

2. Recent trends to the UK economy

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Key findings

- **UK economic weakness has been both more longstanding and more extensive than in other major economies.** Growth in the UK has been weaker than in other G7 economies since 2016, volatile through this year, and averaged only 1.3% in the second quarter of 2019, compared with the same period last year.
- **Unemployment is currently below its natural rate equilibrium, even while realised growth remains below potential.** This reflects weakness in productivity and investment since the referendum, but resilience in employment and household spending. Growth has become more consumption-driven as a result.
- **Private sector investment is particularly weak.** Business investment has witnessed its most sustained period of weakness outside of a recession and is now the lowest in the G7.
- **The sharp divergence between growth in UK private sector investment and that in other developed economies coincides with the post-referendum period,** reflecting a sharp and sustained increase in economic uncertainty. This has increased the perceived risk associated with investments and reduced quarterly private investment by around 15–20% compared with if business investment had continued to grow in line with pre-referendum trends. Ongoing worries about the risk of a ‘no deal’ Brexit are particularly damaging to investment.
- **High employment, a falling exchange rate and low levels of investment have already led to unit labour costs rising sharply.** Low investment now will lead to low growth in productivity and earnings in the future.
- **GDP is roughly 2.5–3.0% (£55–£66 billion) below where we think it would have been without Brexit.** Based on pre-crisis forecasts and global economic performance in 2017 and 2018, we suspect the UK has missed out almost entirely on a bout of global growth, which would normally have boosted exports and investment.
- **A recovery in growth from here is likely to require a profound reduction in policy uncertainty.** Without investment and improvements in labour productivity, growth is likely to slow further.

2.1 Introduction

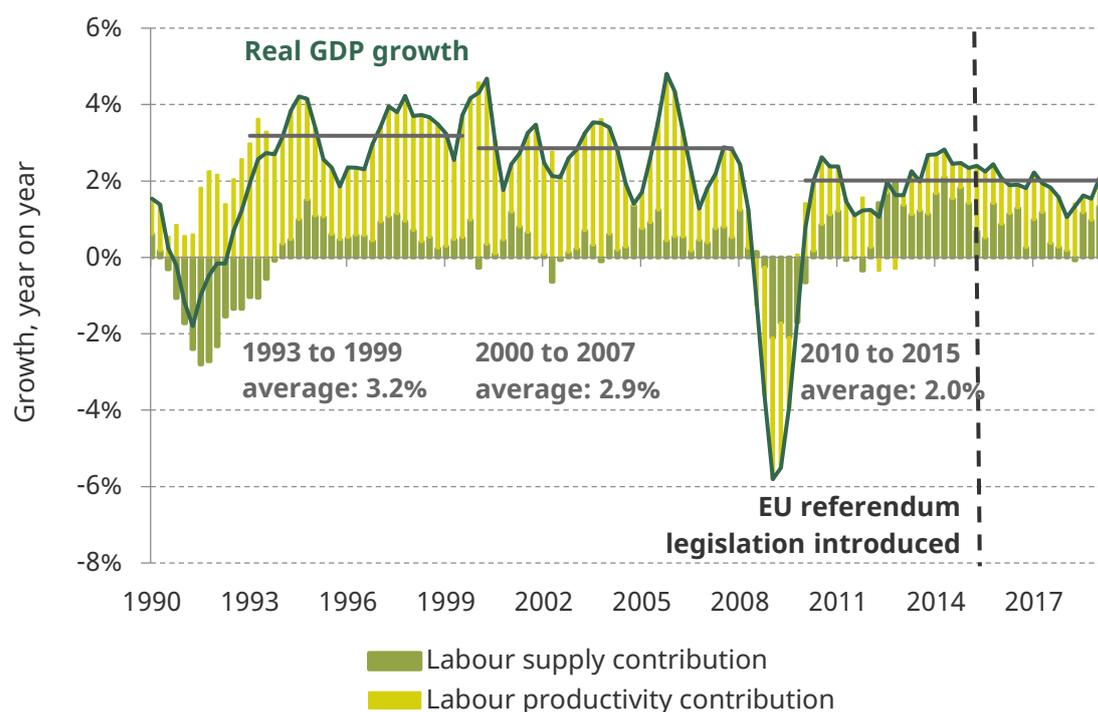
The outlook for economic growth is essential context for any fiscal event, with important implications for the public finances, public spending, taxation and living standards. As

Chapter 1 discusses, 2019 has been a year of intensifying headwinds to global growth, from US-initiated trade wars to a slowdown in both the Chinese and European economies.

But while these global trends have undoubtedly influenced UK economic performance in recent quarters, growth has also been driven – perhaps even more than usual – by idiosyncratic, domestic concerns. The UK’s economic performance since the 2016 EU referendum looks relatively unique in cross-national comparison. The rest of the G7 has seen average year-on-year growth between 2016 and 2018 exceeding its average over the preceding six years (see Figure 2.20). By contrast, UK growth has lagged.

Uncertainty around the UK’s departure from the European Union has played a key role. Growth in the size of the UK economy – known as gross domestic product or GDP – for the second quarter of this year was 1.3% (on an annualised basis) compared with the same quarter in 2018. That is somewhat below its potential of 1.4%, as estimated by the Bank of England,¹ and – as shown in Figure 2.1 – well below the average of 2.0% per year in the post-crisis, pre-referendum period between 2010 and 2015. While labour input appears to have continued to grow, and in fact accelerated over the last four quarters (see Figure 2.1), productivity growth has stalled. In part, this lack of productivity growth has been a feature since the 2008 financial crisis, but this has deteriorated further most recently.

Figure 2.1. UK real economic growth, year on year



Note: Labour and productivity growth contributions are derived assuming a simple two-factor Cobb–Douglas production function. Labour share is taken from the Office for National Statistics (ONS) assuming self-employed income is equal to that of employees on average. Labour supply is measured as the total hours worked.

Source: ONS and Citi Research.

¹ Table 3.C of Bank of England, *Inflation Report: February 2019*, <https://www.bankofengland.co.uk/inflation-report/2019/february-2019>.

In the most recent quarter for which GDP data are available, the second quarter of 2019 (Q2, April–June), GDP fell by 0.2% quarter-on-quarter (QQ). This was the first quarterly decline in UK GDP since the last quarter of 2012 and thus since the end of the eurozone sovereign debt crisis. The drop partly reversed the 0.6% QQ gain in the first quarter of 2019.

The economy started the third quarter on a brighter note, with a 0.3% month-on-month gain in gross value added in July, driven by the services sector. However, soft data for Q3 such as the Purchasing Managers' Indices (PMIs) suggest that output is likely to stagnate in Q3 as a whole. Beyond that, uncertainty about the further short-term path is very high, to put it mildly. The UK is scheduled to leave the EU on 31 October, but at the time of writing, there is no clarity over whether it will do so in orderly fashion with a deal, or without a deal, or whether it will reverse the decision to leave or take more time to make up its mind. This is discussed in depth in Chapter 3. Here, we provide a brief review of recent economic trends that provide context for this uncertain outlook.

In the sections below, we begin by discussing the components of headline UK growth. Section 2.2 provides an overview of the composition of UK growth in recent quarters, followed by more in-depth discussions on private business and residential investment (Section 2.3) and other parts of GDP by expenditure (Section 2.4), such as private consumption, public spending, inventories and trade. Following a comparison of our latest baseline forecasts with the projections in the 2018 Green Budget (Section 2.5), we conclude this chapter with a brief discussion of the effect of the Brexit process on the UK economy thus far in Section 2.6.

2.2 Recent UK growth

In the second quarter of 2019, UK GDP rose by 1.3% compared with the same quarter in 2018 (YY). However, this headline figure masks considerable divergences and notable changes in the respective subcomponents of GDP. For example, private consumption rose by 1.7% (above 2010–15 averages) and government consumption by 4.0% YY. By contrast, total investment (gross fixed capital formation, GFCF) edged up by merely 0.3%. Even this masks significant differences between private investment – where business investment fell by 1.4% and private sector dwellings investment grew by only 1.1% – and investment by the public sector, which grew by a considerable 6.1%. In total, final domestic demand added 1.2 percentage points (ppt) to GDP growth.

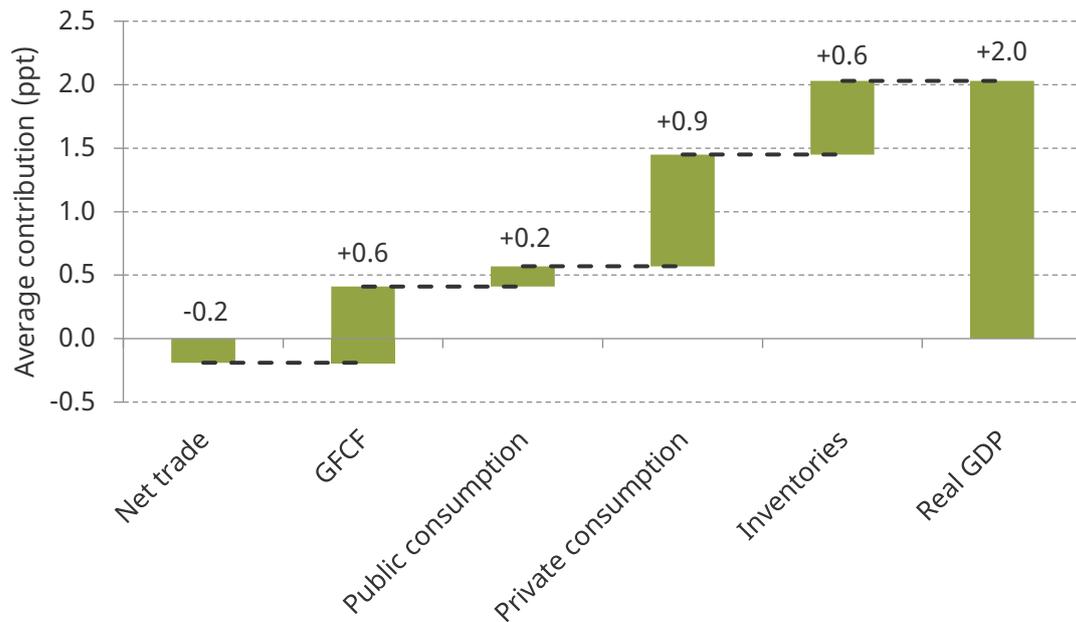
Many of these atypical divergences have emerged since the referendum, resulting in a marked change in both the composition and level of growth. As Figure 2.2 shows, investment growth (measured by GFCF) has weakened since the referendum while the contributions of private consumption to growth have stiffened.

In recent quarters, UK GDP data – shown in Figure 2.3 – have been volatile. Seasonally adjusted real GDP in Q1 grew at 0.6% quarter on quarter, followed by a 0.2% QQ decline in Q2. These shifts were driven by highly unusual fluctuations in imports and inventories. In 2019Q1, imports rose by 10.3% QQ, while exports rose by 1.6% QQ, resulting in net trade subtracting 2.9ppt from quarter-on-quarter GDP growth. This was almost exactly offset by a substantial rise in inventories, which added 2.8ppt to growth in the same quarter. In part, this reflected companies' preparations for a potentially disruptive departure from

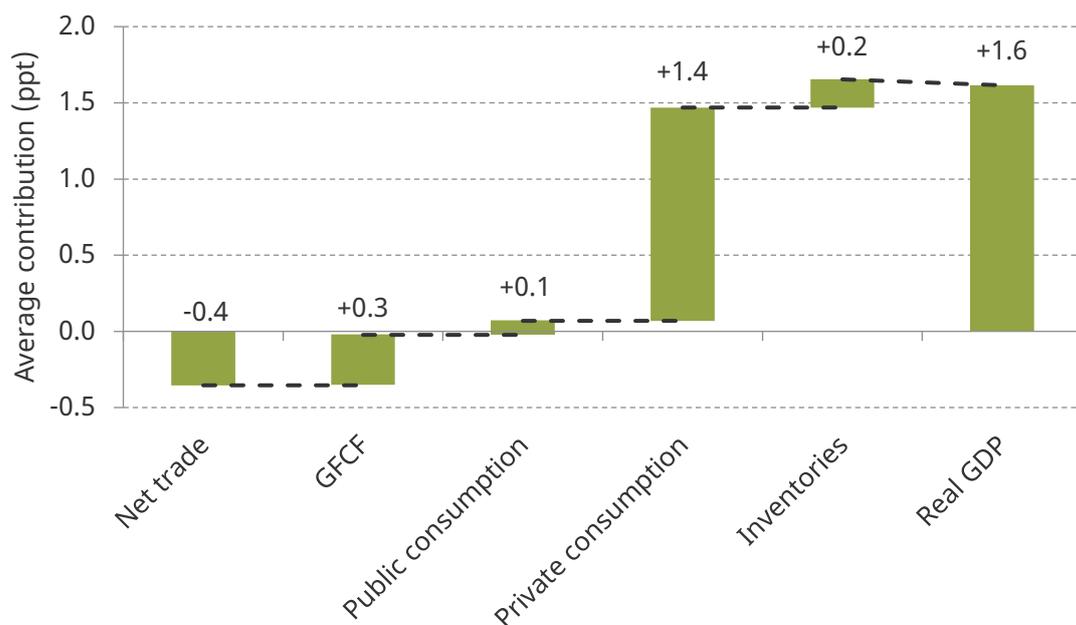
the EU on 29 March, for which they imported more input materials than usual. In part, however, the first quarter was also boosted by a one-off change in accounting rules, which led to a boost to the acquisition of valuables, which is often subsumed in the inventories category.

