



BANK OF ENGLAND

# Speech

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## Are firms underinvesting – and if so why?

Speech given by

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Greater Birmingham Chamber of Commerce

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I am very pleased to be speaking today in Birmingham.

The Bank of England's association with Birmingham took a long time to happen. True, we opened our branch here nearly 200 years ago, in 1827. But that was 133 years after the Bank was founded in 1694.

It was not that it took us a long time to get around to Birmingham. Indeed, this was only our fourth branch, established less than a year after the Bank adopted a policy of having branches. Nor was it just because we like to think hard and carefully before we act – though that is certainly true.

Rather it was because for the first 125 years of its life, the Bank preferred to see itself as essentially a London institution. In 1825, however, the shortage of liquidity in the whole of the British economy led to a great credit squeeze, bankruptcies and bank failures. The Bank was given the choice of expanding its operations into the country as a whole or losing its monopoly.

As a result the Bank quickly established branches throughout the country. It was of course in those days as much a private as a public Bank and these branches soon became important sources of credit in the regional economy.

The Birmingham branch was successful – in more ways than one. One of the Bank staff dispatched hurriedly to establish the new branch was an 18 year old clerk called Charles Geach. In line with the nepotism prevailing at the time, he had joined the Bank through the influence of his uncle. But he was clearly talented and energetic – so much so that when in 1836 a group of midlands businessmen decided to establish the Midland bank (or the Birmingham & Midland Bank to give it its full name) they chose the 28 year old Bank of England clerk to be its manager.

In the dynamic and growing British economy of the first half of the 19<sup>th</sup> century, and in the heartland of precision manufacturing, the Midland Bank was hugely successful; shortly after the turn of the century it was the largest bank in the country.

Geach's rise was also meteoric; he was mayor of Birmingham before he was 40 and left the bank to enter parliament at 43 – by which time he was also one of the leading entrepreneurs in the country. This illustrious career however was cut short by illness and he died a few years later, as a result, according to his obituary, of the noxious air in the Palace of Westminster.

Of course, today, the selection process for entry to the Bank of England is wholly merit based. And, I hope if we had such a talent in the Bank, we would strive harder to keep them. But I mention the Bank's Birmingham branch and the contribution of Charles Geach because it illustrates the role that finance played in the launch of the British economy.

And because I want to talk today about investment and the finance that supports it in the modern British economy. In doing so, I will draw heavily on new work by the Bank of England on businesses investment and financing decisions.

## **Investment and productivity**

An economy's productive power – productivity – depends ultimately on the skills of its workforce, its stock of physical and intangible capital, the bulk of which we can think of as investment by businesses, and the efficiency with which these inputs into production are combined.

Productivity has been disappointing since the financial crisis. There has been almost no growth in output per hour since the crisis. Productivity having fallen in the crisis, then again in 2011/12 after a recovery, has resumed fairly sustained growth in the last three years. But the growth has been weak especially when compared to the rate of productivity growth before the crisis. The amount of output produced per hour worked in the UK would be around 18% higher if the pre-crisis rate of productivity growth had been maintained.

And while other advanced economies have experienced a similar fall in the rate of growth of productivity, the level of productivity in the UK economy is low relative to other advanced economies. The level of output per hour in the UK was nearly 20 percentage points below the G7 average in 2015.<sup>1</sup>

Weak productivity growth has almost certainly been one of the main reasons for the weak growth in pay we have seen in the UK since the crisis. Over the last decade real earnings have grown at the slowest rate since the mid-19<sup>th</sup> century.

And the weakness in productivity growth over the last decade has been accompanied by a weakness in business investment. In the forty years to 2007, business investment growth averaged 3% a year.<sup>2</sup> In the eight years since the crisis it has averaged 1.5% annually.

Or to put it another way, if investment after the crisis had continued to grow at its long-run pre-crisis average rate, all things equal, the UK private sector capital stock would be around 10% higher, or around £250bn larger in real terms.

The level of business investment as a share of GDP is still relatively low, especially looking at nominal levels at 9% of output compared to around 12% at the turn of the century though some of the drop happened pre-crisis.

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<sup>1</sup> See 'International comparisons of UK productivity (ICP), first estimates: 2015', October 2016, ONS.

<sup>2</sup> Average annual growth in business investment in the decade before the crisis was 2.4% and in the 15 years before the crisis it was 3.6%.

One reason for this weak investment since the crisis has been weak demand. Over a run of years, the rate of investment should adjust to maintain the capital stock at a particular level relative to GDP. If GDP grows more slowly, less investment is required to maintain the capital stock at a desired level relative to GDP.

