Office for National Statistics

An International Perspective on the UK - Gross Domestic Product

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Abstract

This note sets recent movements in UK economic statistics in an international context. It is part of a new series of quarterly publications each with a different focus, which aim to support the understanding of the UK economy by drawing international comparisons. They use a wide range of data, including information produced by other organisations on an internationally comparable basis.

Key points

The 2008-09 economic downturn had a wide-ranging impact on the global economy which varied noticeably between countries, both in magnitude and composition. Economic output in the United Kingdom, as measured by real gross domestic product (GDP), fell by 7.2%, the largest fall in post war history. This publication examines that fall by drawing on international comparisons, and is part of a new series of quarterly publications which aim to support the understanding of the UK economy.

This edition will focus on how the magnitude of the UK economic downturn compares internationally – with a particular focus on nominal, real and GDP per capita. It will then focus on the output and expenditure measures of GDP, with the aim of analysing the composition of the UK economic downturn and the subsequent recovery. The next edition, which will be published on the 7th August, will focus on the income approach to GDP, and the Sector and Financial Accounts.

A brief introduction to GDP

Gross domestic product (GDP) is a measure of the value of economic activity and can be measured in three different ways:

1. Production approach (sometimes referred to as the output approach): the sum of all production activity within the economy;

2. Expenditure approach: the sum of all final expenditures within the economy; and

3. Income approach: the sum of all income generated from the production of goods and services within an economy.

These measures provide a wealth of information on a country's economic performance. A comprehensive explanation of the three measures of GDP can be found in ONS published short stories and info-graphics[1].

Notes

1. Explaining economic statistics - Long term profile of GDP in the UK, Explaining economic statistics - Quarterly GDP revisions, Explaining economic statistics - Understanding GDP and how it is measured & STY calculating GDP

The 2008-09 economic downturn in the UK

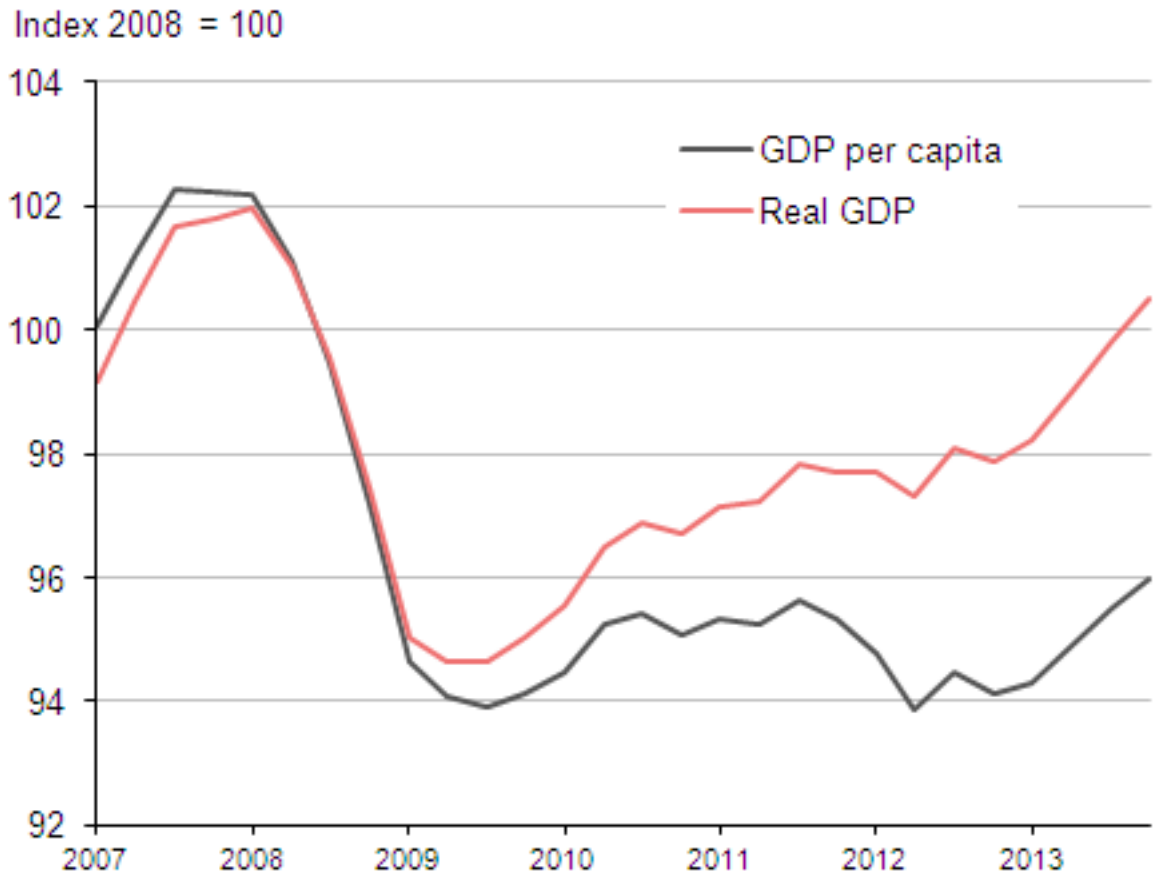
Following the 2007 global financial market shock UK GDP fell on a nominal (5.4%), real (7.2%) and per capita (8.2%) basis, between the beginning of 2008 and the middle of 2009.

Nominal GDP can be thought of as the final market value of all goods and services produced in the economy; however the market price of these goods and services can change over time, which can affect underlying changes in volumes produced or consumed. ONS therefore also measures GDP in real terms, which removes the impact of price changes, this is widely regarded as the headline measure of GDP.

During the 2008-09 economic downturn UK real GDP fell by 7.2% and it remained 1.4% below its pre-downturn level in Q4 2013 (Figure 1). Previous UK economic downturns in the 1970s, 1980s and 1990s were shorter and less severe. Despite a mixed recovery since the 2008-09 economic downturn, UK GDP has risen by 1.7% during 2013.

Real GDP per capita is also an informative measure of economic performance – calculated by dividing real GDP by the resident population. This measure arguably better reflects economic prosperity as GDP per capita gives a sense of how much a nation produces per person. The UK resident population has increased by 5.0% since the start of the economic downturn and the level of GDP per capita remains 6.2% below the pre-downturn peak in Q3 2007. While real GDP has risen by 1.7% between 2012 and 2013, GDP per capita has only risen by 0.9%.

Figure 1: UK real GDP and real GDP per capita (2008=100)



Source: Office for National Statistics

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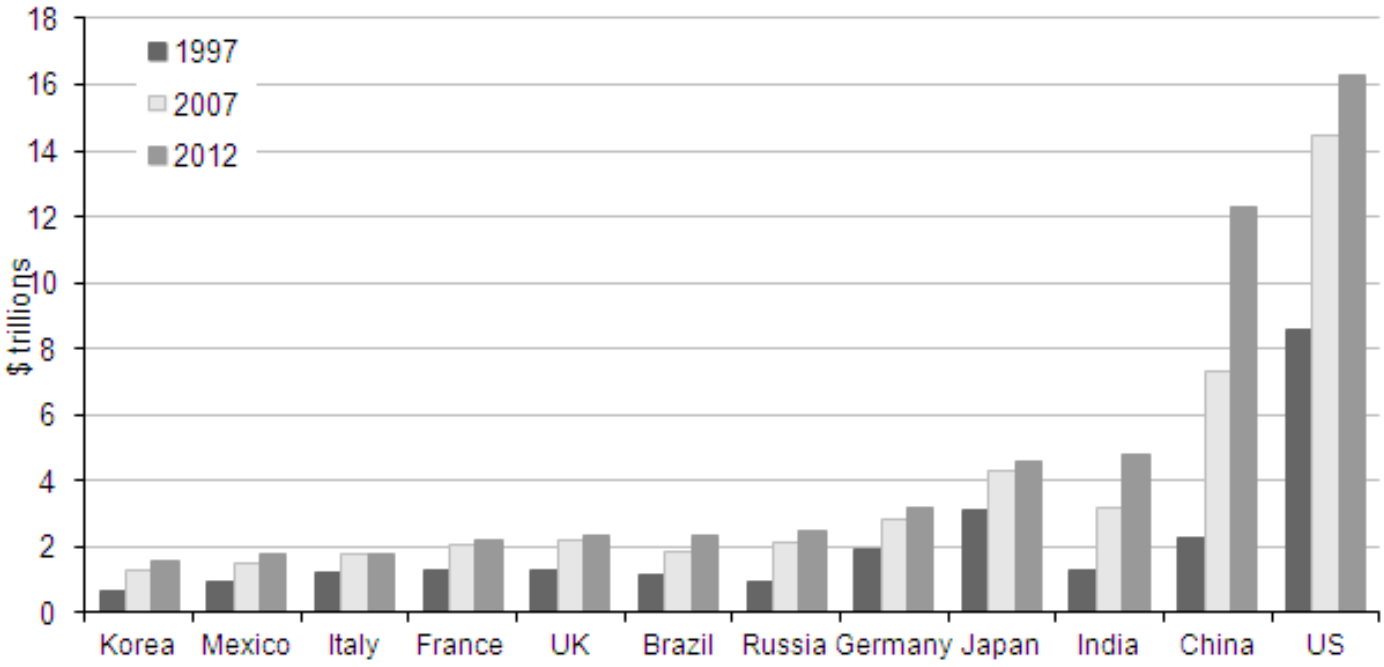
Nominal GDP and nominal GDP per capita

Nominal Gross Domestic Product

In an international perspective, the UK was the eighth largest economy in the world in 2012. The United States is the world's largest economy in Purchasing Power Parity (PPP) nominal terms[1]; Figure 2 shows that the US produced $16.2 trillion of output in 2012, just over seven times that of the UK ($2.3 trillion). China's nominal output grew by an annual average of 12.7% in the decade leading to 2012, by which time it was producing $12.3 trillion a year and stood as the world's second largest economy. Such high growth is exemplary of the BRIC countries (Brazil, Russia, India and China), with all now achieving a higher level of economic output than the UK.