Figure 2.2. Average contributions of GDP components to year-on-year economic growth

Panel A. 2010Q1 to 2015Q4



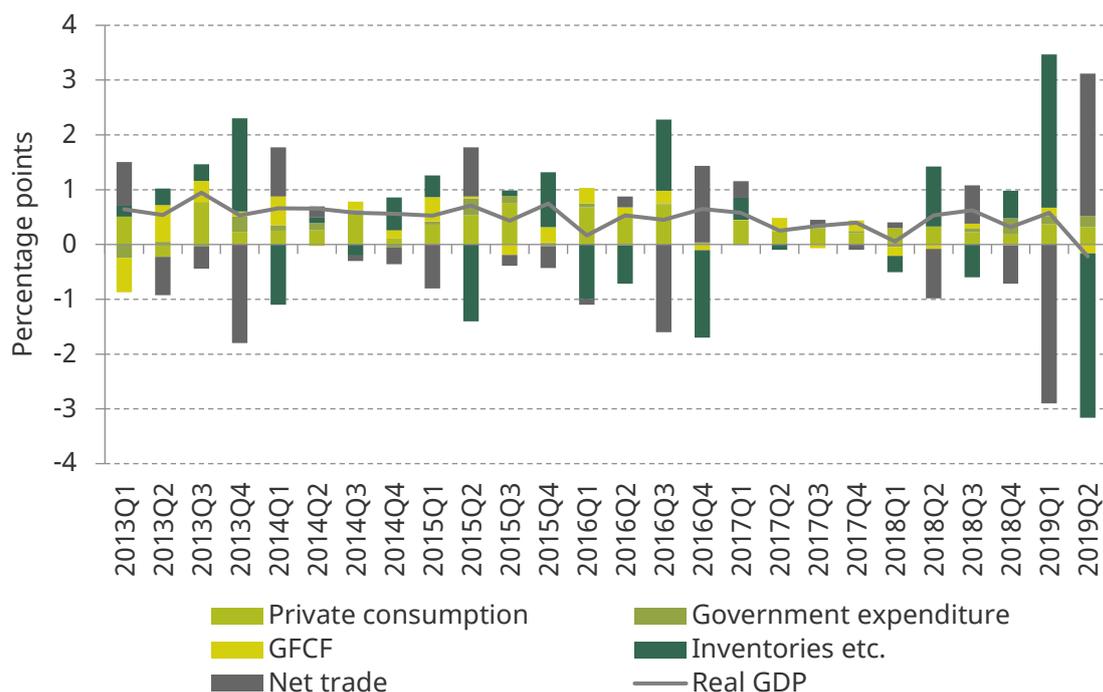
Panel B. 2016Q2 to 2019Q2



Note: These data are based on the first release of the 2019Q2 GDP data. Figures may not add due to rounding.

Source: ONS and Citi Research.

Figure 2.3. UK GDP growth and contribution of expenditure-based components



Note: GFCF refers to gross fixed capital formation, or overall investment. Net trade refers to changes in the trade balance (the difference in the volumes of exports less imports of goods and services).

Source: ONS and Citi Research.

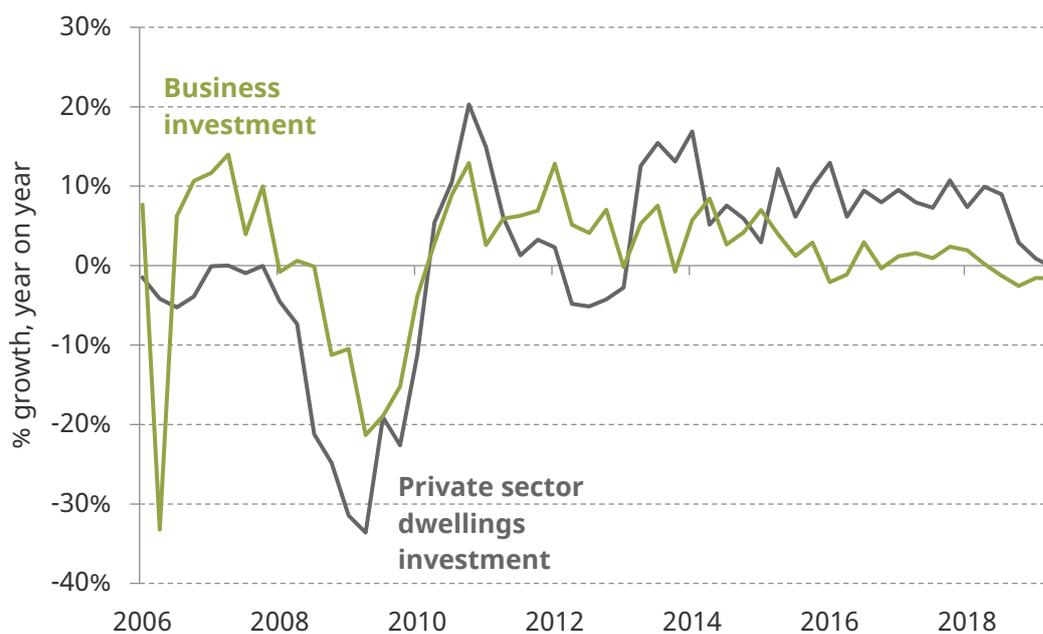
As Brexit was delayed, these trends reversed somewhat in Q2. Inventory divestment weighed on quarterly GDP to the tune of 3.0ppt, while a 13.0% drop in imports paired with a 6.6% QQ drop in exports turned the net export contribution to a positive 2.6ppt. As Brexit-related deadlines continue to come into view in Q3, we expect similar exceptional movements to be repeated, if to a more limited degree.

2.3 Private investment

Since the 2016 referendum, private investment in the UK has been weak. As Figure 2.4 shows, growth in business investment (gross non-residential investment by private and public corporations) has been negative in year-on-year terms since the third quarter of 2018, and it declined in five of the last six quarters in quarter-on-quarter terms. This is the most persistent reduction in investment, outside of a recession, on record.

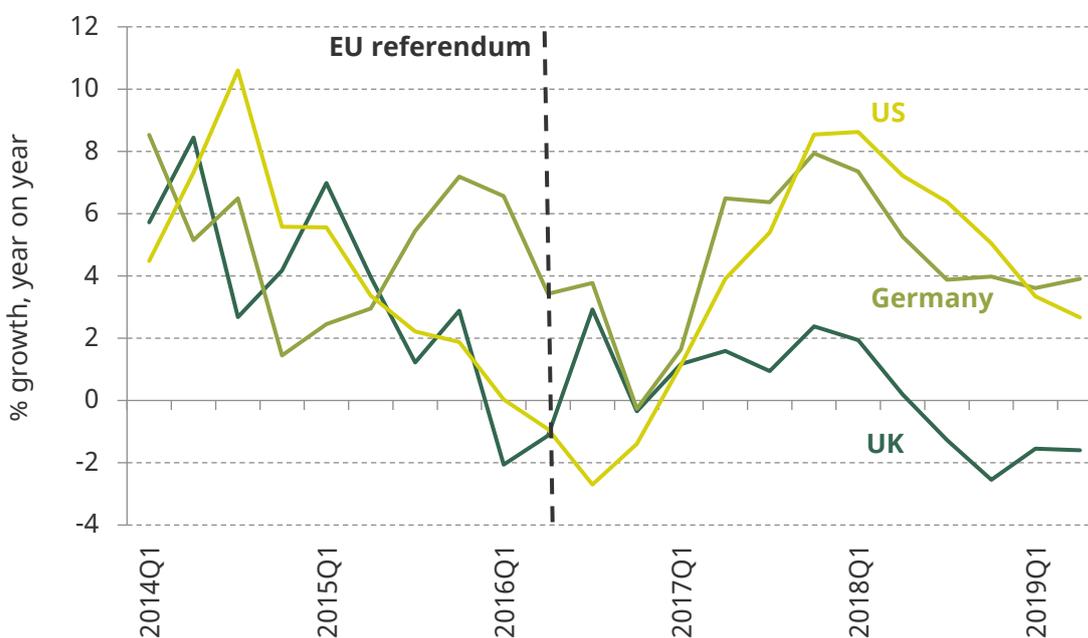
Weakness in business investment (which accounted for 57% of GFCF in 2018) has also increasingly spread to other, traditionally more resilient, areas of investment. For example, private sector dwellings investment, the second-largest component of GFCF (21% in 2018), also fell in 2019Q2.

This persistent weakness in UK business investment is despite both labour shortages and accommodative financial conditions, which would normally be supportive. It is also in spite of relatively strong global investment performance over the post-referendum period, at least in the period before 2019. Between 2012 and the referendum, UK business

Figure 2.4. UK business investment and investment in private sector dwellings

Note: These data are based on the first release of the 2019Q2 GDP data.

Source: ONS and Citi Research.

Figure 2.5. UK, US and German growth in business investment

Note: The figure plots business investment for the UK, investment in machinery, equipment and systems for Germany and private non-residential fixed investment for the US.

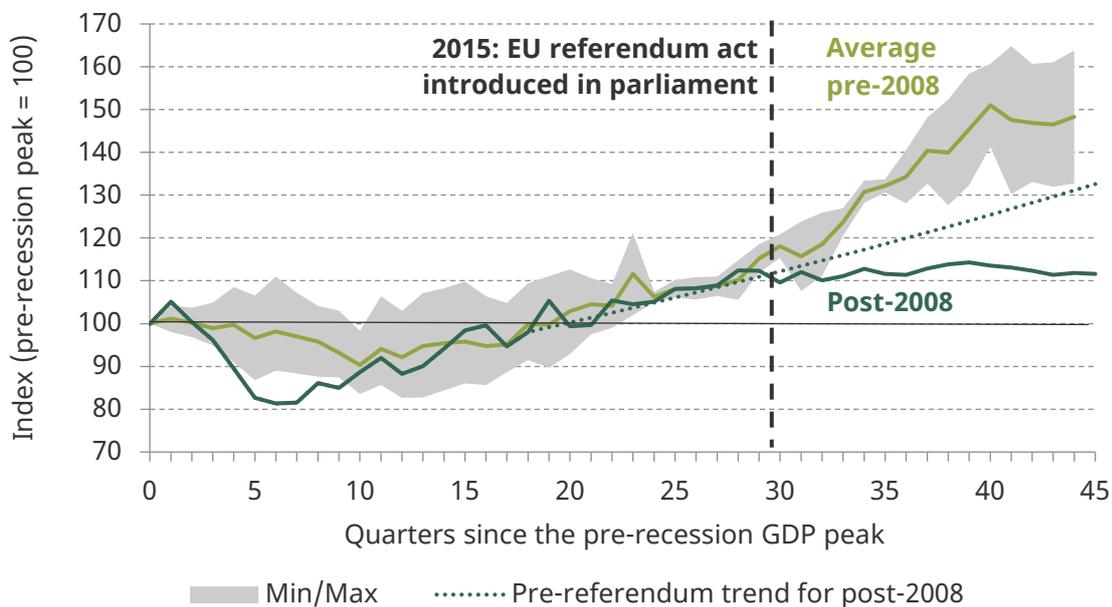
Source: National statistical offices and Citi Research.

investment was generally running ahead of the G7 median, in roughly the top quarter of the G7 economies. Since the referendum, UK business investment growth has dropped to the bottom of the G7 range. A large gap in business investment growth between the UK and the G7 median opened up in 2017 as investment accelerated across the other members of the G7. Even as global investment growth has since moderated, this gap has persisted. Figure 2.5 shows the divergence in business investment between the UK, the US and Germany; while they had previously tracked one another closely, investment in the UK has stayed broadly flat post-referendum while growth rates in the US and Germany have accelerated.

