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The financial system and productive investment:
new survey evidence



The financial system and productive investment: new survey evidence

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- The Bank of England has undertaken an innovative new survey that collects data on business investment and financing decisions — the first of its kind in the United Kingdom.
- About two thirds of UK businesses deemed that their investment levels have been appropriate in recent years, but one third felt that their investment had been too low. Businesses that regarded investment as too low cited financial and real economic barriers to investment.
- When making investment decisions many firms impose a fixed required rate of return, or 'hurdle rate', on investment. The average hurdle rate across UK businesses was 12%.

Overview

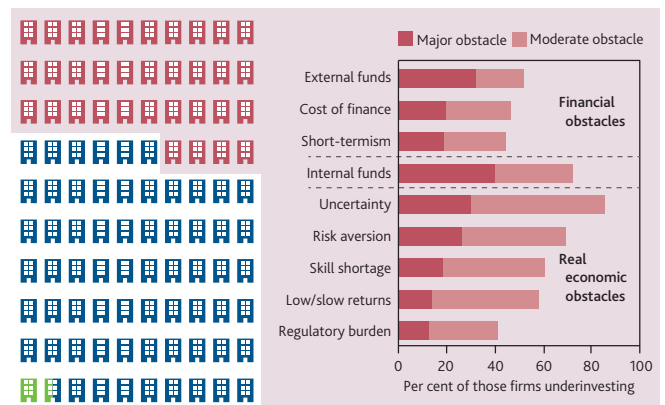
UK productivity growth has been weak since the global financial crisis. In response, the Government has asked the Bank to initiate research to improve measurement of finance for productive investment. To improve measurement, we need to understand business investment and financing decisions better, and recognise when financial rather than real economy frictions and market failures contribute to underinvestment. This article aims to do just that using a new survey of Bank of England Agency contacts.

Two thirds of businesses surveyed reported being able to invest at the appropriate level over the past five years. One third judged that they had invested too little, based on their own assessment (see **summary figure**).

The way businesses make investment decisions may determine their level of investment. The survey found that 40% of businesses made investment decisions using rules of thumb rather than economic models. Over a third used a combination of strategies, such as imposing a required rate of return — or 'hurdle rate' — on investment. The average hurdle rate across UK businesses was 12%, substantially higher than the cost of capital of around 6.5%. A high hurdle rate may be one reason for underinvestment.

Businesses that underinvested cited a range of financial and real economic obstacles to investment, with around 50% of these businesses experiencing both types of obstacles.

Summary figure Why do some firms underinvest?



■ 34% of businesses underinvested
 ■ 65% of businesses invested enough
 ■ 1% of businesses overinvested

Note: This figure draws on Charts 5 and 7.

Source: Bank of England Finance and Investment Decisions Survey.

This article discusses five possible explanations for underinvestment: lack of access to finance, the prioritisation of non-investment uses of funds, uncertainty about the economy, inertia of investment decisions and discouragement from investment.

The article concludes that underinvestment is due to a mix of financial and real economy barriers. Therefore a combination of economic and financial policies is likely to be required to encourage greater productive investment.

(1) The authors would like to thank Thorsten Beck, Alastair Cunningham, Rob Elder, Tamara Li, Jake Palmer, Louise Parreira, Magda Rutkowska, Hasdeep Sethi, Robert Westwood, NMG Associates and participants at a recent conference held at the Bank of England.

Productivity growth, that is, growth driven by improvements in what can be produced using the same inputs, is desirable because it enhances economic growth and the living standards of the UK population. The financial system can, and should, support productivity growth.

A statutory objective of the Bank of England is to protect and enhance the stability of the UK financial system, in part to safeguard the stable provision of financial services to the real economy, including financing for productive investment. Productive investment is investment by businesses that expands the capacity of the economy where the marginal expected return to society as a whole is greater than the marginal expected cost.

The Bank also has a monetary policy objective, to deliver price stability — low inflation — and subject to that, to support the Government's economic objectives including those for growth and employment. In order to set monetary policy appropriately, it is vital to understand productive investment and the supply side of the economy, as it informs the extent to which the economy can grow without generating excessive inflationary pressure.

These two objectives for monetary and financial stability mean that the Bank needs to understand how businesses make their investment and investment financing decisions. The former informs the extent to which investment is responsive to Bank Rate, and the monetary transmission mechanism.⁽¹⁾ The latter is informative about whether investment is being held back by financial factors or real economy factors.

