

Article

An analysis of investment expenditure in the UK and other Organisation for Economic Co-operation and Development nations

Trends seen in government investment and non-government investment in non-financial assets in the UK and other Organisation for Economic Co-operation Development (OECD) nations.

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1 . Main points

- Between 1987 and 2016, government expenditure as a percentage of gross fixed capital formation (GFCF) has increased from an average of 6.3% between 1987 and 1990, to an average of 16.5% between 2013 and 2016.
- The highest value of non-government GFCF as a percentage of total GFCF was seen in 2002 with 88.3%, whilst the lowest recorded value was 72.3% in 2009.
- Between 1995 and 2003, the UK was in the bottom 10th percentile of government investment in non-financial assets of all Organisation for Economic Co-operation and Development (OECD) nations; it has since climbed out of the bottom 10th percentile.
- The UK has the lowest percentage of non-government GFCF as a percentage of gross domestic product (GDP) across the OECD between 1995 and 2015.
- Data show a negative relationship between the percentage of GFCF as a share of GDP as the size of the services sector increases, and a positive relationship between the percentage of GFCF as a share of GDP as the relative size of the manufacturing sector increases.

2 . Introduction

Gross fixed capital formation (GFCF) is a net investment concept used within national accounts, which measures expenditure on non-financial assets from both the public and non-government sectors. More specifically, it measures the acquisitions less disposals of assets such as buildings, software, transport equipment and machinery used in the production process for more than one year. GFCF is a component of the expenditure measure of gross domestic product (GDP) and currently represents approximately 16.4% of GDP in the UK. GFCF is an important factor within an economy as it highlights an aspect of long-term productive capacity.

Since the publication of our previous article, [An international comparison of gross fixed capital formation](#), there has been increased interest specifically regarding the split of government data compared with non-government data, both within the UK and internationally. This short article will focus on and highlight the observed trends within government and non-government GFCF.

For the purposes of this comparison, non-government investment will be defined as investment made by public corporations and the private sector, and government investment will be defined as expenditure made by central and local government. Data have been collated from the Office for National Statistics, the Organisation for Economic Co-operation and Development (OECD) and the World Bank. Comparisons made in this article will be made using current price, seasonally adjusted data on an annual basis from 1997 to 2016 unless specified.

3 . UK GFCF expenditure analysis

Between 1987 and 2016, government expenditure as a percentage of gross fixed capital formation (GFCF) has increased from an average of 6.3% between 1987 and 1990, to an average of 16.5% between 2013 and 2016. The highest percentage of government expenditure as a percentage of GFCF was seen in 2009 during the recovery of the financial crisis, when the government was responsible for 22.1% of GFCF. This reflects how much non-government investment fell over a period of heightened uncertainty and tightening financial conditions.

On an asset basis, the government invests the majority of its money on other buildings and structures. These typically comprise of structures such as schools, hospitals and prisons among other things. It also includes infrastructure such as roads, railways and bridges. Between 1997 and 2009, this expenditure comprised 46.6% of government GFCF.

