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Below the Aggregate: A Sectoral Account of the UK Productivity Puzzle

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In the decade leading up to the 2007-2009 financial crisis, the UK economy experienced strong labour productivity growth, significantly narrowing the long-standing productivity gap between the UK and other major leading economies. As is well-known, during the financial crisis and recession that ensued, UK labour productivity growth disappeared and has remained stubbornly low ever since. Sluggish labour productivity growth in the decade since the financial crisis has been a feature of many other advanced economies, and may reflect a trend that pre-dated the crisis, but the collapse in labour productivity growth rates has been particularly pronounced in the UK. The UK experience of the last decade, characterised by a combination of low productivity growth and high employment is known as the '*UK productivity puzzle'*.

The UK productivity puzzle, and indeed productivity stagnation elsewhere, continues to be a topic of much debate and research and remains a key policy concern, not least because productivity growth is fundamental to wage growth and in raising living standards. This paper contributes to the evidence base by providing a detailed sectoral map of productivity developments that underlie the UK productivity puzzle. We distinguish between parts of the economy conforming to or driving aggregate patterns in productivity and competitiveness, and parts that behave differently. This accounting exercise offers a background picture against which potential causes of the puzzle can be considered, providing clues to the relevance of competing explanations. Importantly, in distilling common patterns and idiosyncrasies across industries, this paper also provides a guide for further in-depth investigation of performance drivers and constraints in particular industries.

We focus on developments in the UK market sector and in particular on the post-recession period of productivity growth stagnation from 2011 to 2015. Average

annual labour productivity growth in the UK market sector was 2.5 percentage points lower during the period 2011-2015 than in the decade before the financial crisis that began in 2007. First, we ask where in the economy this productivity growth stagnation is located. Using new industry level labour productivity series developed by the Office for National Statistics we examine productivity patterns across 59 market sector industries and 15 broader industry sections to account for this labour productivity growth gap. Second, we ask what has driven labour productivity weakness in different industries. To this end we construct measures of capital services, labour composition and total factor productivity (TFP) by industry and use standard growth accounting techniques to examine the sources of growth across industries. Third, we ask how the UK experience compares with that elsewhere. Using internationally comparable data we consider the UK productivity growth slowdown in the context of that in the US and the EU. Last, we note some additional patterns that emerge from the sectoral composition of the puzzle when contrasted with international trade metrics and in light of economic measurement issues. Our main findings are:

1. Several years on from the financial crisis the stagnation of UK labour productivity remains widespread across detailed industry groups, pointing to the importance of macroeconomic or economy-wide explanations for the puzzle. During the immediate financial crisis and recession years 2008 to 2010, labour productivity weakness was pervasive across UK industries, as might be expected. Since then real output growth has resumed in many industries, but hours worked have risen faster than before the crisis in three quarters of the 59 industries we consider. As a result, compared with the pre-crisis period, labour productivity growth remains relatively weak over the period 2011 to 2015 in two thirds of these industries.

2. Some industries contribute more to the UK labour productivity growth gap than others. With some exceptions, labour productivity growth tends to have lost most momentum in those industries that experienced strong growth before the crisis. Three fifths of the gap is accounted for by a few industries that together account for less than one fifth of market sector value added: telecommunications, finance, mining and quarrying, electricity and gas, pharmaceuticals and computer programming. Looking at more aggregated industry groupings the manufacturing, information and communication, and finance sectors account for 80 per cent of the gap and 35 per cent of market sector value added.

3. The re-allocation of jobs and relative price movements towards less rather than more productive industries does not explain the puzzle in the sub-set of the economy that we consider.

4. Capital shallowing has become increasingly important in explaining the labour productivity growth gap, although the majority of the productivity gap remains a TFP gap. During the financial crisis and recession years of 2008 to 2010,

weak capital investment led to capital shallowing and a fall in labour productivity growth in the production industries although, much as in services, TFP accounted for most of the fall. More recently, the buoyancy of the UK labour market has not been sufficiently matched by investment. As such, over the period 2011 to 2015, capital shallowing has also contributed to productivity weakness in high skilled services sectors.

5. Industry patterns across countries point to global explanations of the puzzle. By and large, those industry sections in which labour productivity growth fell most post-crisis and that account for most of the UK puzzle tend to account for most of the stagnation in labour productivity growth in the US and the EU-15 over the same period.
6. The depth of the UK puzzle compared with other advanced economies is not easily explained by differences in industry structure across countries. Aggregating the growth performance of UK industries using the sector composition of the US or the EU-15 does not materially affect the UK growth gap. Rather, the sizable collapse in UK labour productivity growth arises because, more often than not, within the same industry sections, the slowdown of UK productivity growth is greater than that elsewhere. One of the reasons for this is that during the decade before the crisis, UK labour productivity growth was relatively high and UK value added per person or per hour was converging towards the higher levels observed in similarly advanced economies.
7. UK industries that saw the biggest reductions in productivity growth tended to be internationally competitive and more dependent on global demand than other industries; e.g. finance and pharmaceuticals. This pattern points to two potential contributing factors to the productivity puzzle: global demand weakness and the possibility that the scope for catch-up to the technology frontier has become lower in these sectors.
8. Finally, it is difficult not to notice that the UK productivity growth puzzle is concentrated in sectors where productivity is difficult to measure, like information and communication and finance. While quantification is a separate exercise, these patterns suggest that measurement issues should not be dismissed as part of an explanation of the puzzle.