In addition, UK business investment has been weak in comparison with the pre-referendum trend. The dark green line in Figure 2.6 shows how real business investment changed relative to the level observed during the pre-crisis GDP peak. This is indexed to business investment levels in 2008Q1 (£44 billion in today’s prices). Initially, investment slumped deeply during the recession – in fact, more deeply than in any other recession since 1970. However, 10 quarters on from the pre-recession peak, business investment had recovered to the extent that would have been predicted based on the UK’s experience in the average pre-2008 recession (shown by the light green line).

But the vote to leave the EU in 2016 curtailed that nascent recovery. In the 12 quarters since the referendum, business investment has stayed essentially flat. On average, after previous recessions, investment grew by almost 30% over that period. Even the most

Figure 2.6. Real business investment since the 2016 referendum compared with historical cyclical recoveries (1970–2019)



Note: The figure uses the chained volume measure. Cyclical recoveries begin in 1973, 1975, 1980, 1990 and 2008. A cyclical recovery ends when a second recession begins – this is defined as the second quarter of contracting GDP. The ‘pre-referendum trend’ series is calculated over the period 2011Q1–2015Q2 using a Hodrick–Prescott filter with lambda of 1600.

Source: ONS, Bank of England and Citi Research.

anaemic recovery in investment since 1970 (the post-1990 recovery) still saw investment 30% higher than its pre-recession level. In the current recovery, this figure is now just 12%.

It is possible that the 2008 recession had particular characteristics that would have dampened investment for longer regardless of the referendum. But investment since the Brexit referendum has significantly underperformed even the rate of growth it had between 2010 and 2015Q2, shown by the dotted line in Figure 2.6. This is also a much more extensive slowdown than for other elements of the UK's national accounts, such as private consumption, which has continued to grow relatively well.

We, like most economists, attribute this significant UK-specific weakness in business investment to Brexit-related uncertainty. Below, we introduce a measure of UK macroeconomic uncertainty and explore its link with business investment in recent decades. We then discuss specific features of macroeconomic uncertainty since the referendum.

The role of uncertainty

Several different methods have been developed to measure uncertainty. Some look at media reports,² while others look at financial market indicators or more directly at how volatile the unpredictable random 'shocks' are across a range of macroeconomic series.³ Since the 2016 EU referendum, some of these indicators have given conflicting accounts. For example, while media-based indicators have generally suggested a very high level of uncertainty, stock market indices have been more subdued.⁴

Here we use an approach employed by the Bank of England.⁵ This combines information from a range of economic expectations alongside several financial indicators,⁶ with synchronised movements across many of these data series taken to reflect changes in macroeconomic uncertainty.⁷ These data all focus on economic *expectations*, rather than contemporary performance. We use indicators of both the level and dispersion of

² S. Baker, N. Bloom and S. Davis, 'Measuring economic policy uncertainty', *Quarterly Journal of Economics*, 2016, 131, 1593–636, <https://doi.org/10.1093/qje/qjw024>.

³ K. Jurado, S. Ludvigson and S. Ng, 'Measuring uncertainty', *American Economic Review*, 2015, 105, 1177–216, <https://doi.org/10.1257/aer.20131193> use a functional autoregressive value-at-risk (FARVAR) model across a range of economic series.

⁴ N. Bloom, P. Bunn, S. Chen, P. Mizen, P. Smietanka, G. Thwaites and G. Young, 'Brexit and uncertainty: insights from the Decision Maker Panel', Bank of England Staff Working Paper 780, 2019, <https://www.bankofengland.co.uk/working-paper/2019/brexit-and-uncertainty-insights-from-the-decision-maker-panel>.

⁵ A. Haddow, C. Hare, J. Hooley and T. Shakir, 'Macroeconomic uncertainty: what is it, how can we measure it and why does it matter?', *Bank of England Quarterly Bulletin*, 2013Q2, <https://www.bankofengland.co.uk/quarterly-bulletin/2013/q2/macroeconomic-uncertainty-what-is-it-how-can-we-measure-it-and-why-does-it-matter>.

⁶ Technically, we use the first principal component from a principal components analysis of these series. In effect, this constructs a weighted average of the different data series, where the weights are determined by how strongly related the different data series are.

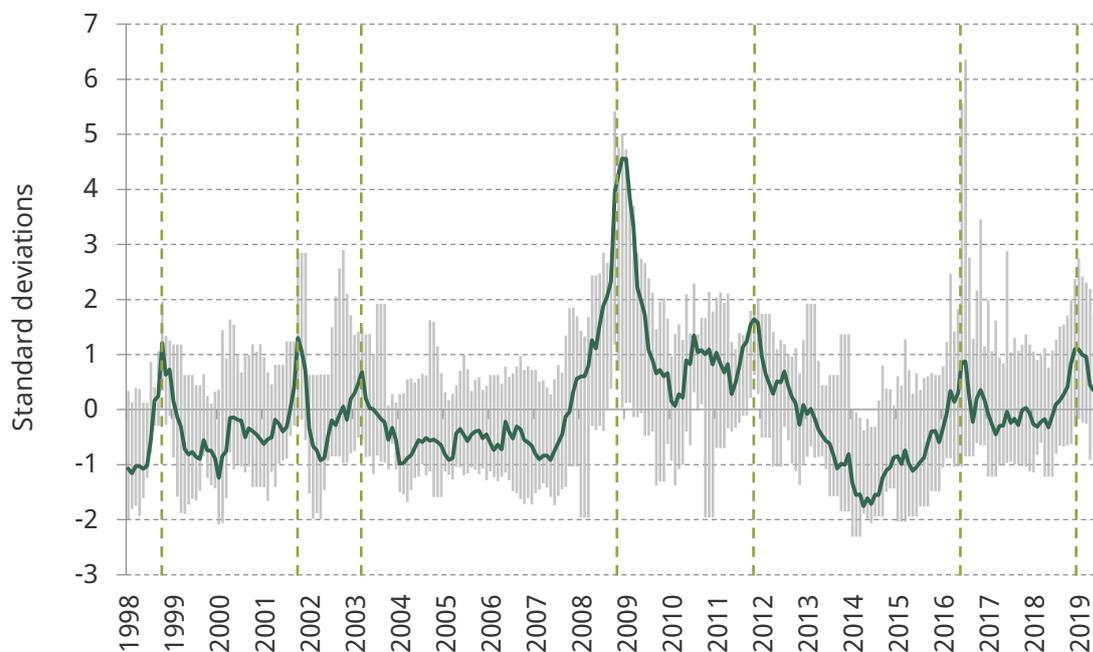
⁷ As noted by M. Melolinna, H. Miller and S. Tatomir, 'Business investment, cost of capital and uncertainty in the United Kingdom: evidence from firm-level analysis', Bank of England Staff Working Paper 717, 2018, <https://www.bankofengland.co.uk/working-paper/2018/business-investment-cost-of-capital-and-uncertainty-in-the-uk-evidence-from-firm-level-analysis>, any effective indicator of uncertainty must meet three criteria: it must be forward looking; it should not include anything that is easily forecastable; and the focus of any such indicator should be on the effect of changes in the so-called 'second order' of economic expectations – namely, their dispersion, rather than level.

economic expectations. This lets us capture both the dispersion of possibilities (how different the possible outcomes are) and the level of risk posed by the worst-case scenario (which is also relevant to businesses’ decision-making).⁸

The resulting measure of uncertainty broadly follows the pattern one might expect; Figure 2.7 shows that there have been seven major spikes in uncertainty since 1997 (marked by the vertical dashed lines): Long-Term Capital Management’s failure and the Asia/Russia crisis in 1998, the 9/11 terrorist attacks in the US in 2001, the invasion of Iraq in 2003, the 2008 acute transatlantic banking crisis, the eurozone sovereign debt crisis in 2011/12, the 2016 Brexit referendum result and, most recently, the growing risk of a no-deal Brexit as successive Article 50 deadlines have approached.

Figure 2.8 highlights that, over the last 20 years, this measure of uncertainty has been strongly associated with (reduced) business investment. Notably, in 2001, 2003, 2008, 2016 and 2018–19, sharp increases in uncertainty coincided with equally notable slowdowns in business investment six months later. The euro crisis is a notable exception: two

Figure 2.7. UK macroeconomic uncertainty since 1998

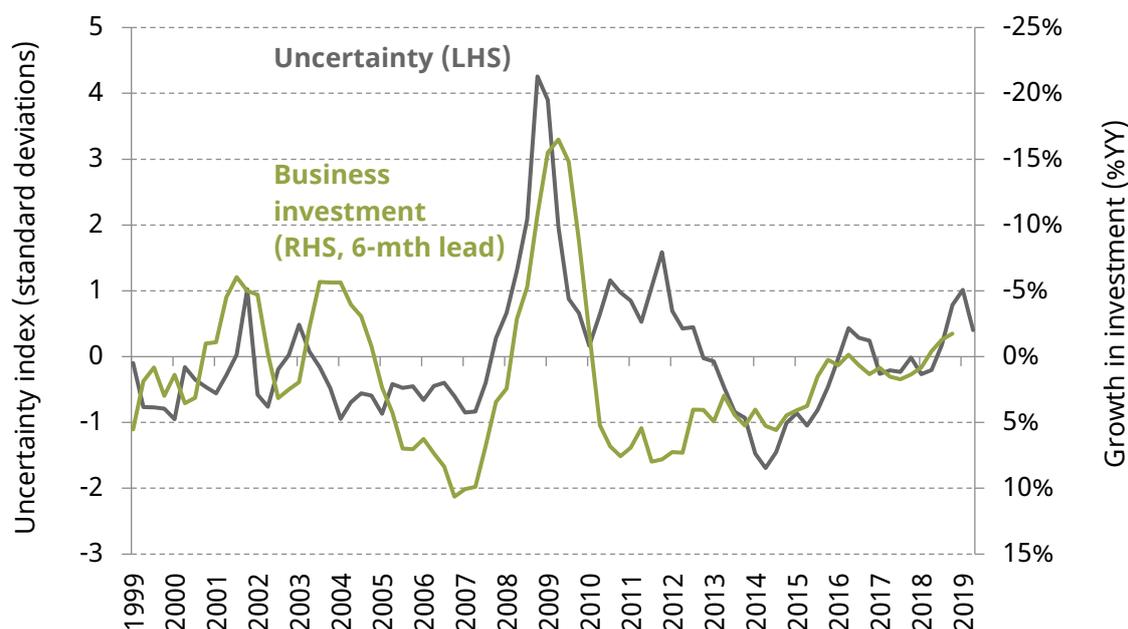


Note: This monthly measure of economic uncertainty is constructed using principal components analysis of the following data series (with their sources in parentheses): expectations and dispersion in expectations for unemployment for the next 12 months (GfK); expectations and dispersion in expectations for the general economic situation for the next 12 months (GfK); change in output volume for the next three months (CBI); change in uncertainty about demand limiting investment (blend of CBI manufacturing and service indicators); change in commercial residential property demand (RICS); change in price expectations for residential property for the next three months (RICS); 90-day implied volatility in the sterling–USD and sterling–euro exchange ranges (Bank of England); and the UK Economic Policy Uncertainty Index, based on 11 newspapers (Economic Policy Uncertainty). The grey error bars show the range of the different uncertainty indicators employed in this analysis.

Source: GfK, CBI, RICS, Bank of England, Economic Policy Uncertainty and Citi Research.

⁸ B. Bernanke, ‘Irreversibility, uncertainty, and cyclical investment’, *Quarterly Journal of Economics*, 1983, 98, 85–106, <https://doi.org/10.2307/1885568>.

Figure 2.8. Macroeconomic uncertainty and real business investment growth (with a six-month lead)



Note: Macroeconomic uncertainty is a quarterly average of the index used in Figure 2.7. Business investment series refers to the real measure here (chained volume measure). We plot the four-quarter moving average of the year-on-year growth rate in this measure with a six-month lead and on an inverted scale. For example, the data for March 1999 plot uncertainty in March 1999 against investment growth in September 1999. For more details on the measure of uncertainty used here, see Figure 2.7.

Source: ONS and Citi Research.

successive spikes in uncertainty in 2010 and 2011 were not strongly associated with lower growth in UK business investment.

