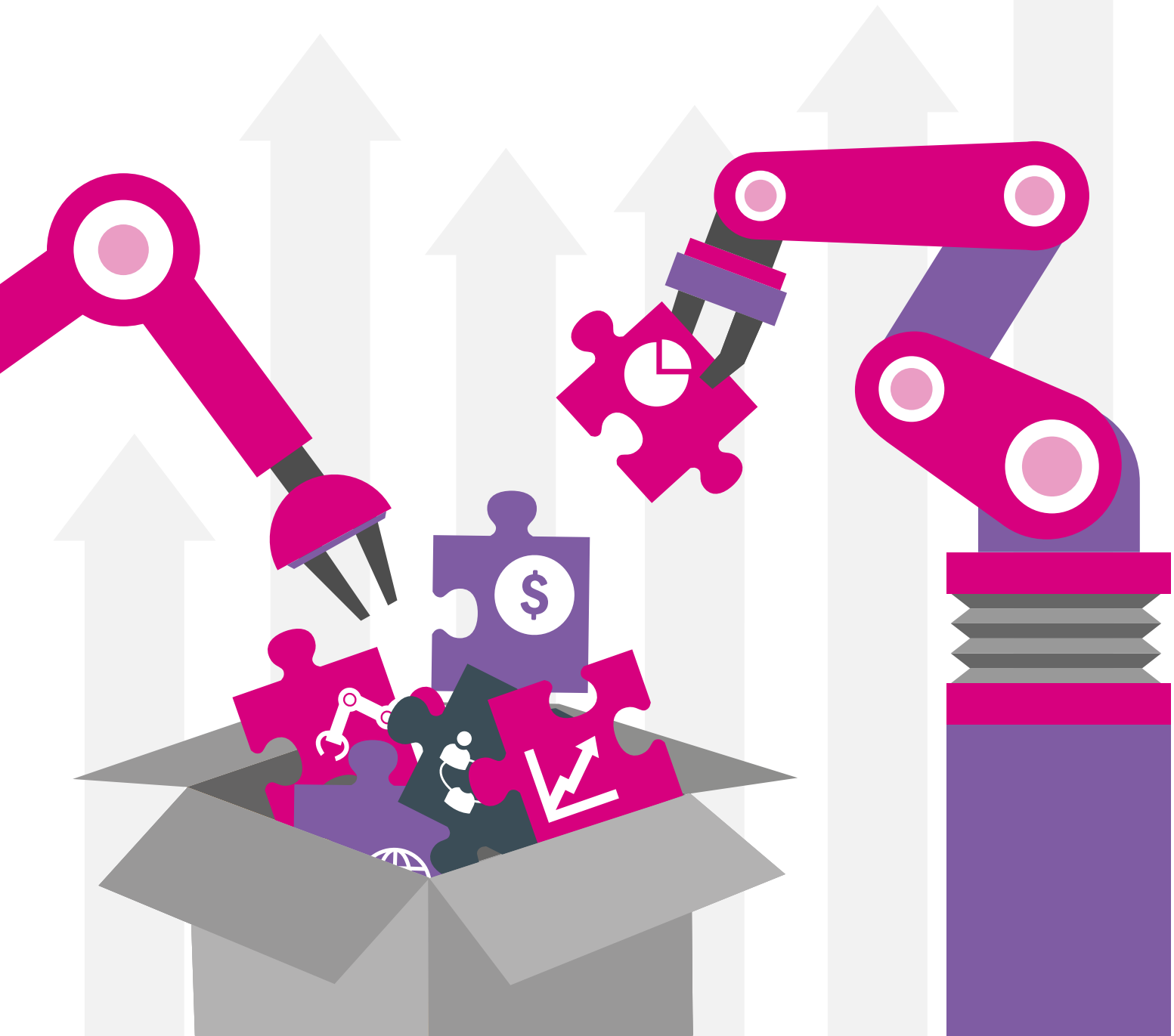
eef The manufacturers' organisation

UNPACKING THE PUZZLE

GETTING UK MANUFACTURING PRODUCTIVITY GROWTH BACK ON TREND



INTRODUCTION

Productivity, and its growth, is important. It enables more to be created with less, supporting competitiveness, profitability and higher living standards.

The UK manufacturing sector has historically contributed significantly to whole economy productivity and it remains firmly at the top of the agenda for EEF members. But despite this strong performance, since 2008 – and in line with the whole economy average – manufacturing productivity has flat lined.

This has implications for all the benefits outlined, but in particular for UK manufacturing which, as a globally focused part of the UK economy, faces stiff competition in international markets.

EEF, as the voice of UK manufacturing and a champion for the sector, has been outlining solutions to address this challenge for some time. While some economy wide solutions that have been enacted will support manufacturing, the economic debate has not yielded a definitive assessment and a new approach is needed to get to a manufacturing specific answer.

Hence this study. We want to understand why productivity growth has flat lined and what can be done to get the sector back on a growth path and we need your insights and input to make this happen.

To help with our analysis we've assessed the performance of the different sub-sectors of manufacturing against each other and across countries to draw out specific insights. This will help us unpick specific factors that impact on manufacturing productivity.

Our initial analysis, based on research and early input from stakeholders and our members, is set out in this report for debate and feedback – and throughout the report you will see questions that this preliminary research raises, that we invite responses to.

This paper sits alongside a podcast exploring in more detail why productivity matters, a webinar which goes into detail on our findings on the factors that are impacting on productivity across the sector and a technical annex outlining additional analysis.

For detail on all these assets visit **www.eef.org.uk/sectorproductivity**

10 KEY POINTS ABOUT OUR RESEARCH

1. Labour productivity, its growth and levels, matters for wages and international competitiveness. Despite this, productivity in the UK has been stagnant since the financial crisis, the so called 'productivity puzzle'.

2. UK manufacturing had a good story to tell on productivity growth, with growth of 4.7% between 2000 and 2007, outperforming international competitors, the whole economy average, and services. However, since 2008 manufacturing productivity growth has flat lined, at less than 1% a year.

3. UK manufacturing productivity levels were catching up with international comparators in the run up to the 2008 recession. However after this, and the collapse in productivity growth, this trend went into reverse.

4. Prior to the 2008 financial crisis all sectors of manufacturing contributed positively to productivity growth, however, since then there has been significant divergence across sectors. This is borne out by the five sectors we assess in our study.

5. Given the importance of UK manufacturing to whole economy productivity growth, the industrial strategy must focus on targeted solutions to get productivity growth back on trend.

6. What factors impact on manufacturing productivity growth? There is not one factor that can completely explain the productivity performance of sectors again underscoring the need for targeted solutions.

Our analysis of the evidence allows us to make the following initial assessments:

7. Size matters, with larger companies being able to exploit economies of scale, vertical integration opportunities and with it higher levels of productivity. Our analysis shows sectors with a higher share of larger firms tend to outperform internationally.

8. Boosting capital investment is not a silver bullet solution, for some sectors significantly investing more may not bear fruit. As an example, despite Italy having higher levels of investment in capital equipment compared to Germany, productivity levels in Italy are weaker.

9. More UK manufacturing sectors undertake ancillary services as part of business operations compared to international counterparts. This suggests UK manufacturers are more likely to be at the end of value chains where the opportunities for productivity growth may be lower, but profits higher.

10. Lastly, management practices across UK manufacturing do not reflect international best practice with a long-tail of companies with poor management practices. Evidence suggests companies with better management practices are more likely to have higher rates of productivity growth.

PRODUCTIVITY MATTERS

Productivity, or more specifically for our study labour productivity, is the measure of gross value added[1] per hour worked (GVA/ hours worked). At a basic level, increasing GVA, or reducing hours worked, leads to growth in productivity.

At the national level improving productivity contributes to boosting living standards by improving profitability to pay for higher wages, higher consumption levels and with it improved economic and social indicators.

At a company and sector level, productivity growth leads to improved competitiveness, enabling firms to be masters of their own destiny, able to worry less about reacting to every external event[2].

Manufacturers' views on productivity

Many manufacturers use alternative metrics to track productivity within their company as at the firm level the macroeconomic measure of labour productivity is harder to measure.

EEF's 2016 productivity report[3] touched on this showing that manufacturers use a variety of measures to track firm level productivity. However, looking across the range, most of these firm level indicators are still based on the concept of output measured against inputs.

Additionally, while these are useful for firm level measurement we don't measure these indicators at an economy wide level and so aggregated measures (i.e. GVA per hour) are used instead.

These macro indicators balance weights to give a fair reflection of the sector and as the same methodology is used across countries it allows us to compare our performance across countries and sectors.

Image 1: The virtuous cycle of productivity

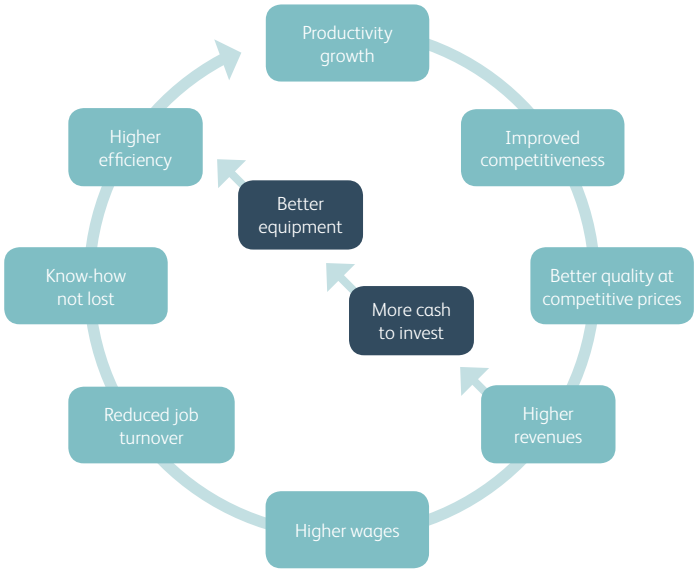


Image 2: Productivity metrics

Based on manufacturers' response to the question: what do you look at to gauge productivity in your business?

Source: EEF – Productivity: The State of the Manufacturing Nation (2016)

[1]A measure of the value for the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production
[2]See Annex Chart 1 for an example of how this has impacted on the mechanical equipment sector
[3]Productivity: The State of the Manufacturing Nation, EEF, February 2016

OVER THE LAST TEN YEARS PRODUCTIVITY GROWTH HAS FLAT LINED

Since the financial crisis of 2008 labour productivity growth in the UK has flat lined. The implications of that have been well documented in various international studies and include feeble growth in real wages and economic growth mostly derived from labour input.

While a healthy labour market producing high levels of employment is an achievement to be proud of, a full job market won't be able to provide more growth in the medium and long-run. As a result, the only way to continuously expand the economy from the supply side is to foster an economy that is able to produce more using the same amount of labour input.

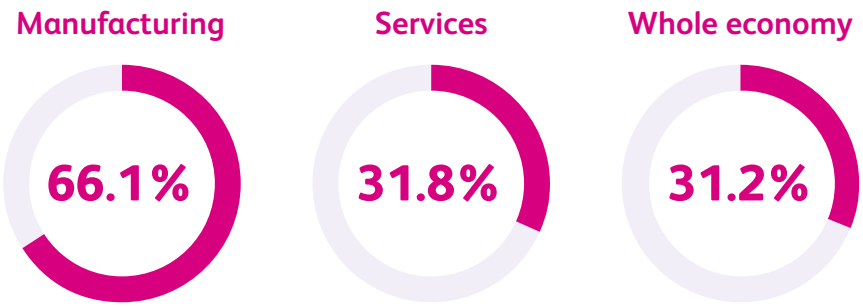
Weak productivity growth has also been exacerbated by regional impacts across the UK with London outperforming the rest of the country on productivity per hour, having productivity levels 30% higher than the UK average according to ONS data released in March 2016[4].

Internationally the picture is also similar, with other countries, particularly the US and across Europe, experiencing weaker than trend productivity growth. However, most are now back on a growth trajectory. This is of particular concern as most had productivity levels higher than the UK prior to the financial crisis.

This 'productivity puzzle', as it has been termed, has been carefully studied with policy solutions put forward to seek to address it. These economy wide solutions, captured succinctly in the Government's 2015 *Productivity Plan*[5], include boosting infrastructure, improving skill levels and addressing the wider tax environment.

We want to explore the manufacturing specific picture so will take these economy-wide solutions as read. This will allow us to undertake deeper analysis into the factors impacting on manufacturing productivity growth.

UK productivity growth rates between 1994 and 2017



Source: ONS

[4]Sub-regional productivity, ONS, March 2016
[5]Fixing the Foundations, HMT, July 2015

THE MANUFACTURING PRODUCTIVITY PICTURE

In the run up to the financial crisis of 2008 manufacturing had a good story to tell on productivity growth, outperforming the whole economy and services. This, in part, helps to explain why wages in the sector are over £3,500 higher than the whole economy average[6].

Since 1998, that improvement has been driven by a significant and consistent reduction in the number of hours worked in manufacturing, despite manufacturing GVA remaining steady on average over that period (charts 1 and 2).

