4 – Which industries will drive future jobs growth in the UK?

Key points

- Total employment in the UK could grow by around 3 million over the next decade, with the total number of jobs reaching almost 37 million by 2025.
- Education and health could add over 1 million jobs by 2025 and become the biggest of the services sectors.
- Business services could create around 1.5 million more jobs by 2025 and become the second biggest services sector, with distribution, hotels and restaurants in third place.
- The number of jobs in manufacturing could fall by a further 600,000 to around 2 million by 2025 as new automated technologies continue to boost productivity and overseas competition remains fierce.
- Around 150,000 jobs could be lost in public administration, defence and social security as austerity measures continue at least until 2020.

Introduction

The UK has been a powerful job creating machine in recent years, with gains in private services sectors far outweighing cuts in manufacturing and parts of the public sector (other than health and education). But can we expect these positive trends to continue over the next decade in the face of further austerity, automation and international competition? This section presents our projections for jobs growth by industry sector to 2025 after first analysing historical trends. Our focus here is on the UK as a whole.

The discussion is organised as follows:

Section 4.1	Long term changes in the industrial structure of UK employment
Section 4.2	Employment and productivity growth by industry sector
Section 4.3	Projected employment growth trends over the next decade
Section 4.4	Summary and conclusions

4.1 - Long term changes in the industrial structure of UK employment

We begin with a long term view of how the structure of UK employment has changed over the past 175 years using Population Census data. Figure 4.1 shows how this can be divided into three distinct time periods.

Back in 1841, manufacturing was the largest employer in Britain, closely followed by services. By that time, only 1 in 4 people were employed in the agriculture, forestry and fishing industry, which had been dominant before the Industrial Revolution began in the mid-18th century, and this fell to less than 1 in 10 by the start of the 20th century. Services had caught up with manufacturing by 1871, but employment in these two sectors remained broadly similar prior to World War I.

The second period, from 1911 to 1961, saw stronger growth in the services industry, reaching around half of total employment in England and Wales by 1931. Manufacturing's share fell during the inter-war years when the global trade environment was disrupted, but recovered slightly after 1945 as world trade growth picked up again. The percentage of employment in agriculture continued to fall and, by 1961, only 1 in 25 people were employed in this sector.

However, it was in the final period from 1961 until the present day during which the growth in services really took off, now accounting for over 80% of all jobs. Manufacturing, on the other hand, fell to just 9% of all jobs by 2011 as international competition increased, production moved overseas seeking lower costs and some services previously undertaken within manufacturing companies were outsourced (e.g. cleaning and catering)[1]. As we will discuss later, however, manufacturing output held up much better than employment as productivity growth remained relatively strong.

1 This latter point may overstate the decline in 'true' manufacturing jobs in the official statistics we use for this article, but unfortunately no data are readily available that adjust for this effect.

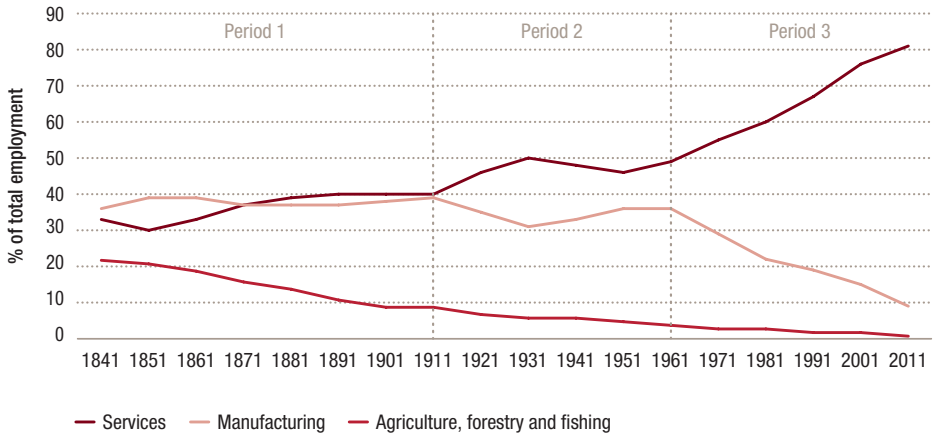
Detailed analysis of sectoral employment trends since 1978