Figure 2: The 12 largest economies in nominal GDP terms ($PPP; 1997, 2007 and 2012)



Notes:

1. Source: IMF

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The UK economy performed well internationally in the decade prior to the 2007 financial market shock. Nominal GDP growth was the third fastest in the G7 (Canada, France, Germany, Italy, Japan, United Kingdom, and United States) over this period – UK average annual growth was 5.4% compared with a G7 average of 4.7%. During and following the 2008-09 economic downturn the UK economy has grown by 1.9% per year on average compared with G7 average growth of 2.1%.

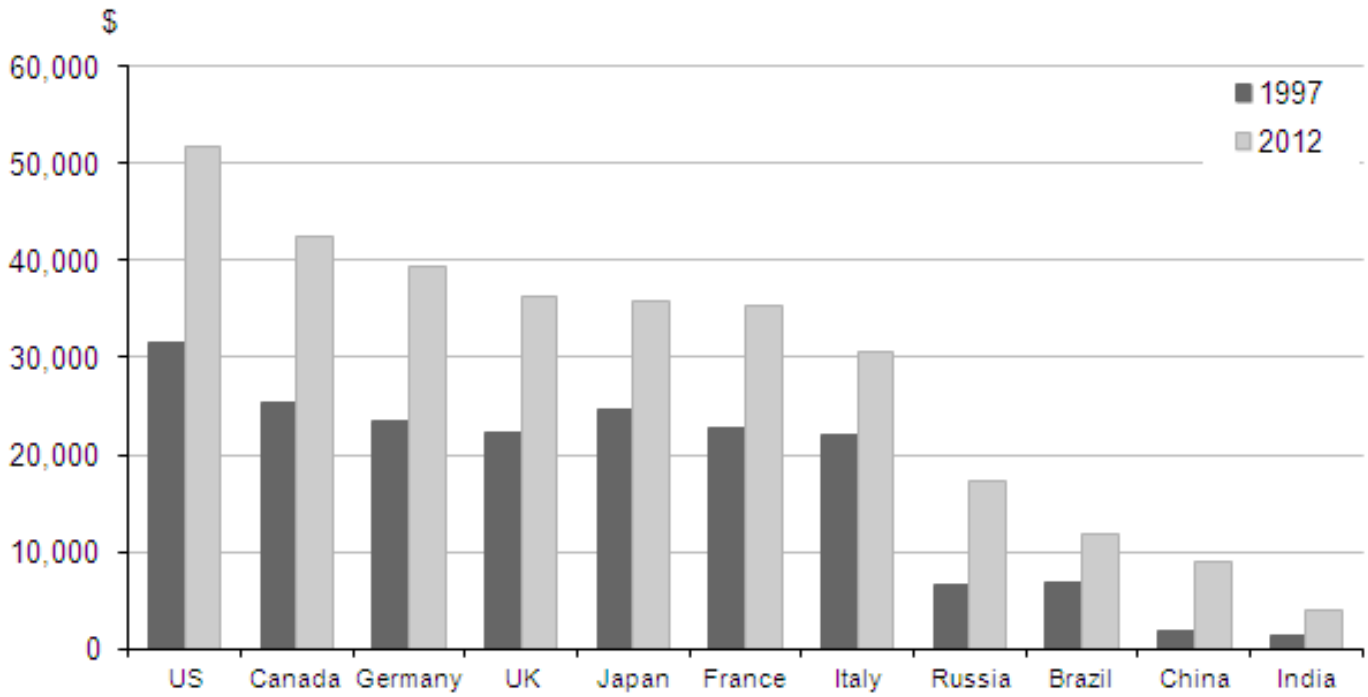
Nominal GDP per capita

However, when making these cross-country comparisons, differences in the size and population should be considered. On a GDP per capita basis the UK compares more favourably with both the G7 and BRIC economies. The US has the highest GDP per capita ($51,708) among these economies on a PPP basis; but UK GDP per capita ($36,333) is broadly favourable in comparison with the remaining G7 economies (Figure 3). Growth since the 2008-09 economic downturn, however, has been less favourable in comparison with other G7 economies – nominal GDP per capita in the UK has risen by 1.0% compared with an average of 1.6% growth across the G7.

Average annual GDP growth in Brazil (10.3%), Russia (19.7%), India (12%) and China (14.2%) has outpaced the UK since 2000; however GDP per capita remains lower due to relatively large populations. For example, GDP per capita in China, the world's second largest economy, is 75%

lower than the UK at $9,051. This is typical across all BRIC economies, which have far lower levels of nominal GDP per capita than the UK despite having larger economies than the UK.

Figure 3: Nominal GDP per capita ($PPP; 1997 and 2012)



Notes:

1. Source: IMF

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Notes

1. GDP in PPP terms is commonly used to compare the economic performance of different countries. This converts GDP in national currency terms into a common currency (in this case the US dollar), using a PPP exchange rate. This is the rate at which a country's currency would have to be converted in order to buy a representative basket of goods and services in the US. These PPP exchange rates can differ to those occurring in financial markets; they are typically less volatile and encapsulate goods that are both traded and not traded.

Real GDP and real GDP per capita

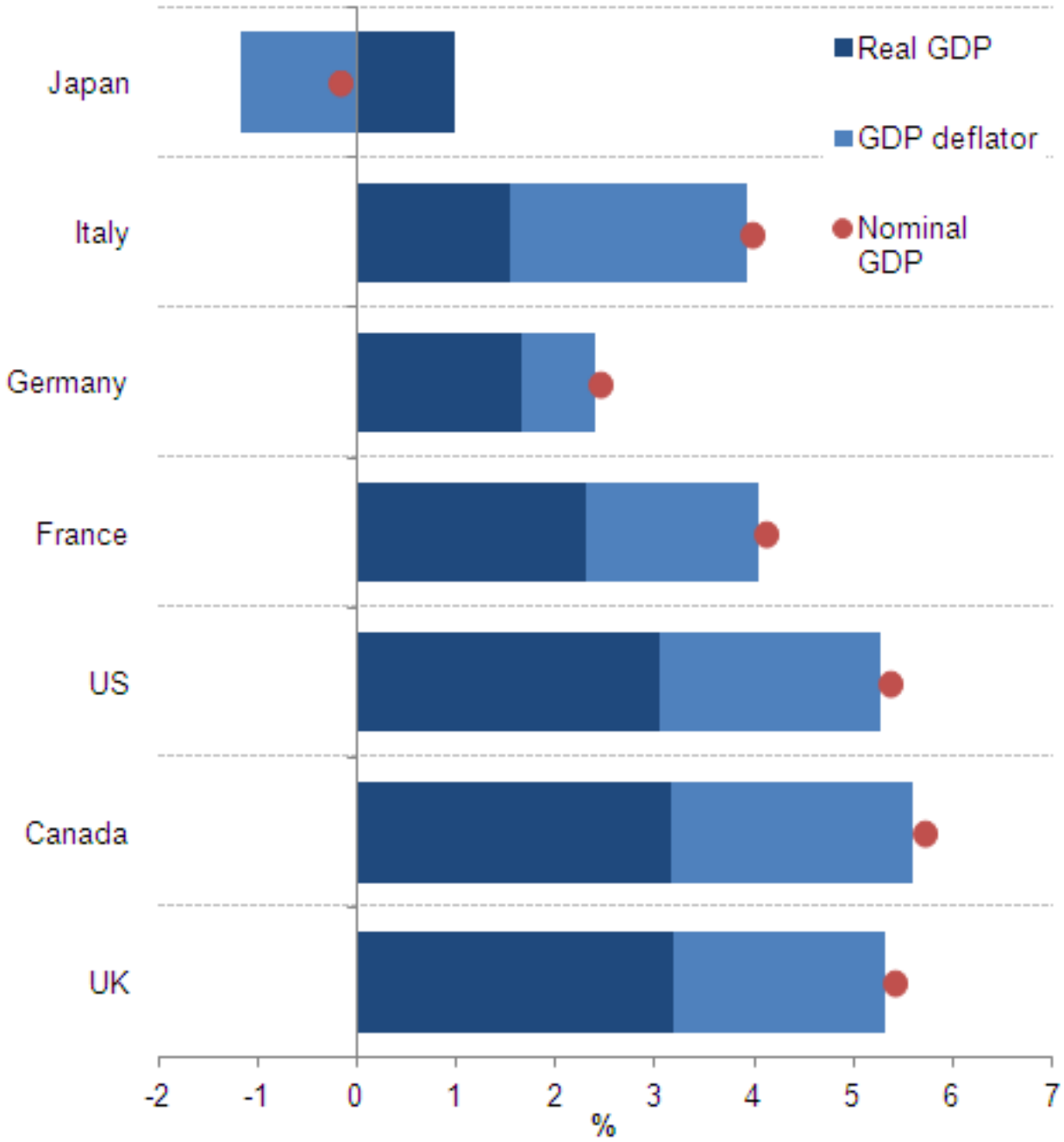
Real GDP growth in the decade before the 2008-09 economic downturn

The UK economy has a broadly similar composition to the other G7 members – therefore it is more appropriate to compare recent economic performance against these, instead of emerging

economies such as the BRICs. UK annual real GDP growth averaged 3.2% in the ten years prior to the 2008-09 economic downturn – which compares favourably with the G7 average of 2.5% (Figure 4).