UK productivity fell sharply during the 2008 global financial crisis. Since then the recovery in productivity has been weak in relation to previous trends in productivity after financial crises.⁽²⁾ This motivated the Government to launch a 'productivity plan' in 2015, in which it asked the Bank of England to initiate research to improve measurement of finance for productive investment.⁽³⁾ In response the Bank published a Discussion Paper in April 2016 on 'Understanding and measuring finance for productive investment'.⁽⁴⁾ To encourage more research on this important topic, the Bank also held an academic conference on Finance, Investment and Productivity.⁽⁵⁾

The Discussion Paper concluded that overall there was no compelling evidence of an investment deficiency in the United Kingdom, and that in aggregate the availability of finance did not appear to be a constraint on investment, although there was variability across businesses. The paper noted that to improve measurement of finance for productive investment, data were needed on how businesses actually financed investment — something that has been largely absent from existing data sources. The Bank also committed

to conduct a survey of its Agency contacts to try to gauge the usefulness of such a survey in filling the identified data gaps.

This article summarises the key findings of a new survey. It is structured as follows. The first section describes the survey. The second examines how businesses make investment and financing decisions, including if they had underinvested. The third section considers the obstacles that may explain why some businesses had underinvested. The fourth section discusses how the survey findings are likely to be useful for policy formulation and the final section concludes. In line with the Discussion Paper, this article uses the private rate of return on business investment and the private cost of finance to proxy their social counterparts. This is an important assumption, because these social returns and costs are what define productive investment.

Survey design and sample characteristics

The Finance and Investment Decisions survey was carried out from the population of Bank Agency contacts. This consists of businesses that provide regular business intelligence to the Bank's Agents.⁽⁶⁾

The survey was sent to all the Bank Agency business contacts in the private sector, but excluded agriculture, mining and the utilities sectors. This amounted to the survey being sent to 4,600 businesses. Agriculture and mining were excluded from the survey because the number of businesses in the Agency contact database was too small to provide representative results. Utilities were also excluded as the investment decisions of businesses in these industries are likely to be more sensitive to regulation than in other industries.

The survey was conducted through an online form over the period 1–18 November 2016.⁽⁷⁾⁽⁸⁾ 1,220 businesses (or 26%) responded. This response rate was higher than similar past surveys.⁽⁹⁾ About half of survey respondents revealed their position in the business; of these about 75% were Chief Executive Officers and Chief Financial Officers.

Since our aim is to better understand business investment and financing decisions, it is important that our sample represents the industrial composition of the private sector in the

(1) See Ireland (2008).

(2) See Hughes and Saleheen (2012) and Barnett *et al* (2014).

(3) The new Government's policies have shifted from a Productivity Plan to an Industrial Strategy, but the implications for the Bank, in terms of ensuring the financial system supports growth remain intact.

(4) See Bank of England (2016).

(5) Conference details can be found at <http://cepr.org/1874/programme>.

(6) For a more detailed description of the role of the Bank's Agencies see England *et al* (2015).

(7) The online survey can be found at www.bankofengland.co.uk/publications/Documents/quarterlybulletin/2017/q1/survey.pdf.

(8) The survey was designed in line with best practice guidelines as set out in Vannette (2011).

(9) The Bank of England Agency survey reported in Millard and Tatomir (2015) had a response rate of 10%, and Greenslade and Parker (2012) a 15% response rate.

Table A Survey composition by industry, firm size^(a) (by employment) and sector GVA^(b)

	Small		Medium		Large		GVA share	
	Sample (per cent)	Population (per cent)	Sample (per cent)	Population (per cent)	Sample (per cent)	Population (per cent)	Sample (per cent)	Population (per cent)
Manufacturing	3.5	3.9	12.9	3.3	9.8	6.1	26.2	13.3
Construction	2.2	4.8	3.4	1.1	3.2	1.9	8.8	7.8
Finance	2.3	1.2	3.0	0.9	2.7	7.7	8.0	9.8
Market services	5.9	10.7	10.7	3.1	14.9	14.8	31.6	28.6
Business services	9.0	14.9	8.9	6.4	7.6	19.2	25.5	40.5
All sectors	23.0	35.5	38.8	14.8	38.3	49.7	100	100

(a) Small businesses are defined as firms that have fewer than 50 employees. Medium-size businesses are those that have between 50–249 employees. Large businesses are those that have more than 249 employees.
(b) GVA is gross value added. It measures the contribution to the economy of each individual producer, industry or sector in the United Kingdom.