However, more recent data suggest manufacturing performance is one of the reasons for the UK's current poor productivity growth – with manufacturing productivity growth slowing to less than 1% a year after the 4.7% average between 2000 and 2007[7].

In a recent speech[8], Silvana Tenreyro, a member of the Bank of England's Monetary Policy Committee, set out the key trends since 2008 noting: 'just two sectors, finance and manufacturing, can account for most of the fall in UK aggregate productivity growth.'

But not all sectors of UK manufacturing are equal and in the next section we look at the sub-sector performance of each.

The performance of sub-sectors

As chart 3 shows, at a sub-sector level a few standout sectors have helped to propel growth in manufacturing productivity including transport, chemicals and pharmaceuticals. While others such as food and drink, the largest manufacturing sub-sector, lagged behind the manufacturing average (which mechanical equipment closely tracks). The performance of UK manufacturing sub-sectors on productivity growth is clearly a divergent one.

We'll be using these five sectors to undertake our analysis in the rest of this paper.

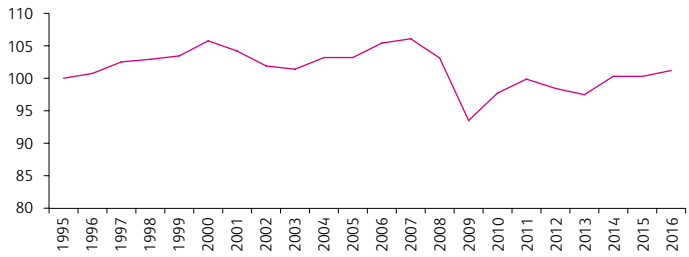
Questions:

1. What accounts for the decline in hours worked in manufacturing since 1998? And what factors have contributed to hours worked staying stable since 2009?

[6]EEF, UK Manufacturing 2017/18, The Facts
[7]For a breakdown of how manufacturing performed relative to other sectors, see Annex Chart 2
[8]The fall in productivity growth: causes and implications - speech by Silvana Tenreyro, January 2018
[9]Excludes coke and petroleum

Chart 1: UK manufacturing output

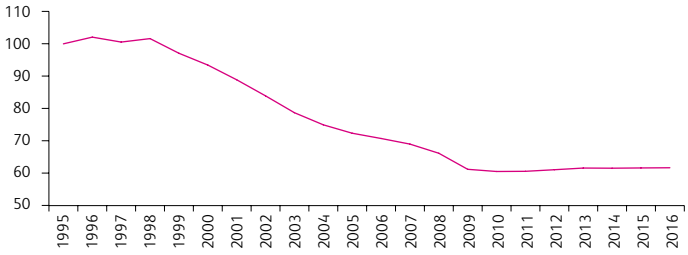
Real manufacturing GVA (1995=100, PPP based)



Source: Eurostat, OECD, EEF analysis

Chart 2: Declining hours contributed to UK manufacturing productivity growth

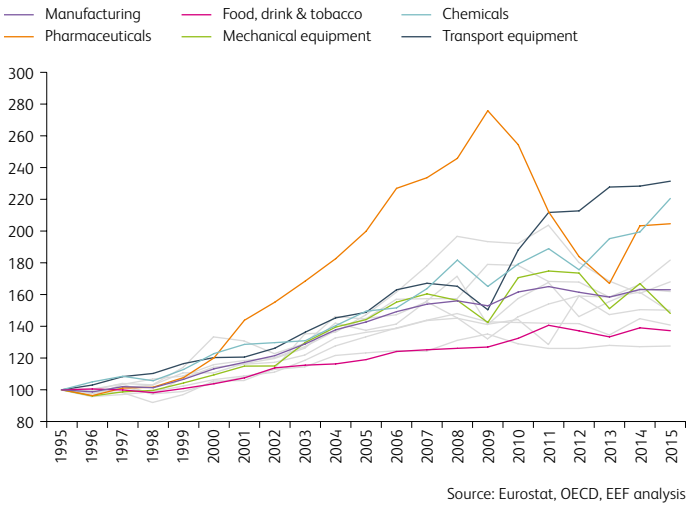
UK manufacturing hours worked (1995=100)



Source: Eurostat, OECD, EEF analysis

Chart 3: How UK manufacturing sub-sectors[9] compare on productivity growth

Real GVA per hour (1995=100)

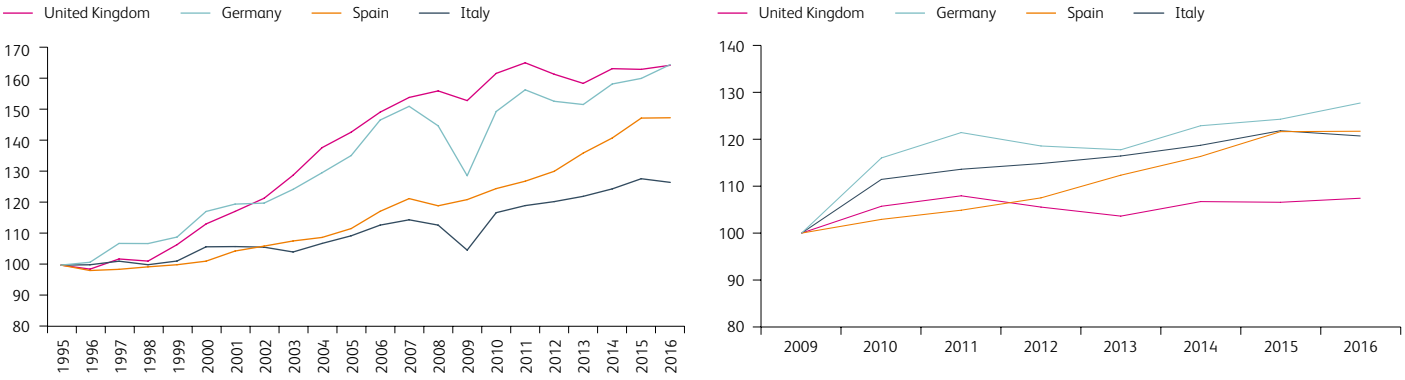


Source: Eurostat, OECD, EEF analysis

MANUFACTURING PRODUCTIVITY IN AN INTERNATIONAL CONTEXT

Chart 4: UK manufacturing productivity growth has underperformed since 2009

Real GVA per hour, left chart 1995 = 100, right chart 2009 = 100



Source: Eurostat, OECD, EEF analysis

To aid our analysis of international comparisons of productivity, we established three comparator countries to use based on comparability of data, size of the economy and of manufacturing sectors. These are Germany, Italy and Spain. France was considered but our analysis showed differences in how data are aggregated so France was discounted as it wouldn't be a fair comparison[10].

At this international level, UK manufacturing productivity growth had been strong since the mid-1990s, growing faster than our comparator countries as chart 4 shows. However, since 2009 this growth has flat lined, while other countries have continued to grow albeit more slowly than before the financial crisis.

This post-2009 trend and the reasons behind it is what we want to unpick to understand how we can get manufacturing productivity back on a growth trajectory.

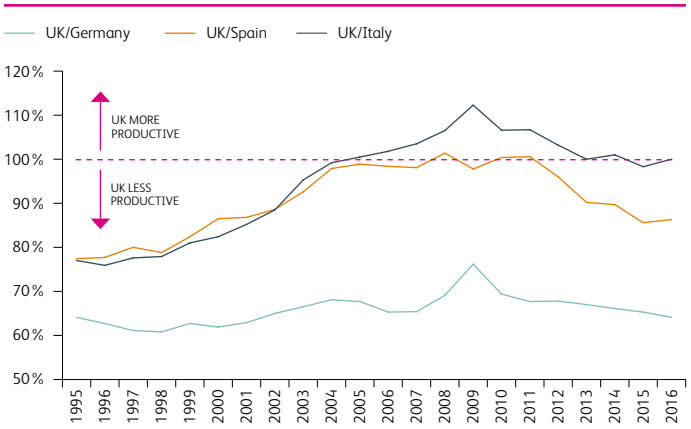
How we compare internationally on productivity levels

The impact of that flat line is reflected in productivity levels[11] – in chart 5 we created ratios between manufacturing productivity based on real GVA per hour comparing the UK against our comparators. Anything above 100% means the UK is more productive, below we are less so.

What we can see is that UK manufacturing started from a lower base but we were closing the gap in terms of levels in the run up to 2009 – indeed we did with Italy and Spain. However as we've flat lined and others have continued to grow that trend has swung into reverse and the gap has reopened.

Chart 5: The catching-up path went into reverse after the financial crisis

Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



Source: Eurostat, OECD, EEF analysis

[10]France uses the approach of homogeneous branches instead of industries meaning that output data for a French company registered under a specific sector are not recorded entirely under the main sector that company operates in, but are split. E.g. If a French pharmaceutical company's output is composed of 70% of pharmaceutical products and 30% of chemicals products, 70% of output would be recorded in the pharmaceuticals sector and 30% in the chemicals sector in national accounts, whereas the same output for a UK company will entirely be recorded as being part of the pharmaceuticals sector total. Only French whole economy productivity can be compared internationally as a result, not sector data.

[11]For methodology please see annex

How sub-sectors compare on productivity internationally

The macro picture in the previous section is not replicated at the sector level. This offers a new lens through which to understand manufacturing performance. It also provides insight into where to focus to find solutions to getting productivity growth back on trend.

Transport equipment

First transport equipment[12]. The sector saw robust productivity growth, particularly following the financial crisis (chart 6), bucking the wider manufacturing trend of flat lining. More importantly, post-financial crisis it has shown significant growth when compared against our comparator countries.

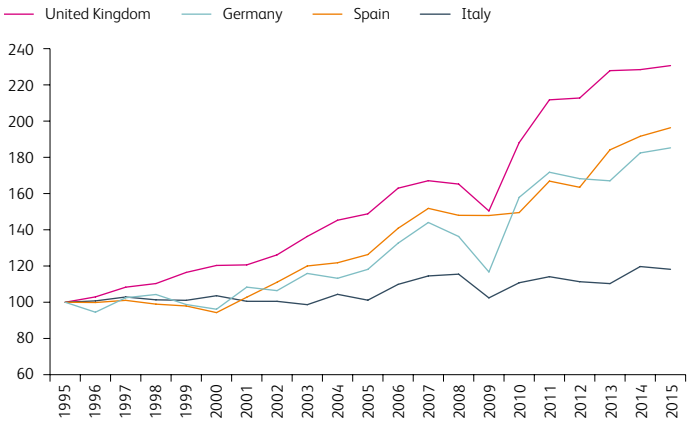
Despite this growth, comparing productivity levels internationally shows that it is not as globally competitive, failing to completely close the gap (chart 7a).

Extrapolating the detailed data available for further analysis[13] for the two components of transport (automotive manufacturing and other transport which includes aerospace, ship, boats, trains) gives us further insight.

Automotive manufacturing productivity levels in the UK have kept pace with Italy and Spain, but is still far off Germany (chart 7b). Other transport manufacturing underperforms against all three comparators (chart 7c). For completeness, it is worth mentioning that other transport is a heterogeneous sector including aerospace, ship building, train building and any other transport not included in the motor vehicle section. Hence different countries may have quite a different structure for this particular sub-sector.

Chart 6: The transport sector saw robust productivity growth following 2008…

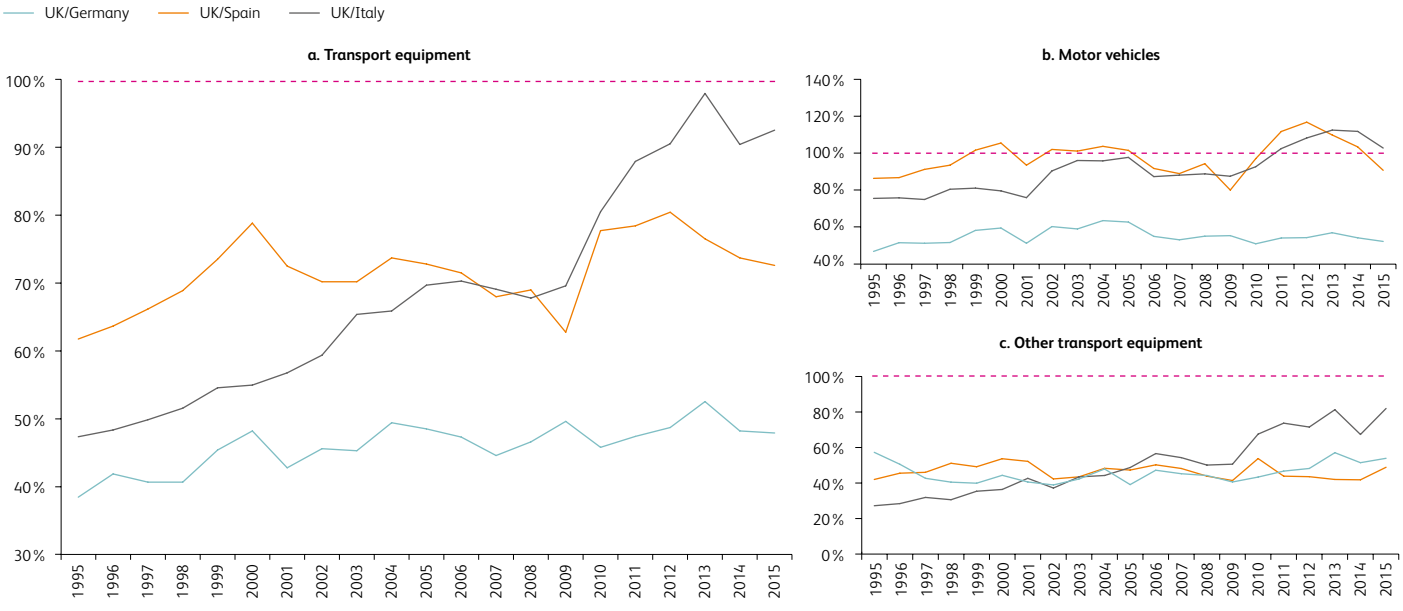
Real GVA per hour, 1995 = 100



Source: Eurostat, OECD, EEF analysis

Chart 7: …but the gap against Germany is still wide

Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



Source: Eurostat, OECD, EEF analysis

[12]Manufacture of motor vehicles, trailers and semi-trailers, ships and boats, air and spacecraft and related machinery, other transport equipment
[13]EEF calculations based on output per employee, since Eurostat does not provide hours data for the transport breakdown for all the countries taken into consideration

Chemicals

The chemicals sector[14] shows a similar story to transport with productivity growth increasing sustainably. This has allowed it to continue to close the gap on productivity levels with comparator countries in the run up to and since the financial crisis.