However nominal GDP does not take account of price changes over time, which may differ between countries. For example, between 1997 and 2012, Russian inflation averaged 19.2% per annum, while Japan experienced deflation of 1.2% per annum. The decomposition of nominal GDP growth into real GDP growth and changes in the price of GDP (the GDP deflator) is shown for G7 economies in Figure 4. The UK GDP deflator is broadly similar to the other G7 economies, with the exception of Germany and Japan. For example Japan experienced a fall in the general price level over the period, resulting in a fall in nominal GDP being adjusted to a rise in real GDP.

Figure 4: GDP Growth & the GDP deflator in the G7 economies (% 1997-2007)



Notes:

1. Source: IMF
2. Subtracting average growth in the GDP deflator from average growth in nominal GDP may not sum to average growth in real GDP, due to rounding.

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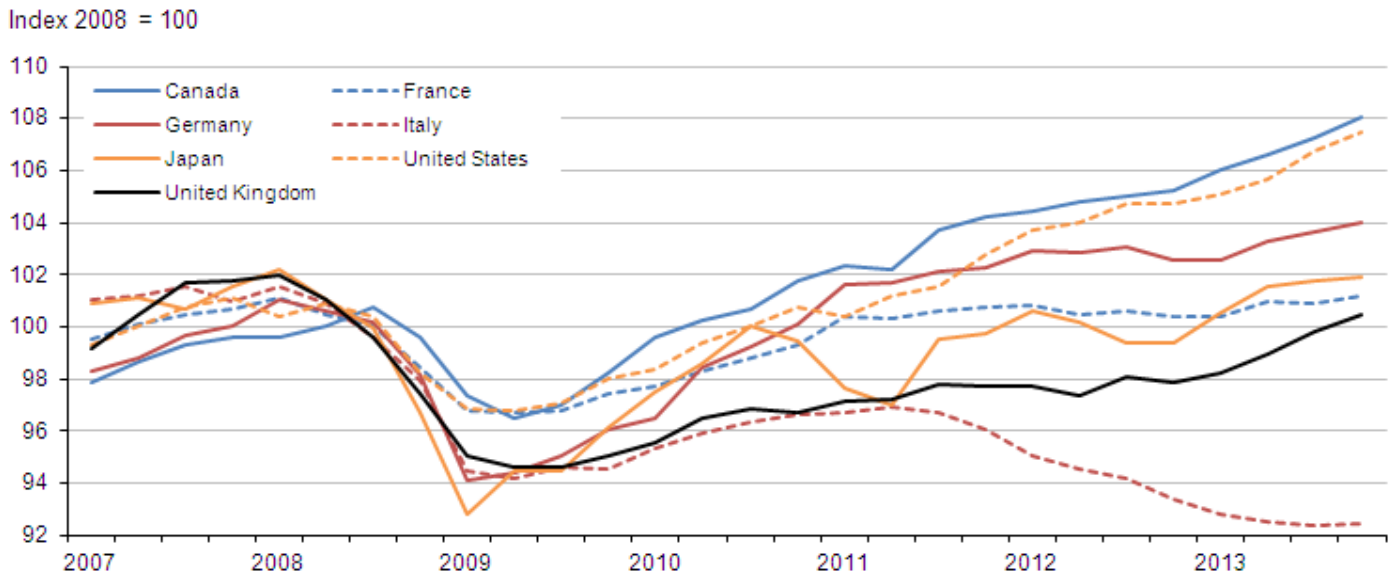
Real GDP growth since the 2008-09 economic downturn

UK economic performance has compared less favourably since the 2008-09 economic downturn. UK real GDP fell by 7.2%, the joint second largest fall in the G7, and the subsequent economic recovery has been one of the slowest in the G7 (Figure 5) and in UK economic history. Between 2009 and 2013 UK real GDP increased by 1.2% per annum, the third lowest rate in the G7, and consequently remains 1.4% below its pre-downturn peak. However, in 2013 the UK has moved from having one of the slowest growth rates in the G7 to one of the fastest, with GDP increasing by 1.7% over the year compared with a G7 average of 1.4%.

Figure 5: Real GDP in the G7 economies (2008=100)



Notes:

1. Source: OECD

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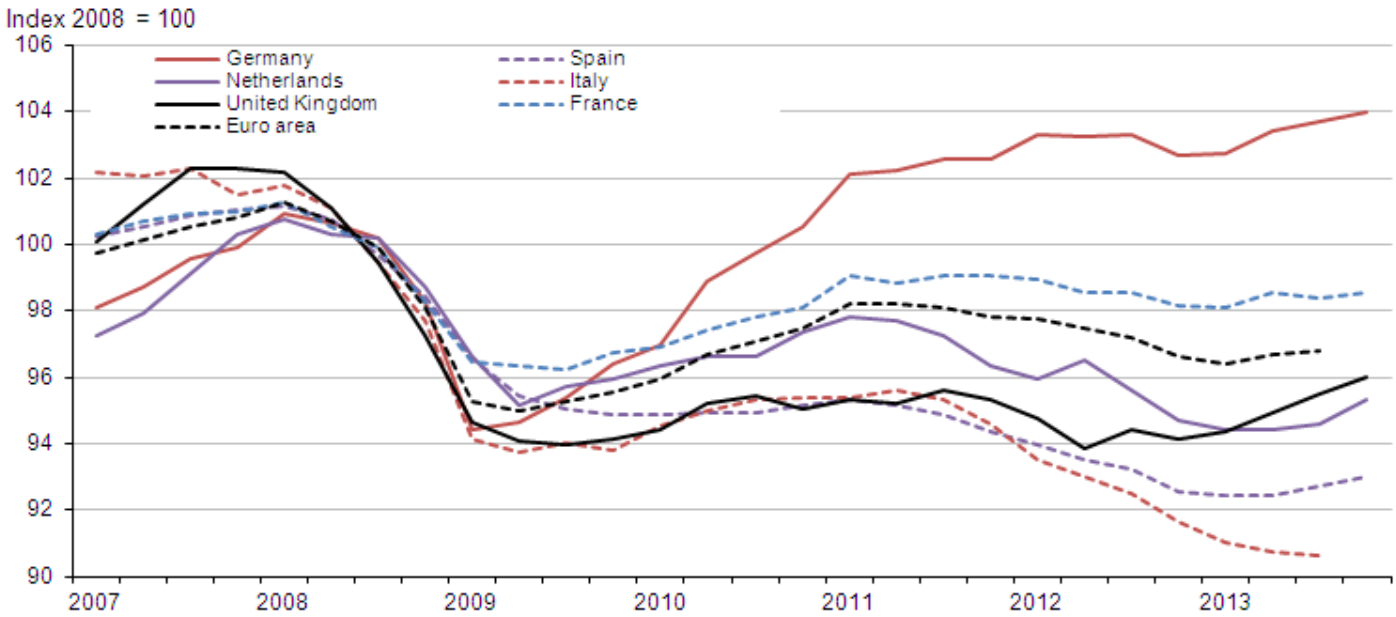
The impact of the 2008-09 economic downturn in the UK is exacerbated when comparing GDP performance per capita (Figure 6) - which fell by 8.1%, the second largest in the G7. The recovery has been one of the most subdued, similar in scale to GDP per capita change in Italy and Spain until early 2012, when growth picked up markedly along with real GDP.

Figure 6: Real GDP per capita in the largest European economies (2008=100)



Notes:

1. Source: Eurostat

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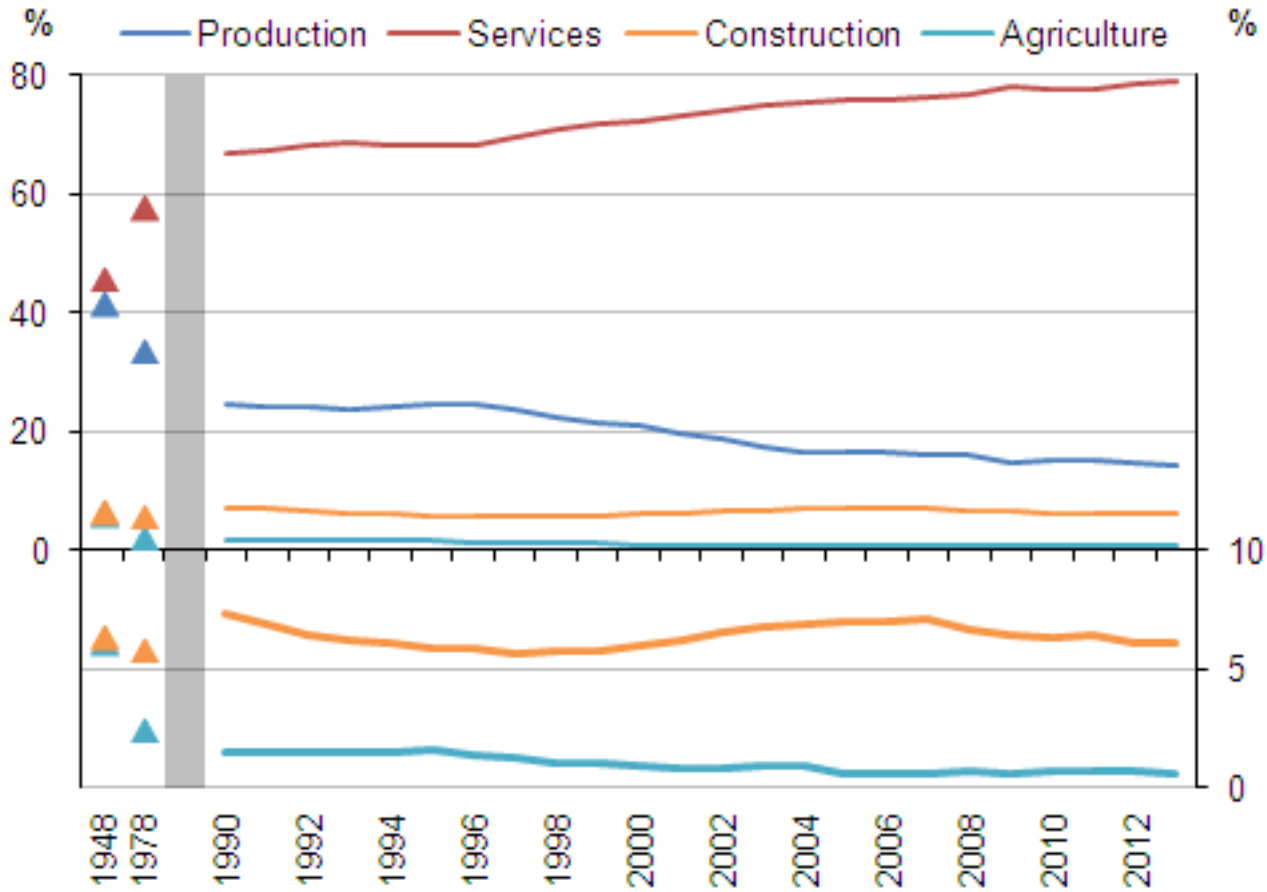
The production approach