Census data give an indication of the broad shift in UK employment since the mid-19th century, but more detailed sectoral breakdowns are only available since 1978 based on the official ONS workforce jobs survey[2]. Figure 4.2 shows this for selected dates, all for September for consistency, as follows:

- September 1978 – The first detailed sectoral data available from the ONS workforce jobs survey in its current format;
- September 1997 – A mid-cycle date that could be considered broadly comparable with 2015 so that the whole period from 1997-2015 covers trends over roughly a full economic cycle;
- September 2007 – Around the start of the global financial crisis;
- September 2010 – Around the low point for total UK employment after the crisis; and
- September 2015 – The latest available data from the workforce jobs survey.

Figure 4.2 shows the growing dominance of the UK services industry and the sharp decline in manufacturing in recent decades. Employment in energy and water also declined sharply in the 1980s and 1990s with the decline of the UK coal mining industry and the effect of the electricity, gas and water privatisations in encouraging efficiency-enhancing job cuts. Employment in construction has, by contrast, been remarkably stable at around 6-7% of the total for nearly 40 years, despite some cyclical ups and downs during this period.

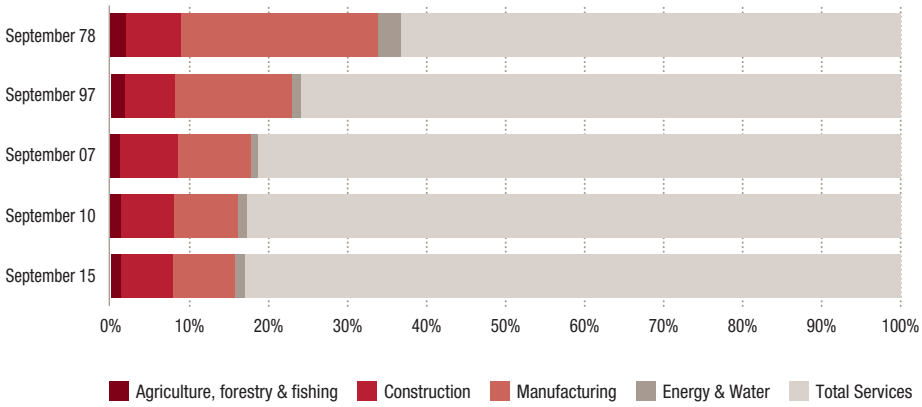
Figure 4.1 – UK Employment shares by industry since 1841



Source: ONS census data

Note: Data until 1911 covers Great Britain, and from 1921-2011 covers England and Wales, but this should not make a major difference to the broad trends shown.

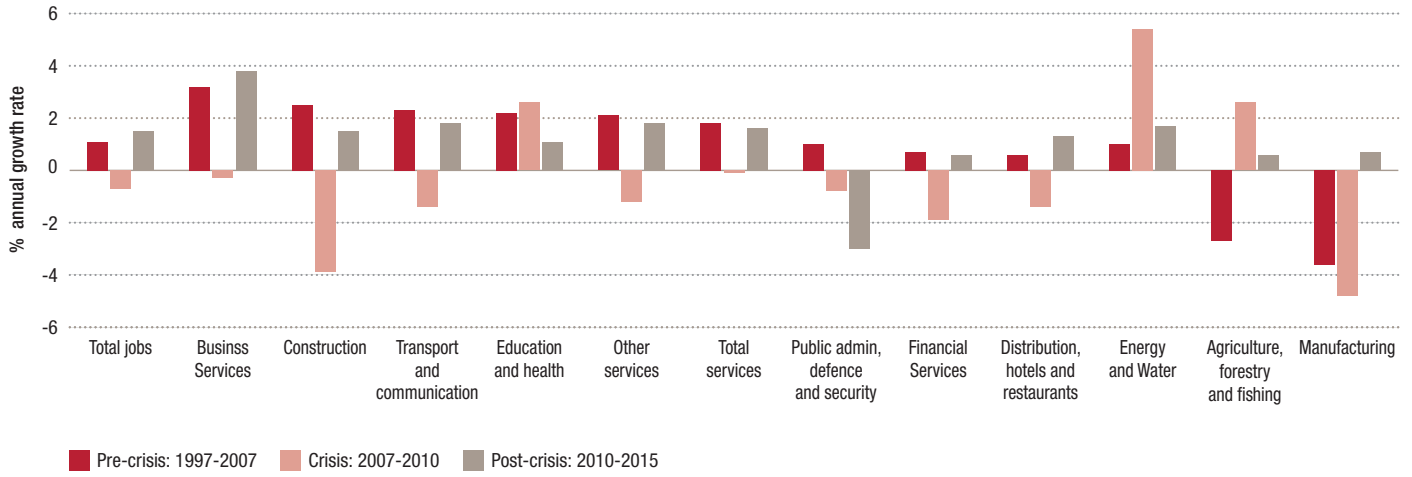
Figure 4.2 – Breakdown of UK jobs by industry sector since 1978