"Chemicals productivity growth has been sustained and the sector is steadily closing the gap with competitors."

Pharmaceuticals

At the domestic level, the pharmaceuticals sector[15] was the standout performer from 1995, but after 2009 productivity growth in the sector didn't just flat line but swung into reverse. Growth in other countries has similarly been somewhat weak since 2009 (Italy stands out as having the most sustained growth run).

Despite this, the sector had historically high levels of productivity and so in spite of the collapse in growth since 2009 it still outperforms comparator countries on productivity levels (chart 10).

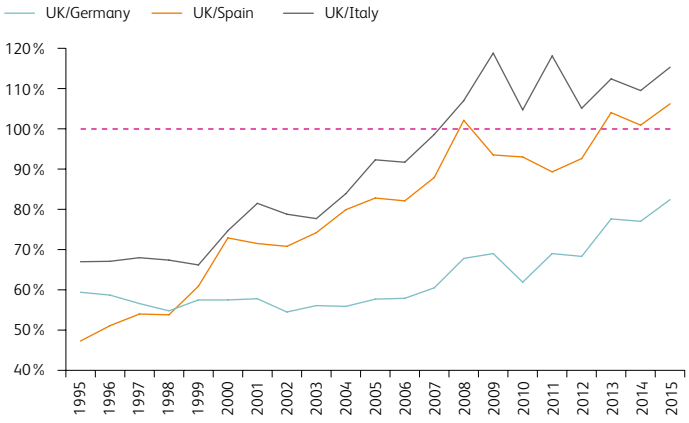
"After 2009, productivity growth in the pharmaceuticals sector didn't just flat line but swung into reverse."

[14]Manufacture of basic chemicals; pesticides and other agro-chemical products; paints, varnishes and coatings; printing ink and mastics; soap and detergents; cleaning and polishing preparations; perfumes and toilet preparations; other chemical products; man-made fibres

[15]Manufacture of basic pharmaceutical products and pharmaceutical preparations

Chart 8: Chemicals productivity is on the right track

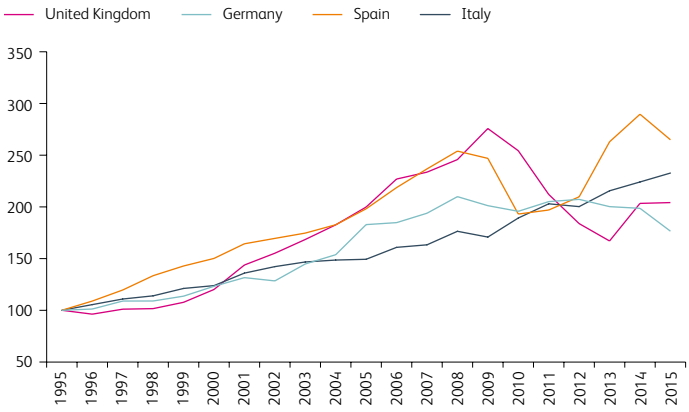
Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



Source: Eurostat, OECD, EEF analysis

Chart 9: The after-crisis trend of weakening productivity growth appears to be a UK story

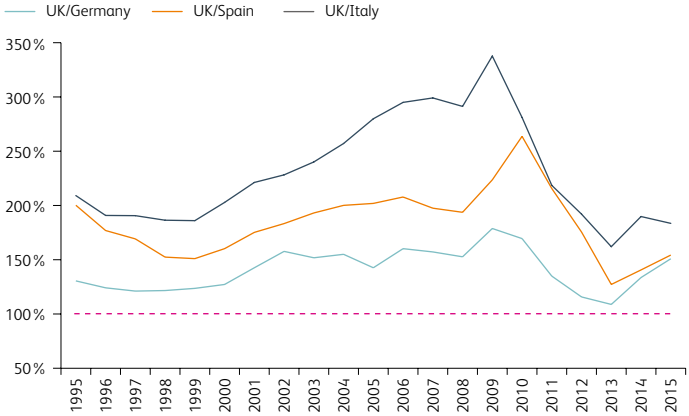
Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



Source: Eurostat, OECD, EEF analysis

Chart 10: Even after the sharp decline, pharmaceuticals is still extremely competitive internationally

Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



Source: Eurostat, OECD, EEF analysis

Food and drink (and tobacco)
Despite being one of the weakest sectors in terms of productivity growth when compared at the UK level, the situation is quite different compared internationally.

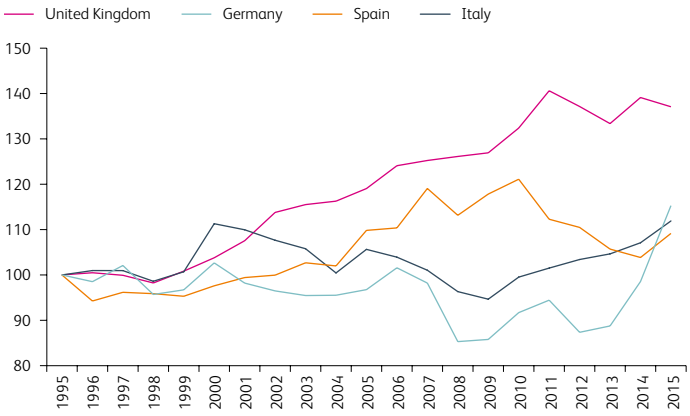
In the run up to 2008 the food and drink sector[16] had sustained and high productivity growth relative to our comparator countries, suggesting slower productivity growth is prevalent in this sector the world over.

However, productivity growth since then has slowed with the sector in other countries catching up. The impact of that is that despite productivity levels being higher than other countries, the situation may not remain if not addressed as the dynamics on levels are finely balanced.

"The food and drink sector had sustained and high productivity growth relative to our comparator countries completely closing the productivity gap."

Chart 11: Food and drink – a competitive sector on the world stage

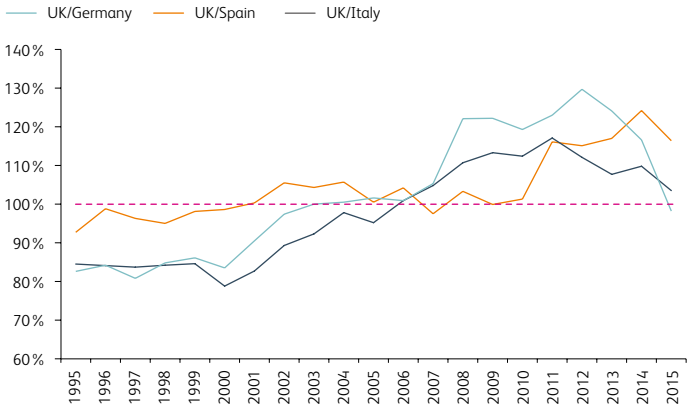
Real GVA per hour, 1995 = 100



Source: Eurostat, OECD, EEF analysis

Chart 12: Productivity levels in food and drink are finely balanced

Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



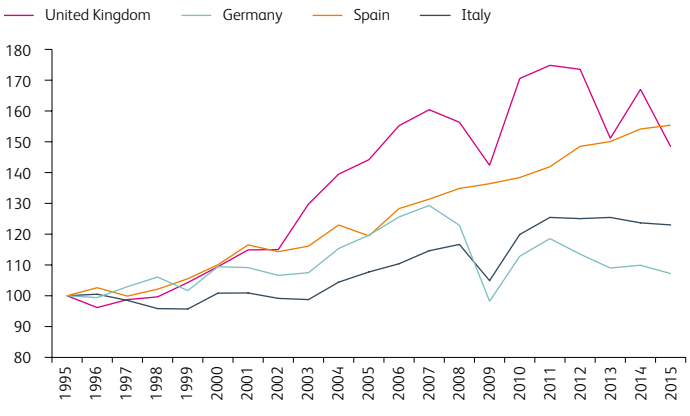
Source: Eurostat, OECD, EEF analysis

Mechanical equipment
The performance of the mechanical equipment sector[17] is closely correlated with the performance of the UK manufacturing average, as a sector which is export intensive and which feeds into multiple other sectors as a capital good, this is not unexpected.

Across our comparator countries the sector saw strong and significant productivity growth up until 2012 when the performance of the sector became highly erratic but on a downward trajectory (chart 13).

Chart 13: The UK mechanical equipment sector had strong productivity growth before becoming more erratic

Real GVA per hour, 1995 = 100



Source: Eurostat, OECD, EEF analysis

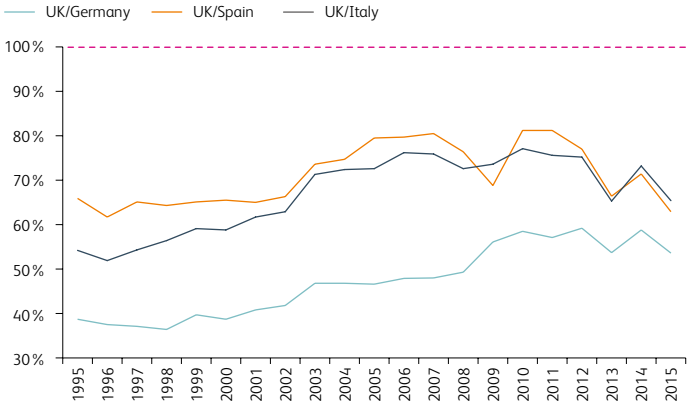
[16]Includes the production, processing and preserving of: meat and meat products; fish and fish products; fruit and vegetables. The manufacture of: vegetable and animal oils and fats; dairy products; grain mill products, starches and starch products; prepared animal feeds; other food products; beverages; tobacco products.
[17]Manufacture of general-purpose machinery, other general-purpose machinery, agricultural and forestry machinery, metal forming machinery and machine tools, other special-purpose machinery.

Despite the long-term growth, in particular since 2002, looking at productivity levels the sector had been closing the gap but from a very low base. We are still some way off equalling productivity levels of our comparator countries as chart 14 shows.

"The mechanical equipment sector is some way off closing the productivity gap with international competitors."

Chart 14: After the financial crisis, the mechanical equipment catch up continued only against Germany

Ratio between UK and comparator countries in terms of real GVA per hour (US$ PPP)



Source: Eurostat, OECD, EEF analysis

Sub-sector performance – key themes

Looking at the performance of the five sectors above, two themes stand out.

The first is that manufacturing sub-sectors each have a unique story to tell in terms of productivity growth both long-term and after the financial crisis, highlighting that solutions will need to factor in the distinctive nature of each sector.

Before the crisis, all sectors made a positive and sustained contribution to overall manufacturing productivity growth. However, after the crisis there were significant swings across sectors year on year, with positive growth in some sectors being offset by negative growth in others, resulting in a flat line. As an example, in 2011 the negative growth of the pharmaceuticals sector was enough to cancel out the positive contribution from the transport equipment sector[18].

Secondly, trends in levels are just as important as growth rates, while it may feel that productivity across manufacturing is advancing more rapidly than other countries, understanding the starting point matters for international competitiveness.

Despite significant productivity growth (with UK manufacturing outperforming our comparator countries), the levels of productivity in the UK and in some sub-sectors are below that of our comparator countries.

Across our sectors, just food and drink has successfully moved from having lower productivity levels to higher levels against all three comparator countries across our time period (pharmaceuticals had consistently higher levels from before our time period).

Questions:

2. How have productivity growth and levels changed in your business and supply chain over the last decade?
3. How does your manufacturing business compare itself internationally on productivity? What metrics do you use?
4. What accounts for the post-2009 divergence away from all sectors consistently contributing to productivity growth?