There are three approaches to GDP which reveal different things about economic performance, and this article examines the production and expenditure approaches. The production approach estimates the generation of value added through the production of goods and services in the economy, and can be broken down into four main industrial groupings: agriculture, production, construction and services. The share of these can change over time due to a numbers of factors, including new technologies and changing demand patterns.

Long-run structural change

The composition of the UK economy has changed markedly over the last 65 years – mainly due to a shift from the production to services industries, as shown in Figure 7 and Figure 8. The share of UK GDP attributable to production industries, including manufacturing, oil and gas extraction, and energy and water utilities, declined from 41% in 1948 to 14% in 2013. In contrast, the share attributable to services industries has risen from 46% to 79% over the same period, while the construction share has remained stable at roughly 6%. Agriculture is now by far the smallest headline industry, with its share of GDP falling to 1% from 6% between 1948 and 2013. It should be noted that industries may experience a declining share of output due to others growing at a faster rate, and not necessarily due to falling output.

Figure 7: UK GVA attributable to headline industries (% nominal GVA, 1948-2013)



Source: Office for National Statistics

Notes:

1. Data points marked with triangles represent historical UK data available from ONS. These will not be entirely aligned with the remaining series, which are consistent with Standard Industrial Classification (SIC). Data consistent with SIC are not available on a yearly basis prior to 1990. For more information, see 'UK Service Industries: definition, classification and evolution' (ONS, 2013).
2. The lower section of this figure focuses on the construction and agriculture series, trends in which might be difficult to observe in the upper section due to their comparatively small values. The left y-axis corresponds to the upper section and the right y-axis corresponds to the lower section of this figure.

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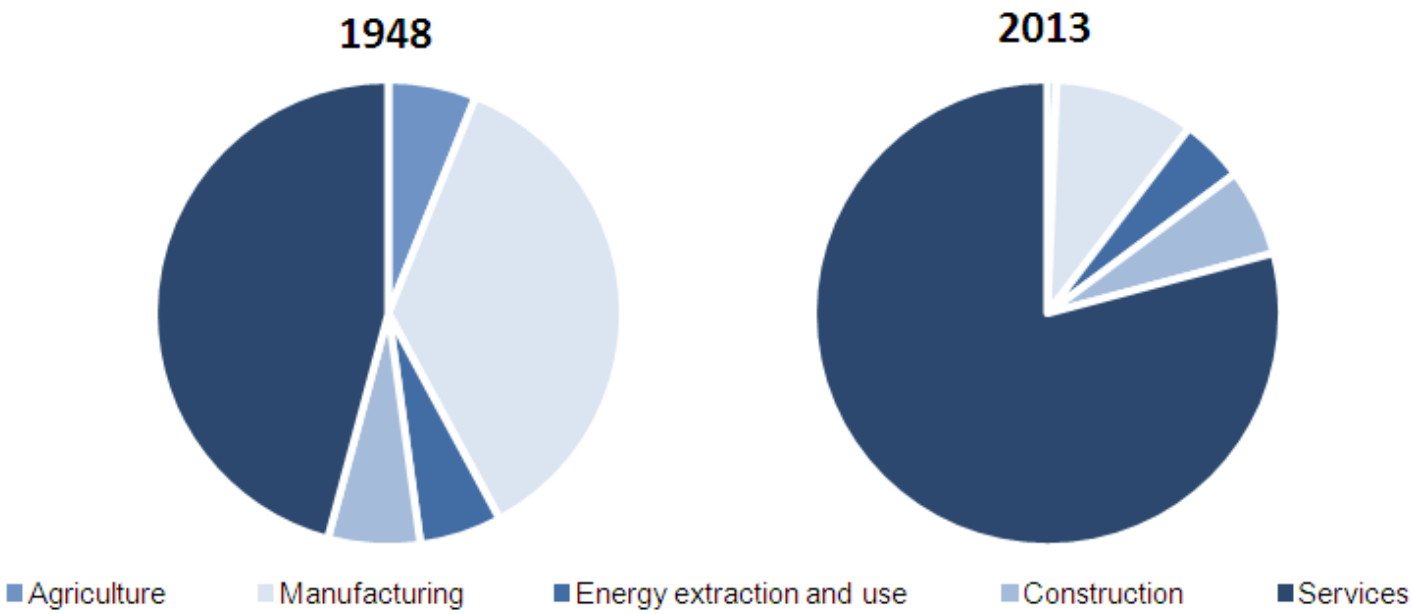
Figure 8: UK GVA attributable to headline industries in 1948 and 2013 (% nominal GVA)



Source: Office for National Statistics

Notes:

1. Industry shares for 1948 are not entirely aligned with SIC, though this is not expected to significantly affect the comparison made. For more information, see 'UK Service Industries: definition, classification and evolution' (ONS, 2013).

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The UK's current industrial composition is broadly comparable with other major economies, with services accounting for the vast majority of output (Table 1), of these, only Germany and Japan are very different having a higher fraction of value added in manufacturing than the norm for the G7.

Table 1: Manufacturing and services in the G7 and BRIC economies

% nominal GVA

	UK	Canada	France	Germany	Italy	Japan	US	Brazil	Russia	India	China
Manufacturing	**10**	12	10	22	16	19	13	13	15	14	32
Services	**79**	66	79	69	74	73	79	68	60	56	45

Table notes:

1. Source: World Bank

2. All data are for 2012 with the exception of Canada (2008), Japan (2011), US (2011) and China (2010)

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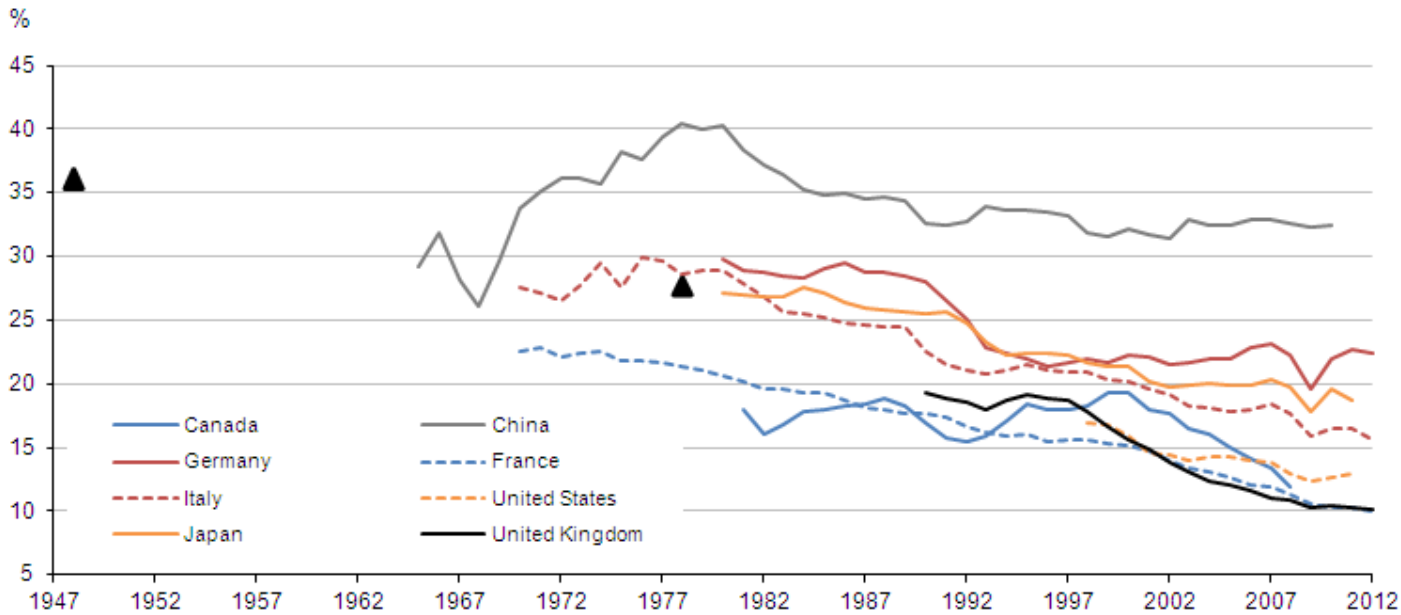
While the BRIC economies generally have a manufacturing share that is broadly comparable with the G7 average, China's is substantially higher at 32%. The change in the composition of the UK economy has been similar to other major economies over the last 60 years – all G7 countries have experienced gradually declining production and manufacturing industry shares (Figure 9). The UK and France currently have the lowest shares of GDP attributable to manufacturing industry – 10% and 10% respectively. In contrast, these shares are considerably higher in Germany (22%) and Japan (19%). The UK manufacturing industry has declined at the fastest pace of the G7 economies; resulting in the UK moving from having one of the largest shares in 1948, to the lowest in 2012 (Figure 10). The pace of the decline in the relative size of manufacturing industries has been fastest in the most recent years – since 1995 its share of GDP has almost halved.