This can lead to a vicious circle in which weak demand leads to lower investment that in turn impairs the productive capacity of the economy. This in turn impairs demand as households and businesses revise down their expectations for future income and profits and so on. So what starts as a demand shock can end up as a supply shock. According to the IMF, this effect probably accounts for some of the weakness in investment in advanced economies.<sup>3</sup>

But this is unlikely to be the whole story behind the weakness of investment post crisis. One common and repeated candidate explanation is the lack of finance for productive investment.

This is not a new issue; it has very deep roots in the UK. The role of banks in providing finance to businesses for investment has been examined many times since Charles Geach's day. It was, for example, the subject of the Macmillan Commission in the 1930s and the Wilson Committee Review in the 1970s.<sup>4</sup>

And it is true that for UK banks nowadays lending to business is a relatively small proportion of their activities. In the century after Geach's day around 80% of bank lending was to businesses, albeit loans of very short maturity.

Today, the great bulk of UK banks' lending is to households, predominantly for mortgage financing. Lending to non-financial businesses accounts for around 18% of UK banks' domestic lending; if one excludes the real estate sector, however, the figure is closer to 12%. And lending to SMEs accounts for only 4%.

Businesses borrow for many reasons not simply for investment, and business investment in the UK as a whole is the result of millions of UK businesses assessing the merits of individual investment opportunities, financing options and other considerations.

In 2015, in order to get a better understanding of the supply of finance for productive investment and to support the government's productivity plan, the Bank initiated research into 'productive finance'. Our aim

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<sup>3</sup> See IMF (2015) 'Uneven Growth', *World Economic Outlook*, April 2015.

<sup>4</sup> The Wilson Committee was formed in January 1977 with the following terms of reference: 'To enquire into the role and functioning, at home and abroad, of financial institutions in the United Kingdom and their value to the economy; to review in particular the provision of funds for industry and trade; to consider what changes are required in the existing arrangements for the supervision of these institutions, including the possible extension of the public sector, and to make recommendations.'

The Committee concluded that the availability of funds was not the prime cause of low industrial investment and identified two areas of concern. First, the reduction of new issues of long-term fixed-interest industrial debentures due to high and fluctuating rates of inflation. And second, that the provision of finance for small firms was generally accepted to be unsatisfactory in a number of respects. See Moore, P, G 'The Wilson Committee Review of the functioning of financial institutions – some statistical aspect', *Journal of the Royal Statistical Society*, Vol.144(1), pp32-65.

was to get a better picture of whether firms 'underinvest' – ie if they turn away profitable investment opportunities and if so what obstacles to investment they face.<sup>5</sup>

To do so, we launched a new survey of firms, the results of which are published today.<sup>6</sup> The survey covered a sample over 1,200 firms. It is representative of the population of UK firms across regions, industries and size.

Some caveats are required here. In the survey responses there was an under-representation of younger firms. This makes the results less informative about the investment behaviour and financing needs of younger companies, particularly of start-ups.

Moreover, as this is the first time such a survey has been carried out, we cannot evaluate the results through time to see whether and how firms' approach to investment has changed over the years.

And of course the survey reflects the subjective judgments of the firms that responded. These need to be evaluated against the harder, aggregate data on investment.

That said, the survey sheds light on a number of interesting aspects of firms' behaviour and on the availability of finance for investment, which may go some way to explain the weakness of investment since the crisis.

I want today to concentrate on two of these. First, the reasons why around a third of the companies surveyed believed they had underinvested over the past five years. And second, whether the rates of return firms require to invest suggest that there is now a greater risk premium that may be leading to lower investment more generally.

### **The 'Underinvestors'**

One of main motivations for the survey was to shed light on whether the cost or availability of finance was acting as a constraint on investment.

Corporate borrowing in general crashed following the financial crisis. This was clearly due to constraints on the supply of finance as well as a marked reduction in demand. Credit conditions surveys over the past few years have suggested considerable improvement at the aggregate level, with fewer firms reporting difficulties accessing external finance.