Sources: Bank of England Finance and Investment Decisions Survey, BEIS Business Population Estimates and ONS National Accounts.

United Kingdom. It is equally important that within each industry, our sample is representative of the share of small, medium and larger firms in the population.

The survey captures businesses with at least one employee.⁽¹⁾ Overall, compared to the population of businesses with employees, the survey was broadly representative across industries, firm sizes and UK regions. That said, the survey was not representative of young businesses (such as start-ups).

The sample contained more manufacturing and fewer business services firms than would be implied by industry shares in output (**Table A**).⁽²⁾ And the share of employment accounted for by larger firms was slightly smaller than in the UK population of businesses. But we were able to adjust for these differences, and ensure our results are representative, by weighting the survey results by both industry and firm size.

Most businesses in our sample have been in business for over ten years compared to 44% in the population of UK businesses (**Table B**). We are unable to correct for this through weighting. The bias in firm age in our sample may be an

Table B Survey composition by region and age

Region	Sample (per cent)	Population (per cent)
England	79.3	86.2
Wales	6.9	4.1
Scotland	6.1	7.1
Northern Ireland	7.7	2.5
Total	100	100
Age	Sample (per cent)	Population (per cent)
Less than two years	0.8	16.8
Two to ten years	6.0	38.9
Ten or more years	93.2	44.3
Total	100	100

Sources: Bank of England Finance and Investment Decisions Survey, BEIS Business Population Estimates and ONS National Accounts.

unavoidable feature of the population from which we undertook the survey (the Agents' database). It means that the survey cannot claim to represent the investment and financing behaviour of young businesses, which are known to be an important engine of innovation and growth.⁽³⁾

Investment decisions

How do businesses make investment decisions?

Businesses surveyed were provided with a range of options on how they make the majority of their investment decisions. We group their investment behaviour into three buckets: rule of thumb, economic models and mixed strategies.⁽⁴⁾ About 40% of businesses use rules of thumb, around 25% use economic models and the remaining 35% use mixed strategies.⁽⁵⁾

How do we define rule of thumb behaviour? It is when a business only invests if an investment project meets certain rules or threshold rates of return. For example, some businesses only invest based on a set target frequency (eg two to five years) for replacing equipment such as IT and office equipment. At the other end of the spectrum, investment is classed as based on economic models when businesses use more technical methods, like net present value or discounted cash-flow calculations to determine whether or not to pursue an investment possibility.

Mixed investment strategies are the final category that defines investment behaviour. This category captures businesses who

- (1) Business with at least one employee make up a quarter of all businesses, but they account for 87% of all employment and 97% of all turnover in the private sector.
- (2) Based on the gross value added measure of output.
- (3) See Haltiwanger *et al* (2016).
- (4) Rule of thumb businesses are those that use set payback periods, set target frequencies for replacing kit or those who target rates of return in line with industry/main competitors; businesses that use economic models include firms that use net present value and discounted cash flows; businesses that use mixed strategies include firms that use hurdle rates, relative rates of return and other methods.
- (5) Businesses were able to tick multiple options, so to allocate businesses into each of these three buckets the following method was used. The businesses were first divided into those that use economic models and those that do not. The ones that do not were then further divided into businesses that use mixed methods and those that do not. Finally, only the businesses that have not ticked any of the boxes for either economic or mixed methods were defined as using rule of thumb methods.

How hurdle rates are used to evaluate investment decisions

What is a hurdle rate?

A hurdle rate is a minimum rate of return per year that a business would require on a new investment project. In that sense, a hurdle rate represents the minimum compensation that a business needs for it to undertake an investment project. One can think of the hurdle rate (h) as consisting of two components: the cost of capital (c) and a hurdle premium (p) — see equation (1) below.

$$h = c + p \quad (1)$$

$$c = r_f + r_p \quad (2)$$

The cost of capital is what it costs the firm to obtain funds, for example through bank borrowing, raising the money through the issuance of bonds and shares or other means. This cost should reflect the level of Bank Rate (or the risk-free rate r_f) and a risk premium (r_p) that captures the level of the riskiness of the firm, that is, the average risk of all the investments made by the firm (equation (2)).