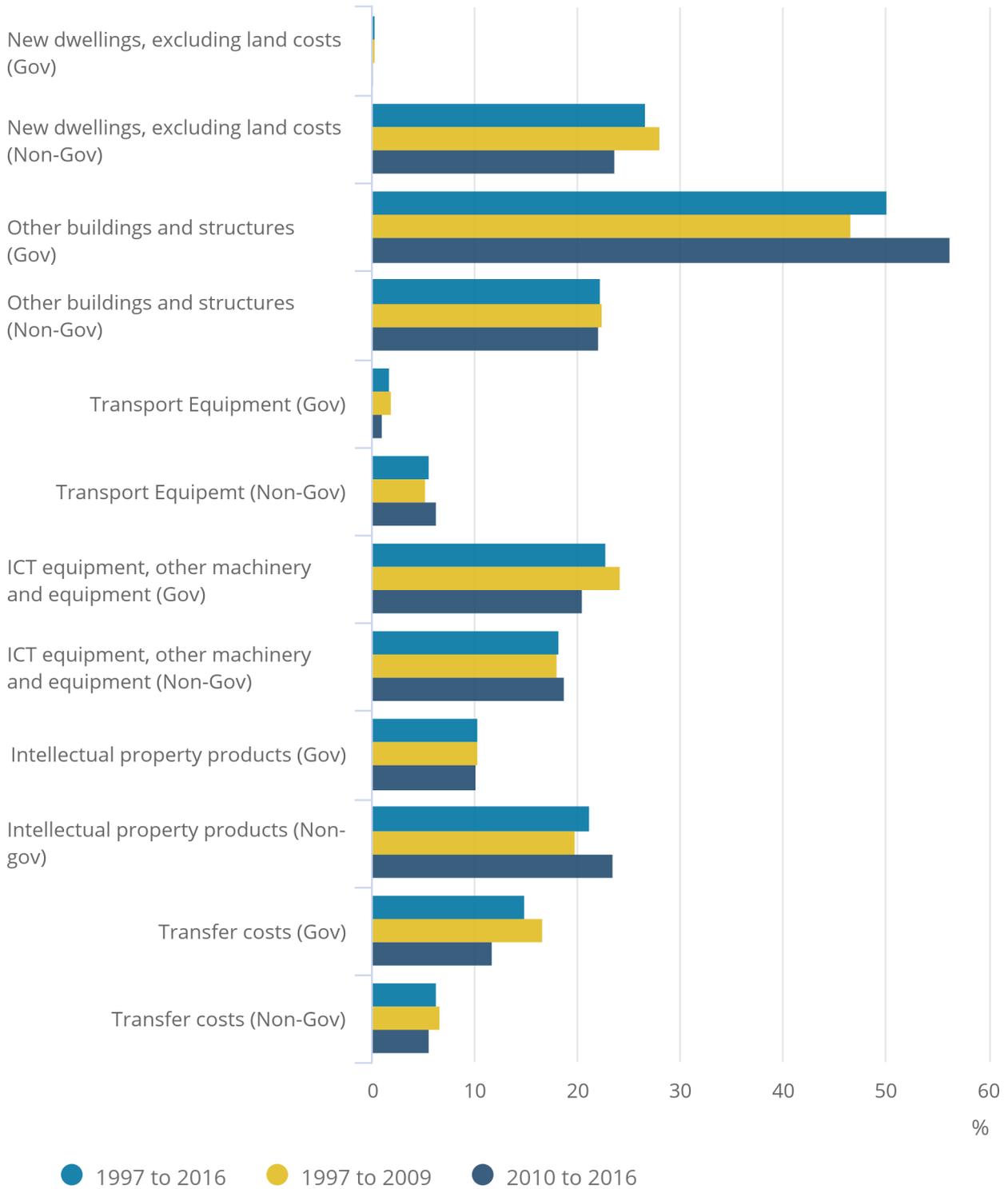
To compensate for the increased percentage spend on other buildings and structures, transfer costs and information and communications technology (ICT) equipment, other machinery and equipment saw a decrease of 4.9% and 3.7% respectively, when looking at the average spend from 2010 to 2016 compared with the average spend of 1997 to 2009. There was also a slight decrease of 1.0% in transport equipment when looking at the same period.

Figure 1: Average government and non-government expenditure on assets

UK, 1997 to 2016, 1997 to 2009 and 2010 to 2016

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UK, 1997 to 2016, 1997 to 2009 and 2010 to 2016



Notes:

1. Gov refers to government expenditure.
2. Non-gov refers to non-government expenditure.

Average non-government expenditure on GFCF between 1997 and 2016 averaged 81.1% of total GFCF expenditure. The highest value of non-government GFCF was seen in 2002 with 88.3%, whilst the lowest recorded value was 72.3% in 2009, corresponding with the peak in the share of government GFCF expenditure.

Non-government expenditure on GFCF has a different composition to government expenditure. Much less, in relative terms, is spent on other buildings and structures than is the case with government expenditure. Between 1997 and 2016, dwellings accounted for 26.6% of total expenditure and intellectual property products stood at 21.2%. These are both much larger percentages than observed within the government series.

Looking specifically at the different assets, between 1997 and 2009, dwellings made up 28.1% of non-government expenditure on GFCF. Between 2010 and 2016, this fell by 4.4 percentage points to 23.7%. The highest chained volume measure spend on dwellings was seen in 2004, with £72.0 billion being spent on dwellings.

