

Written evidence submitted by Thomas Aubrey

This evidence focuses on the specific question why productivity growth has been lower since the financial crisis. The drivers for this fall off in productivity growth are relatively easy to understand and mostly relate to the relative performance of sectors.

Sectors have diverse levels of value added per hour ranging from £16.42 for agriculture, through to £86.15 for financial services excluding insurance and £546.07 for the extraction of oil and gas.¹ Hence, when sectors with higher value added see a fall in either their labour share or value added then this will contribute negatively to productivity growth. Conversely, high value added sectors with a rising labour share or sectors with rising value added contribute positively to productivity growth.

For example, falling output from North Sea oil fields will tend to result in a negative contribution to productivity growth. On the other hand the computer programming sector has seen a rise in its value added per hour and an increase in its labour share, although this has slowed in the more recent period.

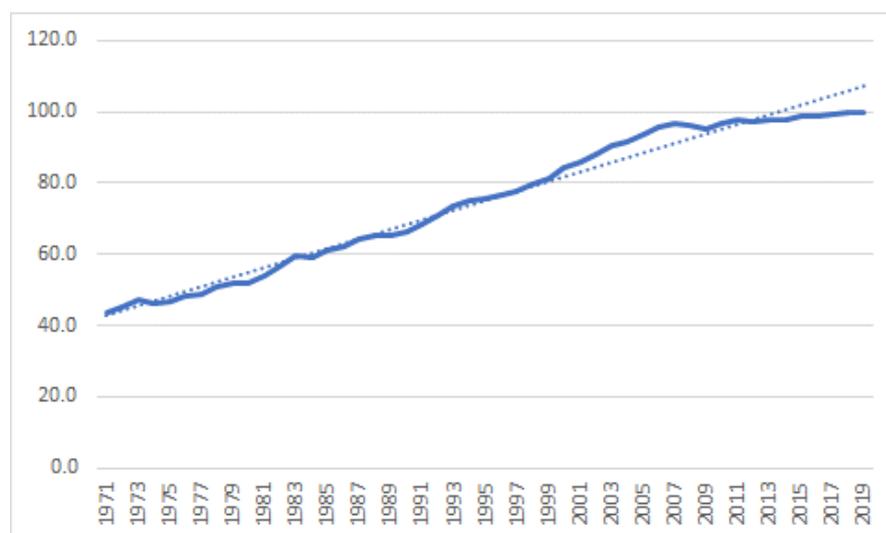
Given that each sector has its own dynamics, most of the contributions that might be made by government to boost productivity growth ought to be understood at the sectoral level. For example, there is a great deal of evidence that the computer programming sector could have expanded much faster thereby contributing more to productivity growth. However, the local skills mismatch between supply and demand of technical personnel has largely prohibited this. Thus a potential positive contribution to this sector could be undertaken that enables city region economies to understand this local mismatch and potential provide extra funding to boost the careers advisory service as well as for Further Education colleges.

Analysis

Since the financial crisis, UK national labour productivity figures have fallen dramatically below their long-term trend. Between 1997-2006 labour productivity grew by 23%, but only by 3% between 2010-2019. This has led to much hand wringing amongst economists as to why this has happened. The [CFM survey](#) has produced a very useful summary of economists' views as to what has caused this slowdown, which mostly focus on falling demand followed by labour market and training issues. Hence economists have argued that the best policy to transform productivity is to invest more in human capital.

¹ 2019 prices

Chart 1: UK Output per hour



Source: ONS

The challenge with this approach to public policy is that it assumes that productivity is normally distributed across an economy's sectors, and that policies to improve productivity can therefore be reduced to national factors such as better training or more capital investment. However, productivity growth tends to be concentrated in certain sectors, so national productivity figures do not provide much insight into what is happening at the firm level. Hence it is critical to look at what is happening within sectors and understand why they are changing.

To facilitate this sectoral analysis, the methodological approach follows Riley et al (2018) and Tang & Wang (2004) which decomposes aggregate productivity growth by sector. Furthermore, this disaggregation includes whether changes in productivity growth are caused by changes in value added or in employment share. Without understanding these sectoral drivers, it is hard for policy makers to provide much of a boost to productivity.

Although the comparison of productivity growth between the two decades of 23% and 3% growth suggests a huge negative productivity shock, a sectoral analysis indicates the need to take a more nuanced approach.

Firstly, the real estate sector is removed from the comparison given that this largely reflects imputed rent. Secondly, the public sector is also removed given measurement issues. When these two sectors are removed from the analysis the relative rates of growth over the two periods are 14.9% for 1997-2006 and 2.2% for 2010-2019. These levels then form the basis of an appropriate productivity comparison between the two periods.

The disaggregation process shows that the Extraction of Crude Petroleum and Natural Gas (oil & gas) and Financial Service Activities Excluding Insurance along with Auxiliary Services to Financial Services (financial services) significantly outperformed in the earlier period and then significantly underperformed in the later period. Between 1997-2006 oil & gas and financial services productivity grew by 3.7% and then fell by -2.3% between 2010-2019.