[18]See Annex Chart 3 for an overview of how different manufacturing sub-sectors contributed to overall UK manufacturing productivity

WHAT COULD EXPLAIN THE DIVERGENT PRODUCTIVITY PATH FOR MANUFACTURING SECTORS?

The recently published industrial strategy[19] outlined that the government will:

"launch a review of the actions that could be most effective in improving the productivity and growth of small and medium-sized businesses, including how to address what has been called the 'long tail' of lower productivity firms"

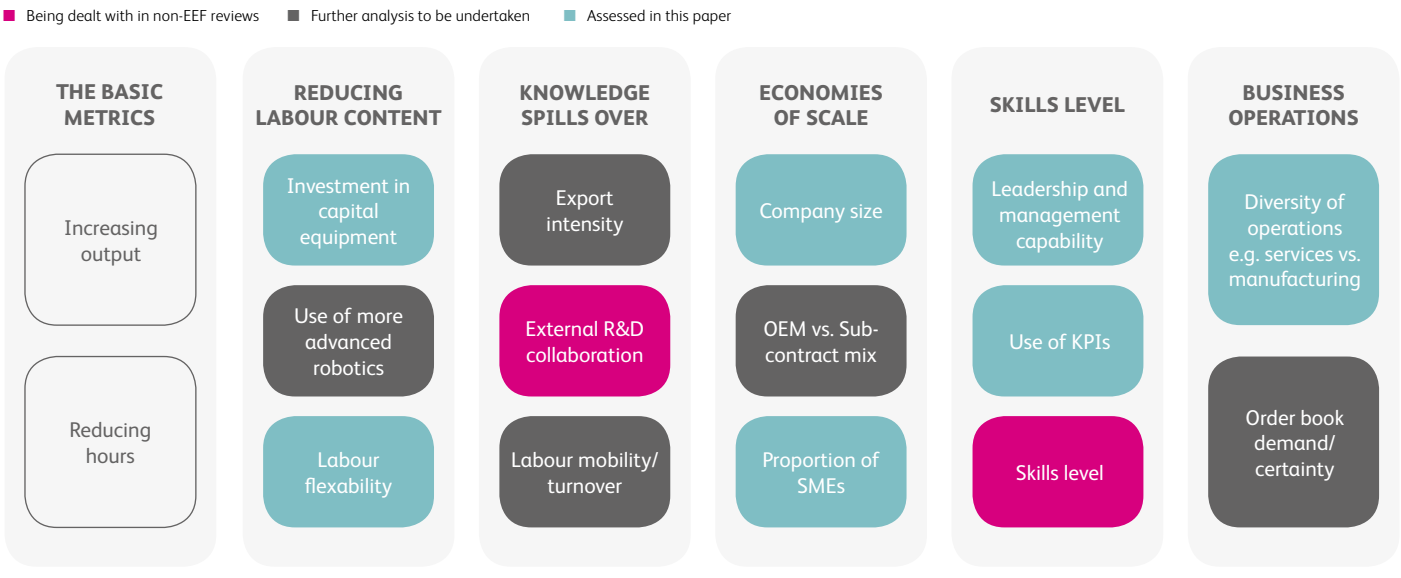
The strategy also set out a number of initiatives that will seek to address this including boosting economy wide spending on R&D to 2.4% of GDP by 2027 and tackling the long-running challenge of skills availability. These initiatives, including the 'long tail' review, aim to deliver economy wide solutions to address the productivity gap.

EEF's work on productivity assesses the challenge from a manufacturing perspective. As part of the first phase of our work we've been speaking with stakeholders and our members and reviewing manufacturing specific literature. This has been done to assess the dominant theories behind the underperformance of UK manufacturing productivity growth since the financial crisis.

Our aim is to validate these theories against data to see which ones fit the divergent picture. These early discussions have advanced five factors as reasons behind the performance of the sector's productivity. In this section we will go into detail on each.

Image 3: What are the factors that impact on manufacturing productivity at the firm level?

Summary based on initial research, member and stakeholder input



[19]Industrial Strategy – Building a Britain fit for the future, HM Government, 2017

Factors affecting UK manufacturing productivity growth – theories

1. Underinvestment in capital equipment – this is the most dominant theory. UK manufacturing underinvests in capital equipment and as a result more hours are worked for the same level of output when compared internationally.

2. Higher rates of labour content – Coupled with the first theory, this argument advances that the supply of labour and its flexibility has led to the cost of labour being at a favourable rate when compared against capital equipment.

3. Lower levels of leadership and management capability – alongside theory 1, this argument suggests the capability of leadership and management within UK manufacturing is poor. The impact of this is risk aversion when it comes to investing in cutting edge technologies and processes that can boost productivity, leading to a slower take up compared with other countries.

4. More complex business operations – often cited as one reason why productivity can't be compared outside sectors. The majority of UK manufacturing sub-sectors have higher levels of non-core manufacturing as part of their GVA when compared internationally, and the delivery of these associated services may not be done in the most productive way.

5. Company size – as part of this theory, UK manufacturers tend to be smaller and further down global supply chains. As a result, the visibility of the market is limited which dents confidence to invest over the long-term, UK firms miss out on economies of scale benefits and experience higher transaction costs as part of operations.

Our analysis of the data available to validate these theories is set out in this section. Some of the evidence does not chime with what we would expect given the theories discussed above. We present this evidence as a way to separate reality from rhetoric and really drill down to the key factors affecting manufacturing productivity performance.

1. UNDERINVESTMENT IN CAPITAL EQUIPMENT

KEY POINTS

- This theory remains the dominant explanation with the UK lagging behind international comparators in terms of investment
- Productive stock in manufacturing peaked in 2000 while the ratio between productive capital stock and hours worked increased until the financial crisis
- Manufacturing is the only UK sector which has seen a contraction in net capital stock between 1998 to 2016
- This situation is shared by most of the sub-sectors with some exceptions (transport, metals)

This is the most dominant theory. Following the financial crisis the manufacturing sector has relied more on hours worked than on capital expenditure.

Table 1 shows how capital stock growth in manufacturing (adjusted for depreciation) was weak but still positive in the period between 1998 and 2007 and then drastically fell during the crisis and continued to decline afterwards. As a result the manufacturing sector is the only economic sector with contraction in capital stock between 1998 and 2016.

Table 1: Average annual growth in net capital stocks by broad industry group

Chained volume measures % (2015)

	1998 to 2007	2008 to 2009	2010 to 2016	1998 to 2016
Other production	0.5	2.7	3	1.7
Manufacturing	0.4	-2.2	-1	-0.4
Construction	1.7	2.9	0.7	1.5
Services	2.4	1.1	0.8	1.6
Whole economy	2	1.2	0.8	1.5

Source: ONS

How do manufacturing sub-sectors compare on capital investment?

The breakdown by sub-sector shows us that the low level of investment in capital equipment is a common story across sub-sectors of manufacturing. There are a few exceptions such as transport equipment which had positive growth before and after the financial crisis.

Looking at our competitor countries, the weakness shown in the national data can also be found when we compare the UK to other countries (chart 15).

Since 1997, UK manufacturing investment in new machinery and equipment has been weak when compared to total manufacturing GVA and against other countries. Given that during this period we saw growth in UK manufacturing productivity, this suggests that investing more in capital equipment may only be part of the picture in addressing the productivity challenge.

The use of capital equipment as part of production

Using the productive capital stock data (an experimental dataset from ONS which looks at the capital input into production) it is possible to create a ratio which compares the use of capital versus the use of labour. The result in chart 16 shows how this ratio for the manufacturing sector has been static from 2009.

Notably, the productive stock decline started long before the financial crisis. Indeed productive stock within manufacturing peaked in 2000 and then started its constant decline throughout the following years, accelerating after 2009. The current productive stock level is 11.8% lower than its peak, even if it has started to improve since the trough experienced in 2014.

Questions:

5. Post financial-crisis there appears to have been a shift in preference for employment over capital investment, does this reflect your experience? What drove and sustained this change?

Table 2: Average annual growth from 1998 to 2016 in net capital stocks by manufacturing sub-sector[20]

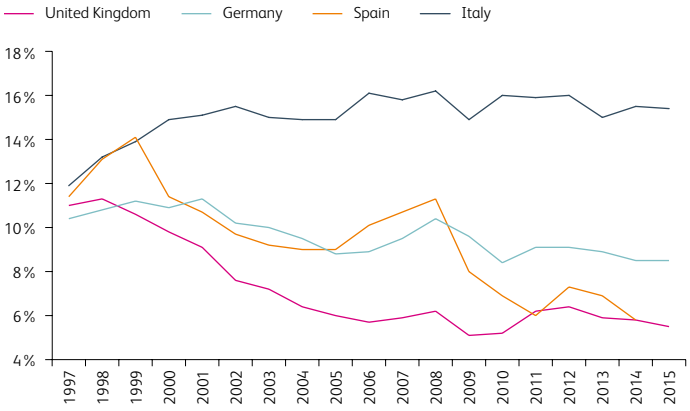
Chained volume measures % (2015)

Food, drink and tobacco	0.0%
Chemicals	-1.3%
Pharmaceuticals	1.2%
Mechanical equipment	-0.5%
Transport equipment	0.8%

Source: ONS

Chart 15: The UK lags behind in terms of investment

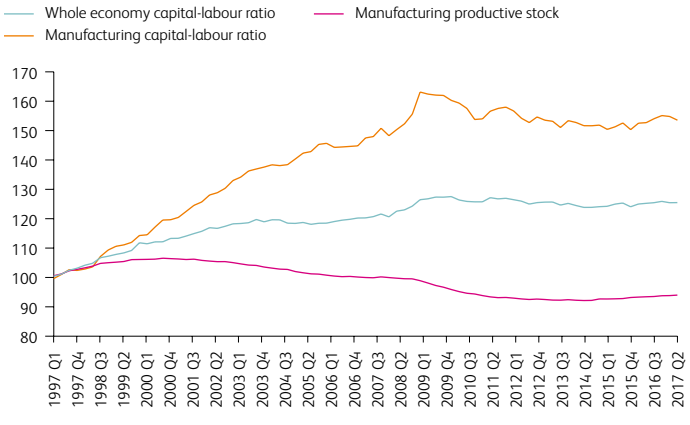
Manufacturing investment in machinery and equipment as a % of GVA by country



Source: Eurostat

Chart 16: The productive stock in manufacturing started declining in 2000, its ratio vs labour use was static from 2009

Aggregate capital and labour indices, 1997q1=100



Source: ONS

[20]Annex Table 1 provides alternative time periods and the breakdown for all sectors

2. HIGHER RATES OF LABOUR CONTENT

KEY POINTS

- Value added in UK manufacturing relies much more on labour than capital compared to international comparators
- The use of labour as part of the production process over capital increased since the financial crisis
- The sub-sector picture is a mixed one with some sectors (i.e. pharmaceuticals) reducing their capital intensity and others (i.e. transport) increasing it
- The UK has the most relaxed labour laws which may reduce the acquisition hurdle for labour compared to capital

The declining use of labour (measured using hours worked) was a key driver of improved manufacturing productivity growth in the run up to the financial crisis, after which it flat lined suggesting something has materially changed. However, what can't be inferred from this change is whether labour was being substituted for capital or how the use of labour in the UK compares internationally.

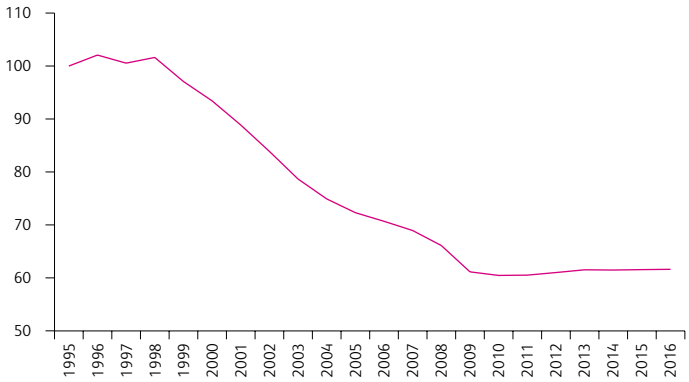
Assessing the data on the key components of UK manufacturing GVA (chart 18), we see that the use of labour (measured using data on compensation of employees) is the highest compared to the countries listed.

This shows the extent to which the UK relies on labour more than other countries and how the use of capital is lower. Despite this, its ability to produce profits is similar to that achieved by competitors.

This use of labour instead of capital (the 'capital gap') has been quite a stable characteristic for the UK over time. The ratio between fixed capital components and labour cost has been fairly steady since 1995 hovering around 21%.