The Intellectual Property Products (IPP) series has seen an upturn in the average percentage of GFCF it contributes to. Between 2010 and 2016, IPP averaged 23.5%, up from 19.9% between 1997 and 2009. With the advent of new technologies, new software and the research and development required to stay competitive for many companies, it makes sense that IPP as a proportion of GFCF should have increased over recent years. Expenditure on transport equipment has seen sharp increases in 2015 and 2016. Despite averaging 5.7% across the period, in 2015 transport expenditure accounted for 8.4% of total GFCF expenditure and this increased to 10.0% in 2016. Expenditure on transport equipment has been consistently increasing since 2011, when it accounted for just 3.8% of total GFCF.

4 . OECD government expenditure

The UK has had historically low investment in gross fixed capital formation (GFCF) as a percentage of gross domestic product (GDP), as outlined in the previous article, [An international comparison of gross fixed capital formation](#). This showed that the UK was consistently near the bottom of the Organisation for Economic Co-operation and Development (OECD) nations in terms of investment. When specifically analysing government expenditure on GFCF, a similar picture is seen.

Between 1995 and 2003, the UK was in the bottom 10th percentile of government investment in non-financial assets of all OECD nations. In this period, government expenditure on GFCF made up just 1.8% of total GDP. In the years since 2003, this average has increased to 2.7% of GDP and the UK has climbed out of the bottom 10th percentile of OECD countries.

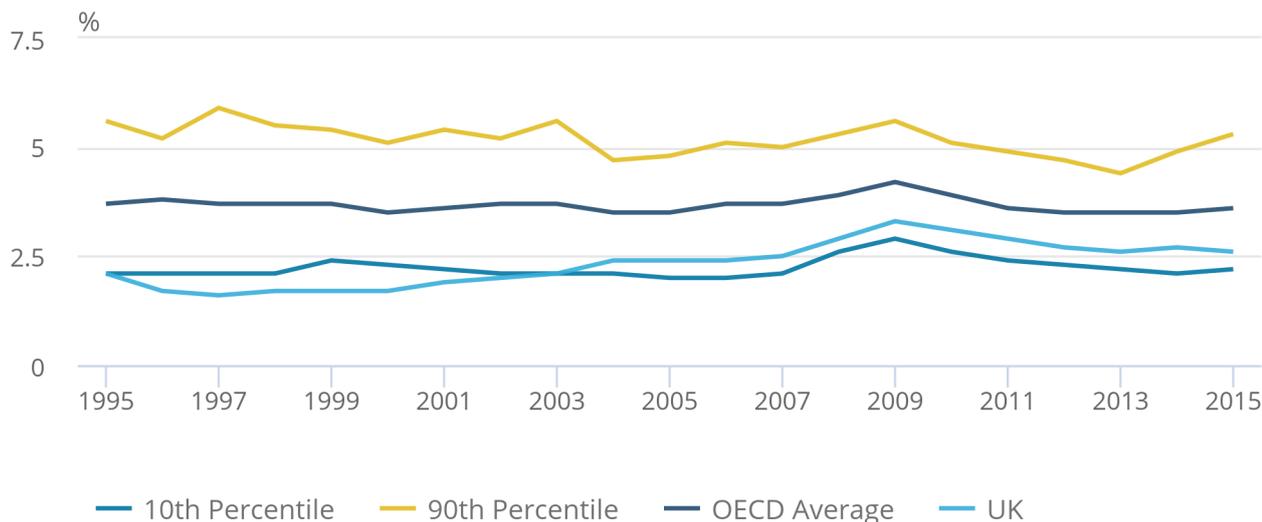
The South Korean government has the biggest proportion of GFCF made up by government investment in non-financial assets, at 5.3% of GDP based on an average between 1995 and 2015. The highest ranking G7 nation in this comparison is Japan, which has a value of 4.6% – the third-highest in the OECD – and a maximum value of 6.5% in 1996.

Figure 2: Government expenditure on gross fixed capital formation as a percentage of gross domestic product

UK and Organisation for Economic Co-operation and Development nations, 1995 to 2015

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UK and Organisation for Economic Co-operation and Development nations, 1995 to 2015



Source: Organisation for Economic Co-operation and Development (OECD)

The G7, as a whole, have relatively low levels of government expenditure on GFCF as a percentage of GDP. Germany is the country that has the lowest average government expenditure on GFCF as a percentage of GDP. With an average of 2.2% between 1995 and 2015, this is slightly lower than Belgium, Chile and the UK, which has the fourth lowest average expenditure across the period at 2.3%.