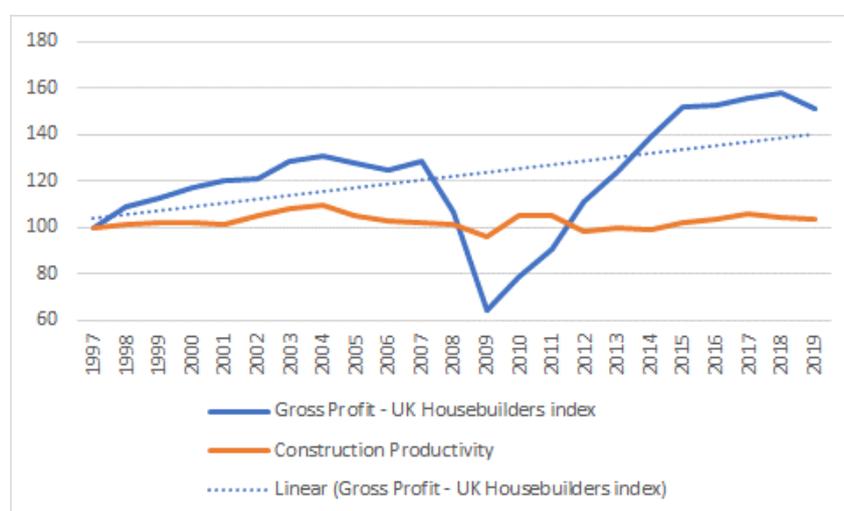
Oil & gas production reached record levels in the first period but then fell by over a quarter in the second period. Given the downward pressure on the oil price and the relative uncompetitiveness of

the sector due to higher extraction costs and diminishing reserves, there seems little chance of the sector reviving to stimulate UK productivity growth.

Financial services were boosted in the first period through economies of scale by becoming the financial hub of the European Union despite being outside the eurozone. In addition, the credit boom prior to the financial crisis resulted in high demand for new financial products, some of which though were not sustainable. Revenues of the leading listed 4 UK banks fell by 17% in the second period as lower aggregate demand in the economy impacted demand for financial products, resulting in a significant fall in its share of the economy.

Another sector that has seen a dramatic shift in the rate of productivity growth is construction which rose by 2.9% in the first period slowing to just 1.1% in the second period. Residential dwelling construction fell by 14% in the second period which may have reduced economies of scale. Despite the fall in the rate of productivity growth, profitability has reached record highs in the sector indicating potential competition issues.

Chart 2: UK Construction Sector



Source: ONS, Refinitiv Datastream

Removing these three sectors, which have had large effects on productivity growth for quite specific reasons, leaves a residual productivity growth of 8.3% for 1997-2006 versus 3.4% in the latter period. So while productivity growth was higher in the earlier period, the difference between the two periods is not as significant. Further analysis of the rest of the sectors, which account for 56% of the economy, highlight a number of other important factors.

First, a large number of sectors, accounting for 21.5% of the economy showed a change of less than a 0.2% in productivity growth between the two periods. This is further evidence that productivity is not distributed normally across the economy, but instead concentrated in sectors. This is not to argue that government policy cannot improve value added per hour in these sectors. However, the fact that it has been relatively static for a significant period of time might reduce the potential for transformation, particularly in non-tradeable services.

Table 1: Sectors with minimal change

Sector	Difference in LP Growth between 1997-2006 and 2010-2019	% of GVA 2019
Postal And Courier Activities	-0.19%	0.63%
Activities Of Head Offices; Management Consultancy Activities	-0.18%	1.29%
Other Personal Service Activities	-0.17%	1.10%
Activities Of Membership Organisations	-0.16%	0.49%
Warehousing And Support Activities For Transportation	-0.14%	1.26%
Libraries, Archives, Museums And Other Cultural Activities	-0.10%	0.13%
Employment Activities	-0.08%	1.61%
Other Professional, Scientific And Technical Activities	-0.08%	0.53%
Information Service Activities	-0.06%	0.53%
Accommodation	-0.02%	0.90%
Security And Investigation Activities	-0.01%	0.19%
Veterinary Activities	0.00%	0.23%
Other Services	0.01%	0.32%
Repair Of Computers And Personal And Household Goods	0.01%	0.16%
Creative, Arts And Entertainment Activities	0.02%	0.40%
Manufacture of Food products, beverages and tobacco	0.02%	1.57%
Gambling And Betting Activities	0.02%	0.42%
Water Transport	0.02%	0.39%
Rental And Leasing Activities	0.03%	1.16%
Air Transport	0.03%	0.28%
Publishing Activities	0.04%	0.65%
Manufacture of wood and paper products, and printing	0.04%	0.65%
Services To Buildings And Landscape Activities	0.05%	0.57%
Other manufacturing and repair	0.07%	0.90%
Manufacture of coke, and refined petroleum products	0.08%	0.13%
Manufacture of rubber and plastics products, & other non-metallic mineral products	0.09%	0.69%
Insurance, Reinsurance And Pension Funding, Except Compulsory Social Security	0.10%	1.55%
Manufacture of electrical equipment	0.11%	0.25%
Office Administrative, Office Support And Other Business Support Activities	0.13%	1.25%
Motion Picture, Video & TV Programme Production, Sound Recording & Music Publishing Activities	0.15%	0.77%
Travel Agency, Tour Operator And Other Reservation Service And Related Activities	0.19%	0.55%

Source: ONS

Second, a handful of sectors saw a relative improvement in productivity in the latter period accounting for just 5.5% of the economy.