Figure 9: GVA attributable to manufacturing in the G7 economies and China (% nominal GVA, 1947-2012)



Notes:

1. Source: World Bank
2. Data points marked with a black triangle represent historical UK data available from ONS. These will not be wholly aligned with the remaining series, which are consistent with International Standard Industrial Classification (ISIC). UK data consistent with SIC are not available on a yearly basis prior to 1990. For more information, see 'UK Service Industries: definition, classification and evolution' (ONS, 2013).

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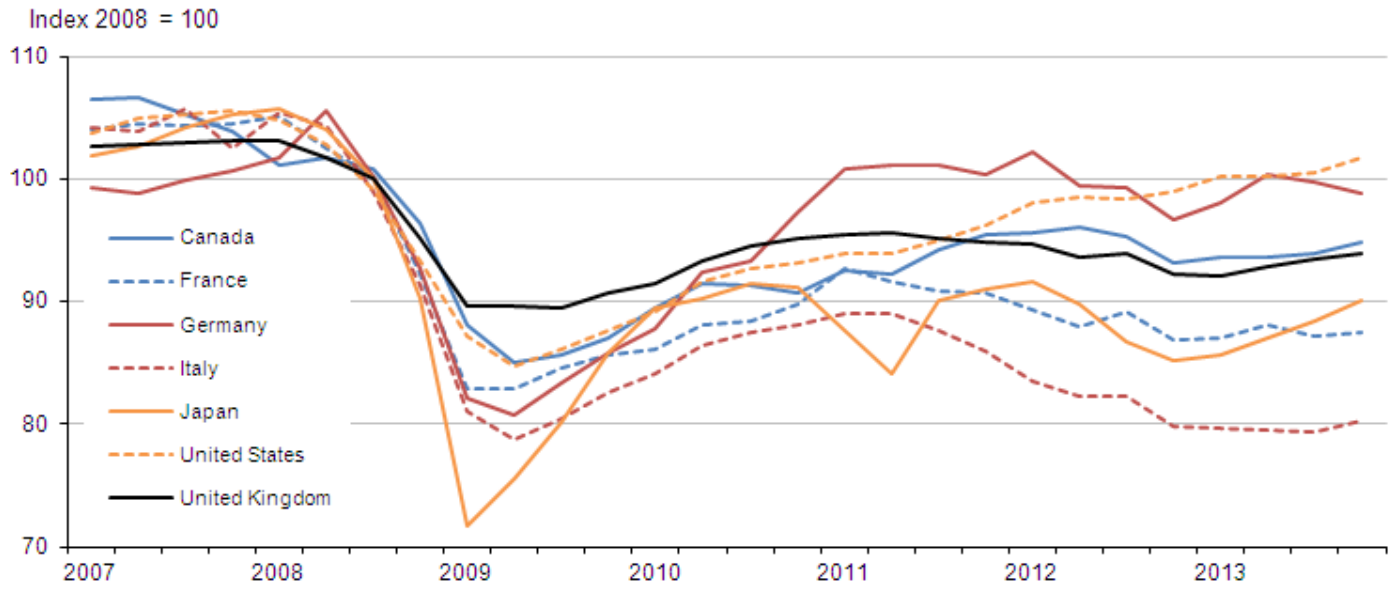
Figure 10: Manufacturing output in the G7 economies (2008=100)



Notes:

1. Source: OECD

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Manufacturing output in the UK fell more sharply than other sectors during the 2008-09 economic downturn. Despite this, the UK manufacturing industry appears to have had one of the best performances internationally. UK manufacturing output fell by 13.3% during the economic downturn, but despite having the second largest economic downturn in the G7, this large fall compares favourably with the G7 average, as confirmed by Figure 10.

However, the UK's recovery in the manufacturing industry has been broadly in line with other G7 economies. UK manufacturing output remains 8.9% below its pre-downturn peak, having suffered a second downturn from the middle of 2011 to the end of 2012. This was also experienced in other European economies and manufacturing output in all G7 economies remains below pre-downturn levels. The US and Germany are the strongest performers on this measure, with manufacturing output 3.6% and 6.4% below their pre-downturn peak respectively.

Services

The UK services industries have grown in importance over the past half century, accounting for 79% of the UK economy in 2013 compared with 46% in 1948 (Table 2). This is mainly as a result of the growth in services output outpacing that of other parts of the economy. The industry grew by 3.0% per annum in real terms between 1990 and 2013 compared with GDP growth of 2.2% per annum.

This can partly be attributed to high growth in ‘business services and finance’, especially from the late 1990s onwards, which consists of ‘finance & insurance’ services, ‘real estate’ services and ‘professional & support related activities’. These industries have seen especially large increases in output rising by 2.9%, 3.4% and 4.5% per annum respectively on average since 1990, growth which is partly responsible for total business and finance services increasing to a 32% share of GDP in 2013 from only 5% in 1948.

Table 2: Share of UK GVA attributable to services and its sub-industries

						% nominal GVA
	1948	**1978**	**1990**	**2000**	**2007**	**2013**
Total services	46	58	67	72	76	79
Distribution, hotels & restaurants	*:*	*:*	*14*	*15*	*14*	*14*
Transport, storage & communication	*:*	*:*	*11*	*12*	*11*	*11*
Business services & finance	*5*	*13*	*22*	*25*	*30*	*32*
Government & other services	*:*	*:*	*21*	*20*	*21*	*23*

Table source: Office for National Statistics

Table notes:

1. Data prior to 1990 have been taken from 'UK Service Industries: definition, classification and evolution'
2. Data may not sum due to rounding

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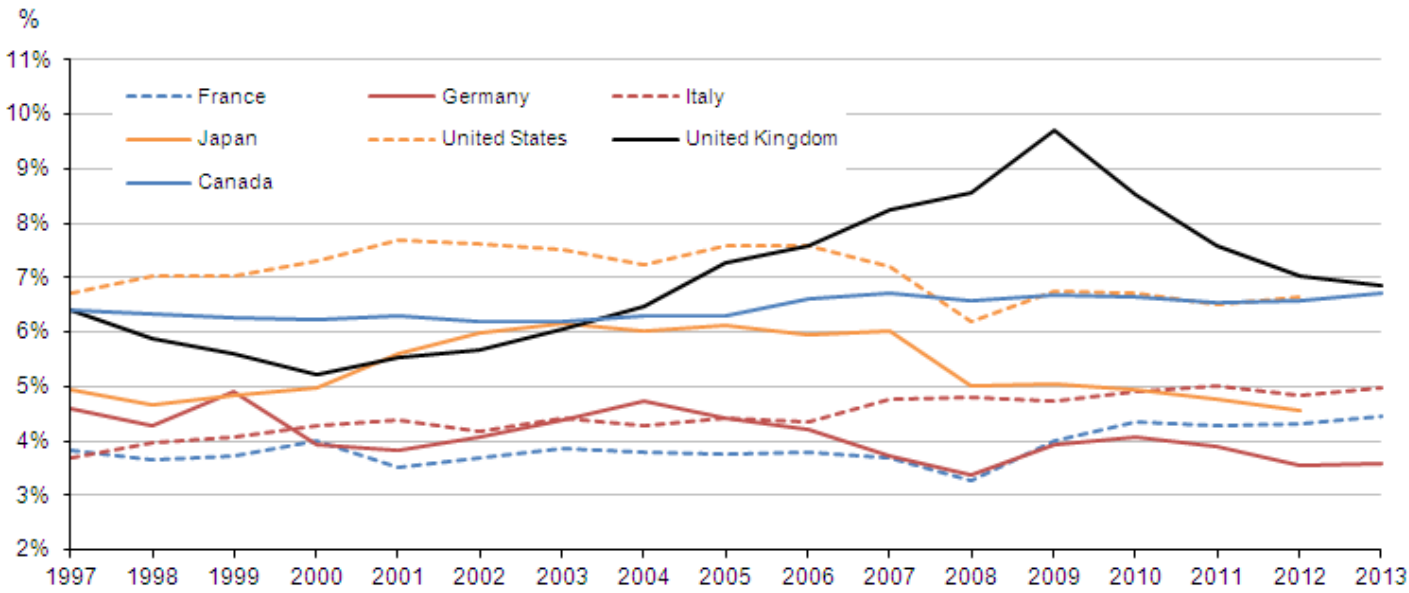
A rising share of GDP attributable to services industries has been observed in all major advanced economies – with these accounting for at least 70% in every G7 economy with the exception of Germany and Canada. This share has risen fastest in the UK, which can in part be explained by the substantial increase in the relative size of the UK financial services industry (Figure 11).

