics' Niki Etebari seeks to explore UK productivity growth and its implications in the context of the upcoming budget.

Introduction

Over the last decade, UK productivity growth has experienced a period of decline and sustained stagnation in what is referred to as the *productivity puzzle*.

In its October *Forecast and evaluation report*, the OBR signaled that it is set to "revise down [its] assumption for trend or sustainable productivity growth over the next five years in its forthcoming *Economic and fiscal outlook* in November" after consistently over-estimating British productivity forecasts.¹ As the UK's fiscal 'watch dog', the OBR's forecasts are of significant influence in policy decisions and provide an important "benchmark against which to judge...new economic and fiscal data."²

The downgrade is expected to wipe clean a significant portion of the chancellors' estimated £26bn buffer that had been set aside to navigate the country through Brexit, with officials and the press referring to the current situation as a 'bloodbath' in public finances.

With mounting pressure to increase public spending amidst a rigid fiscal framework focused on balancing the books by the next decade, the chancellor faces a significant challenge in reconciling the country's conflicting economic objectives.

Productivity theory and policy

Productivity is the key driver for sustainable economic growth and a cornerstone of economic policy. From a policy standpoint, productivity growth is essentially tied to tax receipts (through profits and wage growth) and thus the deficit - such that slower productivity growth forecasts limit potential deficit reductions and flexibility with public finances.

Productivity theory is rooted in the relationship between output and factor inputs and provides the foundation for conceptualizing economic growth.³

¹ OBR, [Forecast evaluation report](#); (October 2017).

² Ibid.

³ Production function: $Y=A f(K,L)$ with output (used interchangeably with GDP for simplicity) as a function of the observable factor inputs (capital: K and labour: L) augmented by the residual contribution of total factor productivity (A). For a more detailed explanation of TFP refer to: BIS, [UK skills and productivity in an international context](#), (December 2015).

Economic growth can be analyzed from changes in living standards, and measured empirically by GDP per capita. Under this measurement, growth either occurs as a result of higher employment (or hours worked) or higher productivity. Given the limitations on growth of labour inputs in an economy, productivity remains as the primary route to long term growth.⁴

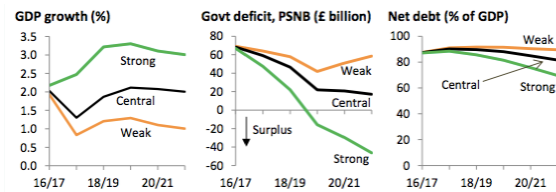
While there continues to be considerable debate on the theoretical background and conceptual framework for measuring productivity, the most widely used framework is growth accounting, based on the ‘neoclassical’ approach.

The growth accounting framework is built upon the theory of production and a set of assumptions such that the sources of growth can be attributed to the contributions of growth in Total Factor Productivity and the growth in factor inputs (labour and capital stock), weighted for their respective shares of output.⁵ Essentially, in the long-term, it is technological advancement (TFP) that drives sustainable growth, as factor inputs are subject to diminishing marginal returns.

While the growth accounting framework is limited in scope, often oversimplified, and not explicitly applied to institutional UK productivity measures, it is an important mechanism for analyzing the proximate sources of growth and informing policy debate.

In the context of the UK budget, “HM Treasury uses assessments of trends in productivity growth to estimate future economic output, employment, and the capacity of the economy to support government spending.”⁶ The Government’s productivity framework focuses on labour productivity (output per worker or hours worked) as a broad measure and identifies investment, innovation, skills, enterprise, and competition as the drivers of productivity performance, and thus policy targets.⁷

Figure 1: OBR forecasts (Nov. 2016) for economic growth, the deficit and debt under three productivity scenarios⁸



OBR (Nov. 2016) forecasts for 2021/22 based on different productivity scenarios

Scenario	GDP growth	Public sector net borrowing	Public sector net debt
	% change	£ billion	% of GDP
Weak productivity	1.0	58.5	89.6
Central Scenario	2.0	17.2	81.6
Strong productivity	3.0	-46.3	69.5

Source: OBR, Economic and fiscal outlook, Nov 2016, pp217-20
Note: Negative public sector net borrowing indicates a budget surplus

The above figure broadly highlights the effects of the anticipated downgrade in productivity forecasts. In its March 2017 forecast, the OBR assumed the central scenario (in line with past forecasts) such that the trend in productivity growth would rise to 1.8% in 2021. This scenario corresponded with a growth in GDP of 2.0% by 2021/22, in line with the pre-crisis trend, and a net public sector borrowing of £17.2bn.