Table 2: Sectors that had faster relative growth in 2010-2019

Sector	Difference in LP Growth between 1997-2006 and 2010-2019	% of GVA 2019
Manufacture of machinery and equipment n.e.c.	0.25%	0.78%
AGRICULTURE, FORESTRY AND FISHING	0.26%	0.66%
Manufacture of basic metals and metal products	0.26%	1.01%
Manufacturing of computer, electronic & optical products	0.31%	0.68%
Manufacture of transport equipment	0.42%	1.46%
Manufacture of chemicals and chemical products	0.58%	0.57%
Manufacture of textiles, wearing apparel and leather products	0.60%	0.36%

Source: ONS

This leaves 28.9% of the economy that has seen a relative deterioration in labour productivity growth in the more recent decade. It is important to note that while a sector in the second period has seen a slowdown compared to the first period, it still might be generating a positive contribution to productivity growth.

Table 3: Sectors that had faster relative growth in 1997-2006

Sector	Difference in LP Growth between 1997-2006 and 2010-2019	% of GVA 2019
Retail Trade, Except Of Motor Vehicles And Motorcycles	-1.34%	5.06%
Legal And Accounting Activities	-0.64%	2.72%
Manufacture Of Basic Pharmaceutical Products And Pharmaceutical Preparations	-0.62%	0.69%
Electricity, Gas, Steam And Air Conditioning Supply	-0.55%	1.42%
Architectural And Engineering Activities; Technical Testing And Analysis	-0.55%	1.25%
Telecommunications	-0.54%	1.78%
Computer Programming, Consultancy And Related Activities	-0.47%	2.83%
Scientific Research And Development	-0.45%	0.77%
Wholesale And Retail Trade And Repair Of Motor Vehicles And Motorcycles	-0.45%	1.67%
Wholesale Trade, Except Of Motor Vehicles And Motorcycles	-0.40%	3.69%
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	-0.38%	1.25%
Advertising And Market Research	-0.32%	0.98%
Food And Beverage Service Activities	-0.26%	2.12%
Sports Activities And Amusement And Recreation Activities	-0.25%	0.67%
Programming And Broadcasting Activities	-0.25%	0.40%
Land Transport And Transport Via Pipelines	-0.23%	1.56%

Source: ONS

From a public policy perspective, the challenge ought be to assess the potential of each sector and understand how the state might be able to improve a sector's competitive advantage either through increased efficiency or more importantly through innovation.

For example the Pharmaceuticals sector, despite its recent lower level of productivity growth, still has a [higher value added per capita](#) than in France and Germany. The ongoing COVID 19 pandemic has demonstrated that the UK's science base and pharmaceutical sector has huge potential to help solve global health issues. Table 4 indicates the Pharmaceuticals sector has not suffered a declining labour share but rather a fall in value added, something which innovative new products would drive back up.

The Computer Programming sector has seen the largest increase in productivity growth with an increase in both value added and relative size over the last decade even though its rate of growth has slowed. However, this fast-growing sector is plagued with skills shortages, with firms creating jobs faster than they can be filled, particularly in data centres. Between 2015-2018, there has been a 150% increase in demand for roles within the digital tech sector, but according to a recent British Chambers of Commerce survey three in four businesses are facing [a shortage of digital skills in their workforce](#).

Table 4: Disentangling the between and within effects

Sector	Within effect 97-06	Between effect 97-06	Total LP Growth 97-06	Within effect 10-19	Between effect 10-19	Total LP Growth 10-19
Manufacture Of Basic Pharmaceutical Products And Pharmaceutical Preparations	1.03%	-0.66%	0.36%	-0.23%	-0.03%	-0.26%
Computer Programming, Consultancy And Related Activities	0.83%	0.35%	1.19%	0.51%	0.21%	0.72%

Source: ONS

It is only by assessing sectoral productivity performance that policy makers can fully understand how one might support potential growth sectors, thereby deploying resources more effectively. This might include support for new drug developments or ensuring that local economies are able to supply sufficient numbers of digital workers. Other areas that are likely to become relevant include reducing frictions to trade for manufacturing which have arisen as part of the UK's withdrawal from the single market and customs union.

Trying to think about productivity as a national issue fundamentally misses the point of what generates productivity in the first place, which is what takes place day to day in firms across the country.

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