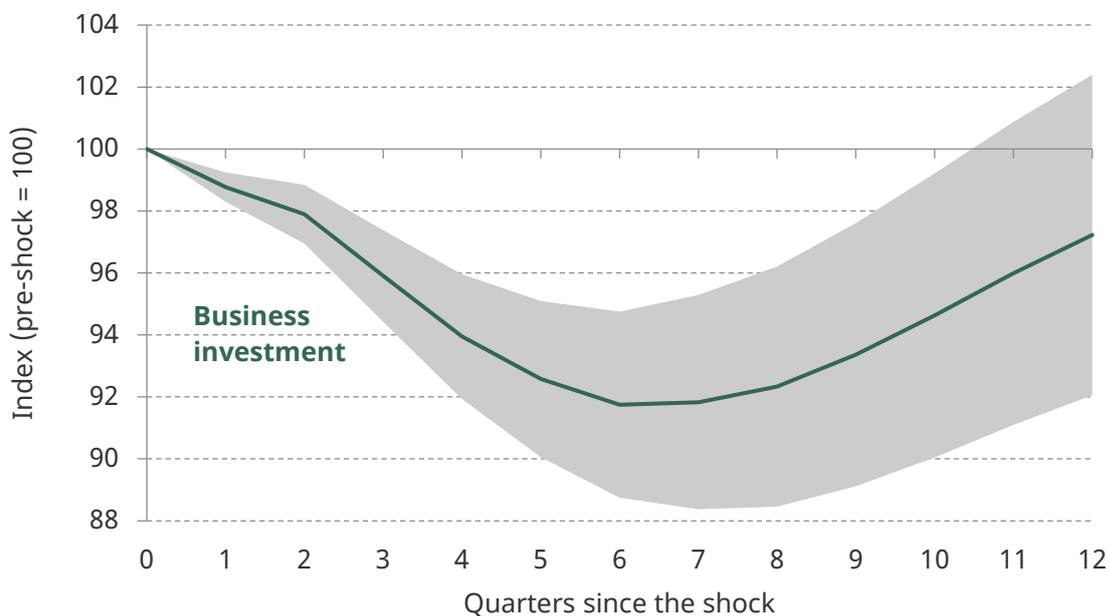
The role of uncertainty in depressing business investment and economic growth remains even after accounting for a range of other potential drivers, including labour supply growth and financial conditions. Figure 2.9 shows the impact that a sudden, one-standard-deviation increase in economic uncertainty has on business investment (Panel A) and real GDP (Panel B), after accounting for the role played by other factors.⁹ We trace these impacts for three years after the initial shock – which is roughly equivalent in size to the increase in uncertainty around the Brexit referendum documented in Figure 2.7. We find that, around 18 months following the shock, the level of business investment is around 8% below its pre-shock trend. For GDP, the equivalent figure is 2.2% below trend. The latter effect is of a similar size to the impact of a one-standard-deviation increase in the effective cost of capital,¹⁰ at least in the first 12–18 months; both weigh on year-on-year GDP growth to the tune of around 0.4–0.6ppt a year after the shock.

⁹ More specifically, we use a conventional vector autoregression (VAR) model with a two-period lag. We account for the potential drivers listed in the note to Figure 2.9. Our model assumes that the Bank of England does react directly to uncertainty, but that fiscal policy only responds to changes in real economic data. We assume that uncertainty is itself affected by economic data even if also driven by exogenous factors.

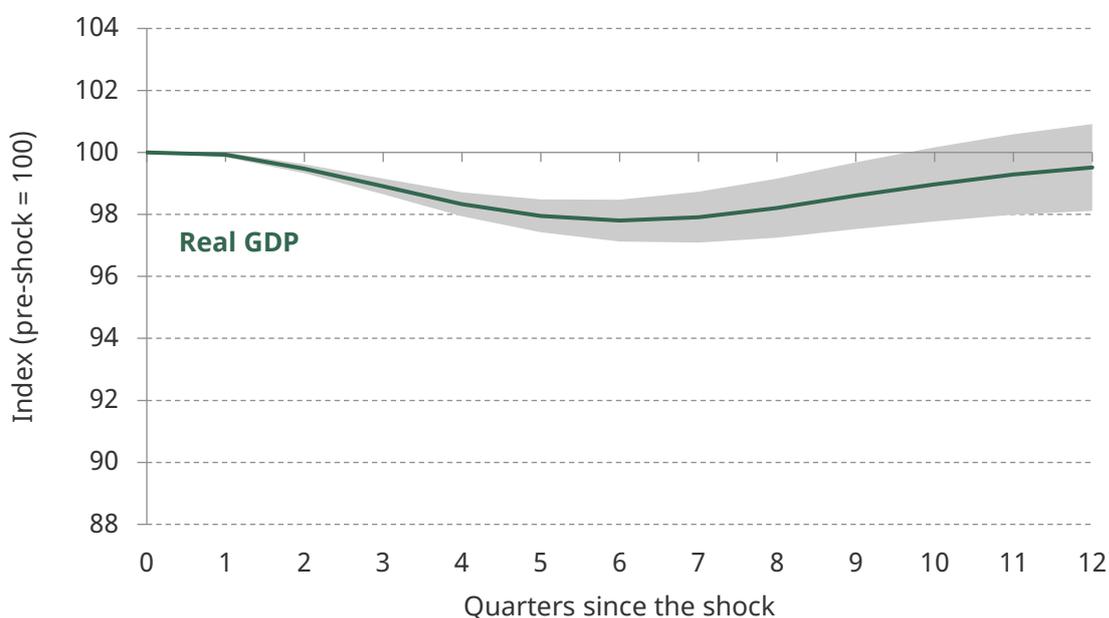
¹⁰ Here measured as the weighted average interest rate of sterling loans made to private non-financial corporations by UK-resident monetary financial institutions (excluding the Bank of England).

Figure 2.9. Cumulative impact of a one-standard-deviation increase in uncertainty on business investment and real GDP

Panel A. Impact on business investment



Panel B. Impact on real GDP



Note: The grey band plots the central estimate plus or minus one standard error to indicate the uncertainty around it. The following endogenous variables are included in the VAR model: business investment growth (%YY), GDP growth (%YY), growth in hours worked (%YY), growth in government expenditure (%YY), the cyclical component of the broad sterling exchange rate, the cyclical component of house price changes, the cyclical component of the weighted average of commercial interest rates offered by banks to private non-financial corporations (PNFCs), and core inflation measured by the Consumer Prices Index. US Financial Conditions are included as an exogenous variable.

Source: ONS, Bank of England, Bloomberg and Citi Research.

An unconventional kind of uncertainty

Uncertainty is linked to macroeconomic performance both by strong theoretical ties and by a large body of empirical evidence. It has a particularly strong impact on investment, since the decision on an investment is made today but the returns to it will depend on how the future unfolds. A wider-than-normal range of possible outcomes in the future therefore translates into more risk that a particular project will, faced with adverse conditions in the future, end up being unprofitable. Projects that would be profitable in a stable state of the world might therefore become temporarily unattractive.¹¹

Faced with a temporary period of uncertainty, one response is for companies to delay irreversible investment projects and wait for clarity. As former US Federal Reserve chairman Ben Bernanke argued in 1983,¹² as long as the time needed to complete a new investment project is not prohibitively long, a company can wait to undertake it until news improves and it can be confident that the investment will end up being profitable. By contrast, trying to reverse investment after it has been made is costly and time-consuming.

This means that, even in conditions of normal uncertainty, the risk of a bad outcome disproportionately drives firm behaviour, causing it to hold fire on investment projects. Temporary uncertainty would therefore be expected to hold down spending on investment as well as on other inputs into production, such as employment: companies will wait and see whether the demand ends up being in place before they commit to developing the capacity to meet it.

The impact of the referendum reflects many of these effects, which have consistently weighed on UK business investment. However, in several respects, Brexit is also an unusual – and particularly economically damaging – source of uncertainty.

One reason that post-referendum uncertainty has been unusual is its duration; since the referendum result, around 40% of firms have persistently reported an increase in uncertainty associated with Brexit.¹³ But Brexit-based uncertainty is also unusual in the severity of its downside risk and how it has been politically managed: there has been a repeated pattern of fixing a date for the uncertainty to resolve, only to prolong it further. In this subsection, we consider each of these characteristics and how they might have contributed to a particularly distinctive impact on business investment.

Typically, uncertainty affects both investment and employment as firms temporarily postpone projects. However, the persistence of Brexit-related uncertainty has constituted a fundamentally more complex shock. As such, rather than driving a general slowdown in both employment and investment, it may increasingly be driving (or exacerbating) something of a substitution between the two by affecting their relative prices.

¹¹ A. Dixit and R. S. Pindyck, *Investment under Uncertainty*, Princeton University Press, 1994.

¹² B. Bernanke, 'Irreversibility, uncertainty, and cyclical investment', *Quarterly Journal of Economics*, 1983, 98, 85–106, <https://doi.org/10.2307/1885568>.

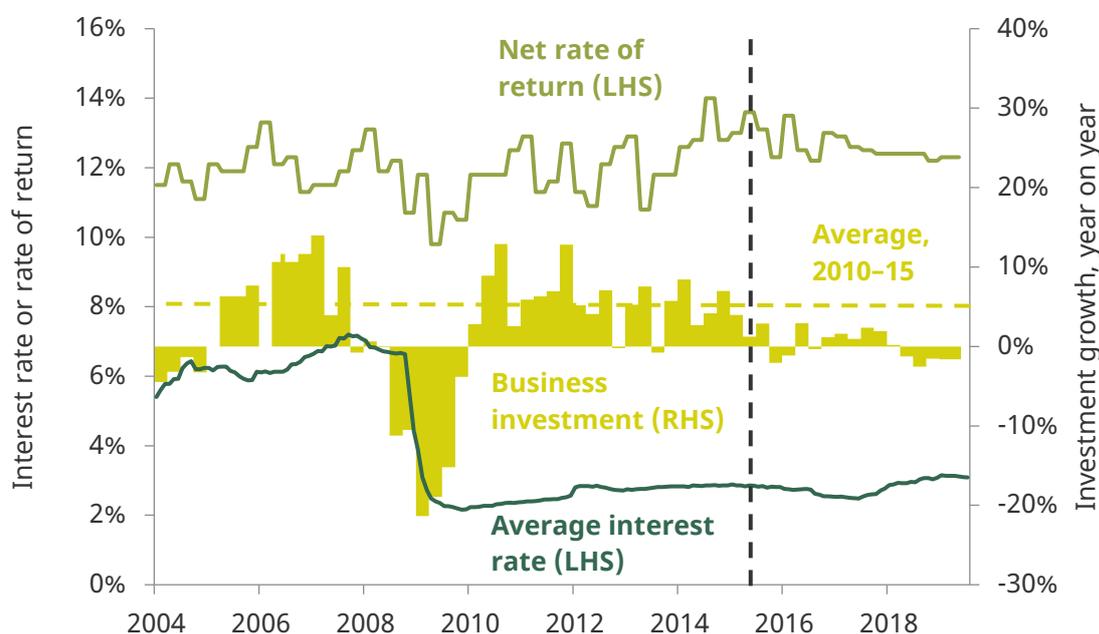
¹³ Based on data from the Bank of England Decision Maker Panel survey. See Figure 2.12 and N. Bloom, P. Bunn, S. Chen, P. Mizen, P. Smietanka, G. Thwaites and G. Young, 'Brexit and uncertainty: insights from the Decision Maker Panel', Bank of England Staff Working Paper 780, 2019, <https://www.bankofengland.co.uk/working-paper/2019/brexit-and-uncertainty-insights-from-the-decision-maker-panel>.

In the face of a long-term increase in strategic uncertainty, like Brexit presents, it is simply not viable for firms to delay everything and wait for clarity. Instead, firms continue to adapt to the contemporary environment, but give more value to flexibility. Hiring a worker, or increasing her number of hours worked, is more easily reversible than investment into machines, buildings or software – which often requires a greater degree of strategic clarity. As longer-term uncertainty has grown and in a context of robust global demand during 2017 and 2018, firms may have favoured hiring in lieu of investment.

Several trends suggest such substitution may have been a feature of recent UK economic experience, even before the referendum. For example, since 2008, the risk premium on corporate investment decisions – which measures the return expected on an investment over and above the cost of financing – has increased markedly. Put another way, firms have become more discriminating in the investment decisions they take. Figure 2.10 plots the cost of funding (in the form of rates on bank loans, or corporate bond yields) in dark green against the net return on capital in light green. While the cost of funding has fallen, the net return on capital – which can be interpreted as a hurdle rate (the rate of return needed to prompt a company to pursue a given investment project) – has remained broadly constant.