If the OBR downgrades its forecast in line with a weak productivity scenario of 0.8% productivity growth per year, the impact is particularly pronounced, with public sector borrowing more than triple that of the central scenario.⁹

Over the last two years, government policy has increasingly targeted productivity growth with strategies such as the Government’s productivity plan in 2015, the creation of the National Productivity Investment Fund in 2016, and PM May’s focus on building a “strong industrial strategy”.¹⁰ While productivity has remained weak in the months since, the effects of these targeted policies in relieving the UK’s productivity woes will become increasingly evident over the coming years.

⁴ ONS, [The ONS Productivity Handbook](#), (2007).

⁵ OECD, [Measuring Productivity Manual](#), (2001).

Simplified formula: $\% \Delta Y = \% \Delta A + \alpha \% \Delta K + (1 - \alpha) \% \Delta L$ With α , $1 - \alpha$:

Output elasticity of factors of production-labour and capital

⁶ Ibid.

⁷ Ibid.

⁸ Harari, Daniel; [Productivity in the UK](#); House of Commons Library; Briefing paper #06492, (September 2017).

⁹ A weak scenario is in line with a continuation of current trends. Ibid.

¹⁰ Harari, Daniel; [Productivity in the UK](#); House of Commons Library Briefing paper #06492, (Sept. 2017).; HM Treasury and BIS, [Fixing the foundations: creating a more prosperous nation](#), (July 2015); HM Treasury, [Autumn Statement 2016](#), (November 2016); Prime Minister’s Office press release, “[New Cabinet committee to tackle top government economic priority](#),” (August 2016).

Productivity trends

As the first industrial nation, the UK witnessed a period of rapid economic growth leading up to the 20th century, driven by increased productivity performance.

By the mid-twentieth century; however, the UK's relative productivity performance had significantly declined as its neighbors both in Europe and abroad played 'catch-up'.¹¹

The post-war era marked an acute period of *relative* economic decline for the UK *vis-à-vis* its continental rivals; by 1973 the UK had "been overtaken by seven other countries in terms of real GDP per person and by nine others in terms of labour productivity."¹²

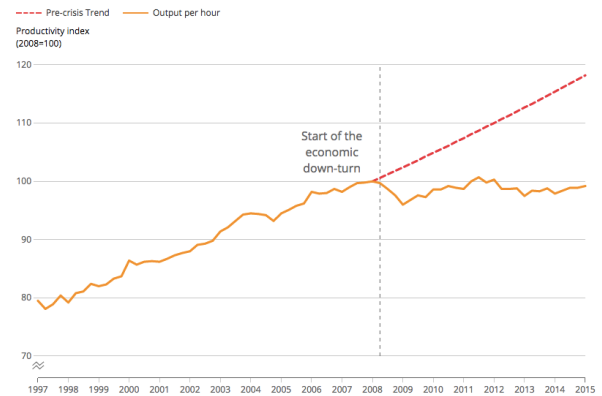
While the US took the baton for productivity leadership and Europe experienced a 'golden age' of economic growth, the UK had difficulties in adjusting to the "new forms of technology and organization" led by the Americans.¹³

It was not until the last three decades of the 20th century that relative UK productivity growth had once again picked up, with the introduction of new, more flexible forms of production. The UK's productivity gap continued to narrow through the turn of the century and early 2000s with UK GDP per hour worked growing at an average rate of 2% per annum.¹⁴ This sustained period of growth was largely driven by "a rapid rate of growth in TFP, ICT-capital deepening and increases in skill levels."¹⁵

With the onset of the global financial crisis in 2008, the UK once again embarked on a period of weak productivity performance. While the initial fall during the recession is neither surprising nor a UK-specific phenomenon, the largely unexplained stagnation in productivity over the recovery period has perplexed economist and sparked

debate in what has been dubbed as the *UK productivity puzzle*.