Chart 17: Declining hours contributed to UK manufacturing productivity growth

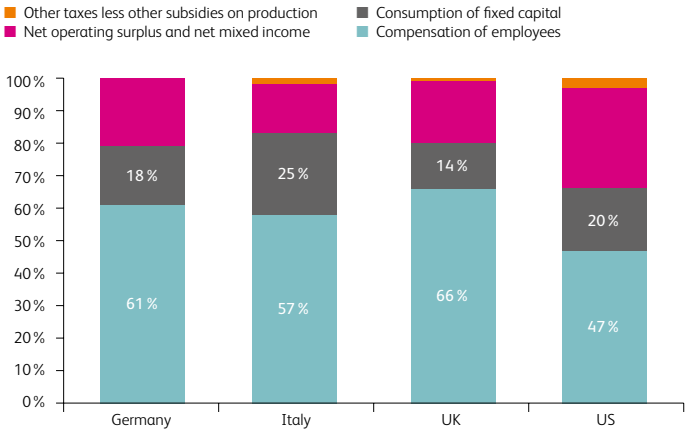
Manufacturing employment (1995=100, thousand hours)



Source: Eurostat, EEF Analysis

Chart 18: UK GVA relies heavily on labour compared internationally

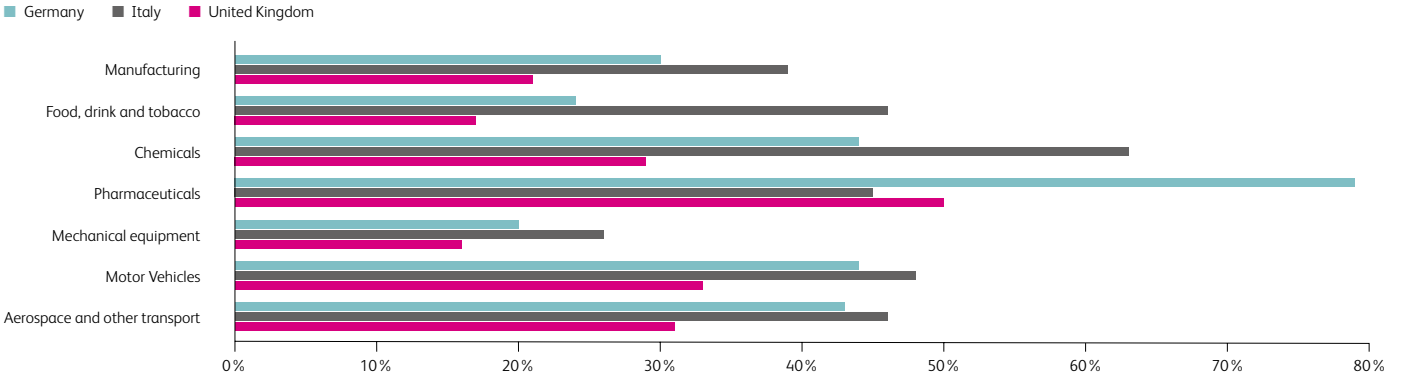
Composition of manufacturing GVA by country (2015)



Source: OECD

Chart 19: The 'capital gap' appears to be even stronger when compared at the sub-sector level[21]

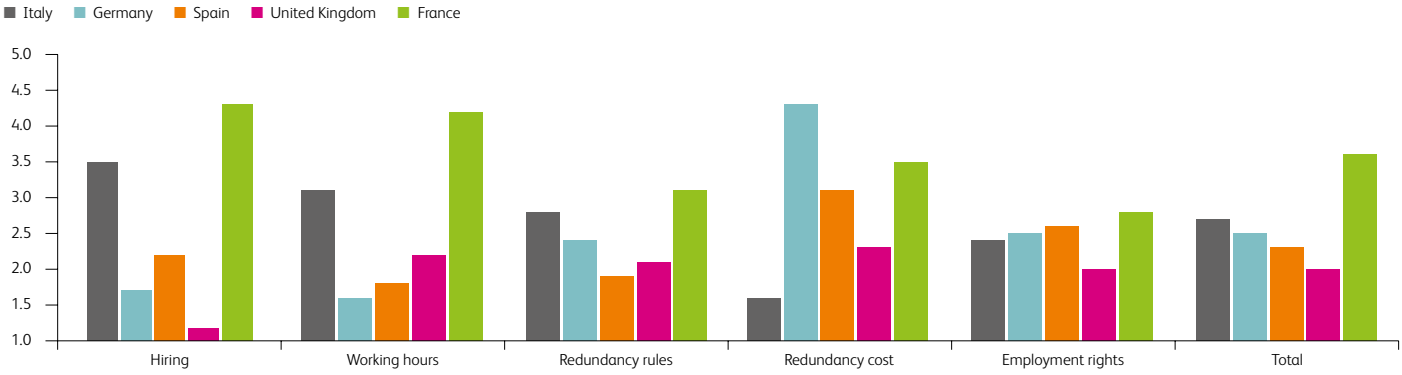
Consumption of fixed capital divided by compensation of employees – Average 1995 to 2015 – (a higher value indicates a more intense use of capital over labour)



Source: Eurostat

Chart 20: The UK has more relaxed labour laws[22]

Labour laws – ease of doing business 2018



Source: World Bank, EEF analysis

The situation is quite mixed amongst sub-sectors with some in the UK showing a large gap against German and Italian counterparts (the two countries for which comparable data are available). As chart 19 shows, the 'capital gap' across our sub-sectors places the UK in the weakest position except in pharmaceuticals, suggesting a higher use of labour compared to capital for most of UK manufacturing.

Italy, which has not achieved great results in terms of productivity in recent times, appears to be the country that relies the most on capital. This may actually be related to restrictive labour laws which may push Italian firms to hire less than UK ones, we turn to this next[23].

Labour laws

The ease of employing and therefore investing in people will be weighed against other investments by manufacturers. Using the latest World Bank Ease of Doing Business survey[24], we created an index that ranks the five big European countries according to their labour laws. Similar results can be seen in the data provided by the OECD and included in the annex.

The UK is the country with the most relaxed labour laws. In particular the UK has the most flexible regulation for hiring compared to high restriction in countries such as Italy. This analysis suggests that the hurdle for hiring an employee may be lower than the hurdle for investing in new capital equipment in the UK compared to other countries.

Questions:

6. What factors other than labour laws could be the cause of higher labour content in UK manufacturing compared to other countries?

[21]Annex Table 2 provides data for alternative time periods
[22]Methodology: For each survey question a mark between 1 (most flexible law) and 5 (most restrictive law) was given. Using these we then created an average (using equal weights) for the different main categories and an average of the averages to create the final ranking.
[23]Annex Chart 4 also provides an indicator of employment protection legislation
[24]Ease of Doing Business Survey, World Bank, 2018

3. LOWER LEVELS OF LEADERSHIP AND MANAGEMENT CAPABILITY

KEY POINTS

- A few studies highlight the relationship between productivity and management practices
- An LSE study shows that Germany and the US scored better on management capability than the UK which has results right across the spectrum from extremely poor to world class (the so called 'long-tail' problem)
- Size, foreign-ownership and employee qualification appears to be positively related to high management scores

Measuring management capabilities is not an easy task since it is clear that we need to rely more on survey data rather than official statistics. However, looking at a range of studies we can see if the productivity gap across sectors and countries could be associated with poor management practices.

The first study is a survey conducted by the ONS[25] which found "a significant correlation between management practices and labour productivity". This study found that structured management practices are easier to find in the service sector than in production industries and it is also more prevalent in larger, foreign-owned, and non-family owned companies where workers, on average, have higher skill levels.

According to this study, the link between management and productivity is strong, for each step up of 0.1 in the "management score" we can expect the productivity level of a company to be 9.6 % higher. This score was based on four aspects of management practices: continuous improvement, employment practices such as promotions and rewards based on performance, the use of KPIs, and targets.

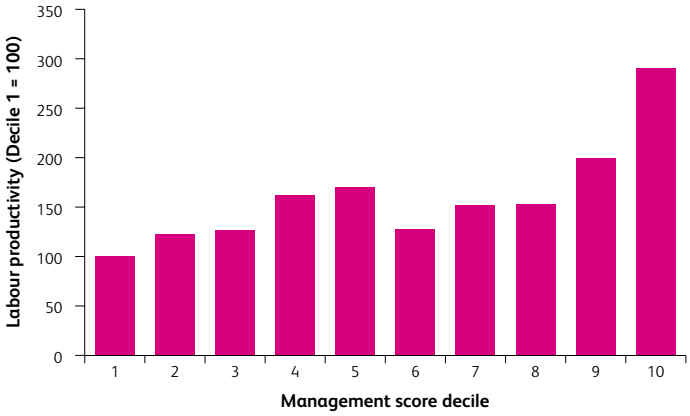
Chart 21 shows that firms included in the top management score deciles perform better in terms of productivity.

The study also provided average scores by industry (with the exception of agriculture, finance & insurance activities, and activities of households as employer) and even here it appears that a correlation between management practices and productivity can be found.

The top performer in chart 22 is the utilities sector which tends to be made up of big firms and has a high prevalence of multinationals. The three sectors at the bottom of this ranking are accommodation and food services, construction, and transportation & storage. The data show some link between management practices scores and productivity per hour.

Chart 21: Firms with good management practices tend to be more productive

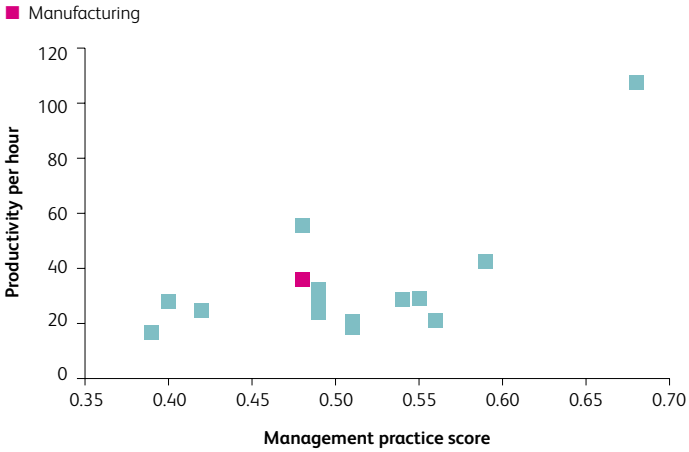
Labour productivity by management score decile (2016)



Source: ONS – Management and Expectation Survey 2016

Chart 22: Productivity per hour & management scores by industry[26]

Labour productivity by management score decile (2016)



Source: ONS – Management and Expectation Survey 2016

[25]ONS, Management and Expectation Survey 2016
[26]In the chart we have excluded two sectors (real estate and mining and quarrying) since their productivity level is extremely high due to the nature of their business and so it is not easily comparable with the other industries.

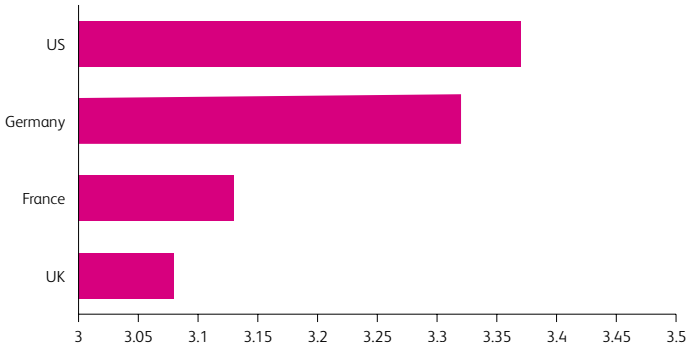
Another study of 2006[27] seems to confirm that low productivity in the UK could be related to the lack of robust management practices. This study shows how US and German companies outperform UK and French comparators on management practices (chart 23) and from the analysis made, this has had an impact on the productivity gap.

Compared to other countries, the UK results are also the broadest across the range of management scores from the poorest to top class. This is something that is not found in the German and US scores where the concentration of firms are in the middle or top end of the range.

Confirming the earlier cited ONS study regarding foreign ownership, European companies owned by US multinationals perform much better compared to domestic firms, with higher productivity and management scores.

Chart 23: US and Germany in the lead in terms of management practices

Country level management scores (from 1 to 5)



Source: Bloom and Van Reenan 2006, Measuring and Explaining Management Practices Across Firms and Countries

Questions:

7. How would you compare management practices against competitors, your supply chain, internationally and against the business community more generally?

4. MORE COMPLEX BUSINESS OPERATIONS

KEY POINTS

- The UK manufacturing sector has a 'core' business share higher than Germany and Spain but the result is heavily influenced by coke and petroleum, and pharmaceuticals
- Some sub-sectors have a low share of core business activities such as mechanical equipment and electronics. The top non-core business output across sectors is usually related to wholesale services

Manufacturing has been undergoing a shift towards greater levels of service provision as part of changes in business models across the sector. This transformation sees manufacturing firms moving up the value chain allowing them to work closer with their customers to feed back into future production.

This trend, known as servitisation, has been well documented[28] and, over time, could see the day to day operations within manufacturing shift from one focussed overwhelmingly on production towards a greater mix between service (non-core) and manufacturing (core).

This mix may manifest itself in the productivity figures in a number of ways. Manufacturers may not be measuring and managing the productivity of non-core parts of their business, but this may not be seen as an issue if the non-core activity provides value add in other ways or if the number of people employed in non-core parts of the business are low. Additionally, increasing the focus of the firm away from core to non-core activities could over time lead to a diversion of focus.