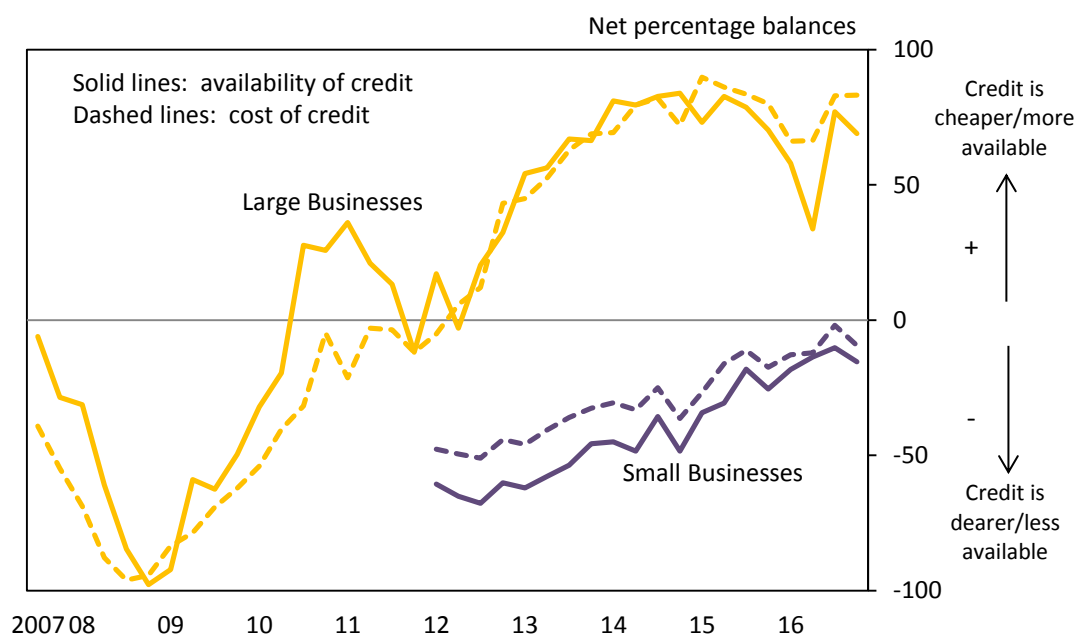
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<sup>5</sup> Bank of England (2016a), 'Understanding and measuring finance for productive investment', *Discussion Paper*, available at [www.bankofengland.co.uk/financialstability/Documents/fsdiscussionpaper/080416.pdf](http://www.bankofengland.co.uk/financialstability/Documents/fsdiscussionpaper/080416.pdf).

<sup>6</sup> Saleheen, J, Levina I, Melolinna, M and Tatomir, S (2017), 'The financial system and productive investment: new survey evidence', Bank of England Quarterly Bulletin, Vol 57, No1.

The improvement has been most marked for large businesses, which now seem to face few constraints on cost and availability of financing. Credit conditions for smaller businesses have taken longer to improve – net lending to small business only turned positive in August 2015. And although small firms' perceptions of the cost and availability of credit have improved substantially they are, on balance, still negative (**Chart 1**).

**Chart 1: Perceived availability and cost of credit for large and small firms**



Sources: Deloitte CFO Survey, FSB Voice of Small Business Index, Bank calculations.

(a) Net percentage balances for the cost (availability) of credit are calculated as the percentage of respondents reporting that bank credit is 'cheap' (available) in the *Deloitte CFO Survey* for large corporates or is 'good' in the Federation of Small Businesses' (FSB) *Voice of Small Business Index* for small businesses less the percentage reporting that it is 'costly' ('hard to get') in the *Deloitte CFO Survey* for large corporates or 'poor' in the FSB *Voice of Small Business Index* for small businesses.

(b) A positive balance indicates that a net balance of respondents report that credit is cheaper or credit is more available.

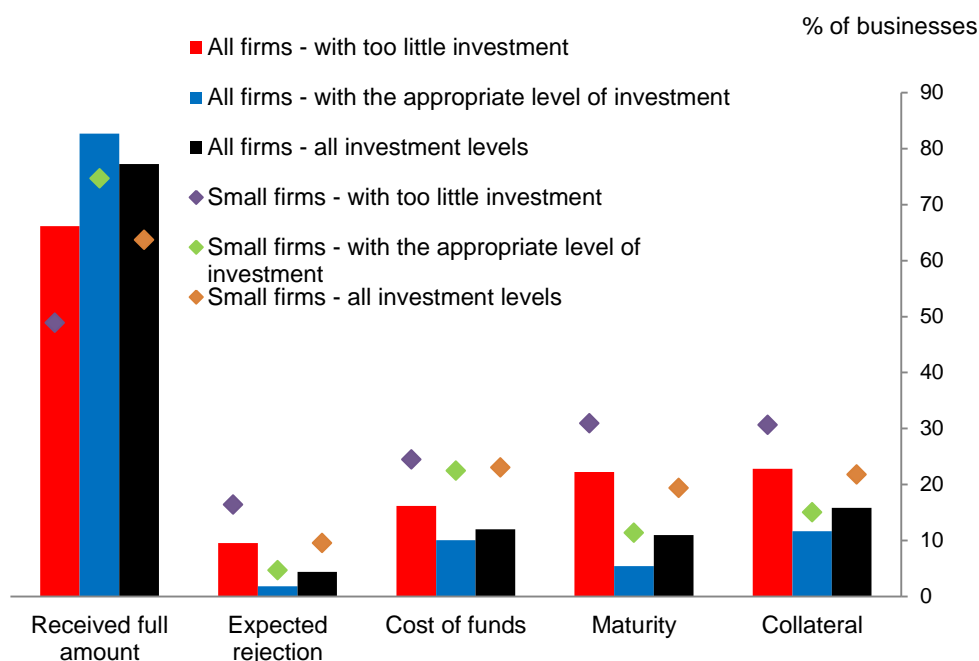
Credit surveys, however, only give a broad picture of whether credit is available and being extended to firms. They do not answer the question of whether credit is available for particular purposes like investment.