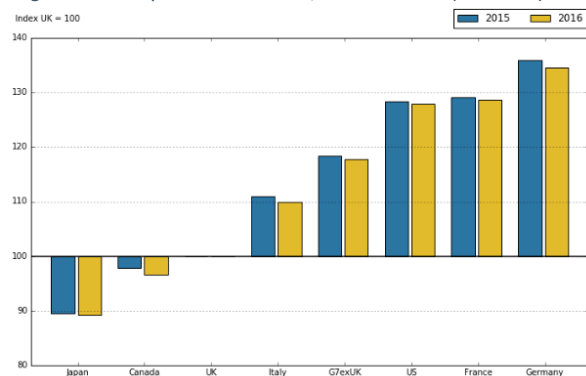
Figure 2: UK Productivity, 1997 (Jan.-Mar.) to 2015 (Jan.-Mar.)¹⁶



Today, productivity growth is continuously well-below its pre-crisis trend and institutional forecasts. Had productivity recovered to the pre-2007 trend, it would be 16% higher than the current outturn.

In an international context, UK productivity continues to fall short *vis-à-vis* the rest of the G7.

Figure 3: GDP per hour worked, G7 countries (2015-16)¹⁷



While UK productivity outperformed that of Japan and Canada, it was 15.1% lower than the rest of the G7 in 2016 - whereas only a decade earlier the productivity gap had stood at around 4 percentage points.¹⁸

¹¹ BIS, [UK skills and productivity in an international context](#), (Dec. 2015); Crafts (2012) and Broadberry and O'Mahony (2005).

¹² Crafts, Nicholas; [British relative economic decline revisited](#), (2011).

¹³ Broadberry, Stephen; [Britain's Twentieth Century Productive Performance in International Perspective](#), (July 2005).

¹⁴ OBR, [Forecast evaluation report](#); (October 2017).

¹⁵ BIS, [UK skills and productivity in an international context](#), (December 2015).

¹⁶ ONS (2015).

¹⁷ ONS, [International comparisons of UK productivity \(ICP\), first estimates: 2016](#), (October 2017).

¹⁸ ONS, [International comparisons of UK productivity \(ICP\), first estimates: 2016](#), (October 2017); BIS, [UK skills and productivity in an international context](#), (December 2015).

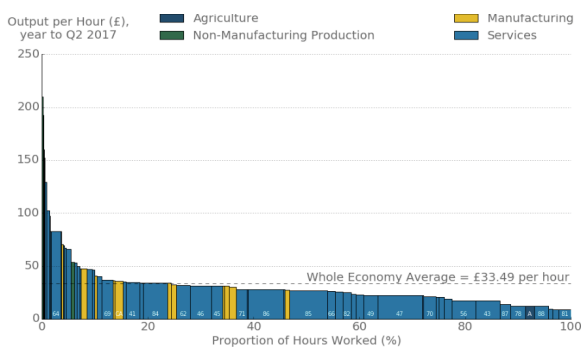
While the UK does perform poorly in an international context, it is important to note that it does have a “a higher share of its working-age population in employment” than Italy, France, and the US”.¹⁹ This could potentially explain lower productivity growth if labour substituted for capital investments.

From a sectoral perspective, labour productivity varies across industries. Prior to the crisis, effectively “all sectors [were] making a positive contribution to productivity growth” with the strongest being in manufacturing, information and communication and financial services (all of which experienced annual growth of over 4%).²⁰

In the post-crisis period, productivity has broadly declined in all sectors but continues to vary substantially across industries, with the most productive “located in production-mining and quarrying, water transport, and pharmaceutical manufacturing- and in industries that account for a relatively small share of total hours.”²¹

Figure 4: Output per hour by industry (excluding real estate)²²

UK, current prices, seasonally adjusted, Quarter 3 (July to Sept) 2016 to Quarter 2 (Apr to June) 2017



Services overwhelmingly fall below the average, with the exception of financial services, excl. insurance, (industry 64), and legal and accounting activities (industry 69) which each have above average productivity.²³

¹⁹ BIS, [UK skills and productivity in an international context](#), (December 2015).