The hurdle premium can be thought of as compensation related to the uncertainty of a specific project. If the return is highly uncertain, the firm might think that other — less uncertain and equally profitable projects — are likely to come up in the future and it will be less inclined to commit to undertaking the current project. This assessment is reflected in a higher hurdle premium for the current project.⁽¹⁾

Companies may calculate their hurdle rate in different ways. They can estimate the hurdle rate in a 'top-down' way, for example by comparing the average riskiness of an investment project to the riskiness of projects carried out by their competitors or the wider industry. But they may also calculate their hurdle rates in a 'bottom-up' way, reflecting the factors, such as the cost of finance, directly affecting the riskiness of a specific project. In general, a project will go ahead when the expected rate of return of a project is higher than the target hurdle rate.

How does a hurdle rate relate to businesses' investment decisions?

Businesses use a variety of methods to evaluate whether an investment project is worth carrying out. This section describes some of the most common methods used.

Businesses may assess a project using economic models. For example, they may estimate the net present value (NPV) of the project. The NPV is computed by estimating the future net cash flows of the project, and discounting those at a rate

that reflects the cost of capital and the riskiness of the project (ie the hurdle rate). If the NPV is positive then the business will gain from investing, so the project should go ahead. This method is sometimes also described as the discounted cash-flow (DCF) method.

Other businesses invest only when the internal rate of return (IRR) of a project is higher than their set hurdle rates. The IRR of a project is a discount rate that makes the NPV of all cash flows from a particular project equal to zero.⁽²⁾ The IRR calculations rely on the same formula as the NPV method described above.

Businesses may also use simpler investment 'rules of thumb'. For example, businesses may set a target payback period for their investment — where the rule is that the costs of a project must be recovered within a specific time period (eg five years). One drawback of these rules of thumb is that they do not capture the gains of the project beyond the target payback period.⁽³⁾ Similarly businesses may set a target frequency for replacing equipment (eg company laptops should be replaced within three to five years).

It is important to note that some of the above methods of assessing investment projects will explicitly incorporate a hurdle rate calculation (eg the NPV, DCF and IRR), while others, such as target payback periods, may embody an implicit hurdle rate.

To conclude, hurdle rates are an important method used to evaluate investment decisions. All investment rules rely on the idea that an investment should generate sufficient profits to cover the cost of borrowing funds and compensate investors for the risk they are bearing.

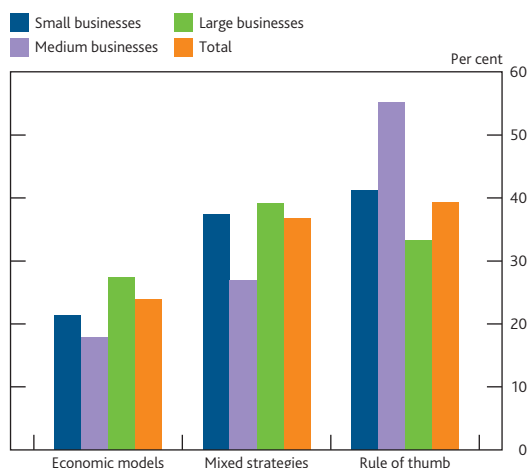
(1) For a more detailed discussion of hurdle rates see Poterba and Summers (1995).

(2) See Wardlow (1994).

(3) For example, if the target payback period was five years, this rule would not account for the benefits of the investment project beyond the five-year horizon.

invest only when the investment project meets a predetermined threshold or required rate of return (hurdle rate), or when they report targeting a rate of return on investment which is a certain fraction above that at which they are able to borrow funds. The box on page 7 sets out what we mean by hurdle rates. Hurdle rates were classed as mixed strategies in **Chart 1** as it was not clear whether the set rates of return were determined by rules of thumb, economic models, or a combination of the two.