The Bank's survey specifically addresses this question. It supports the overall picture that external finance is, in the main, available for investment.

Two thirds of the firms surveyed said they had invested 'appropriately' over the past five years.

And these firms seem to have experienced few external financial constraints on investment. The vast majority of those who said they had invested appropriately also said they had received the full amount of funds they had applied for over the past year (**Chart 2**). Few of them reported other external financing constraints such as cost or shortage of collateral – although within this group the picture was less positive for smaller firms.

**Chart 2: Different types of financial constraints experienced over the past five years**



Source: Bank of England Finance and Investment Decisions Survey.

a) Constraints are identified from the following questions:

Question 19: "If your business applied for any form of external finance for investment over the past year, what was the outcome?"

External finance refers to bank loans, equity issuance, debt securities and other financial liabilities."

**(Received 100%)**

Question 22: "Looking back over the past 5 years, how far do you agree with the following statements?"

**Expected rejection:** I do not want to apply for external finance as I believe I would be turned down (agree).

**Cost of funds:** I do not want to apply for external finance as I believe it is too expensive (agree).

**Maturity:** I am able to borrow at the **maturity** I need (disagree).

**Collateral:** is not a constraint for my business (disagree).

However, a sizeable share of firms, one third, judged that they had invested too little. And two thirds of these – 20% of the entire sample – reported a variety of external financial constraints as an obstacle to investment.

These firms were less likely to receive the full amount of finance they had applied for and more often experienced other external financing constraints. They were more often unable to borrow at the maturity required or faced collateral constraints.

And again, these constraints were higher for the smaller firms that judged they had invested too little. 30% of the smaller firms in the sample said they faced external financing constraints on investment. Moreover 16% of small firms did not even apply for external finance for fear of rejection.

One in five firms, out of a large representative sample, facing external financing constraints on investment sounds high – as does nearly one out of three of the smaller firms. It chimes perhaps with the still negative overall perception of financing conditions on the part of small firms.

It is, however, hard to know whether or not these constraints were warranted. One would certainly expect the rejection rate of loan applications to be above zero. Not all investment projects are robust. It could represent prudent credit rationing by lenders. We do not have a sufficient time series to help gauge what a 'normal' rejection rate looks like.

### **Other obstacles to investment**

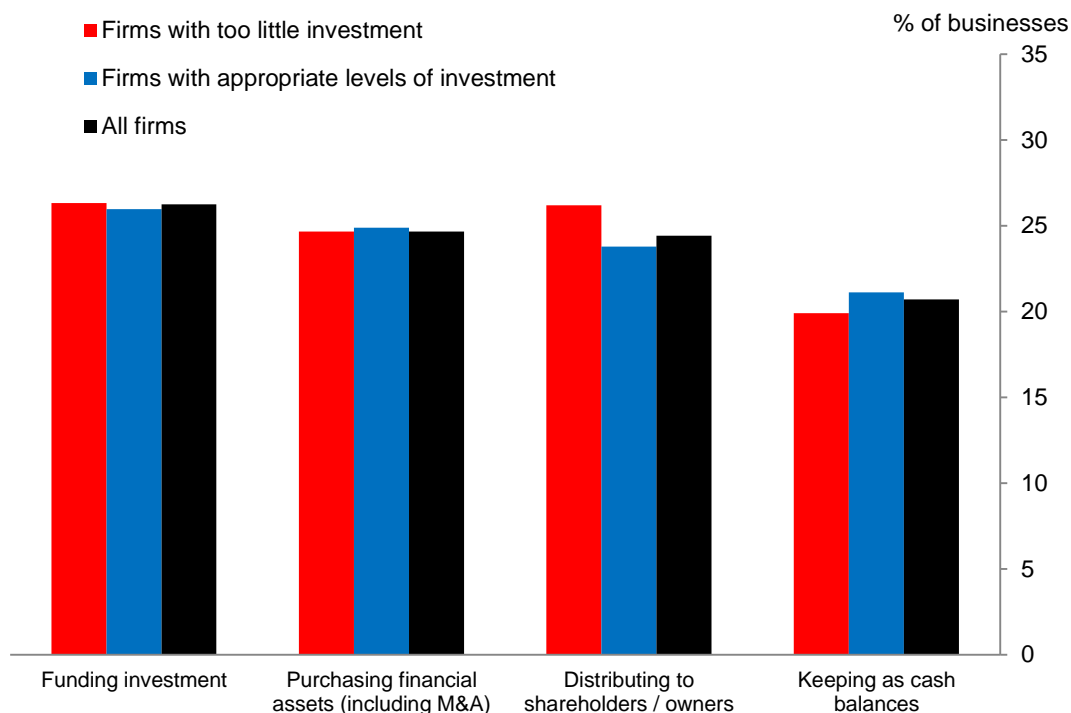
The picture is, however, more complex than simply one of firms that underinvest having difficulty in raising external funds for investment. Of the firms in the survey that said they had invested too little, most cited other financial and non-financial obstacles as well.