Several factors could be at play here – for example, unobserved challenges in accessing financing may have grown. However, we suspect that firms have chosen not to take on

Figure 2.10. Rates of return and indicative costs of capital for private non-financial corporations



Note: The vertical line marks the introduction of the EU referendum bill to parliament in 2015Q2. The 2010–15 average is average business investment growth (YY) between 2010Q1 and 2015Q2. Business investment refers to the real series (chained volume measure). ‘Rate of return’ is measured by the (annualised) net rate of return to private non-financial corporations (PNFCs). The net rate of return reflects total net operating surplus, divided by the net capital stock. ‘Average interest rate’ is measured by the weighted average interest rate of sterling loans made to PNFCs by UK-resident monetary financial institutions (excluding the central bank).

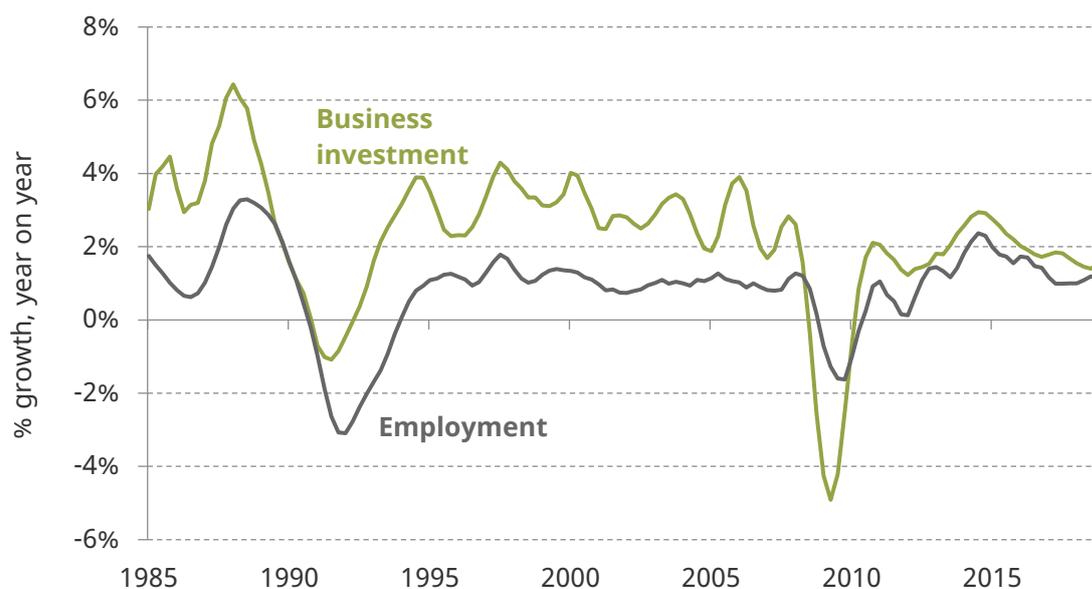
Source: ONS, Bank of England and Citi Research.

new, lower-return, investment projects even as lower financing costs have made these viable. This reflects a greater degree of corporate caution with respect to investment. Investment seems to have become more responsive to perceived uncertainty and subsequent changes in the investment risk premiums.¹⁴

The 2016 EU referendum has compounded these structural developments. Even as interventions by the Bank of England ensured borrowing costs remained historically low, increases in corporate risk premiums associated with Brexit uncertainty have still made investment relatively less attractive. Notably, since the referendum announcement, these trends have not increased the gap between borrowing costs and the observed rate of return. This is because firms have not systematically prioritised the most profitable investments, but instead the most essential ones. The result has been a persistent, structural reduction in investment over the Brexit period, even as the observed risk premium remains relatively steady (see Figure 2.10).

Persistent Brexit uncertainty thus had an effect similar to a relative increase in the cost of capital expenditure, making hiring relatively more attractive. All but non-essential investment has been put into a holding pattern. This, then, has still driven business investment down.¹⁵ As such, this is likely to have exacerbated the post-crisis trend of

Figure 2.11. Year-on-year business investment and employment growth



Note: Business investment refers to the real series (chained volume measure). Both series are four-quarter moving averages.

Source: ONS and Citi Research.

¹⁴ M. Melolinna, H. Miller and S. Tatomir, 'Business investment, cost of capital and uncertainty in the United Kingdom: evidence from firm-level analysis', Bank of England Staff Working Paper 717, 2018, <https://www.bankofengland.co.uk/working-paper/2018/business-investment-cost-of-capital-and-uncertainty-in-the-uk-evidence-from-firm-level-analysis>.

¹⁵ B. Broadbent, 'Uncertain times', speech given at Wall Street Journal on 5 October 2016, <https://www.bankofengland.co.uk/-/media/boe/files/speech/2016/uncertain-times>; B. Broadbent, 'Investment and uncertainty: the value of waiting for news', speech given at Imperial College Business School on 20 May 2019, <https://www.bankofengland.co.uk/speech/2019/ben-broadbent-imperial-college-business-school-london>.

strong employment growth and weaker investment relative to the pre-crisis period (Figure 2.11).

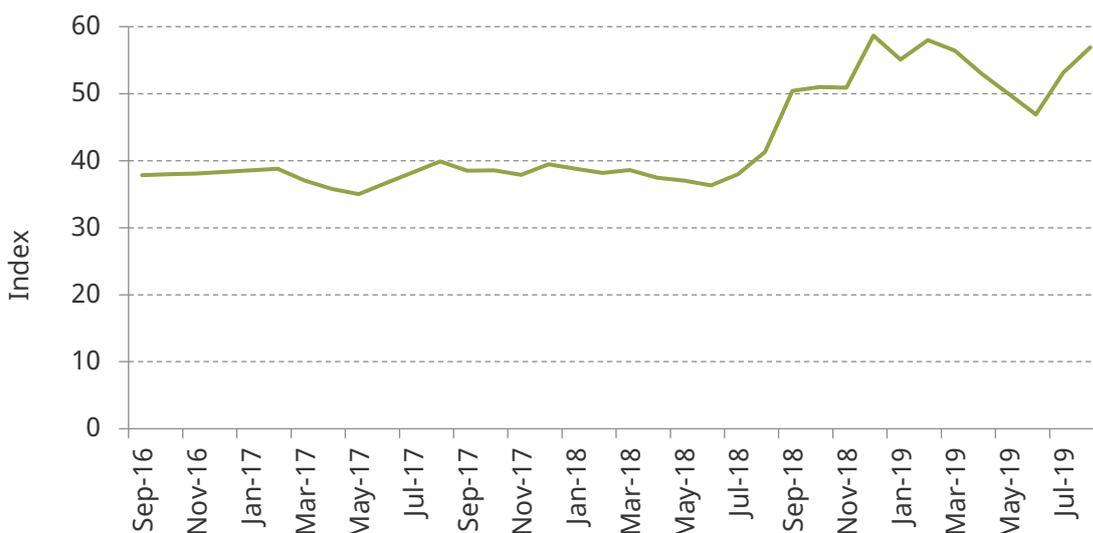
Alongside these more persistent effects, there have been periods when Brexit has also driven particularly acute reductions in business investment. These constitute more conventional uncertainty-driven slowdowns.

As the UK approached the scheduled Brexit day in the first quarter of 2019, and again in Q2, surveyed levels of uncertainty rose. This probably reflected both uncertainty about whether the UK would leave with a deal (and thus a transition period) and uncertainty about what the agreed arrangements would mean for businesses. As Brexit deadlines have loomed, companies asked about the sources of uncertainty facing them increasingly highlight Brexit as one of their main sources.

As the original March 2019 exit date drew closer and the risk of an economically damaging no-deal Brexit appeared to increase. This has been formalised in the Bank of England’s ‘Brexit Uncertainty Index’. This measures the number of firms reporting Brexit as one of their most important sources of uncertainty. Since the referendum, this has been broadly steady with around 40% of firms highlighting Brexit as one of their top three sources of uncertainty. As Figure 2.12 shows, as the 31 March deadline loomed, uncertainty increased markedly in 2019Q1. This then fell slightly following an extension, but has increased again since as the 31 October deadline has approached.

It is worth noting that the growth in uncertainty associated with Brexit may, in fact, have been greater than these data suggest. Since the start of 2019, other sources of macroeconomic uncertainty have also grown – including the Sino-US trade war. Here Brexit uncertainty is measured by comparing Brexit-related concerns to other sources of uncertainty. Specifically, it measures the number of firms identifying Brexit as one of their

Figure 2.12. Indicator of Brexit uncertainty among UK companies



Note: This is an index comprised of responses to the Decision Maker Panel Survey on sources of uncertainty, with the score defined by the proportion of respondents who highlight Brexit as one of their top three sources of uncertainty.

Source: Bank of England Decision Maker Panel survey and Citi Research.

top three sources of uncertainty. As other sources of uncertainty have also grown more notable, the growing relative importance of Brexit reflects a particularly significant growth in macroeconomic uncertainty.

As uncertainty increases, the attractiveness of waiting to see how it will be resolved also grows. In addition, as the time to supposed resolution falls, the costs of waiting are also reduced: firms go without a potentially profitable investment for less time before the deadline.¹⁶

In a Brexit context, this has often meant that the sensitivity of investment (and indeed other economic decisions) to increases in uncertainty grows in the run-up to key Brexit deadlines, just as uncertainty has also grown with it. The simultaneous increase in value of waiting and fall in cost associated with delay has driven particularly acute slowdowns in business investment as the UK has approached the 29 March 2019 Article 50 deadline.

In this sense, the manner in which the government managed the Brexit process exacerbated the economic effects of the post-referendum uncertainty. First, throughout the process, the possibility of a ‘no deal’ exit was kept alive as a perceived bargaining chip in talks with the EU. Keeping the continued risk of the most economically damaging form of Brexit on the table likely disproportionately affected investment decisions (which are more sensitive to downside than to upside risk) in the UK, leading more firms to push back investment plans.

Second, the repeated pattern of committing to a Brexit deadline only to push it back at the last minute has also likely worsened the impact on investment. The shorter the expected time to resolution of the uncertainty, the lower the cost of waiting to invest. Multiple delays are therefore likely to have weighed on business investment to a greater degree than if this length of negotiation period had been assumed initially, all else being equal.¹⁷ Alongside a broader lack of clarity regarding the UK’s future relationship with the EU, this is likely to have compounded inevitable increases in uncertainty since the referendum.

Business investment and future growth

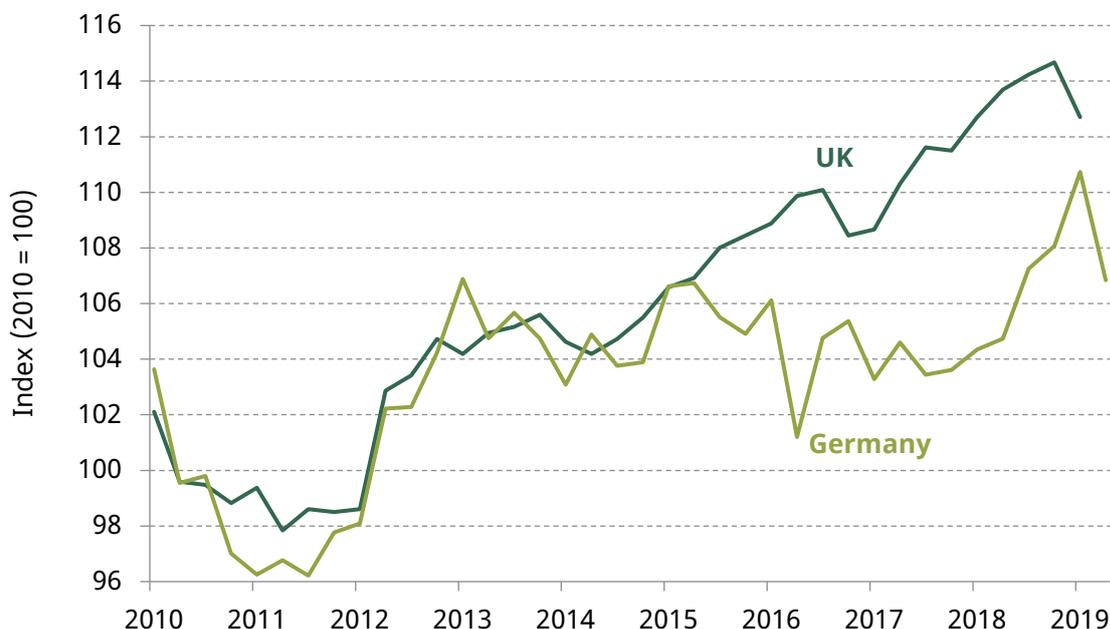
Besides weighing on current demand (through a lower contribution to this year’s GDP), the persistent lack of business investment and the bias towards hiring rather than capital investment puts the economy’s capital stock on a lower growth path. That will depress labour productivity (output per worker or per hour worked) in the future. Slower productivity growth means that either cash-terms wages will not grow as quickly or unit labour costs will rise.