Source: PwC analysis of ONS data

2 Note that this measures the numbers of jobs (including self-employment), which will be higher than the number of people employed given that some may have two or more jobs. These estimates are mostly based on employer surveys, which are considered by the ONS to be more reliable in providing an industry classification than the Labour Force Survey (LFS), which is of individuals. However, LFS data is used for self-employment and other administrative sources are also used by the ONS to supplement employer surveys where appropriate. The latest such workforce jobs data published at the time of writing are for September 2015 given that they are only produced quarterly with some time lag.

Figure 4.3 – Annual job growth rates by sector since 1997

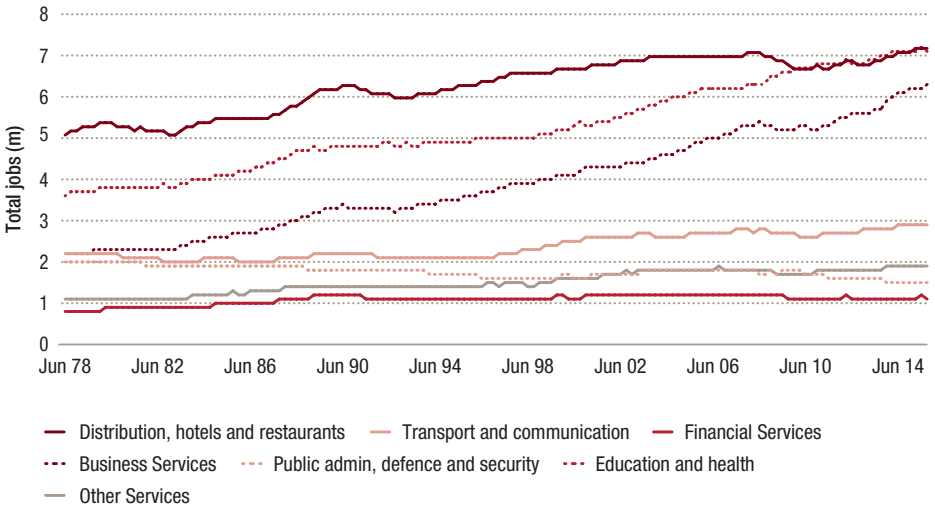


Source: PwC analysis of ONS data

Figure 4.3 shows a more detailed sectoral breakdown of the growth rates of employment within three sub-periods of what we estimate to be the latest full economic cycle: pre crisis (1997-2007), crisis (2007-2010) and post-crisis (2010-2015). Construction and manufacturing were hit the hardest by the financial crisis, with employment in these sectors falling by around 4% per annum in 2007-10. By contrast, education and health employment continued to grow through the recession and beyond, while the public administration, defence and social security sector saw jobs cut after 2010 as austerity started to bite.

To understand what is really driving UK employment growth, however, we need to look more closely at the growth in key services sectors, as shown in Figure 4.4.

Figure 4.4 – Jobs trends in services sectors



Source: PwC analysis of ONS data

Business services has experienced the strongest growth since 1978 and now employs over 6 million people as well as being a major contributor to UK exports and productivity growth[3]. Distribution still remains the biggest employer of services at around 7 million, but its growth rate has been much less strong and the education and health sector is only just behind now.

Despite London being a global centre for the industry, financial services account for relatively few (but, on average, high value) jobs and has seen broadly flat employment levels in recent years in contrast to the very strong growth in business services jobs.