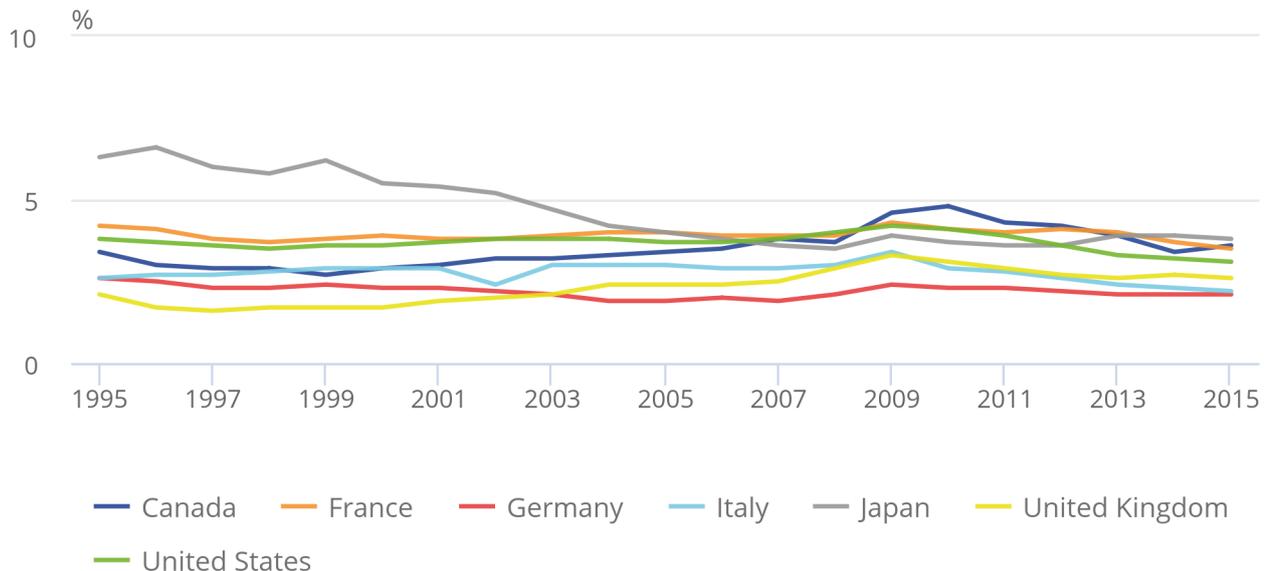
Japan, on the other hand, had a very high percentage prior to and at the turn of the century, but has since fallen to a level more similar to that of Canada and France. These three countries lead the G7 in government expenditure on GFCF as a percentage of GDP, although their percentage is similar to that of the OECD average. The US's average government expenditure on GFCF as a percentage of GDP in this period was 3.7%; that is, 1.4% higher than the UK. The UK ranks fifth in 2015 levels, having ranked last in every year from 1995 to 2003, and moving to a higher percentage than Italy in 2010.

Figure 3: Government expenditure on gross fixed capital formation as a percentage of gross domestic product

G7 nations, 1995 to 2015

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G7 nations, 1995 to 2015



Source: Organisation for Economic Co-operation and Development (OECD)