Chart 1 Methods that determine investment decisions^(a)

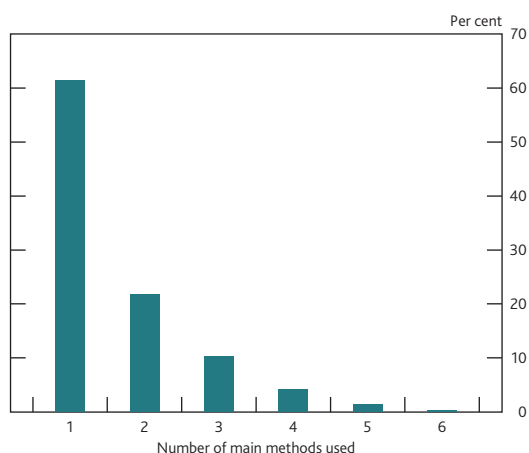


Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 10: 'What best describes your business' approach to taking the majority of its investment decisions?'. Economic models include firms that use net present value and discounted cash flows; mixed strategies include firms that use hurdle rates, relative rates of return and other methods; rule of thumb firms are those that use set payback periods, set target frequency for replacing kit or those who target rates of return in line with industry/main competitors.

Businesses were allowed to select multiple options on how they make investment decisions. Over 60% of businesses use only one method, while 20% use two (**Chart 2**). There are no large differences across categories of businesses, apart from financial businesses being more likely to use a large number of

Chart 2 Number of main methods used for investment decisions^(a)



Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 10: 'What best describes your business' approach to taking the majority of its investment decisions?'.
investing.

methods (five or six) than businesses in other sectors. In terms of size, large businesses are more likely to use economic models and less likely to use rules of thumb than smaller businesses.

How is investment financed?

To our knowledge, there are no data that explicitly ask businesses how they finance their investment decisions. ONS flow of funds data has information on the sources of funds for corporates, but they do not map those sources to specific uses of funds (investment being only one of the uses).

According to the 'pecking order' theory, when financing investment, businesses will tend to turn to internal funds — the cheapest source of finance — first, followed by the more expensive debt and then equity finance.⁽¹⁾

Our new survey provides a unique perspective on how investment is financed. It shows that internal funds and bank loans have been the most important sources of finance for investment over the past five years (**Chart 3**).⁽²⁾ These sources were used by the largest share of businesses. Internal funds are particularly important as many businesses finance more than half of their investment with internal funds. Bank loans were the second most important source of finance for investment. Around 20% of businesses use capital market finance (bonds and equity), but most businesses use this type of finance to fund less than 10% of investment. This could reflect the fact that most firms reported that equity is more expensive than debt. This evidence lends some support to the pecking order theory. Large businesses were a little more likely to draw on bank loans and capital markets, and less likely to use trade credit, asset finance and other loans (which includes loans from family and friends).

The survey is also able to consider the extent to which businesses use diverse sources of finance for their investment. It showed that 20% of businesses only use one source of finance, with a further 40% using two to three sources of finance. Around 30% of businesses used four or more types of finance from those listed on **Chart 3**.

Are businesses underinvesting?

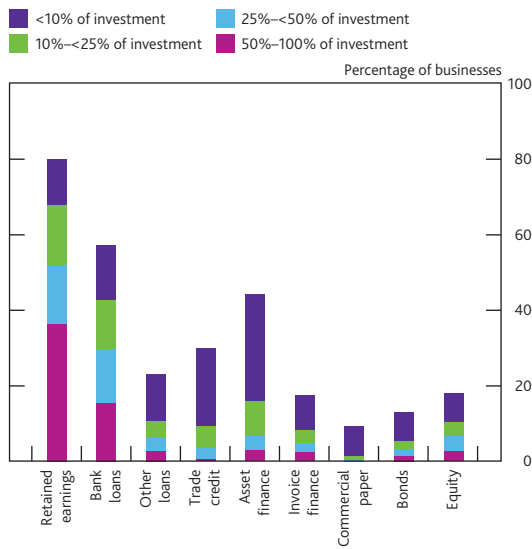
One key challenge for the Monetary Policy Committee (MPC) in recent years has been to explain the weak profile of investment, given the relatively robust rates of return on capital and the historically low levels of Bank Rate (**Chart 4**).⁽³⁾ It is worth noting that weak private investment in the

(1) See Majluf and Myers (1984) for a theoretical approach and Corbett and Jenkinson (1997) for empirical evidence.

(2) The survey cannot tell us if the reliance on internal funds relative to external funds has changed over time. For example, some have argued that difficulties in raising external finance after the financial crisis encouraged businesses to build up internal funds in the form of cash balances.

(3) See Bank of England (2015) for a recent discussion of the weakness of investment.