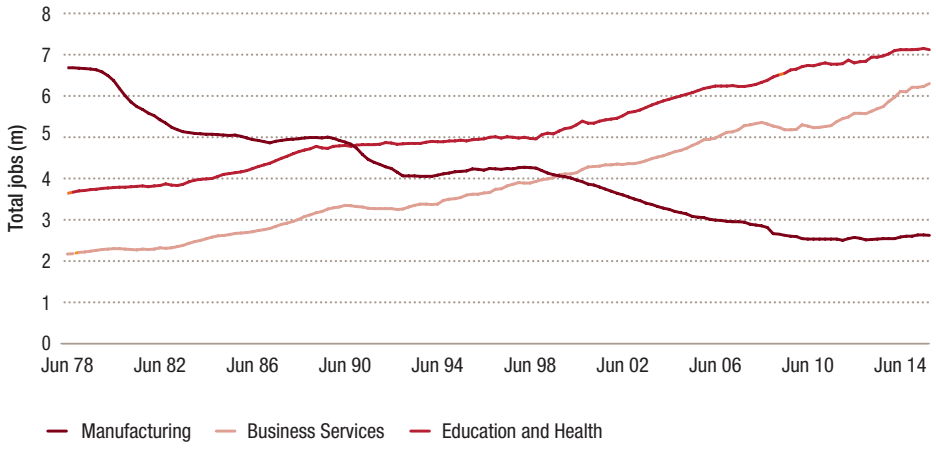
As the UK economy has transitioned towards services, so manufacturing has been overtaken first by health and education (in around 1990 as Figure 4.5 shows) and then by business services in around 2000. Manufacturing was hit hard by the recessions in the early 1980s and early 1990s, with the total number of jobs falling by 23% and 18% respectively. Between recessions, manufacturing employment appears to have been relatively stable until around 1997, but was then hit by increased competition from China and other emerging markets and a relatively strong pound until 2007. It was then impacted by the global financial crisis of 2008-9, though to a lesser degree than in earlier recessions.

The rise in business services employment has been particularly striking in recent decades, associated partly with outsourcing from other sectors and partly with strong growth in professional areas like law, accounting, consultancy and real estate services. We can also note that this has gone alongside a general rise in entrepreneurial activity in the UK. For example, the Department for Business, Innovation and Skills (BIS) estimates that the total number of businesses in the UK's private sector has grown from 3.5 million in 2000 to 4.9 million in 2013 – a rise of just over 40% during this period[4].

This almost perfectly matches the 40% growth in jobs in professional, scientific and technical activities over the same period, which may be related to some degree.

It is worth noting that there has also been a marked rise in self-employment[5] in the UK since the late 1970s, some of which may be a voluntary sign of increased entrepreneurship and some a less positive indication of people wanting but being unable to become employees in either the private or public sector jobs during and after major recessions, or indeed people who have been made redundant "forced" into self-employment. We discuss these trends further in Box 4.1 at the end of this article.

Figure 4.5 – Manufacturing vs education and health vs business services



Source: PwC analysis of ONS data

3 As highlighted, for example, in an article by Andrew Sentance, PwC's senior economic adviser, in our July 2015 UK Economic Outlook report: http://www.pwc.co.uk/assets/pdf/ukeo-jul2015.pdf
4 Source: Business population estimates for the UK and regions 2013, Department for Business Innovation and Skills, October 2013.
5 Note that the jobs figures in this article generally include both employees and the self-employed.

4.2 - Employment and productivity growth by industry sector

The relationship between productivity growth[6] and employment growth is also important in assessing overall sectoral performance. Figure 4.6 shows how industries compare on these two measures over the period since 1997 (which is roughly a full economic cycle as we noted earlier).