In practice, because nominal wage growth has returned to the pre-crisis average of 4% while productivity growth remains virtually flat, the UK is facing the latter scenario. Besides generating cost pressures for firms, higher unit labour costs can put the competitiveness of trade-intensive sectors at risk. Since the EU referendum was announced in 2015 until the latest industrial slowdown since the second half of 2018,

¹⁶ A. Dixit and R. S. Pindyck, *Investment under Uncertainty*, Princeton University Press, 1994.

¹⁷ B. Broadbent, ‘Investment and uncertainty: the value of waiting for news’, speech given at Imperial College Business School on 20 May 2019, <https://www.bankofengland.co.uk/speech/2019/ben-broadbent-imperial-college-business-school-london>.

Figure 2.13. Nominal unit labour costs in manufacturing in the UK and Germany (seasonally adjusted, 2010 = 100)



Source: ONS, Destatis and Citi Research.

nominal unit labour costs in UK manufacturing have risen by almost 10ppt more than those in Germany (see Figure 2.13).

So far, the effect of these higher labour costs on the UK's international competitiveness has probably been more than offset by the depreciation of sterling since 2016. But a depreciating currency also has its own downsides, not least for private consumption. Domestic price adjustments may also drive a different picture in real terms, but that should not matter too much for the competitiveness of UK manufacturing labour.

2.4 Other GDP components

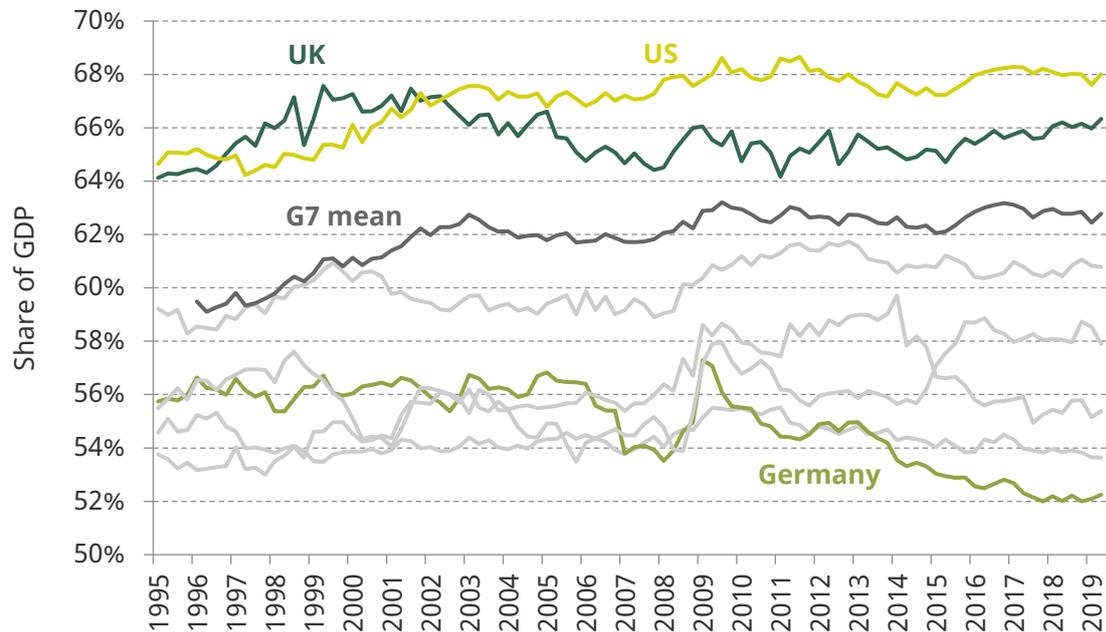
Private consumption

Private consumption is traditionally the dominant part of advanced economies, in the UK even more so than in most. As Figure 2.14 shows, consumer spending accounts for two-thirds of the UK's GDP. Among the G7, only the US has a slightly higher private consumption share (68%); in Japan, France and Germany, the share of private consumption in GDP is 10ppt or more below that of the UK.

A high share of private consumption makes the economy more dependent on the financial well-being of households. On the other hand, investment is less important, insulating the economy better against fluctuations in the global investment cycle. As financial crises are less frequent than the peaks and troughs of the global business cycle, consumer spending growth is by far the least volatile and most persistent part of expenditure in GDP. That normally makes consumers a source of resilience for the UK economy during externally induced slowdowns. Somewhat surprisingly, private consumption has also managed to

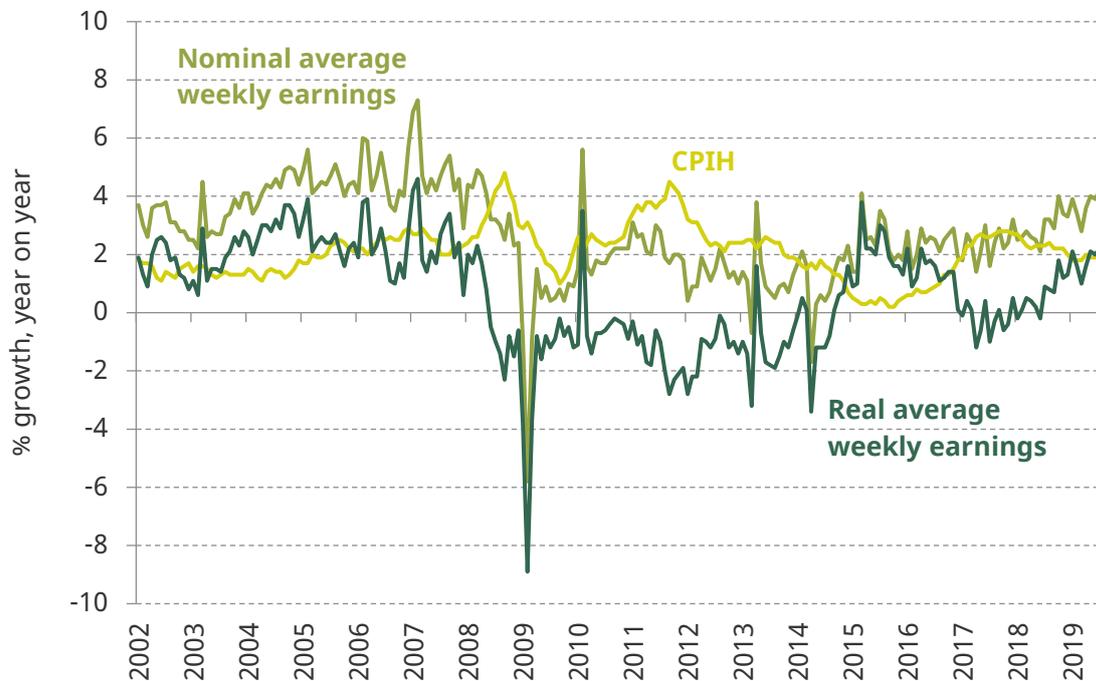
remain the pillar of growth throughout the uncertainty caused *domestically* by the 2016 EU referendum.

Figure 2.14. Share of private consumption in GDP of G7 economies



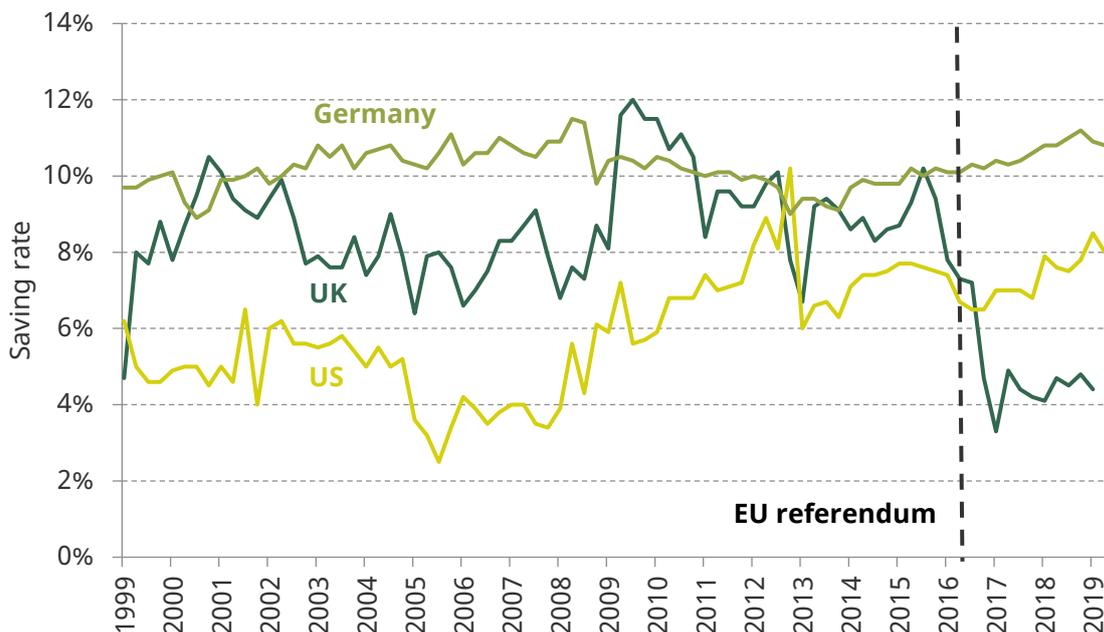
Source: OECD and Citi Research.

Figure 2.15. Year-on-year growth in average weekly earnings and consumer prices



Note: CPIH = Consumer Prices Index, a measure of inflation. Real average weekly earnings = Nominal average weekly earnings minus CPIH rate.

Source: ONS and Citi Research.

Figure 2.16. Household saving rate in the UK, US and Germany (% of disposable income)

Source: ONS, BEA, Destatis and Citi Research.

Consumer spending has slowed somewhat from the heady heights of pre-referendum days. However, it remains supported by robust employment growth, low unemployment (and thus low fears of being made redundant), nominal wage growth that is strong (at least in the context of the last decade) and consumer price inflation back to the Bank of England's 2% target. As Figure 2.15 shows, the latter two in combination have yielded the strongest real wage growth since 2016. Finally, consumers enjoy the wealth effects of very low interest rates (which boost disposable income for households with net debt, increase domestic asset prices and reduce the incentive to save) and globally rising equity markets.

Offsetting these positive factors, consumer confidence on the GfK measure is slightly below its long-run average due to weak economic expectations, pointing to modest spending growth; stagnating house prices reduce households' wealth gains and also weigh on spending decisions. Figure 2.16 shows that UK household saving rates are very low in historical and international comparison, suggesting that households have little room to cut saving rates further to keep spending through another downturn.

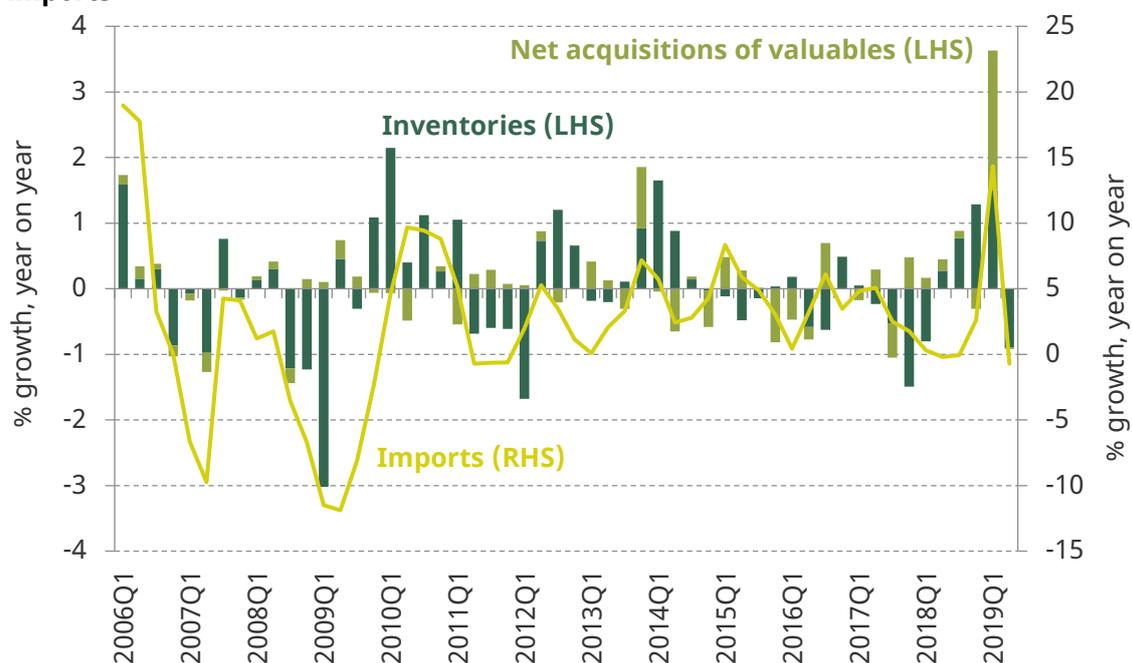
Government consumption and investment

An unusually strong expansion of public spending and investment offset some of the softening in parts of private sector demand over the past year (see Chapter 6). Reflecting a shift away from the fiscal rebalancing paradigm as well as Brexit preparations, real government consumption plus public investment rose by 3.5% YY in the second quarter of 2019, the second-highest annual growth rate since the global financial crisis. Since public consumption accounts for 21% of total consumption and public investment for 16% of total GFCF (both 2018 data), the boost to overall growth between 2018Q2 and 2019Q2 was a significant 0.7ppt or more than half of overall growth.