Along with the US, the UK economy has long had a relatively high share of financial services; however between 2006 and 2009, the share in the UK rose markedly. UK financial services

accounted for 10% of GDP in 2009 – markedly higher than any other major economy – with Canada the second highest (6.7%) and Germany the lowest (3.9%). However, this share fell by 2.9 percentage points following the financial market shock, while the share in other major economies remained broadly stable (Figure 12). Output in the UK financial services industry is currently 13.6% below its pre-downturn level according to the most recent ONS data.

Figure 11: Financial and insurance output in the G7 economies (% of nominal GVA)



Notes:

1. Source: OECD, BEA and Statistics Canada
2. All data are OECD with the exception of Canada and the US, which have been obtained from Statistics Canada and the U.S Bureau of Economic Analysis (BEA) respectively.

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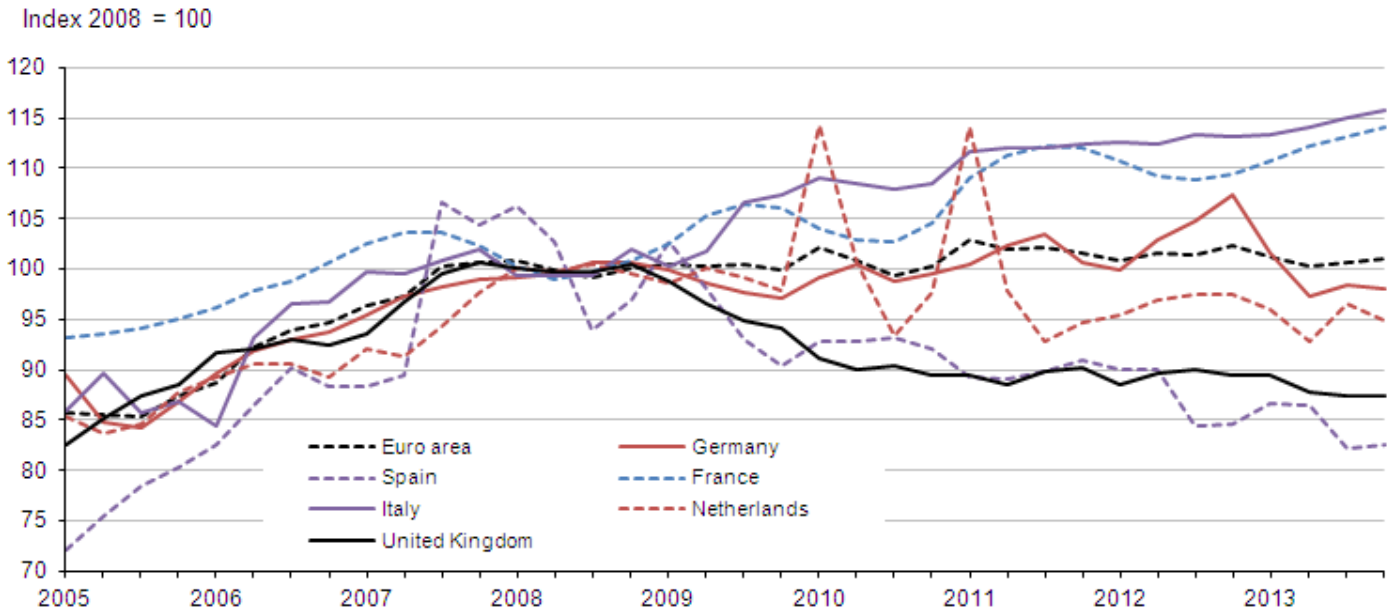
Figure 12: Financial services output in the largest European economies (2008=100)



Notes:

1. Source: Eurostat
2. Financial services output data are consistent with NACE Rev. 2 code K (chain-linked volumes, reference year 2005, indexed to 100 at 2008).

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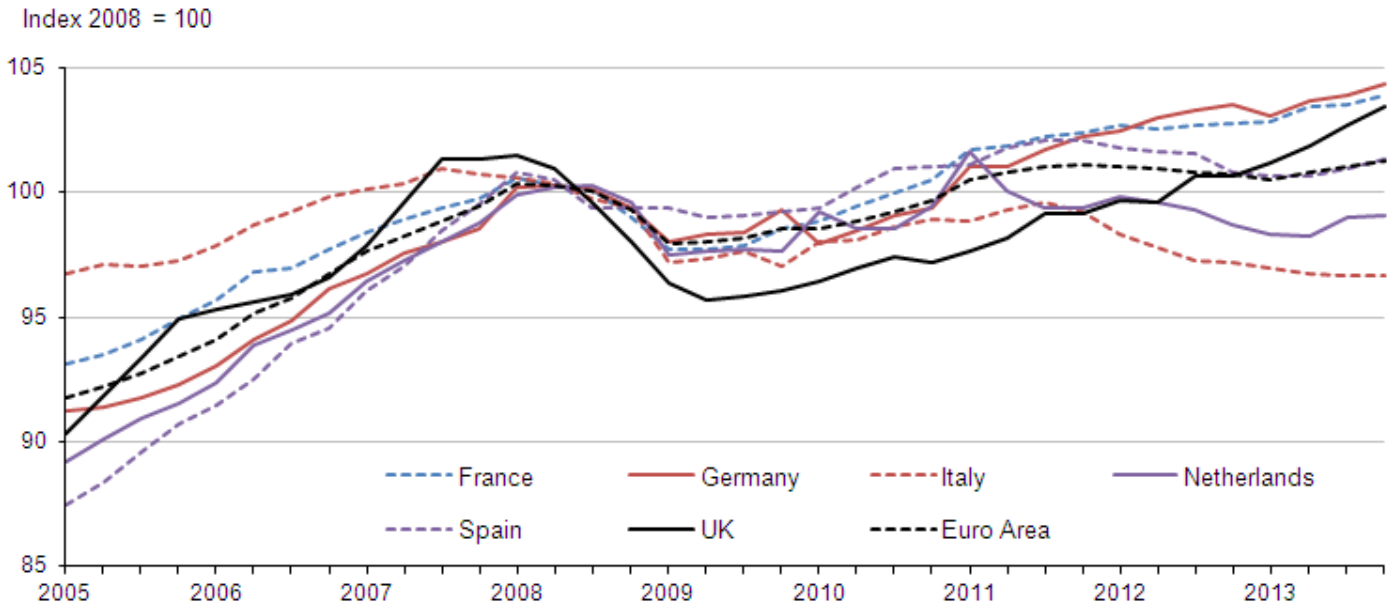
Despite a sizeable fall in financial services output it is this industry has made a substantial contribution to the overall recovery in UK GDP. Total services output recently surpassed pre-downturn peak levels and the recovery in output within this industry compares favourably with other major economies (Figure 13). ‘Non-financial services’, which excludes the financial sector, is currently 3.9% above pre-downturn levels according to the most recent ONS data.

Figure 13: Total services output in the largest European economies (2008=100)



Notes:

1. Source: Eurostat
2. Total services data are defined as the sum of the following NACE Rev. 2 codes: G, H, I, J, K, L, M, N, O, P, Q, R, S, T and U (chain-linked volumes, reference year 2005, indexed to 100 at 2008).

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The expenditure approach

Gross domestic product (GDP) can also be measured as the sum of all expenditure, which can be divided into household final consumption expenditure, government expenditure, investment, and the balance of trade (defined as exports less imports).

In contrast to the production measure, the expenditure composition of the UK economy has been more stable over the past 65 years. The composition has varied, but has broadly consisted of between 60% to 70% household expenditure, and roughly 15% to 20% investment and government expenditure. The level of exports and imports have slowly been rising relative to GDP, but at a broadly similar rate to each other, to the extent that the net trade balance GDP never accounts for more than 5% of GDP in either direction.

The expenditure composition of the UK is broadly similar to the remaining G7 economies. Table 3 shows household consumption accounting for the majority of GDP in all major economies, with government consumption and fixed investment accounting for a much smaller share.

The BRIC economies display a greater diversity in their expenditure composition than G7 countries. Private consumption, for example, varies from 37% of expenditure in China to 58% in India. While

it varies across the BRICS, the share of expenditure on investment is consistently higher in China, India, and Russia than in any of the G7 economies in 2013. This is consistent with the fast GDP growth displayed in the BRICs, which supports and draws upon this high share of investment.

Table 3: Headline expenditure components in the G7 and BRIC economies

					% nominal GDP
	Private consumption	**Government consumption**	**Investment**	**Exports**	**Imports**
UK	**64**	**21**	**15**	**31**	**33**
Canada	54	22	24	30	32
France	55	25	20	27	29
Germany	56	19	17	51	44
Italy	60	20	17	30	28
Japan	59	20	21	15	17
United States	67	16	19	14	17
Russian Federation	49	19	26	29	22
India	58	12	36	20	25
China	37	14	49	27	25

Table notes:

1. Source: OECD
2. All data are for 2013 with the exception of Italy, US, China and Russia (2012) and India (2009). Data are not available for Brazil from this dataset.