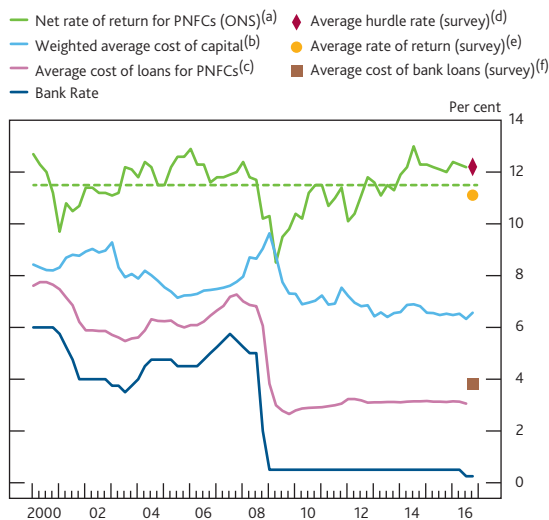
Chart 3 Investment financed by different sources of funds^(a)



Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 21: 'Over the past five years, approximately what proportion of investment was financed by...'

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



Sources: Bank of England, Bank of England Finance and Investment Decisions Survey and ONS Profitability of UK companies.

- (a) UK private non-financial corporations' (PNFC) net operating surplus/net capital stock (per annum).
- (b) 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.
- (c) Weighted average interest rate of sterling loans made to PNFCs by UK-resident monetary financial institutions (excluding the central bank) (per annum).
- (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 five years?'
- (f) Question 20: 'Over the past year, approximately at what cost were you able to raise bank finance?'

United Kingdom has been part of a broader trend in advanced economies.⁽¹⁾

Are some businesses not investing even though they still face productive investment opportunities? To shed light on this we turn to the survey question that asked businesses about their expected rate of return on future investment projects. The

average expected rate of return was 13%, slightly higher among businesses that underinvested, and slightly lower in the market services sector.⁽²⁾ This is above the 11% actual rates of return businesses had achieved over the past five years.

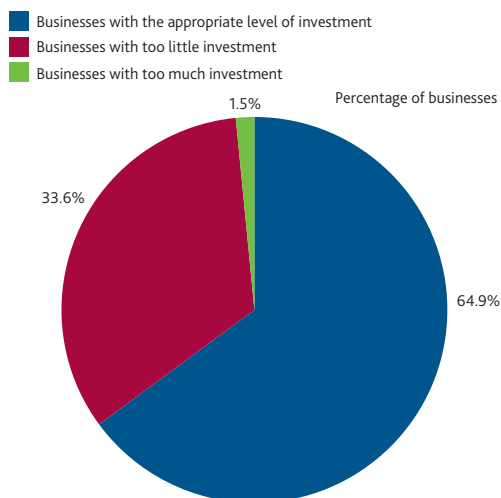
Both the actual and expected rates of return on investment are significantly above the cost at which businesses reported being able to raise bank debt, around 4%, over the past five years.⁽³⁾ Of course, the overall cost of finance may be slightly higher than 4% as it is well known that other types of finance, such as equity finance, are more expensive than bank debt.⁽⁴⁾ Chart 4 shows one such estimate of this broader cost of finance — the so-called 'weighted average cost of capital'.⁽⁵⁾ This weighted average cost of finance has been around 6%–7% over the past five years. Taking these data at face value shows that there is a large gap between the return to investment and a broad measure of the cost of finance. This suggests that on average businesses face additional profitable investment opportunities. A caveat here is that these high expected rates of return could reflect the desire for, rather than the actual prospects of, higher returns.

The survey asked businesses if they had invested at the appropriate level over the past five years.⁽⁶⁾ Two thirds said they had made the appropriate level of investment, about a third reported investing 'too little' and only 2% said they invested 'too much' (Chart 5).

Taken at face value, these results suggest that for the majority of businesses, the financial system is not holding back productive investment opportunities. Two thirds of businesses have been able to access the required finance to exploit their desired productive investment opportunities.