The most important of these was constraints on using internal rather than external funds – ie using profits – for investment rather than for distribution to shareholders or purchasing financial assets (including M&A). Nearly 70% of the firms who said they had underinvested, cited lack of internal funds for investment as an obstacle. Over 60% judged distribution to shareholders and purchasing financial assets as the most important use of internally generated funds.

In fact, only a quarter of all firms prioritised using their internally generated funds for investment purposes (**Chart 3**). Three-quarters of firms put investment behind distribution to shareholders and investment in financial assets when assessing the most important use of internally generated funds.



**Chart 3: Most important uses of internal funds**



Notes: Question 17: 'When you think about using internal funds what do you generally prioritise?'.  
Options provided to firms include: distribution to shareholders includes dividends and share buybacks.  
Purchasing financial assets includes M&A.

Source: Bank of England Finance and Investment Decisions survey.

And, on a related question, 80% of all the publicly owned firms agreed that financial market pressure for short-term returns to shareholders had been an obstacle to investment. Somewhat surprisingly, a significant proportion of the privately owned firms in the survey also saw financial market pressures as an obstacle to investment. This implies perhaps that financial market pressures for returns have a more general effect on the way investment returns are viewed by firms.

The underinvesting firms also faced non-financial obstacles. Chief amongst these were greater risk aversion and greater uncertainty about the economic environment, which may include uncertainty about the returns to investment.

I want to deal with these under my second set of observations around rates of return. At this stage, however, it is worth noting that for the group that underinvested, non-financial obstacles seem to have played as big a role as financial ones in their investment decisions.

And, when looking at constraints on finance, using profits to finance investment appeared as important as constraints on borrowing.

As I noted earlier, the question of constraints on finance for investment in the UK has deep roots. The survey suggests that while there has been underinvestment and while financial constraints appear to have played a role, other financial and non-financial constraints like crowding out, uncertainty and risk aversion have probably been equally important.

Unfortunately there seems to be no silver bullet. The survey suggests that any policy initiative to address underinvestment would need to address a wider agenda than just constraints on external financing.

### **Rates of return**

I have concentrated so far on the firms who believe they had invested too little and the reasons they gave for this underinvestment. The survey however also shed light on the approach used by all firms to decide whether to take an investment opportunity.

The results reinforce other evidence that suggests that investment projects may now face a stiffer test than pre-crisis because firms are implicitly applying a higher risk premium in their decision making.

The survey asked firms about the average rates of return on the investments they had made over the past five years and how they assessed investment opportunities.

The responses indicate that the rate of return on past investments has averaged 12%. This is squarely in line with the top down ONS estimate of the annual net return on capital in the private non-financial corporate sector as a whole – an estimate that has been remarkably stable at around 12% since the turn of the century.

Firms used a number of methods to assess investment opportunities but most used, explicitly or implicitly, a target rate of return or 'hurdle rate' to decide if the investment was worth making. These hurdle rates varied among firms. The largest group, some 40% of firms in the survey used hurdle rates of return between 10% and 15%. And the average across the whole survey was 12% – very much in line with actual rates of return achieved and with the aggregate ONS estimate.

Moreover, the survey suggests that firms' hurdle rates are quite sticky. A fifth of firms surveyed had not reviewed their rates in the last five years. As we do not have previous survey data of this sort, we cannot say whether firms' hurdle rates have historically tracked the ONS measure. But earlier research, anecdotal evidence and the stickiness of hurdle rates certainly suggest that this may well have been the case.

It is not surprising that the ONS estimate of return on capital, actual rates of return recorded by firms in the survey and their hurdle rates for new investment are all in the same area. There is probably a feedback

mechanism at work here; if firms on average do not invest unless they expect to receive 12% that will be consistent with an actual average return around 12%.