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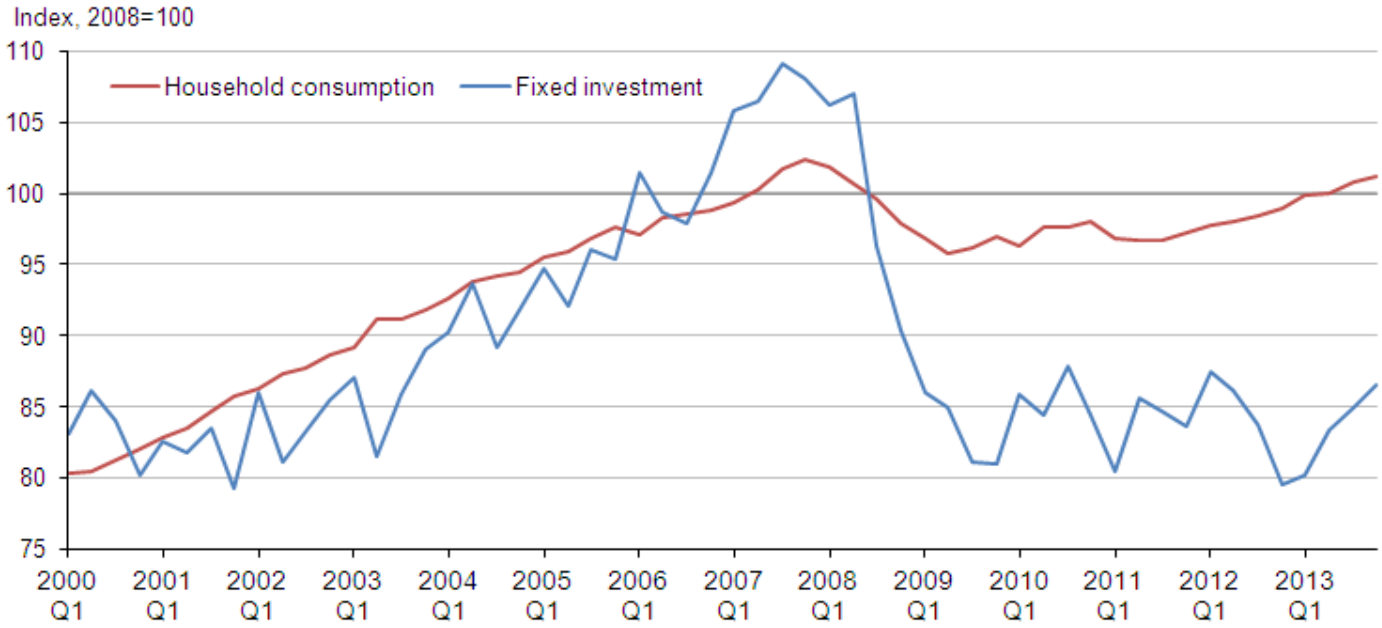
Over the last year, debate in the UK has switched focus from the strength of growth to the composition of the recovery, and in particular the relative performances of consumption and investment (Figure 14). Growth in the former has strengthened in recent years, with the current level of household expenditure now above that experienced in 2008. The UK economy is yet to see the strong recovery in fixed investment that is necessary for sustained GDP growth – with the level of investment 16.2% lower in 2013 when compared with 2008.

Figure 14: UK household consumption and fixed investment since the economic downturn (2008=100)



Source: Office for National Statistics

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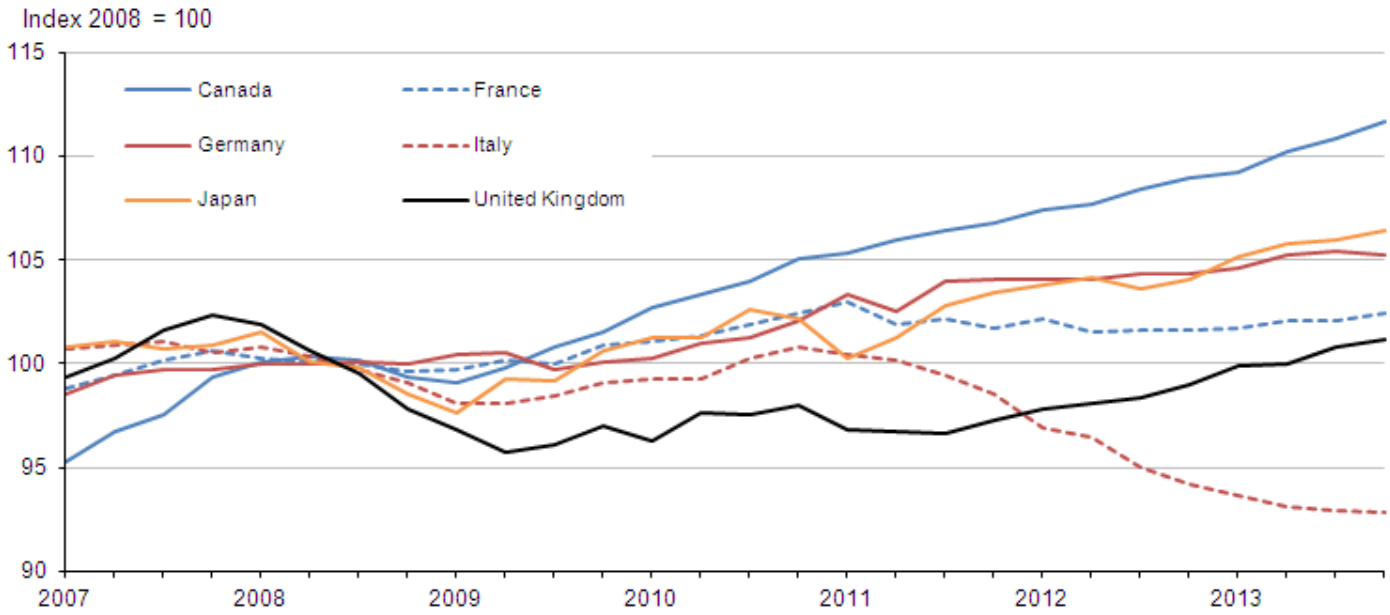
Household expenditure in the UK performed relatively well throughout the 2008-09 economic downturn and subsequent recovery (Figure 15) when compared with investment, but relative to other economies it contracted by the largest amount (5.7% between Q1 2008 and Q3 2009). Despite it being widely being reported that the UK economic recovery has been dominated by household consumption, the sector only recovered the output lost in the economic downturn in 2013, while all other G7 economies with the exception of Italy passed this milestone much earlier. In the most recent year growth in household consumption has picked up to be broadly in line with Canada, the US and Japan – improving by 2.2% comparing Q4 2013 with Q4 2012 according to the most recent ONS data.

Figure 15: Household final consumption expenditure in the G7 economies (2008=100)



Notes:

1. Source: OECD

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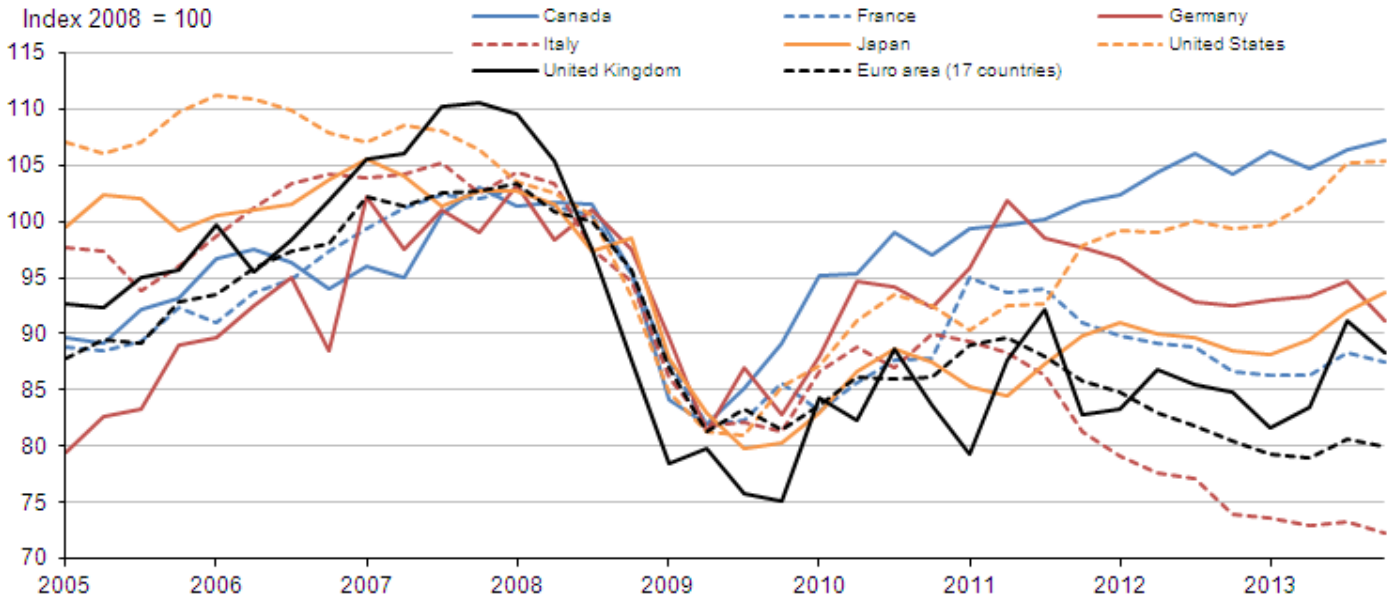
Compared with UK household consumption, fixed investment fell to a greater extent during the downturn - by 24% between Q1 2008 and Q3 2009 according to the most recent ONS data – with investment remaining 18% below pre-downturn levels (Figure 16). While investment tends to be volatile, the initial fall in investment was much larger than any other major economy and the subsequent recovery has been the weakest in the G7, with the exception of Italy.