Our analysis shows a negative correlation coefficient between employment growth and productivity growth of around -0.5 (the dotted line in Figure 4.6). While correlation does not necessarily imply causation, there does appear to be some tendency for labour-intensive sectors that face increased demand but have relatively low productivity growth potential to generate a lot of jobs so as to meet this extra demand (e.g. education and health). The opposite may tend to be true for more capital-intensive sectors (e.g. manufacturing, energy and water). But there are also 'star' sectors that are outliers on the chart and perform relatively well on both measures, in particular:

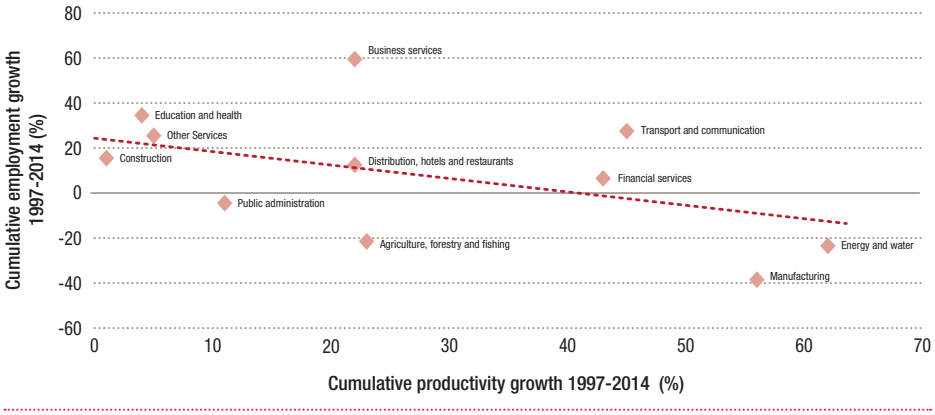
- **business services**, which tend to be labour-intensive and so have increased employment numbers greatly in response to a strong increases in demand, but have also been able to make some efficiency gains over time through use of new information technologies; and

- **transport and communication**, which is a more capital-intensive sector in general, but has also seen reasonably strong jobs growth since 1997.

These two sectors illustrate the possibility that higher productivity might itself, through lowering costs and prices, actually boost output and hence employment in the medium to long run.

There are also some sectors, however, where either productivity growth has been weak without being a huge job creator (e.g. construction), or where employment has been stagnant or falling without particularly strong productivity growth since 1997 (e.g. public administration and agriculture).

Figure 4.6 – UK sectoral jobs growth vs productivity growth (1997-2014)



Source: PwC analysis of ONS data

6 Measured here as output per job in volume terms.

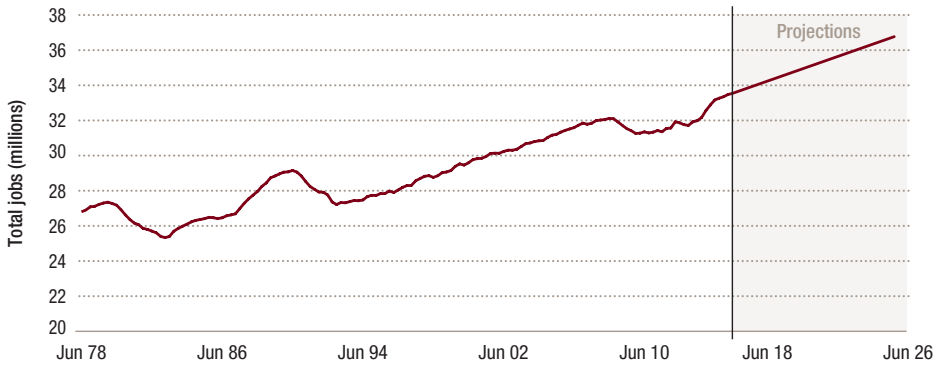
4.3 – Projected employment growth trends over the next decade

We now turn to future job prospects. We began by looking at the past trend in the total number of UK jobs as shown in Figure 4.7 and then project this forward to 2025. This implies average annual jobs growth of around 0.9% per annum, which is similar to that achieved over the approximate full economic cycle from 1997-2015 and also broadly in line with the latest OBR employment growth projections for 2015-20. If we assume overall GDP growth of around 2-2.5% per annum in line with OBR estimates, this would imply average productivity growth of around 1-1.5% per annum, somewhat lower than historical norms but more consistent with trends in the recovery period since mid-2009. This would also suggest continued positive, but relatively modest, real earnings growth of around 1-1.5% per annum over the next decade, as you would expect this to broadly match productivity growth.