To undertake analysis on this 'core' vs 'non-core' split we can look at the international comparison of the composition of the output produced by each manufacturing sub-sector. The 'supply and use' table provided by ONS and Eurostat helps us to understand if final output produced is a 'core' business output (e.g. Chemical sector producing chemical product), otherwise this activity is categorised as an ancillary service that the sector is providing (wholesale, scientific research, installation and other sector products being the dominant 'non-core' activities).

The UK manufacturing sector has a core business share higher than Germany, however, when sub-sectors are considered, we notice that this result is mainly due to two sectors: pharmaceuticals and coke & petroleum product manufacture.

[27]Source: CEP, Bloom and Van Reenan, Measuring and Explaining Management Practices Across Firms and Countries (2006)
[28]See for example, The Future of Manufacturing, Government Office for Science, 2013

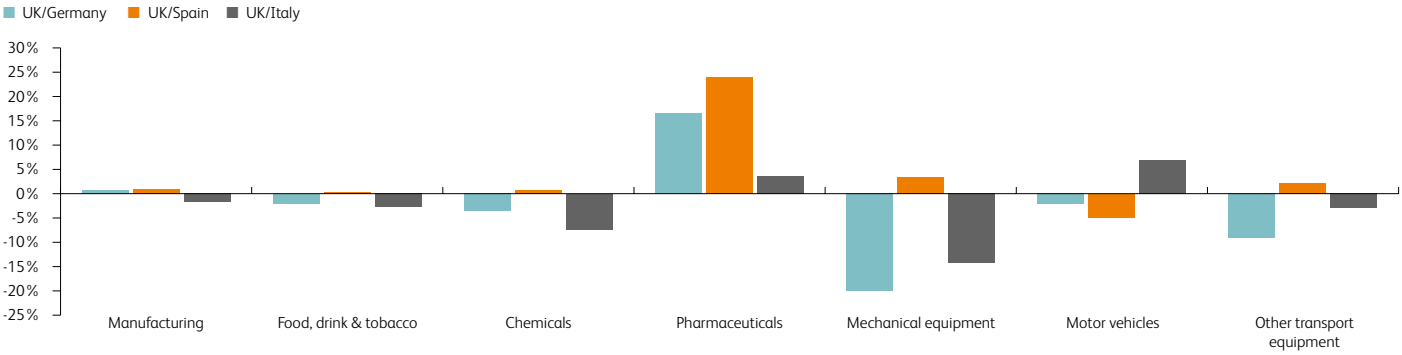
Table 3: Non-core output by UK manufacturing sub-sector (2015)[29]

Manufacturing sub-sector	2nd top output (i.e. 1st non-core output)	Share of total output
Manufacturing	Wholesale trade services, except of motor vehicles and motorcycles	2.7%
Food, drink and tobacco	Wholesale trade services, except of motor vehicles and motorcycles	3.2%
Chemicals	Wholesale trade services, except of motor vehicles and motorcycles	7.3%
Pharmaceuticals	Scientific research and development services	3.8%
Mechanical equipment	Repair and installation services of machinery and equipment	12.0%
Motor vehicles	Wholesale and retail trade and repair services of motor vehicles and motorcycles	5.7%
Other transport equipment	Scientific research and development services	5.7%

Source: Eurostat

Chart 24: UK manufacturing is as focussed on core activities as comparator countries but differences are strong when sub-sectors are compared

Core business product output as % of total (2014) – variances against comparator countries – a positive figure shows the UK has a stronger 'core' focus in that sector compared to other countries



Source: Eurostat, EEF analysis

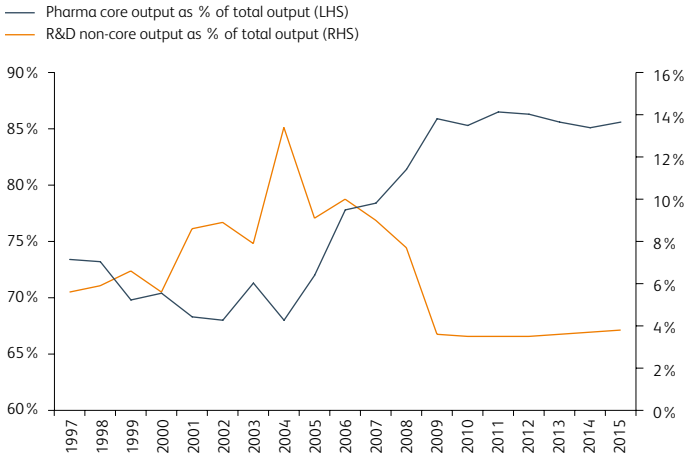
Some sectors such as mechanical equipment have a low level of core business with a larger share of output related to installation and repair (table 3). It appears that compared to the UK, German firms are much more focused on core production in this sector (chart 24).

Looking at one of the strongest outliers (compared against international comparators), the pharmaceuticals sector, the sector in the UK is focused on core business activities, but this hasn't always been the case.

The second item in the output ranking list for the sector (i.e. the first non-core activity) is R&D and this shows a significant fall after the financial crisis, now making up around 4% of pharmaceuticals GVA from a peak of 13% (chart 25). In Germany the comparable figure is 8%. Given that pharmaceuticals productivity declined after it became more focussed on core output, this would suggest that assuming that 'core' production is always more productive is not an immediate link that can be made.

Chart 25: Non-core activities in the UK pharmaceutical sector fell after 2008

Core output vs R&D output as % of total output



Source: Eurostat, EEF analysis

Questions:

8. Is the productivity of non-core activity (e.g. warehousing, repair and maintenance) measured in manufacturing firms? How does it compare with core activity (i.e. production)?

[29]See Annex Table 3 for the full table

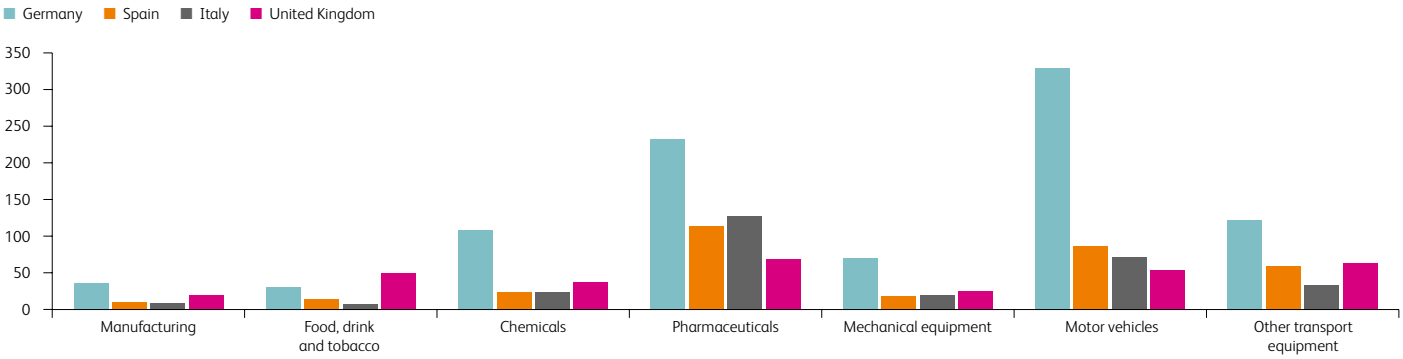
5. COMPANY SIZE

KEY POINTS

- On average, UK manufacturing companies are half the size of those in Germany, but bigger than those in Spain and Italy
- For some sub-sectors this difference is significant, such as for pharmaceuticals and automotive. On the other hand, the UK food industry has companies on average larger than those in other countries
- Food and drink is the only industry where the UK has a higher share of 250+ companies compared to Germany

Chart 26: Manufacturers in other countries tend to be smaller than those in Germany

Average size of manufacturing firms by number of employees (2015*)



*the figure for the UK pharmaceuticals sector refers to 2014

Source: Eurostat

Another important factor to consider is the size of companies. The argument being that larger companies can capture economies of scale and their existence in a country comes with competitiveness benefits through market determining capabilities.

The chart above shows the average size of manufacturing companies by number of employees. It is evident that in Germany companies are bigger than those in the UK.

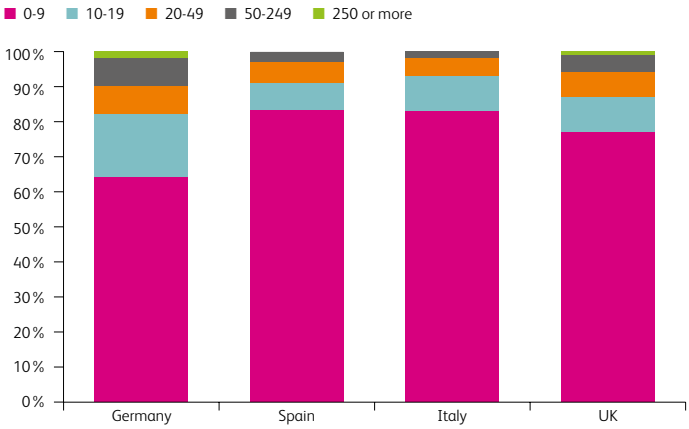
This difference is also reflected in almost all the sub-sectors with the exception of the food and drink industry – and from our earlier analysis we know this sector outperforms our international comparators on productivity levels so there could be some link between company size and productivity.

Chart 26 gives us a sense of the size structure of the manufacturing sector looking at the average size of firms across sectors. However, chart 27 shows an even clearer picture for manufacturing aggregate values. Germany has fewer micro firms and a larger share of bigger firms.

What these data also tell us is that at the manufacturing level the UK has fewer micro firms (0-9 employees) and more large firms (in the 50-249 employees and more than 250 employees size brackets) than Spain and Italy. However, the UK's size structure is more similar to Spain and Italy's and this may explain why Germany is not only more productive than the UK but also more than the two Southern European countries.

Chart 27: Big manufacturers are prevalent in Germany

Manufacturing size structure, number of employees - 2015



Source: Eurostat

Sector size mix

From the data it is clear that German companies are bigger in size at the total manufacturing level and in each of the sub-sectors except food where the UK has bigger firms.

The last chart about size goes deeper to compare the structure of the German manufacturing sector and selected sub-sectors against the structure of British companies. Values above zero means that Germany has a bigger share in that size category, whereas a negative value means that the UK has a higher share.

The pharmaceuticals sector is the main stand out (aside from food and drink which we discussed earlier) with the UK having more small companies compared to Germany in 2015. Looking back at 2009 (the first year for which we have comparable data), the structure is pretty similar with a notable difference only in the pharmaceuticals sector. It appears that UK pharmaceutical firms used to be much larger in size, on average, and there were fewer SMEs.

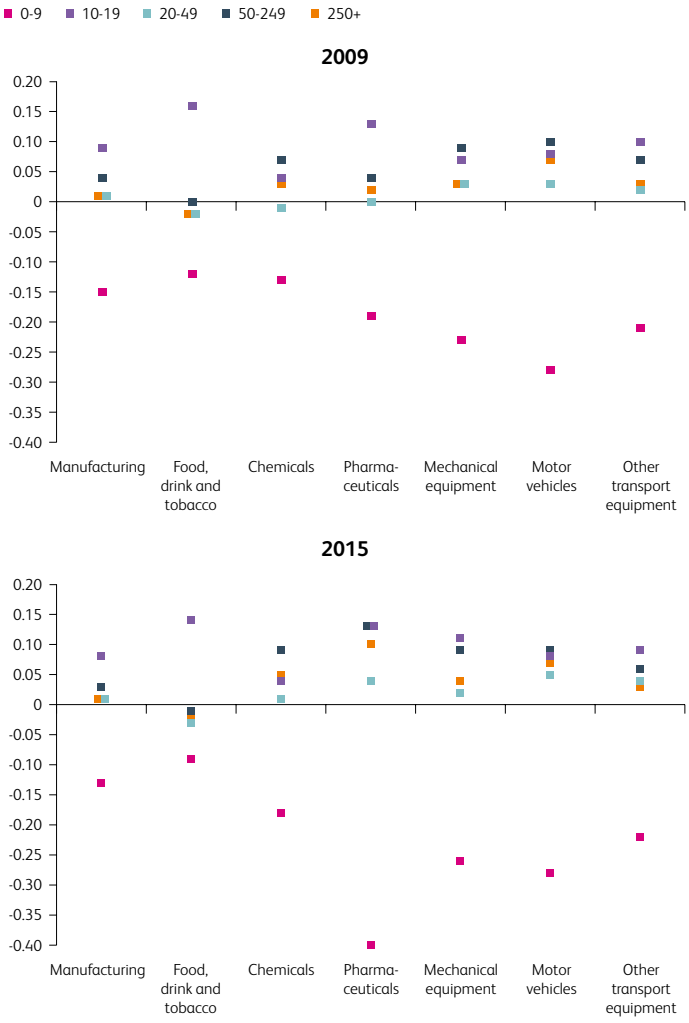
Companies in mechanical equipment and transport equipment also have a size structure that has a higher share of small firms compared to Germany. Notably, UK transport equipment firms are not on average micro firms (as seen in chart 26), but German firms are much larger with an average number of employees (over 300 in the case of motor vehicles).