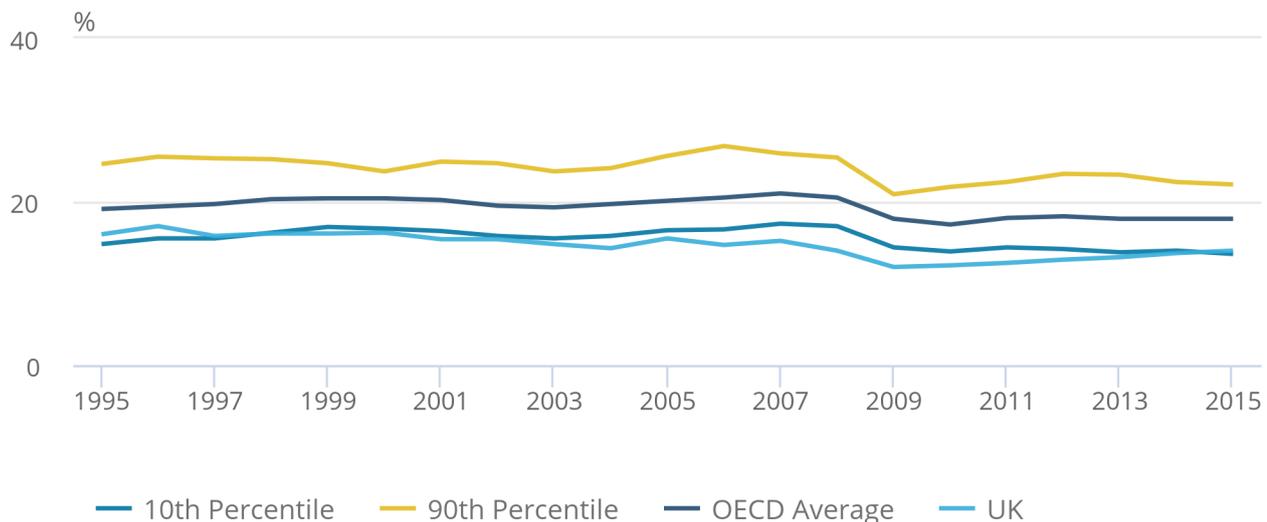
However, there is a difference between the UK and the rest of the OECD when looking at non-government expenditure on GFCF as a percentage of GDP. Much of the UK's low investment appears to stem from a lack of non-government sector investment. The UK has the lowest percentage of non-government GFCF as a percentage of GDP when looking at an average value between 1995 and 2015. The average value is 14.6%, with the next lowest being Greece at 15.8%.

Figure 4: Non-government expenditure on gross fixed capital formation as a percentage of gross domestic product

UK and Organisation for Economic Co-operation and Development nations, 1995 to 2015

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UK and Organisation for Economic Co-operation and Development nations, 1995 to 2015



Source: Organisation for Economic Co-operation and Development (OECD)

Germany, which has the lowest average government expenditure on GFCF as a percentage of GDP, ranks 18th out of 35 countries in the OECD when looking at average non-government expenditure as a percentage of GDP. Out of German GDP, 18.5% is accounted for by non-government expenditure on average, compared with just 14.6% of UK GDP. As explored later in this article, countries that have a larger manufacturing sector typically have a larger percentage of GDP made up by GFCF. This is shown by South Korea, which has the largest average non-government spend of GFCF as a percentage of GDP at 26.1%.

Australia has one of the largest percentages of non-government expenditure on GFCF. It ranks fifth on the list, with 23.0% of GDP coming from non-government investment in non-financial assets. This is 8.4 percentage points greater than the same statistic for the UK, despite both economies being of comparable size and structural make-up.

Japan also has a large percentage of non-government GFCF accounting for a significant portion of GDP, at 20.6%. It is the only G7 nation to appear in the top half of this comparison. All other nations in the G7 make up 6 of the bottom 13 countries analysed within the OECD when looking at the average.