Of course, actual jobs growth will almost certainly be less smooth than shown in Figure 4.7, so our projection should be interpreted as an indicator of the long term underlying trend, not a year-by-year forecast. We cannot predict the cyclical ups and downs of the labour market over the next decade but we assume, in the absence of any better information, that these cyclical variations will broadly average out over this ten year period. This is clearly not guaranteed and so represents one source of risk to our projections (this and other uncertainties are discussed further later in this article).

Overall, our projections imply cumulative jobs growth of around 3 million by 2025, taking the total number of jobs in the UK to almost 37 million by that date (note that this will be more than total employment, since some people will have more than one job).

Figure 4.7 – Projected trend growth in total UK jobs to 2025



Source: PwC projections based on historical ONS data

Having set the overall jobs envelope, we assess how this might break down by industry sector as set out in Table 4.1.

Comparing the last two columns in Table 4.1 shows that in many sectors we consider it reasonable for historic trends to continue over the next decade. This includes a continued decline in manufacturing jobs as smart automation reduces the number of workers required while also boosting productivity as in the past. There may be some areas where 'cobotics' will involve increased demand for people with the skills to work in a complementary way with robots[7], but these are likely to involve a small number of relatively highly qualified staff, not a return to the mass manufacturing employment seen in the UK in earlier periods.

Public administration is also likely to see further job losses as austerity continues over the period to 2020. Even beyond this date, however, we expect the UK government to use digital technologies to enhance efficiency and reduce headcount while aiming to maintain service quality[8].

Table 4.1 – UK employment growth rates 1997-2015 and 2015-2025

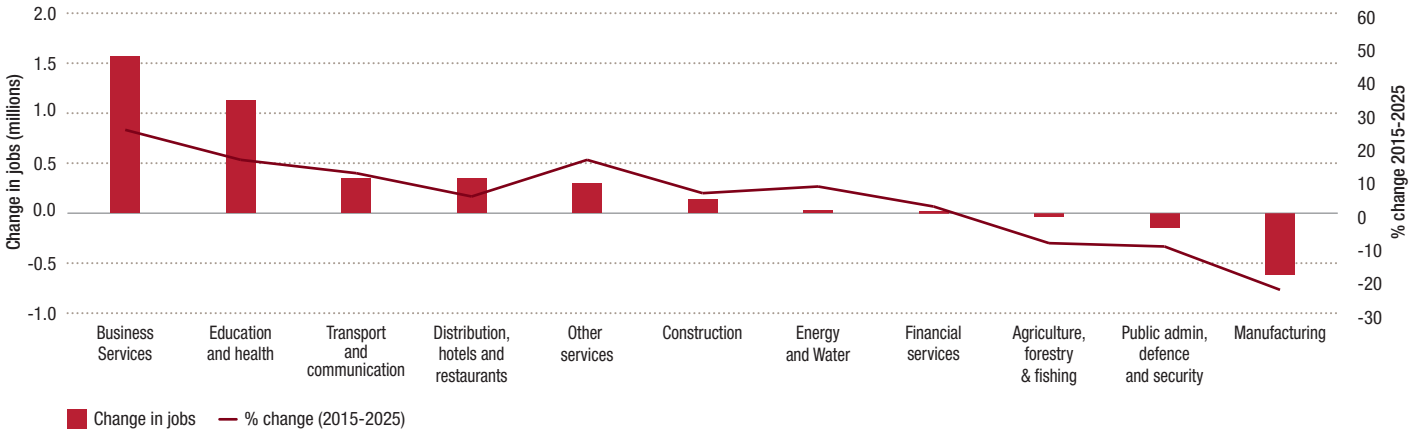
	Number of jobs (millions)			Growth rates (per annum)	
Industry	1997	2015	2025 (projected)	1997-2015	2015-2025 (projected)
Agriculture, forestry & fishing	0.5	0.4	0.4	-0.9%	-0.9%
Construction	1.8	2.2	2.4	1.1%	0.6%
Manufacturing	4.3	2.6	2.0	-2.6%	-2.6%
Energy and water	0.3	0.4	0.4	0.8%	0.8%
Distribution, hotels and restaurants	6.6	7.2	7.5	0.5%	0.5%
Transport and communication	2.2	2.9	3.2	1.6%	1.2%
Financial services	1.1	1.1	1.2	0.2%	0.2%
Business services	3.9	6.3	7.9	2.8%	2.3%
Public administration, defence and security	1.6	1.5	1.3	-0.4%	-1.0%
Education and health	5.0	7.1	8.3	2.0%	1.5%
Other services	1.5	1.9	2.2	1.5%	1.5%
Total services	21.8	28.0	31.6	1.4%	1.2%
Total Jobs	**28.8**	**33.7**	**36.9**	**0.9%**	**0.9%**