Inventories

Inventories and acquisitions less disposals of valuables usually do not impact GDP growth in a sustained fashion. However, as Figure 2.17 highlights, it seems that companies built up large inventories of finished goods in the run-up to the initial Article 50 Treaty of the European Union deadline on 29 March 2019 to tide them over any possible short-term disruption from Brexit. That acted to push up GDP growth massively, but was largely offset by a large increase in imports, since much of the stockpiling was of imported goods or materials. The only net positive impact of this stockpiling was probably the increase in exports by 3.2% over the two winter quarters (against the euro-area trend of falling exports according to CPB data), which could be the result of stockpiling of materials and goods from the UK by the rest of the European Union.

Figure 2.17. Year-on-year growth in UK inventories, net acquisitions of valuables and imports



Source: ONS and Citi Research.

But all these effects were quickly reversed in the second quarter, after Brexit was delayed. A similar pattern could now be repeated in the third quarter as companies may fear not just any Brexit but potentially the most disruptive version of it, a no-deal Brexit. On the other hand, where stocks are not perishable, no-deal inventories may already exist. We therefore expect the temporary effect of stockpiling to be merely 0.1 or 0.2ppt of GDP in Q3, with a later reversal depending on the Brexit schedule. Note that the data for net acquisition of valuables in the first quarter were distorted upwards by an accounting change, and thus probably not due to Brexit preparations or other real economic activity.

Trade

UK exports boomed for a brief period after the 2016 EU referendum. In part, this likely reflected rebounding growth of its export markets. In Figure 2.18, we compare UK export growth and the trade-weighted rate of change of real imports of the UK's trade partners (known as the UK export market index). This measure broadly captures changes in potential demand for UK exports. The UK's export boom coincided with a slight rebound

in import growth among the UK’s trading partners in 2017. However, the far greater driver of this short period of export growth was likely the 20% depreciation of sterling from late 2015 to late 2016.

Since then, as Figure 2.18 shows, UK export growth has fallen back again and averaged only 0.1% YY over the last four quarters. This slower growth comes despite another small temporary surge in winter 2018/19, which probably reflected Brexit stockpiling of UK products in the rest of the EU.

Compared with potential demand, the UK’s exports have somewhat underperformed in recent years. From 2002 to 2012, UK exports rose by two-thirds the pace of its export market index. However, from 2012 onwards, the UK’s export market expanded by 33%, while UK exports only rose by 14%. So instead of tracking at least two-thirds of its export markets’ growth as it did the decade before, the UK only achieved 40% of it. This is despite the strong tailwinds to exports from the 10% depreciation in the UK’s trade-weighted exchange rate over this period.

The UK is not alone in underperforming export expectations in recent years; other European economies have done similarly badly. Germany’s export market index had almost the exact same growth performance in 2002–12 (+64%) and 2012–19 (+32%) as the UK’s. Germany’s real exports of goods and services rose by 69% in the first period, but only 24% since then (108% and 75% of the growth in its export market index). Germany thus dramatically outperformed the UK in both periods, but nevertheless its export performance has deteriorated over the last two decades as it started losing market share like the UK. Of course, German exports did not have the benefit of a depreciating trade-weighted exchange rate over this period.

Figure 2.18. UK exports and potential demand from the rest of the world



Note: The export market index measures the trade-weighted growth in real imports of the UK’s trading partners, and so provides a measure of potential demand for UK exports.

Source: ONS and Citi Research.

Import growth in the UK was roughly stable around the EU referendum despite the deteriorating exchange rate and falling business investment. This resilience was made possible by UK households, which absorbed post-referendum higher prices largely through a drop in their saving rate.

However, by the summer of last year, import growth had slowed to zero as business investment growth ground to a halt and consumer spending slowed further. Later in the year, a period of erratic moves started: the winter saw extremely strong imports growth as companies built stockpiles ahead of the Brexit deadline, which was followed in the second quarter of 2019 by a complete unwind when Brexit was delayed. Given that no-deal Brexit is becoming a greater risk again into October, a repeat of this cycle (strong imports in Q3, unwind in Q4) could be on the cards.

On balance, with the exception of 2017, net exports continue to contribute negatively to UK growth. According to our latest projections, in 2019 they will reduce GDP growth by 0.6ppt.

2.5 Compared with our forecasts a year ago

Our forecasts in last year's Green Budget 2018 proved a bit too optimistic relative to what the latest data suggest and to what we currently expect for the rest of the year. Based on the assumption that the UK would leave the EU into an agreed transition period in March 2019, we had forecast GDP to rise by 1.3% in 2018 and 1.5% in 2019. According to the latest ONS data, 2018 GDP growth ended up a smidgen higher than we had expected, at 1.4%. In contrast, our latest 2019 GDP growth projection is 1.1%. This is below many other forecasters (Consensus (Bloomberg) 1.3%, IMF 1.3%, OECD 1.2%, OBR 1.2%, BoE 1.3%), but all of these are also below what we anticipated last year.

Table 2.1. Differences between 2018 and current forecasts for % growth in GDP and its components

	Green Budget 2018		Latest		Deviation	
	2018	2019	2018	2019	2018	2019
GDP	1.3	1.5	1.4	1.1	0.1	-0.4
Private consumption	1.1	1.4	1.7	1.7	0.6	0.3
Public consumption	1.3	1.8	0.4	2.5	-0.9	0.7
Fixed investment	0.4	0.5	0.2	0.3	-0.2	-0.2
Business investment	0.5	-0.2	-0.4	-1.2	-0.9	-1.0
Residential investment	6.3	-0.2	7.2	0.6	0.9	0.8
Exports	-0.7	2.0	0.1	0.7	0.8	-1.3
Imports	-0.2	1.8	0.7	2.6	0.9	0.8

Table 2.1 summarises the differences between our forecasts in last year's Green Budget and our current projections, broken down by the different expenditure components of GDP discussed in the previous two sections. We expected private and public consumption growth to strengthen somewhat in 2019 compared with 2018, which only partly materialised – in public spending. Household consumption turned out stronger than we expected in 2018, but failed to accelerate in 2019. Our investment forecasts were nearly spot-on in total. Business investment is significantly weaker (we currently expect a 1.2% fall in 2019, while a year ago we expected investment to flatline in 2019), but this was largely offset by higher-than-expected public investment. Private sector dwellings investment slowed sharply in 2019, roughly in line with our expectations last year. Finally, real exports and imports growth is currently forecast to be a bit higher in 2019 than in 2018, but not by as much as we had anticipated last year.

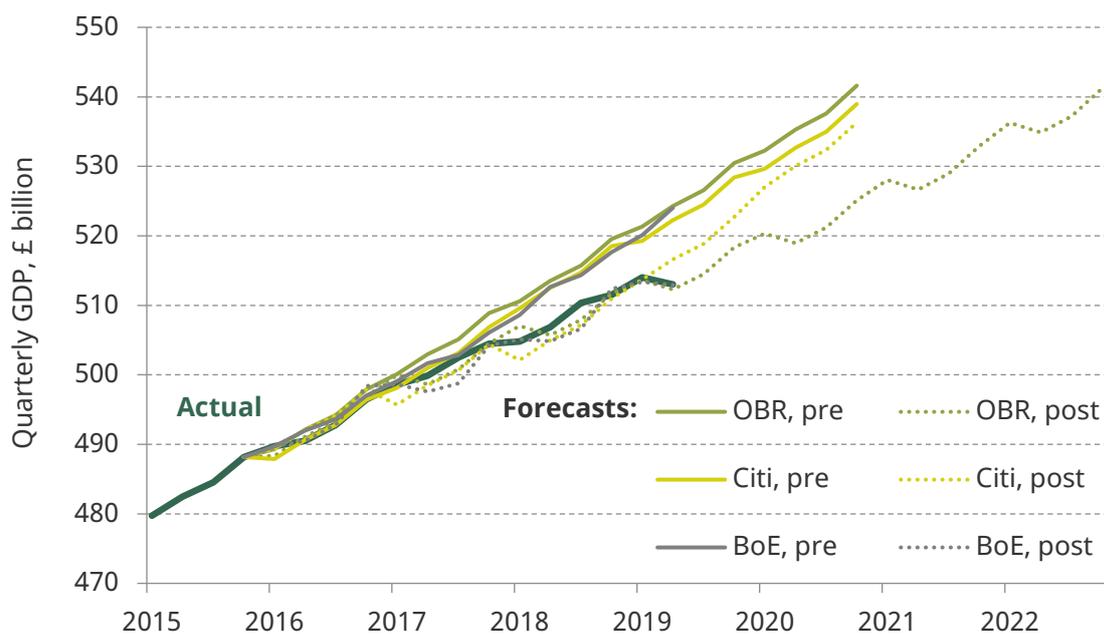
In sum, the downward revision to our forecasts reflects weaker-than-expected business investment as well as a shallower-than-expected rebound in export growth. We put this down to the unexpected Brexit path and a deeper and more protracted global manufacturing slowdown than seemed likely last year (see Chapter 1). However, some components of GDP held up better than expected: both private consumption last year and public spending this year have higher-than-anticipated growth. We underestimated the resilience of these key elements of UK domestic demand.

2.6 The cost of Brexit so far

In last year's Green Budget, we analysed the performance of the economy in comparison with forecasts made before and after the referendum. We noted that by the end of 2018, UK real GDP would probably be almost exactly at the level we had predicted immediately after the referendum. Updating this analysis for 2019, we can now say that the economy is now performing worse than our forecasts at the time (see Figure 2.19).

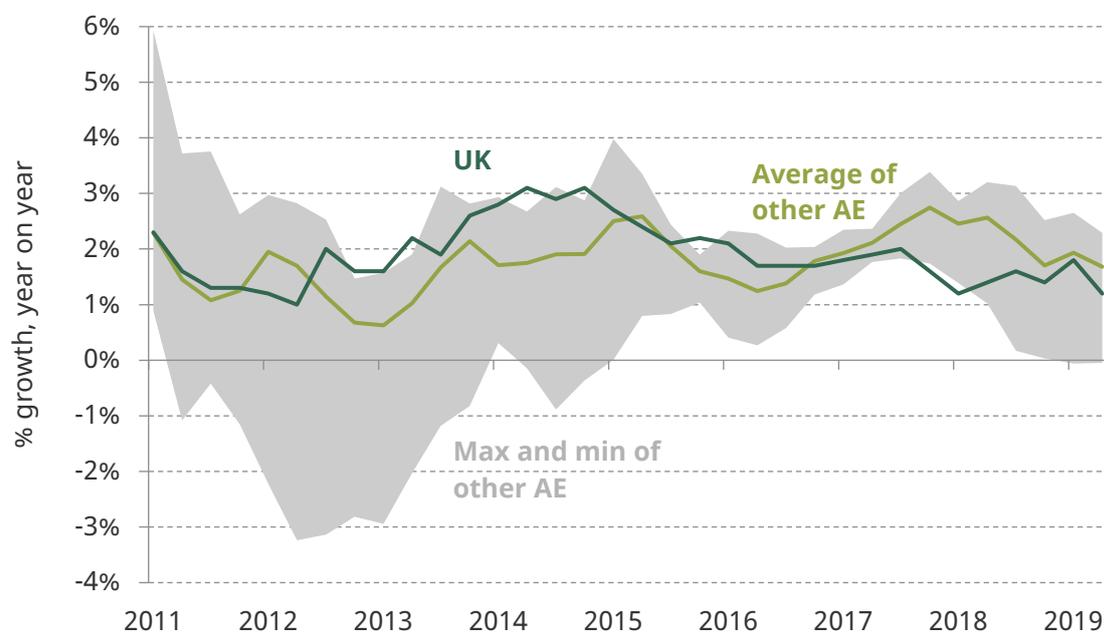
The cumulative accuracy of our forecasts in 2018 was the result of two major forecasting errors which offset each other. Instead of slowing sharply due to the confidence shock of the surprise 2016 EU referendum result, the economy initially stayed resilient and growth even accelerated briefly in the second half of 2016. Thereafter, the economy slowed gradually and progressively, while we and most forecasters had expected a growth rebound as the confidence shock was expected to wear off, policy support by the Bank of England to set in and support from weaker sterling to prop up domestic production.