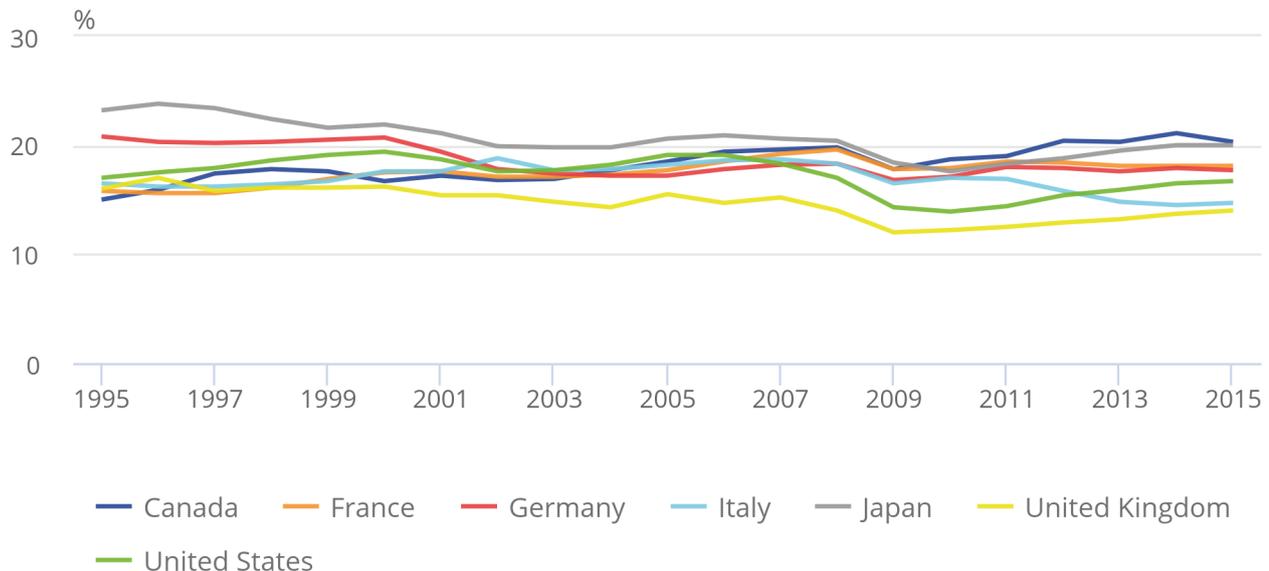
Figure 5 notes the G7 non-government spend on GFCF as a percentage of GDP from 1995 to 2015. Canada has had a large increase in this measure, going from the lowest ranking G7 nation in 1995 to the highest ranking G7 nation in 2015, growing from 15.0% to 20.3% over the course of two decades. The US saw the biggest decline from 2006 to 2010, losing more than 5% of GDP; while GFCF as a percentage of GDP decreased from 19.1% to 13.9%. The UK has consistently been at the bottom of the G7 rankings since 1999; however, GFCF as a percentage of GDP has been steadily increasing since 2009.

Figure 5: Non-government expenditure on gross fixed capital formation as a percentage of gross domestic product

G7 nations, 1995 to 2015

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G7 nations, 1995 to 2015



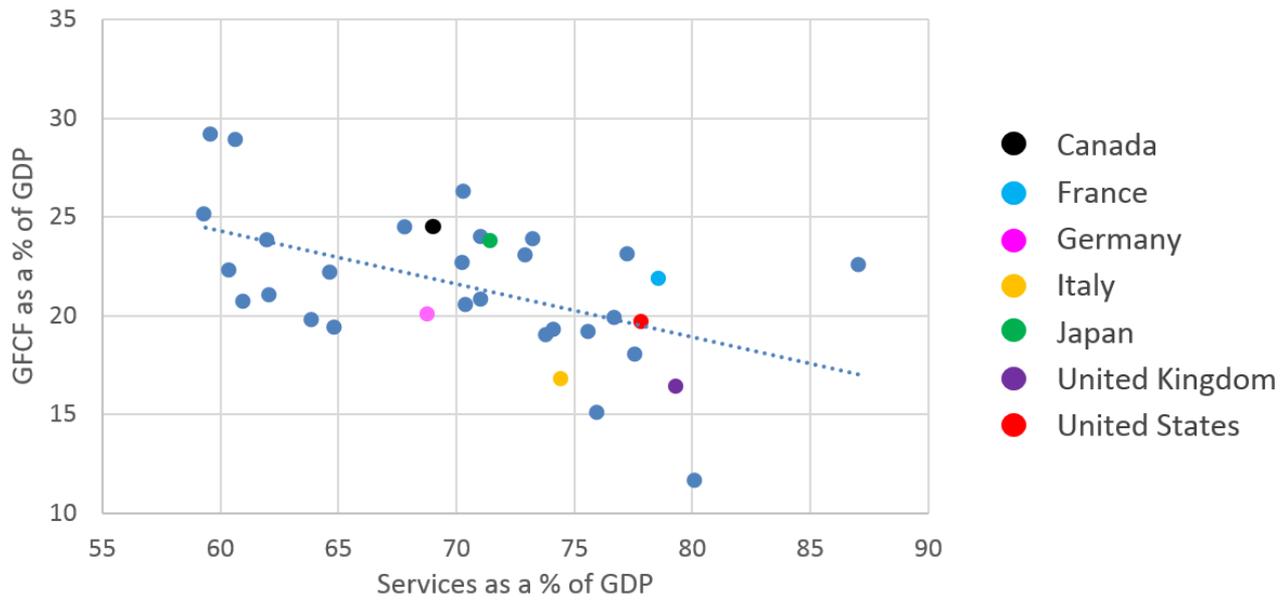
Source: Organisation for Economic Co-operation and Development (OECD)

5 . What are the reasons for the UK’s low investment?