Source: PwC projections and ONS historical data

7 As discussed further in our Strategy& Industry Perspectives piece on the future of manufacturing here: http://www.strategyand.pwc.com/perspectives/2016-manufacturing-trends

8 For more discussion of these and other issues around the future of government see: http://www.pwc.com/gx/en/industries/government-public-services/public-sector-research-centre/publications/government-19th-annual-ceo-survey.html

Figure 4.8 – Change in jobs over the next decade by UK industry sector (2015-2025)



Source: PwC projections based on historical ONS data

But we expect that these areas of declining headcount will be far outweighed by continued strong job creation in health and education and business services in particular (see Figure 4.8).

Although we believe the growth in business services will slow down slightly from its past trend as some of these markets mature, we are projecting close to 900,000 new jobs in professional, scientific and technical activities by 2025 (in contrast, administrative and support services jobs may be more at risk from further advances in automation[9]).

In contrast to business services, the financial services sector is unlikely to be a large job creator, though there could be plenty of change within the market due to regulatory pressures and challenges to incumbents from FinTech start-ups[10].

We project around 1.1 million new jobs in health and education by 2025, taking its total above that for distribution, hotels and catering, with around 60% of these new jobs arising in the health sector as an ageing population further increases demand in this area. The NHS is pushing towards more healthcare being provided in the community, where it is relatively cheaper, rather than the expensive acute sector, but this is more to save non-labour costs rather than reduce the number of doctors, nurses and other carers needed. We do expect the growth in this sector over the next decade to slow down somewhat, as the rate of jobs growth seen in 1997-2015 seems financially unsustainable in the long run, but this is still likely to be a major net job creator if health and long term care service standards are not to be seriously eroded over the next decade.

Overall, therefore, we are projecting close to 3.6 million extra jobs within services over the next decade, with this broad sector accounting for over 85% of total UK employment by 2025. By that date, there could also be fewer people working within manufacturing than construction for the first time in recorded history.

9 Offshoring may also continue to be a factor in some support services, though there could also be some 'reshoring' of customer service call centres as we argued in earlier research here: http://www.pwc.co.uk/services/economics-policy/insights/uk-economic-outlook/reshoring-a-new-direction-for-the-uk-economy-ukeo-march14.html

10 As discussed further here: http://www.strategyand.pwc.com/perspectives/2016-financial-services-trends

Risks to our projections

Whilst we believe our projections are plausible, they could be thrown off by various factors including:

- a deep and prolonged recession from which the economy was not able to recover fully by 2025 (though past experience is that jobs growth does eventually bounce back from such cyclical downturns, so our projections may still be a good guide to longer term underlying trends);
- little or no continuation of recent trends towards increased labour force participation by older people, which will be needed to keep the workforce growing strongly despite an ageing population; planned further rises in state pension ages will tend to support this trend continuing but it is not guaranteed it will proceed as fast as in the past five years in particular;
- severe limits being imposed on migration of workers to the UK, for example after a vote to leave the EU (although it is important to note that our projections are broadly consistent with ONS population projections which suggest a gradual moderation in net migration to the UK from the very high levels seen over the past few years); and
- a significant number of workers being displaced from some jobs by smart machines, although these should – as in the past – be compensated for to a large degree by job creation in other services areas, even if we cannot easily predict what these new jobs will be (there should certainly be some new digital job creation, as we have argued in our previous research).

4.4 – Summary and conclusions

The dominant story of the last century has been the rise of services to its current position as the dominant source of UK employment. Manufacturing now accounts for less than 10% of UK jobs and there is little prospect of this reversing, while health and education and business services have been the biggest growth areas since the late 1970s.