Figure 16: Gross capital formation in the G7 economies (2008=100)



Notes:

1. Source: OECD

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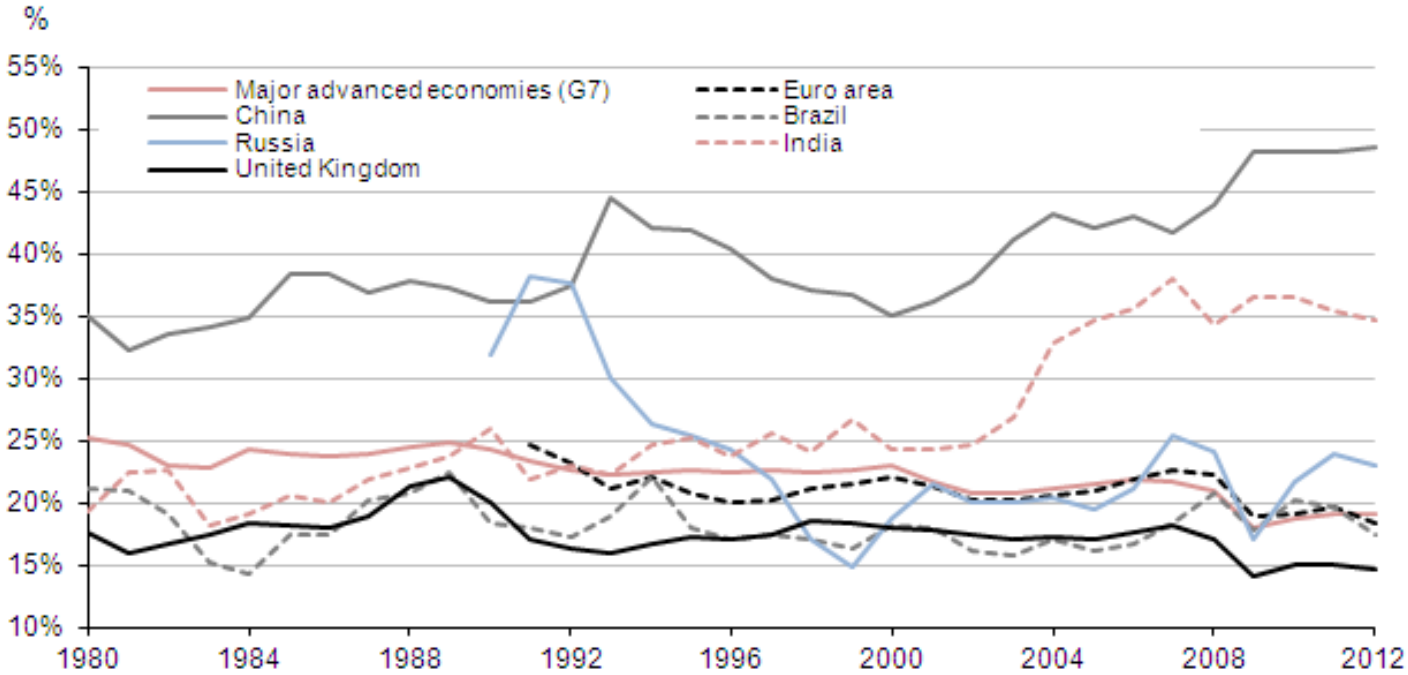
Looking over a longer period of time, the UK has consistently experienced the lowest level of investment relative to GDP compared with other major economies (Figure 17). In the latest year for which data are available, the ratio remained stable at 15%; however this is a lower rate than both the G7 and BRIC economies since the early 1980s.

Figure 17: Gross Capital formation (% nominal GDP)



Notes:

1. Source: World Bank

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Net trade – calculated by taking the volume of goods and services imports away from the volume of goods and services exports – completes the expenditure measure of GDP. In the UK and across the G7, both the volume of imports and the volume of exports have been on a long-term upwards trajectory, reflecting the impact of globalisation and the growing integration of supply chains. The shares of UK GDP accounted for by imports and exports respectively were 33% and 32% in 2012 – higher than in Japan or the United States, but broadly comparable to the other G7 nations (Table 3). In this group, Germany has the highest trade flows to GDP ratios – which have risen strongly since the mid-1990s - with imports and exports accounting for 44% and 52% of GDP respectively in 2012.

While several G7 nations have experienced rising export to GDP ratios over the long-term, the composition of their exports varies widely. Table 4 shows the ratio of exports to GDP in the G7 economies in 2012, as well as the share of total expenditure accounted for by goods and services exports respectively. It suggests that goods and services exports differ in their importance across countries. In Germany, exports of goods were more than five times greater as a share of total GDP than exports of services in 2012, while in Japan, exports of goods were around seven times greater than exports of services. By contrast, the UK has the highest ratio of services exports to GDP of this group. As is shown in the final column of Table 4, 29% of these exports were of financial services in 2012. Taken together, these data suggest that the UK's trade position is more dependent on financial services than other G7 nation.

Table 4: Exports of goods, services and financial services in the G7 economies in 2012

			% of GDP	*% of total services exports*
	Total exports	**Exports of goods**	**Exports of services**	***Financial services exports***
Germany	52	44	8	*8*
Canada	30	26	5	*11*
Italy	30	25	5	*6*
France	28	22	6	*5*
UK	32	19	13	*29*
Japan	16	14	2	*3*
US	13	9	4	*15*

Table notes:

1. Source: OECD and World Bank
2. Data for exports of Goods and Services as a percentage of GDP comes from the OECD
3. Data for total services exports as a percentage of GDP comes from the World Bank

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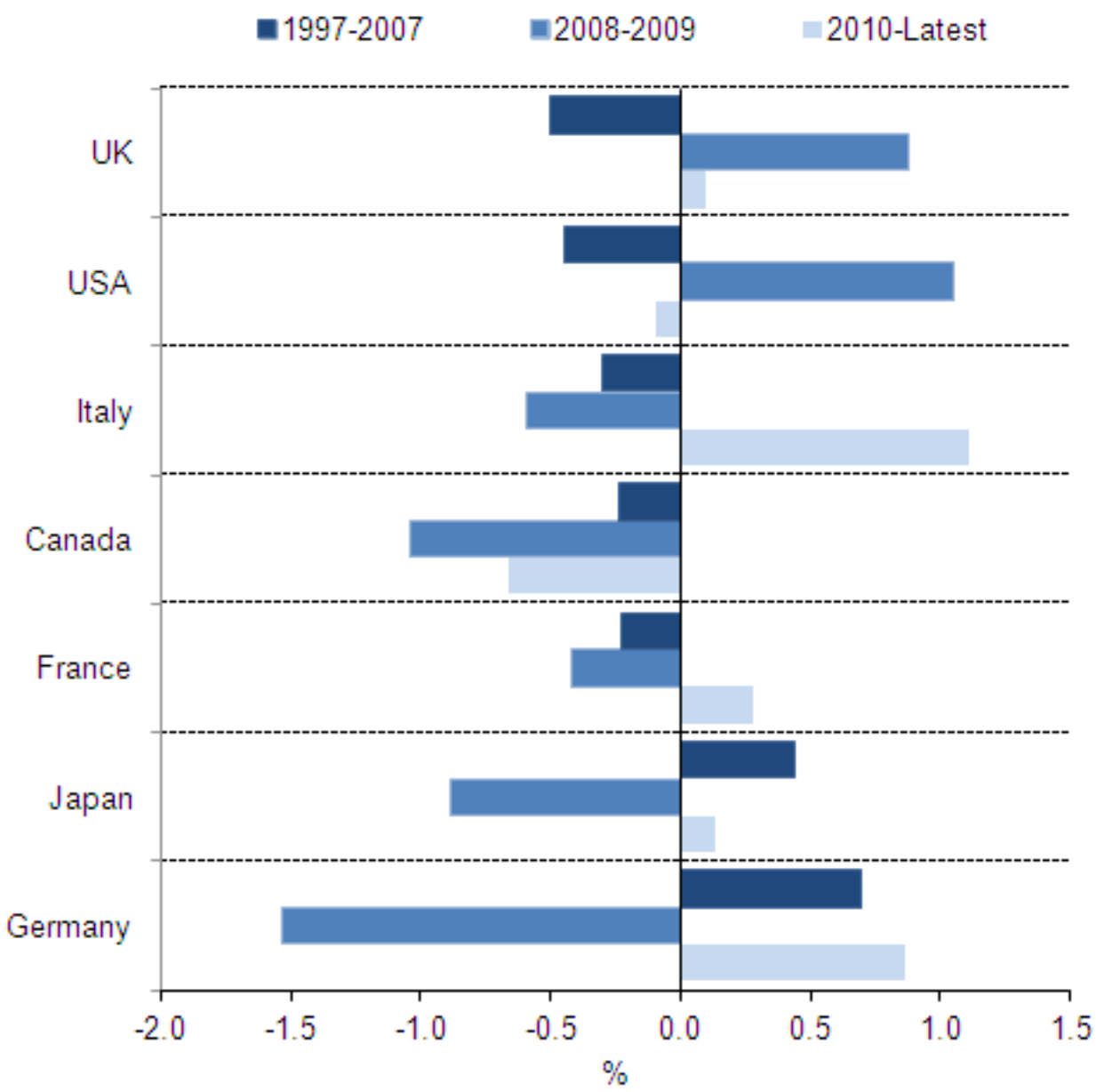
The contributions to GDP from net trade have also varied considerably across the G7 (Figure 18). UK net trade contributed negatively to GDP growth between 1997 and 2007, however during the downturn and the recovery, net trade has contributed positively – possibly due to the large and sustained depreciation of sterling between 2007 and 2009. The contributions of net trade to GDP growth in the other G7 nations, with the exception of the United States, were affected particularly badly during the 2008-09 economic downturn, and only Germany and Italy have performed well since 2010.

Figure 18: Contribution to average annual real GDP growth from net trade (%)



Notes:

1. Source: OECD

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The next edition in the international comparisons series will continue this analysis and focus on the income measure of GDP and the Sector and Financial Accounts, published on 7th August.

Background notes

1. Details of the policy governing the release of new data are available by visiting www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html or from the Media Relations Office email: media.relations@ons.gsi.gov.uk

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