One of the possible explanations for a lower value of gross fixed capital formation (GFCF) as a percentage of gross domestic product (GDP) in the UK is because the UK economy is primarily based on services rather than manufacturing. To test this relationship, Figure 6 shows GFCF as a percentage of GDP placed against the services sector as a percentage of GDP. A basic regression analysis shows the inverse relationship between an increasing services sector as a percentage of GDP and GFCF as a percentage of GDP. The UK has one of the largest services sector in the world and has the lowest percentage spend on GFCF. Germany, Italy and France also have a large services sector, but spend approximately 3 to 4 percentage points more on GFCF as a percentage of GDP.

Figure 6: Gross fixed capital formation as a percentage of gross domestic product (GDP) against the services sector as a percentage of GDP

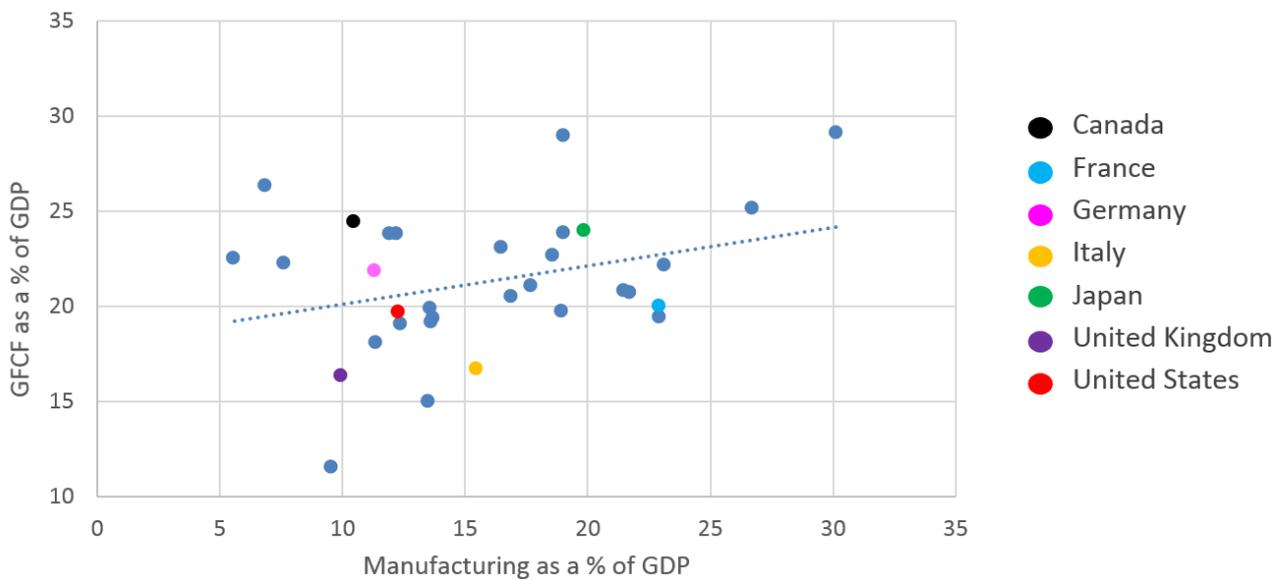
UK and Organisation for Economic Co-operation and Development nations, 2015



The reverse of this can be applied to the manufacturing sector. A positive correlation between manufacturing as a percentage of GDP and GFCF as a percentage of GDP can be seen in Figure 7. The line of best fit is slightly less representative of the data than when looking at services. The UK, Germany, France and Italy all lie below the trendline. Germany also has a lower value for GFCF as a percentage of GDP than France, despite having more than 6% extra of GDP accounted for by manufacturing.