Looking ahead, our analysis suggests that over the next decade:

- Employment in the UK could grow by around 3 million by 2025, with the total number of jobs reaching almost 37 million.
- Education and health could add over 1 million jobs by 2025 and become the biggest of the services sectors.
- Business services could create around 1.5 million more jobs by 2025 and will become the second biggest services sector, with distribution, hotels and restaurants in third place.
- The number of jobs in manufacturing could fall by a further 600,000 to around 2 million by 2025 as new automated technologies continue to boost productivity and overseas competition remains fierce.
- Around 150,000 jobs could be lost in public administration, defence and social security as austerity measures continue at least until 2020.

11 The ONS projections suggest working age population growth of around 0.6-0.7% per annum as compared to our 0.9% per annum employment growth projections. We would see the difference as being made up by a continued trend towards higher employment rates, particularly for women and older workers.
12 PwC UK Economic Outlook, March 2015 here: http://www.pwc.co.uk/services/economics-policy/insights/uk-economic-outlook/ukeo-mar2015-new-job-creation.html

Box 4.1
The rise of self-employment

As Figure 4.9 shows there was a strong rise in self-employment in the UK in the 1980s and then again over the past decade (though the last year has seen more volatile trends).

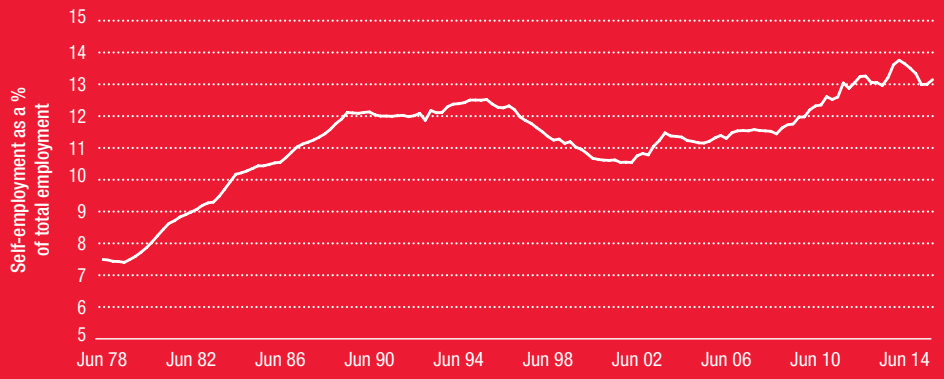
The industries with the highest and lowest self-employment rates are shown in Table 4.2.

Whilst it may be no surprise to see that agriculture, forestry and fishing has the highest rate of self-employment the absolute numbers involved are small. There have, however, been significant increases recently in the construction and other services sectors, perhaps partly as a result of people laid off during the last recession being unable to get corporate jobs after that, as well as by older workers preferring to be their own boss.

It is also notable that the biggest growth in self-employment over the past 10 years has been in education: from 2005 to 2015 there were nearly 200,000 more self-employed people in this sector, perhaps reflecting both cutbacks in some public sector services, particularly in further education, as well as people turning to tutoring as a supplement to other household incomes and/or a convenient source of part-time work for older, well educated people.

We believe that this growing trend for self-employment will continue over the next 10 years, perhaps pushing up the proportion of self-employed workers to close to 20% by 2025. The rise of the 'gig economy', as exemplified by digital age companies like Uber and Task Rabbit, may be at the forefront of this trend as discussed in previous PwC research[13].

Figure 4.9 – Self-employment as a percentage of total employment



Source: PwC analysis of ONS data

Table 4.2: Highest and lowest rates of self-employment (as % of total jobs in sector)

Highest self-employment rates	Lowest self-employment rates
Agriculture, forestry & fishing (48%)	Public administration, defence and social security (3%)
Construction (37%)	Water supply, waste & remediation activities (5%)
Other services (34%)	Accommodation and food services, and financial and insurance activities (7%)

Source: PwC analysis of ONS data

13 See our analysis of the sharing economy's growth potential at: http://www.pwc.co.uk/issues/megatrends/collisions/sharingeconomy.html

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www.pwc.co.uk/economics