Questions:

9. How much of an impact on manufacturing productivity does the prevalence of smaller firms in UK manufacturing have?

Chart 28: The evolution of UK vs Germany manufacturing structure by size between 2009 and 2015

Ratio between shares of manufacturing size structure



Source: Eurostat

FACTORS IMPACTING ON MANUFACTURING PRODUCTIVITY GROWTH – KEY THEMES

In this section we've pulled data on five themes identified as contributing to the flat lining of manufacturing productivity growth since the financial crisis. These were:

1. Underinvestment in capital equipment
2. Higher rates of labour content
3. Lower levels of leadership and management capability
4. More complex business operations
5. Company size

There is not one factor that can explain completely the productivity performance of sectors. While UK manufacturing underinvests in capital equipment compared internationally, the fact that Italy is the stand out performer despite having weaker levels of productivity suggests there is more to the picture than just boosting levels of capital investment.

On the other side of the coin, restrictive labour laws may have contributed to some countries such as Italy investing heavily in capital equipment. While ostensibly more flexible labour laws in the UK may have reduced the hurdle for recruitment compared to the hurdle of investing in capital, the lack of data on how companies make this decision suggest it is too early to tell if this is the case – other factors may be at play.

Leadership and management capability is fast becoming an area of study across the whole economy as part of the wider look at the 'long tail' of productivity underperformance. The data show that the UK has a 'long tail' of management practice underperformance which could be contributing to productivity underperformance. To carry out further assessment in this space will require manufacturing specific data on management practices.

The fourth factor we looked at was the complexity of business operations. This showed that in some sectors of UK manufacturing there is significant variance against comparator countries in the extent to which the focus is on 'core' production. Most significantly pharmaceuticals is more focused on production compared to other countries, with the data suggesting the sector became less productive when it switched to focussing more on production as opposed to other activities.

Lastly, looking at average company size has produced some interesting results. The UK food and drink manufacturing sector has, on average, larger companies when compared internationally. Given the sector outperforms internationally on productivity we can infer there may be a link between company size and international competitiveness.

This initial assessment has highlighted further areas of study that can be undertaken in each area. However, we want to hear from you on what this initial evidence suggests. Details on how to submit evidence is set out in the next section.

Further questions:

10. How would you rank the factors we've identified (capital equipment investment, higher rates of labour content, leadership and management capability, complexity of business operations, company size) in terms of having the greatest impact on manufacturing productivity growth?
11. What other factors could potentially be impacting on manufacturing productivity growth that could be considered as part of our further analysis?

CALL FOR EVIDENCE

Listed below are the key questions we would like feedback on as part of our study.

Our call for evidence runs until the 29th June 2018 and submissions can be made to sectorproductivity@eef.org.uk.

Please include your name and background as part of your response.

Questions:

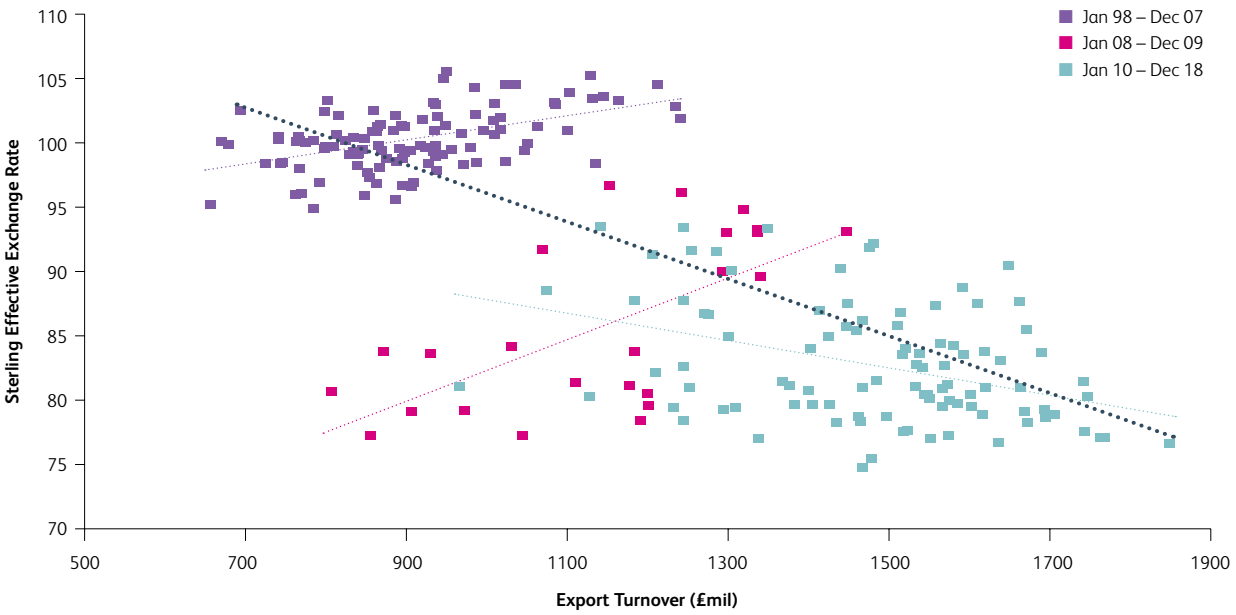
1. What accounts for the decline in hours worked in manufacturing since 1998? And what factors have contributed to hours worked staying stable since 2009?
2. How have productivity growth and levels changed in your business and supply chain over the last decade?
3. How does your manufacturing business compare itself internationally on productivity? What metrics do you use?
4. What accounts for the post-2009 divergence away from all sectors consistently contributing to productivity growth?
5. Post financial-crisis there appears to have been a shift in preference for employment over capital investment, does this reflect your experience? What drove and sustained this change?
6. What factors other than labour laws could be the cause of higher labour content in UK manufacturing compared to other countries?
7. How would you compare your management practices against competitors, your supply chain, internationally and against the business community more generally?
8. Is the productivity of non-core activity (e.g. warehousing, repair and maintenance) measured in manufacturing firms? How does it compare with core activity (i.e. production)?
9. How much of an impact on manufacturing productivity does the prevalence of smaller firms in UK manufacturing have?
10. How would you rank the factors we've identified (capital equipment investment, higher rates of labour content, leadership and management capability, complexity of business operations, company size) in terms of having the greatest impact on manufacturing productivity growth?
11. What other factors could potentially be impacting on manufacturing productivity growth that could be considered as part of our further analysis?

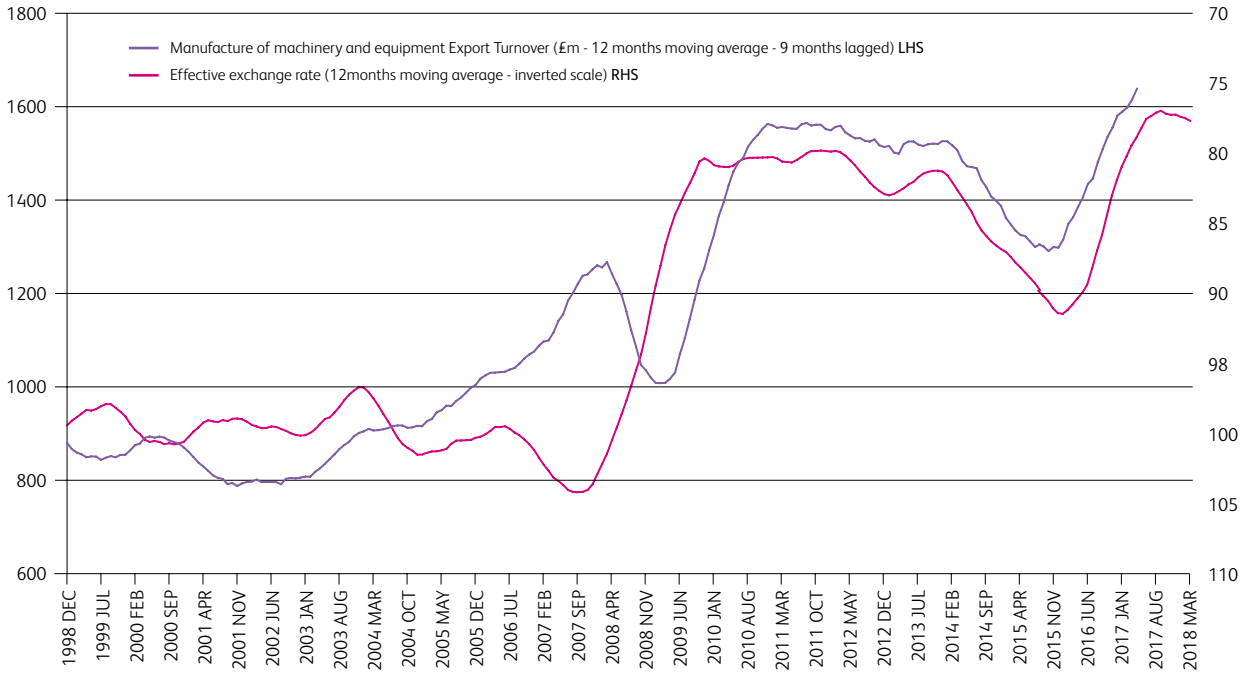
ANNEX

The charts below provide further evidence and illustration of arguments made in the report.

Annex Chart 1: Weakened productivity led to reduced international competitiveness for mechanical equipment

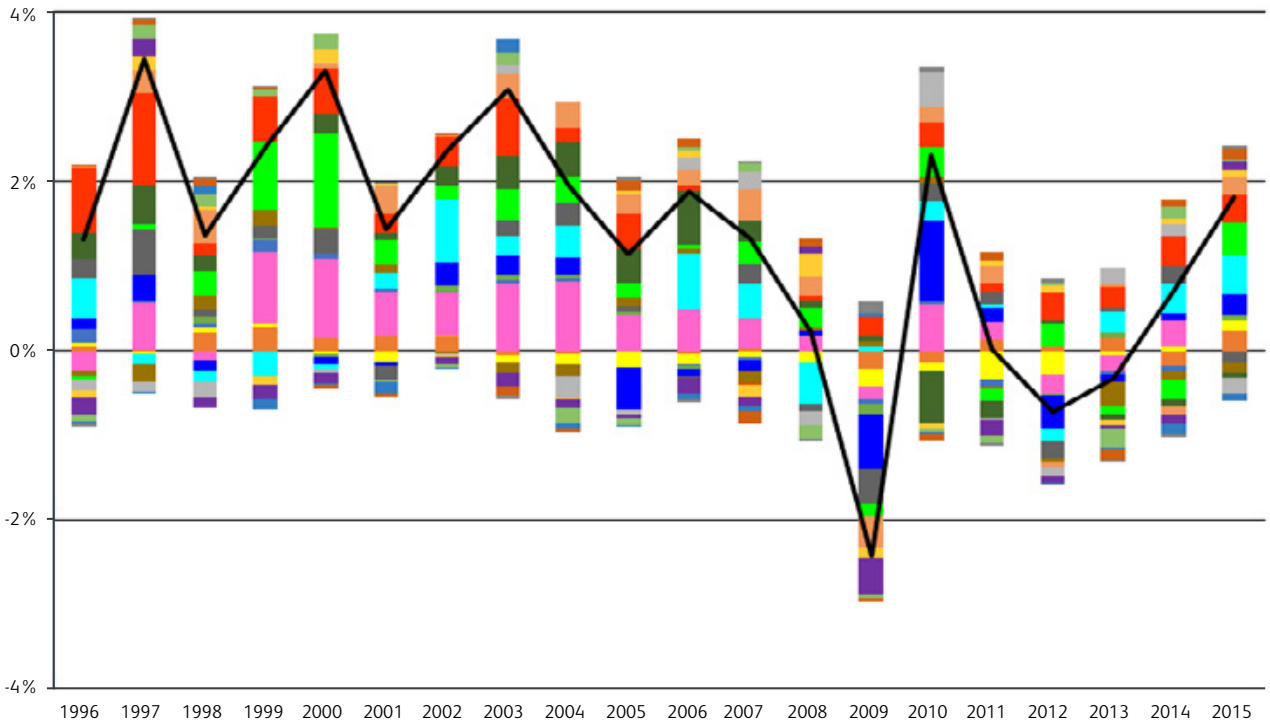
As an example, our initial analysis shows the impact of weakened productivity on sectors such as mechanical equipment. Post-2008, export turnover in the mechanical equipment sector is closely related to Sterling valuation on international markets, whereas pre-financial crisis, when productivity was on the rise, it wasn't.