²⁰ Haldane, Andy (Bank of England’s Chief Economist); [Productivity puzzles-speech](#), (March 2017).

²¹ ONS, [UK productivity introduction: April to June 2017](#), (October 2017).

²² Ibid.

²³ Ibid.

Analysis – a tale of two theories

While there is much debate on the factors contributing to the UK’s persistently weak productivity performance, there is little consensus.

Despite economic recovery over the decade since the financial crisis, UK productivity continues to fall substantially short of forecasts and the pre-crisis trend with seemingly no concrete explanation. The majority of the analysis and literature on the topic tends to focus on cyclical versus structural elements; increasingly however, the arguments have leaned toward suggesting a greater emphasis on the structural factors.

During the “initial phases of the recession,” cyclical factors were thought to account for much of the decline as “companies...acted flexibly by holding on to labour and lowering levels of factor utilisation in response to weak demand conditions.”²⁴

With an economy that has broadly recovered in recent years, the “protracted weakness in productivity and the strength in employment growth” have served to instead emphasise the contributions of more persistent, structural factors related to reduced capital investment and impaired resource allocation.²⁵

A third, though less significant, theory relates to the perception that official statistics may underestimate productivity growth by as much as “0.5 percentage points per year as a result of failure to capture elements of the digital economy.”²⁶ Whilst mismeasurement is broadly considered a factor, it is unlikely to account for a significant portion of the puzzle.

Conclusions- the new normal?

Productivity growth is expected to take centre-stage this month as expected weak forecasts hinder the chancellor’s flexibility with the November budget. In an era characterised by high

²⁴ Bank of England [2014Q2 Quarterly Bulletin](#).

²⁵ Ibid.

²⁶ Haldane, Andy (Bank of England’s Chief Economist); [Productivity puzzles-speech](#), (March 2017); Feldstein (2016), Baily and Montalbano (2016).

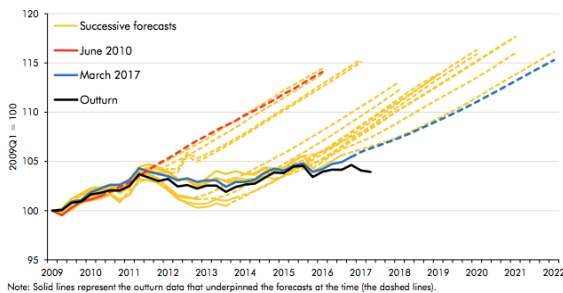
employment and low GDP growth, restoring productivity growth remains “the central long-term economic challenge facing the UK.”²⁷

secular stagnation - and how to reconcile this with conflicting policy targets and fiscal objectives for the future.

Low potential productivity growth implies the economy has less room to grow unless labour increases. With unemployment levels at an all time low (4.3%) and a political climate increasingly opposed to immigration, labour growth seems an unlikely route to future growth.²⁸

After seven years of optimistic forecasts for UK productivity growth, the OBR is poised to take on a more pessimistic view in its upcoming report alongside the release of the budget.

Figure 5: Successive OBR productivity forecasts (output per hour)²⁹



Why now? Coming up on almost a decade since the financial crisis, actual productivity growth has “averaged just 0.2 percent over the past five years” compared to an average of 2.1% in the pre-crisis period.³⁰ And despite some recovery, productivity performance has remained persistently weak and continuously well below forecasts. What differentiates November 2017 from previous forecasts, in particular, is the renewed weakness witnessed over the first half of the year and “likelihood that heightened uncertainty will continue to weigh on investment.”³¹

The question now facing both the OBR and the chancellor is whether this new level of productivity growth is in fact the new normal - whether productivity has embarked on an era of

²⁷ HM Treasury, [Spring Budget 2017](#), (March 2017).

²⁸ ONS, [UK labour market](#) (October 2017).

²⁹ : OBR, ONS.

³⁰ OBR, [Forecast evaluation report](#); (October 2017).

³¹ Ibid.