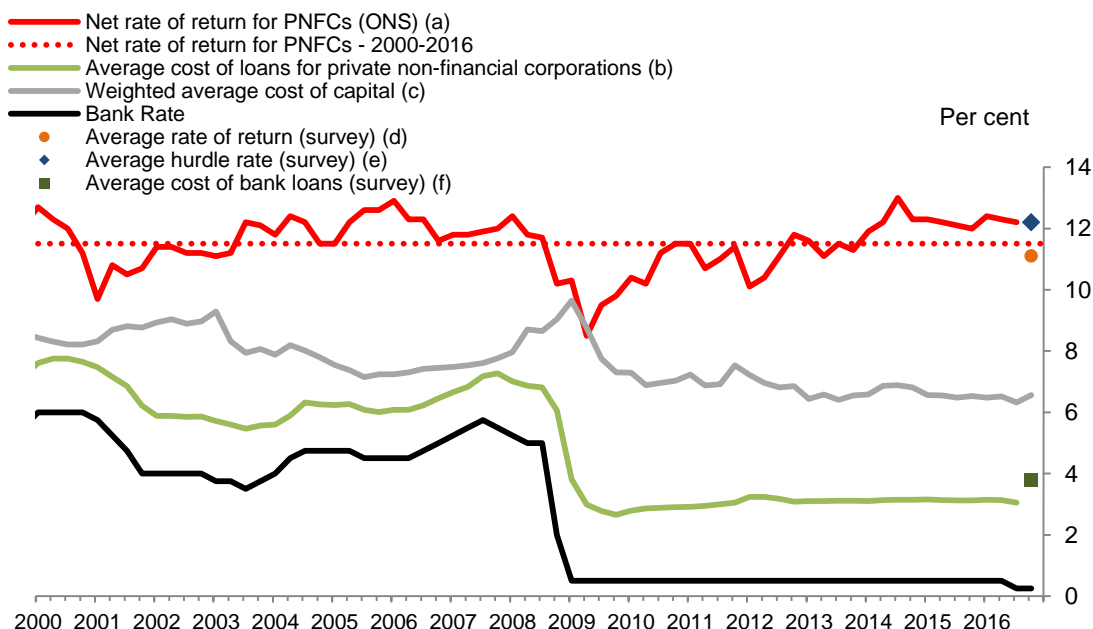
What is more surprising is that the ONS estimate of the net rate of return, actual returns and, by implication, hurdle rates has been so stable around 12%, despite the historically low level of Bank Rate since 2008. Bank Rate has been at or below ½% for the past eight years and some of this has fed through to a lower cost of corporate borrowing.

One might have expected the very low risk-free rate to have brought down the rate of return demanded by firms on investment. If, as seems likely, hurdle rates, like the ONS rate of return, were around 12% before the crisis, firms now seem to be looking for a 12% return over the risk free rate compared to around 7% prior to 2007.

Some of this can probably be explained by the fact that the cost of financing investment has come down but not by as much as the risk-free rate.

The weighted average cost of capital has come down since the crisis. But the reduction has been smaller than the reduction in the risk-free rate. This is because providers of debt and equity finance have increased the premium they charge for risk (**Chart 4**).

**Chart 4: Rates of return on capital and cost of capital compared to survey measures**



Source: Bank of England, ONS Profitability of UK companies and Bank of England Finance and Investment Decisions Survey.  
 (a) UK non-financial corporations' net operating surplus/net capital stock (per annum).  
 (b) Weighted average interest rate of sterling loans made to private non-financial corporations by UK resident monetary financial institutions (excl. the central bank).

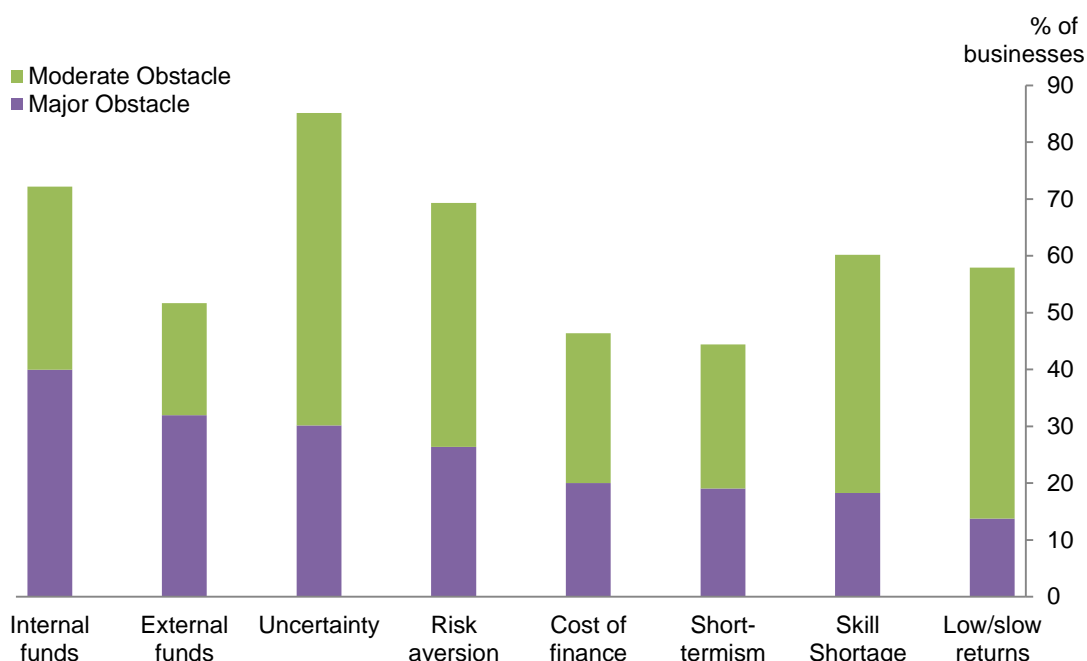
- (c) This is partly based on estimates of the equity risk premium as described in Inkinen, Stringa, and Voutsinou (2010). There is considerable uncertainty surrounding these estimates.
- (d) Question 12: 'If you set an investment hurdle rate, what is it?'
- (e) Question 5: 'On average, what is the total rate of return realised on investment projects completed in the past 5 years?'