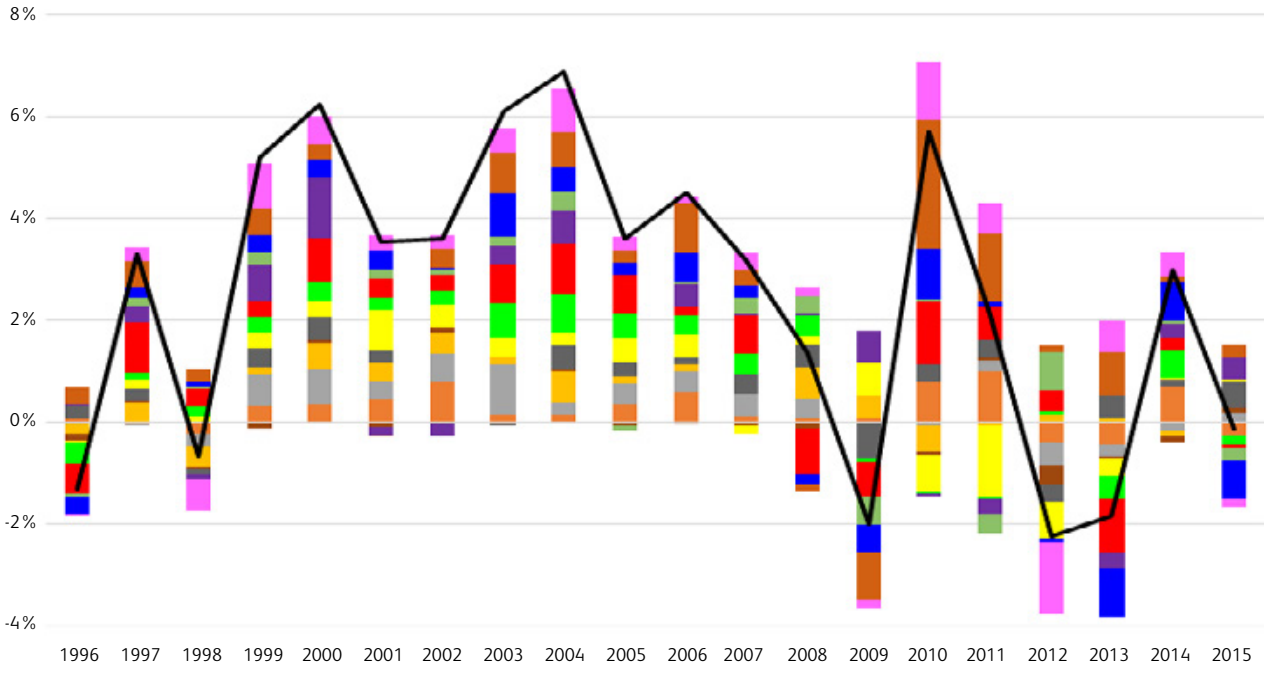
Source: Eurostat, Bank of England, and EEF analysis

Annex Chart 2: The contribution of manufacturing to economy wide productivity growth alongside other whole economy sectors



Source: Eurostat and EEF analysis

Annex Chart 3: Contribution of different manufacturing sub-sectors to overall manufacturing productivity growth

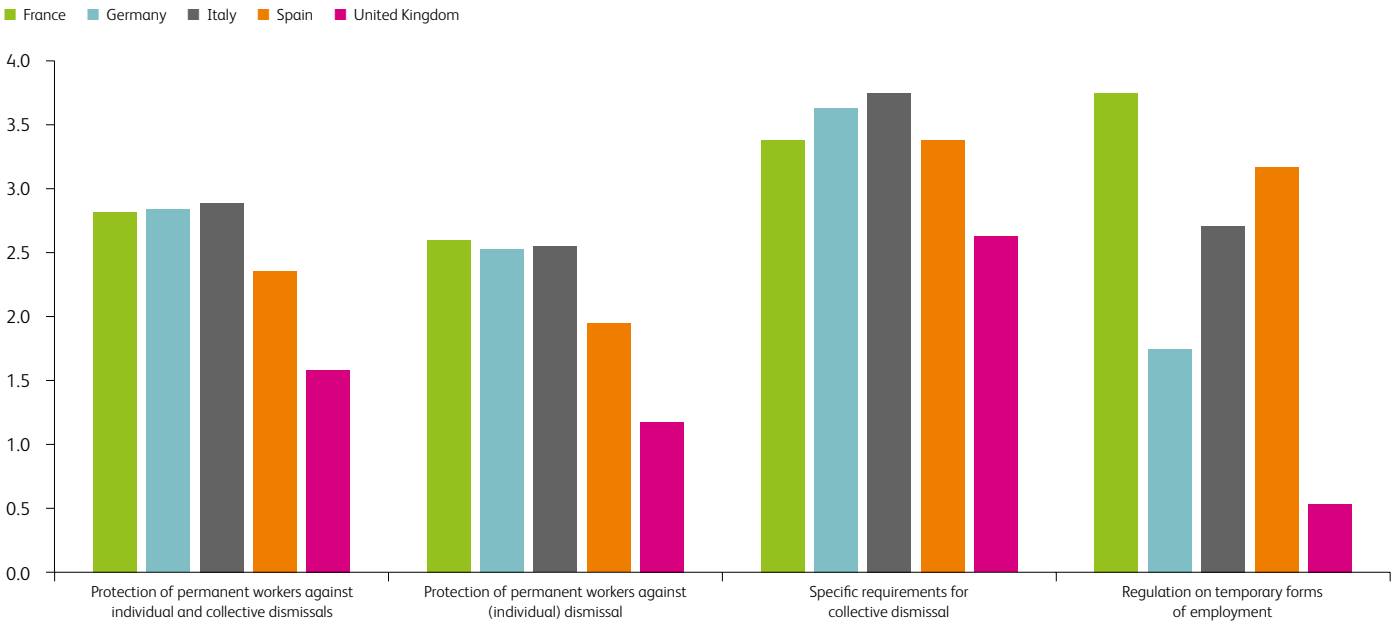


- Manufacture of furniture; jewellery, musical instruments, toys; repair and installation of machinery and equipment
- Manufacture of motor vehicles, trailers, semi-trailers and of other transport equipment
- Manufacture of machinery and equipment n.e.c.
- Manufacture of electrical equipment
- Manufacture of computer, electronic and optical products
- Manufacture of basic metals and fabricated metal products, except machinery and equipment
- Manufacture of rubber and plastic products and other non-metallic mineral products
- Manufacture of basic pharmaceutical products and pharmaceutical preparations
- Manufacture of chemicals and chemical products
- Manufacture of coke and refined petroleum products
- Manufacture of wood, paper, printing and reproduction
- Manufacture of textiles, wearing apparel, leather and related products
- Manufacture of food products; beverages and tobacco products
- Manufacturing

Source: Eurostat and EEF analysis

Annex Chart 4: OECD indicators on employment protection legislation (2013)

Scale from 0 (least restrictions) to 6 (most restrictions)



Source: OECD

Annex Table 1: Average annual growth in net capital stocks by manufacturing sub sector – alternative time brackets and all sectors

Chained volume measures % (2015)

	Average 1998-2007	Average 2008-2009	Average 2010-2016	Average 1998-2016
Food/drink/tobacco	0.40 %	-1.00 %	-0.20 %	0.00 %
Textiles	-3.30 %	-5.50 %	-3.50 %	-3.60 %
Wood products	-2.40 %	-4.00 %	-2.80 %	-2.70 %
Coke/petroleum	2.20 %	1.90 %	1.00 %	1.70 %
Chemicals	-0.60 %	-2.80 %	-1.90 %	-1.30 %
Pharmaceuticals	4.10 %	-4.00 %	-1.40 %	1.20 %
Rubber/plastics	-0.20 %	-1.20 %	-0.30 %	-0.30 %
Basic metals	5.10 %	-3.10 %	-2.70 %	1.40 %
Computer products	-1.70 %	-3.30 %	-2.40 %	-2.10 %
Electric equipment	-3.00 %	-4.20 %	-3.00 %	-3.10 %
Mechanical equipment	-0.50 %	-1.20 %	-0.20 %	-0.50 %
Transport equipment	0.80 %	-0.90 %	1.40 %	0.80 %
Other manufacturing	-0.10 %	-1.50 %	-0.50 %	-0.40 %

Source: ONS

Annex Table 2: The "capital gap" appears to be even stronger in some of the selected sub-sectors – alternative time brackets

Consumption of fixed capital / compensation of employees

	Average 1995-2015			Average 1995-2007			Average 2008-2009			Average 2010-2015		
	DE	IT	UK	DE	IT	UK	DE	IT	UK	DE	IT	UK
Manufacturing	30 %	39 %	21 %	30 %	36 %	21 %	31 %	40 %	23 %	30 %	44 %	22 %
Food, drink & tobacco	24 %	46 %	17 %	25 %	44 %	17 %	23 %	48 %	17 %	21 %	49 %	17 %
Chemicals	44 %	63 %	29 %	46 %	58 %	29 %	45 %	71 %	32 %	42 %	71 %	30 %
Pharmaceuticals	79 %	45 %	50 %	78 %	41 %	53 %	84 %	47 %	51 %	80 %	54 %	44 %
Mechanical equipment	20 %	26 %	16 %	20 %	25 %	16 %	20 %	26 %	17 %	19 %	28 %	17 %
Motor vehicles	44 %	48 %	33 %	40 %	41 %	31 %	51 %	52 %	35 %	50 %	60 %	35 %
Aerospace and other transport	43 %	46 %	31 %	47 %	43 %	30 %	39 %	44 %	37 %	36 %	54 %	31 %

Source: ONS

Annex Table 3: Non-core output by UK manufacturing sub-sector (2015)

Manufacturing sub-sector	2nd top output (i.e. 1st non-core output)	Share of total output
Manufacturing	Wholesale trade services, except of motor vehicles and motorcycles	2.70 %
Food, Drinks, and Tobacco	Wholesale trade services, except of motor vehicles and motorcycles	3.20 %
Textiles and Related Products	Furniture and other manufactured goods	2.60 %
Wood and Wood Products	Furniture and other manufactured goods	3.50 %
Paper and Paper Products	Wholesale trade services, except of motor vehicles and motorcycles	3.60 %
Printing and Reproduction Of Recorded Media	Paper and paper products	9.10 %
Coke and Refined Petroleum	Computer programming, consultancy and related services; Information services	0.00 %
Chemicals	Wholesale trade services, except of motor vehicles and motorcycles	7.30 %
Pharmaceuticals	Scientific research and development services	3.80 %
Rubber and Plastic Products	Wholesale trade services, except of motor vehicles and motorcycles	1.80 %
Other Non-Metallic Mineral Products	Wholesale trade services, except of motor vehicles and motorcycles	3.40 %
Basic Metals	Wholesale trade services, except of motor vehicles and motorcycles	2.10 %
Fabricated Metals	Repair and installation services of machinery and equipment	3.70 %
Computer, Electronic and Optical Products	Repair and installation services of machinery and equipment	8.20 %
Electrical Equipment	Computer, electronic and optical products	5.40 %
Mechanical Equipment	Repair and installation services of machinery and equipment	12.00 %
Motor Vehicles	Wholesale and retail trade and repair services of motor vehicles and motorcycles	5.70 %
Other Transport Equipment	Scientific research and development services	5.70 %
Furniture	Wholesale trade services, except of motor vehicles and motorcycles	5.90 %
Repair and Installation of Machinery and Equipment	Computer, electronic and optical products	21.70 %

Source: Eurostat

METHODOLOGY AND DATA USED FOR PRODUCTIVITY LEVEL CALCULATION

In our analysis we have chosen to use data from international sources such as Eurostat and OECD to achieve a good level of comparability amongst countries. As already explained on page 6, we have selected three European countries with manufacturing sectors big enough to be compared with the UK and with statistical agencies following the same recording data methodology (please see footnote at page 6 on why France has been excluded).

Productivity levels have been calculated using the following formula:

$$\frac{\textit{Real GVA chained 2010 prices National Currency/PPP exchange rates}}{\textit{hours worked}}$$

We used 2010 as price reference year since it is the official reference year currently used by Eurostat. We must note that the choice of a different reference year would create different level results and shifts in the ratios. However the trends would be the same, growth rates would be untouched and the gaps would remain broadly similar.

The choice of using US$ PPP to express GVA also created results extremely similar to those achieved using plain US$ or another common currency.

We would like to stress that the ratios are created mostly to check trends. The numbers shown in the graphs should not be used as an exact measure on how big these gaps are for the reasons cited above.

The manufacturers' organisation

EEF is dedicated to the future of manufacturing. Everything we do is designed to help manufacturing businesses evolve, innovate and compete in a fast-changing world. With our unique combination of business services, government representation and industry intelligence, no other organisation is better placed to provide the skills, knowledge and networks they need to thrive.

We work with the UK's manufacturers from the largest to the smallest, to help them work better, compete harder and innovate faster. We're committed to developing the engineering skills of the future. That's why we've invested in two multi-million pound, purpose built training centres in Birmingham, which deliver world-class apprenticeships and technical skills training.

And, because we understand manufacturers so well, policy-makers trust our advice and welcome our involvement in their deliberations. We work with them to create policies that are in the best interests of manufacturing that encourage a high growth industry and boost its ability to make a positive contribution to the UK's real economy.

Our policy work delivers real business value for our members, giving us a unique insight into the way changing legislation will affect their business. This insight, complemented by intelligence gathered through our ongoing member research and networking programmes, informs our broad portfolio of services; services that unlock business potential by creating highly productive workplaces in which innovation, creativity and competitiveness can thrive.

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