To get a sense of where the UK economy might be had voters decided to remain in the EU in 2016, it is not enough to compare pre- and post-referendum forecasts. Subsequent performance reflects other shocks, which were not anticipated at the time of the referendum. While there have been few other major domestic economic disruptions in the UK since 2016, the external environment has seen some notable developments, many of which are discussed in Chapter 1. These include China's rebalancing, US fiscal stimulus and trade wars, the global investment acceleration in 2017, and a global manufacturing slowdown in 2018–19. These will all have influenced the UK economy's growth performance over the past three years; for example, the strong GDP growth in the eurozone in 2017 would normally have elicited stronger growth in the UK than had been predicted in 2016. On the other hand, the eurozone's sub-par performance in 2019 or US trade wars might have been expected to drive UK growth below the 2016 baseline.

Figure 2.19. UK quarterly GDP forecasts (pre- and post-referendum) and realised data

Note: GDP is calculated using the chained value measure and reported in 2016 prices. Pre-referendum forecasts are taken from the March 2016 outlook from the OBR, the May 2016 inflation report from the Bank of England and May 2016 for Citi from our monthly Global Outlook and Strategy publication. The post-referendum forecasts are all taken from November 2016.

Source: ONS, OBR, Bank of England and Citi Research.

Figure 2.20. Year-on-year GDP growth in the UK and other advanced economies

Note: Other advanced economy (AE) average weighted by nominal GDP at market exchange rates for the four quarters before the observation in question. Countries included: France, Germany, Italy, Japan and the US. Max/Min series do not include the UK.

Source: National statistical offices and Citi Research.

We can try to disentangle the effects of Brexit from these global economic changes by constructing a measure of how the UK economy would have been expected to perform based on its historical correlation with other economies. If these other economies were not impacted (very strongly) by Brexit, but were affected by common global economic shocks, a ‘synthetic’ model of the UK economy can give some indication of how the UK would have likely behaved if driven by external, global factors alone. Clearly, however, this alternate state of the world can never be known for certain.

Here, we use an often-used methodology employed previously, for example, by the Centre for European Reform to construct a ‘doppelgänger’ of the UK economy,¹⁸ based on a weighted average of the OECD economies that performed most similarly to it in the period up to 2015Q2.¹⁹ The difference between this model and what actually happened allows us to isolate the impact of shocks, such as Brexit, that only or mainly affect the UK.

The model selects several economies to track UK GDP (Canada, Denmark, Hungary, Ireland, Japan, Norway and the US) and weights them based on pre-2016 data.²⁰ As Figure 2.21 shows, this doppelgänger has historically tracked realised GDP relatively closely, with the exception of the financial crisis, which had a greater – and more abrupt – impact on the UK economy. This is to be expected given the UK’s extensive exposure to global finance.

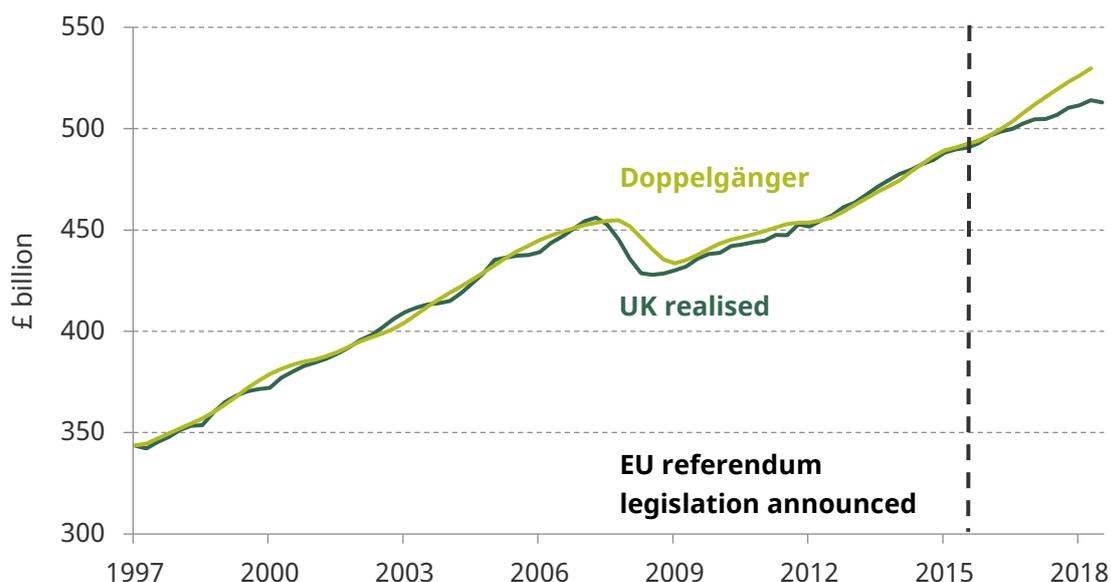
However, since 2016, a sustained divergence has opened up between realised GDP and the level implied by the synthetic model. Comparing realised GDP with pre-referendum forecasts, the economy is 2.5% smaller than initially expected before the 2016 referendum. However, taking the doppelgänger results at face value, this divergence may be closer to 3.0% if we also take into account the positive global growth surprises that would have likely boosted the UK economy, at least until recently, beyond levels expected in 2016 (see Figure 2.20).²¹ These orders of magnitude should be kept in mind when we turn to the potential impact of no-deal Brexit in Chapter 3.

¹⁸ J. Springford, ‘What’s the cost of Brexit so far?’, Centre for European Reform – Insight, 2018, https://www.cer.eu/sites/default/files/insight_JS_23.6.18_revised.pdf.

¹⁹ More specifically, the methodology employs a ‘synthetic control method.’ Here we adopt the same approach as the Centre for European Reform. It matches the UK to a weighted average of other advanced economies. The basket and associated weighting are based on the extent of headline covariance, alongside the degree to which this is driven by common expenditure components of GDP.

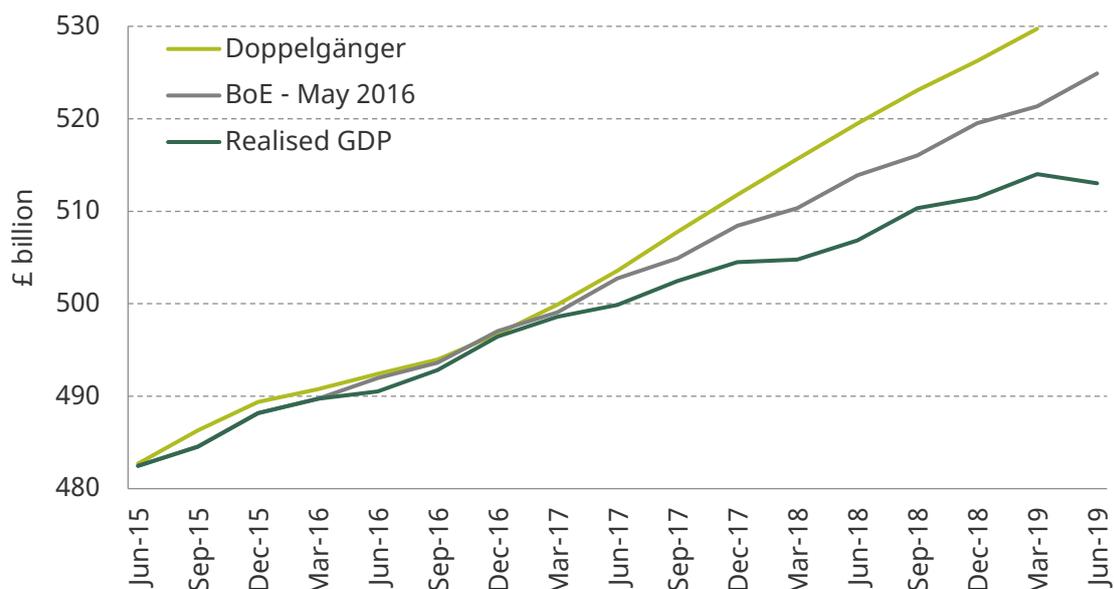
²⁰ This is with the following weights: Canada – 15.5%; Denmark – 3.7%; Hungary – 23.1%; Ireland – 4.2%; Japan – 22.8%; Norway – 6.7%; US – 24.0%. Selection is based on the use of a synthetic control unit on quarterly national accounts data.

²¹ These results are robust to a range of different tests. In particular, the same post-referendum divergence shown in Figure 2.21 is evident even after adjusting US growth for the somewhat idiosyncratic, pro-cyclical, US stimulus since the election of President Trump. Similarly, both J. Springford, ‘The cost of Brexit to June 2018’, Centre for European Reform – Insight, 2018a, https://www.cer.eu/sites/default/files/insight_JS_30.9.18_revised.pdf and G. Vlieghe, ‘The economic outlook: fading global tailwinds, intensifying Brexit headwinds’, speech given at Resolution Foundation on 14 February 2019, <https://www.bankofengland.co.uk/speech/2019/gertjan-vlieghe-speech-at-the-resolution-foundation> have shown the same conclusions are robust to including or removing different countries from the sample. This includes completely removing the US, as well as only including other G7 countries in the pool of potential economies. The results are also robust to basing the calibration only on data between 1995Q1 and 2014Q2 (rather than 2015Q2, as we use in our main estimates). However, if we only calibrate with a sample up to 2012, the doppelgänger economy shows a much weaker growth path than what actually happened, as Italy becomes a larger component of the basket of economies used to model the UK. (Springford, 2018a.)

Figure 2.21. Quarterly real GDP: UK and doppelgänger

Source: Centre for European Reform, national statistical authorities and Citi Research.

Of course, the estimates from this model cannot provide a perfect indication of what would have happened had the Brexit referendum gone the other way; this is unknowable. However, it is noteworthy that the doppelgänger has performed better since 2016 than the pre-referendum path forecast by the Bank of England. This suggests that the method of comparing actual growth with pre-referendum forecasts is likely to, if anything, underestimate the impact that Brexit has had on the UK economy. As Figure 2.22 clearly shows, both this doppelgänger model and the comparison of pre- and post-referendum forecasts indicate that the UK's economy is smaller after 2016 than it would have been had the vote been to remain.

Figure 2.22. UK GDP: realised, forecast and doppelgänger

Source: ONS, Bank of England, Centre for European Reform and Citi Research.

2.7 Conclusion

Since our forecasts for the UK economy in last year's Green Budget, there have been important changes in the economic environment. Some of these changes look likely to be persistent: globally, a slowdown in growth in 2019 has dampened prospects for the UK economy. Others are likely to be purely temporary: volatility in the last few quarters – in particular for imports and inventories – is a result of Brexit stockpiling and is unlikely to reflect longer-term changes to the economy. Still other changes are yet to come: while private consumption has, so far, remained resilient, there are signs that it could provide less of a buffer against the next set of shocks.

But amidst all the other changes, cause for concern is greatest when looking at private, and especially business, investment. Business investment has witnessed its most sustained period of contraction, ever, outside a recession. While global forces and broader structural trends in the UK economy are partly to blame, it is hard to escape the conclusion that Brexit-related uncertainty has played an especially damaging role.

Any type of uncertainty deters investment, as companies postpone making costly decisions with long-term implications until the future becomes clearer. But the lack of clarity since 2016 – over whether the UK will leave the EU with a deal, and what future relations might look like after that – has been especially persistent and Brexit is now one of the biggest sources of uncertainty for UK companies.

The impact that this has had on investment has been amplified by the continued risk of a 'no deal' Brexit affecting firms whose investment decisions are sensitive to economically damaging scenarios for the future. And the political process since 2016 – with repeated deadlines to provide clarity ultimately postponed – has led firms to delay investment decisions repeatedly in the hope of getting over the short-term hump to find some clarity, which has not yet arrived.

The post-referendum negotiating period has not been a costless process. We estimate that the UK economy is now between 2.5% and 3.0% smaller than it would have been with a vote to remain in the EU. But this chapter points out that not all of this is driven by the expectations of looser eventual relations with the EU; the uncertainty of the process itself plays a role.