One might still, however, have expected firms' hurdle rates to come down to reflect lower financing costs and lower yields on other investments such as financial assets. There are probably several reasons why they have not.

As noted earlier, inertia has probably played a role – the survey results suggest that firms adjust their investment targets infrequently and change them slowly. So it is possible that the sharp decline in real interest rates since the global financial crisis may not yet be reflected in company hurdle rates.

Uncertainty and risk aversion may also have played a role. In the survey, these were the predominant non-financial obstacles to investment (**Chart 5**). Of the third of firms who said they had invested too little over the past five years, over 80% cited uncertainty as an obstacle.<sup>7</sup> Other studies have also found that increased uncertainty can lead to weak investment.<sup>8</sup>

**Chart 5: Obstacles to investment over the past five years<sup>(a)</sup>**



Source: Bank of

England Finance and Investment Decisions survey.

(a) Question 8: 'If your business invested 'too little' over the past five years, what were the main obstacles to investing?'

(b) 'Short-termism' arises when companies value short-term returns above investment that typically yields returns once a long-term horizon.

<sup>7</sup> My colleague Ben Broadbent has noted that the difficult-to-reverse nature of investment projects creates an option value of waiting which increases with uncertainty leading firms to require projects not just to cover the initial cost but to do so by a wide margin. See 'Uncertain Times', Speech given by Ben Broadbent, Deputy Governor, Monetary Policy at the Wall Street Journal, The News Building, London, October 2016, available at: <http://www.bankofengland.co.uk/publications/Pages/speeches/2016/929.aspx>.

<sup>8</sup> Eg, Gilchrist, Sim and Zakrajsek (2014), 'Uncertainty, financial frictions, and investment dynamics', NBER WP 20038 and Christiano, Motti, Rostagno (2014), 'Risk shocks', *American Economic Review* 104(1), 27-65).

Risk aversion was cited as an obstacle by 70% of the underinvesting firms. This may be due to 'scarring effects' from the crisis which markedly lowered returns from investment in 2009 and increased the cost of finance. Interestingly, nearly 40% of firms in the survey had a hurdle rate above the rate of return they had experienced on investment in the past five years, suggesting perhaps that for many firms investment has not met expectations. Such experiences may have increased both risk aversion and uncertainty.

This would be consistent with other more general studies documenting enduring risk aversion (or scarring).<sup>9</sup>

Academic literature suggests that experience of adverse events can affect future risk-taking behaviour. There is evidence that individuals who experienced the Great Depression reported lower willingness to take financial risk throughout their lives.

And there is evidence that experiencing natural disasters can affect financial risk taking – one study found that CEOs who experienced the extreme downside of natural disasters behaved more conservatively across various corporate policies. Another found that the purchase of earthquake insurance rose after a quake despite the probability of a subsequent large quake falling because stress on the fault line has been relieved.<sup>10</sup>

One plausible hypothesis, therefore, is that the current high level of hurdle rates relative to the risk-free rate and lower costs of financing reflect, in part at least, both greater uncertainty – i.e. greater perceived risk – and greater aversion to risk.

This higher hurdle rate risk premium is in addition to the higher debt and equity risk premia embodied in the cost of external financing of investment. It may have led to underinvestment more generally, even among those firms that reported that they had invested appropriately.

### **Investment and economic outlook**

If this is right, and there is currently an elevated hurdle rate premium driven by uncertainty and greater risk aversion, how persistent will it be? Will it fade over time as memories of the crisis recede? Or if and when risk-free rates begin to rise will hurdle rates move up to reflect the higher premium? This will have important consequences for the rate of investment in the future.

In the near term, in the Bank's latest economic forecasts published last week, business investment is expected to remain very weak before picking up. This weakness is consistent with survey indicators of

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<sup>9</sup> For example, Guiso, L, Sapienza, P and Zingales, L (2013), 'Time Varying Risk', NBER Working Paper 19284. Guiso et al use a survey of Italian investors and find that the proportion of individuals unwilling to take any financial risk had increased from 18% in 2007 to 42% in 2009 and put this down to emotional response (fear) triggered by a scary experience.