Figure 7: Gross fixed capital formation as a percentage of gross domestic product (GDP) against the manufacturing sector as a percentage of GDP

UK and Organisation for Economic Co-operation and Development nations, 2015



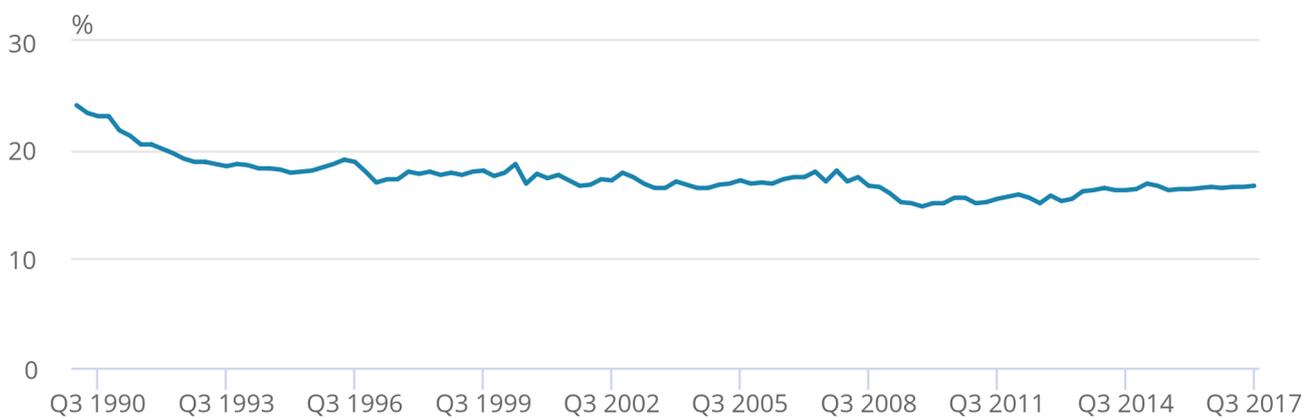
Looking at GFCF from a historical standpoint, the highest percentage of GFCF as a percentage of GDP came in 1989. The economy started to see a sharp increase in the services sector during the 1990s and into the 2000s. Taking indexed services values with Quarter 3 (July to Sept) 2015 equals 100, the services sector has grown from a value of 52.8 in Quarter 1 (Jan to Mar) 1990 to 104.9 in Quarter 3 2017. This represents an almost 100% increase over the period. As might be expected, this is correlated with a decline in GFCF as a percentage of GDP as seen in Figure 8 from 1990 onwards. There is a large fall in GFCF as a percentage of GDP as the economy transitions towards services. The correlation coefficient between the indexed services values and GFCF as a percentage of GDP is negative 0.85, which gives grounding to the theory that a larger services sector will lead to a smaller proportion of money being spent on non-financial assets.

Figure 8: Historic gross fixed capital formation as a percentage of gross domestic product

UK, Quarter 1 (Jan to Mar) 1990 to Quarter 4 (Oct to Dec) 2017

Figure 8: Historic gross fixed capital formation as a percentage of gross domestic product

UK, Quarter 1 (Jan to Mar) 1990 to Quarter 4 (Oct to Dec) 2017



Source: Office for National Statistics

Notes:

1. Q1 refers to Quarter 1 (Jan to Mar), Q2 refers to Quarter 2 (Apr to June), Q3 refers to Quarter 3 (July to Sept) and Q4 refers to Quarter 4 (Oct to Dec).

6 . Conclusion

The UK's investment in non-financial assets can be categorised into government and non-government expenditure. The government expenditure was shown to occur mainly on other buildings and structures along with other machinery and equipment. Non-government expenditure occurs more broadly across all five assets, with notable increases in dwellings and intellectual property products when compared with government expenditure. The UK's non-government expenditure on gross fixed capital formation (GFCF) typically comprises around 82% of total GFCF.

When looking at government expenditure on GFCF as a percentage of gross domestic product (GDP), the UK has one of the lowest values of all the Organisation for Economic Co-operation and Development (OCED) nations. However, looking at the non-government expenditure on GFCF as a percentage of GDP, the UK has the lowest of any OECD nation by 1.2% when an average was taken between 1995 and 2016. One possible explanation for a lower spend on GFCF in the UK is an increase in the services sector, which was explored in section 4. This suggested the relationship that as a country's services sector as a percentage of GDP increases, its share of GFCF as a percentage of GDP tends to decrease, and the opposite relationship is true for the manufacturing sector.