<sup>10</sup> See Nagel, S and Malmendier, U (2011) 'Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?', Quarterly Journal of Economics, Vol126(1), pp373-416.

Kunreuther, H., R. Ginsberg, L. Miller, P. Sagi, P. Slovic, B. Borkan, and N. Katz (1978). *Disaster Insurance Protection: Public Policy Lessons*. Wiley Interscience.

Bernile, G., Bhagwat, V., & Rau, P. R. (2017) 'What doesn't kill you will only make you more risk-loving: Early-life disasters and CEO behavior', *The Journal of Finance*, Vol.72(1), pp167-206.

investment intentions which remain subdued and elevated uncertainty, as detailed in the February 2017 *Inflation Report*.<sup>11</sup>

By the end of the forecast, the level of business investment is around 20% lower than in the Monetary Policy Committee's May 2016 forecast. Our latest estimate of year-on-year business investment growth in the fourth quarter of 2016 is already around six percentage points weaker than our projection in May.

Ultimately, the outlook for business investment, like the outlook for the economy more generally over the forecast period, depends largely on how households and businesses react to Brexit and on the process that accompanies it.

The central case outcome in the February *Inflation Report* is that the economy will gently slow as higher inflation squeezes households' real earnings. But that's not the only conceivable scenario. There are, however, both upside and downside risks.

So as the Committee has made clear, we will be looking closely at the incoming evidence, particularly on pay growth, labour market slack, household consumption, inflation expectations and the impact of the lower level of sterling on consumer prices.

## **Conclusion**

I want to conclude by saying a little about why all of this matters to the Bank and our role in issues surrounding investment and productive finance.

As I noted at the outset, it was the great financial crisis of 1825 – when the country, according to one contemporary commentator, was within 24 hours of returning to barter and a run on the Bank of England was only halted by a last minute shipment of gold by Nathan Rothschild – that led to the establishment of Bank of England branches in Birmingham and elsewhere.

That crisis was due in part to the constraints on the UK's under-developed banking system. These prevented it from efficiently and safely channelling savings between those parts of the country with a financial surplus to the booming industrial areas of the north and the midlands that needed finance for investment.

These constraints included the Bank of England's monopoly position as the only limited liability bank in the country allowed to issue bank notes and its lack of any presence outside London.

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<sup>11</sup> See *Inflation Report*, February 2017, Bank of England, available at: <http://www.bankofengland.co.uk/publications/Pages/inflationreport/2017/feb.aspx>.

The Government of the day therefore offered the Bank the choice between losing its monopoly or establishing branches. Parliament's response, however, was to legislate for both in order to improve financial liquidity throughout the country and provide for a more efficient intermediation of savings for investment.

This enabled both the establishment of the Bank's Birmingham branch and the Midland Bank that Charles Geach helped to start in 1836 – one of the first new joint stock banks, in competition with the Bank of England.

The Bank of England has long since given up its private banking role in the financing of the economy. But the efficiency and soundness of the mechanisms for channeling savings to investment remain a key element in the delivery of our now, exclusively public, responsibility to safeguard monetary and financial stability.

Today, monetary and financial stability is the most important contribution the Bank can make to stable, productive investment.

There is, unfortunately, a great deal of painful experience of the negative impact of high and volatile inflation on investment. And the adverse impact of the recent financial crisis on investment is clear. Indeed, as I have noted, it may still be with us in the form of higher hurdle rate risk premia.

It is also important for the Bank to understand the drivers and obstacles to productive investment, even if the policy responses to obstacles are no longer primarily for us.

Our monetary policy benefits from a better understanding of productivity and the supply side of the economy. Investment is an important channel through which monetary policy is transmitted. Understanding how businesses make investment decisions informs our understanding of the monetary transmission mechanism.

On the financial stability side, our aim is a resilient financial sector that can support the economy even in times of stress. Diversity and robustness in the channels of finance to the real economy increases resilience. That is why we are interested in the way firms finance investments and the constraints they may face.

And, of course, we have a secondary objective to support the economic policy of the Government. The work I have been drawing on today is part of our work to support the government's productivity agenda and will I hope be helpful in developing policy responses that go wider than the Bank's primary objectives.

So while the Bank of England may not be as directly – or reluctantly – involved in the provision of liquidity and finance to the midlands economy as we were in Geach's day we remain very much engaged in these issues.

Our Birmingham office, which celebrated its 190<sup>th</sup> birthday this year, no longer discounts bills of exchange in competition with the Midland bank, which is itself soon to return to Birmingham. Rather it is our eyes and ears in the region. Along with our network of Agents' offices in other parts of the country it helps us to understand what is going on, on the ground, in the economy.

Indeed, the large and representative survey I have drawn on so heavily today, was only possible through our Agents' network using their contacts with firms.

I hope Charles Geach would have been pleased.

Thank you.