In the survey, businesses were left to interpret what was meant by the 'appropriate' level of investment. If a large number of businesses said that investment was appropriate given the constraints that they faced, then the two thirds of businesses saying investment was at the right level might be considered an overestimate. Similarly, businesses may think that they underinvested, but it may not be underinvestment from a social perspective, if, for example, these businesses

- (1) See IMF (2015) and McKinsey Global Institute (2012).
- (2) The survey tried to capture this by asking businesses 'If you were given the funds that you required to implement a desired investment project, what total rate of return would you expect?'. One can think of this question as capturing the marginal rate of return on investment. But we are unaware of any academic literature that helps us decide if this question captures what we want.
- (3) The survey asked businesses about the quantity of different types of finance they had raised and the cost at which they were able to borrow.
- (4) See 'DDM implied expected returns' on page 30 in Chin and Polk (2015).
- (5) This measure weighs together the cost of different sources of finance, using the shares of each type of finance on a typical balance sheet as weights. The precise measure used here is based on estimates of the equity risk premium as described in Inkinen, Stringa and Voutsinou (2010). It is worth noting that there is considerable uncertainty surrounding these estimates.
- (6) Five years was used as the reference period because of the lumpy nature of investment: investment tends to take place with large expenditure required over shorter periods of time rather than smaller amounts that are distributed evenly over longer horizons.

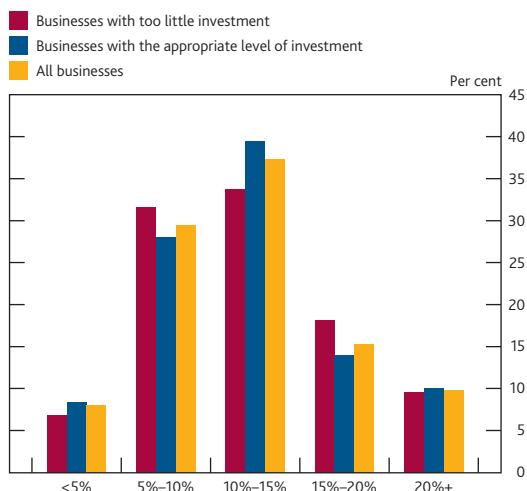
Chart 5 Businesses with different levels of investment^(a)

Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 7: 'Do you feel your business has made the appropriate level of investment over the past five years?'. Businesses were given the following three options to choose from: Yes, No — invested too little and No — invested too much.

belong to a declining industry. Overall, care is needed when mapping subjective evidence on underinvestment to objective macroeconomic aggregate levels of investment.

One hypothesis for why businesses may be underinvesting is that businesses have relatively high hurdle rates. The survey shows that, on average, the most common hurdle rate was in the 10%–15% range, with considerable variation across businesses (Chart 6). Using mid-points for each selected range the average hurdle rate for companies in the survey was 12% — this was in line with the ONS data of the net return to capital, and the average actual rate of return across businesses as reported in the survey (Chart 4). Hurdle rates in construction, manufacturing and finance are a little higher than the average across all businesses.

Chart 6 Hurdle rates^(a)

Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 7: 'Do you feel your business has made the appropriate level of investment over the past five years?' and Question 12: 'If you set an investment hurdle rate, what is it?'.

The 10%–15% hurdle rates are consistent with recent US studies.⁽¹⁾⁽²⁾ It may be surprising that the average hurdle rate across businesses in the survey is as high as 12%, despite the fall in the weighted average cost of capital (Chart 4). That said, we cannot rule out from the data we have that the high hurdle rate reflects business' perception that the cost of finance is much higher than it really is. Or that businesses' perception of the riskiness of investment (or the 'hurdle premium') has increased to fully offset any fall in the cost of finance.

To sum up on investment behaviour, the survey provides some evidence of underinvestment: the rates of return on investment appear to be well above businesses' cost of capital; and when asked directly about levels of investment, one third of businesses believe they invested too little over the past five years. This raises two important questions: why are businesses not investing more? And which factors may be holding back investment?

Why may businesses underinvest?

As set out in the Discussion Paper, if the UK economy is found to have unexploited productive investment opportunities, it is important to establish whether they are unexploited due to a failure of the financial system to allocate the funds to their most efficient use (so-called financial frictions), or if they arise from real economy frictions such as barriers that stop businesses entering the most profitable markets.

Below we provide evidence supporting five potential explanations of why investment may be held back, the first two financial and the rest non-financial:

- lack of access to finance;
- 'crowding out' of investment;
- uncertainty and risk aversion;
- inertia in firm behaviour; and
- discouraged investors.

This is not a comprehensive list of explanations, but it is a list that aligns most closely to the evidence suggested by our survey. Below we also note that sometimes these perceived obstacles to investment may be consistent with rational behaviour if viewed from the perspective of businesses or providers of external finance. But they may not be optimal when viewed from a socio-economic perspective for the economy as a whole.

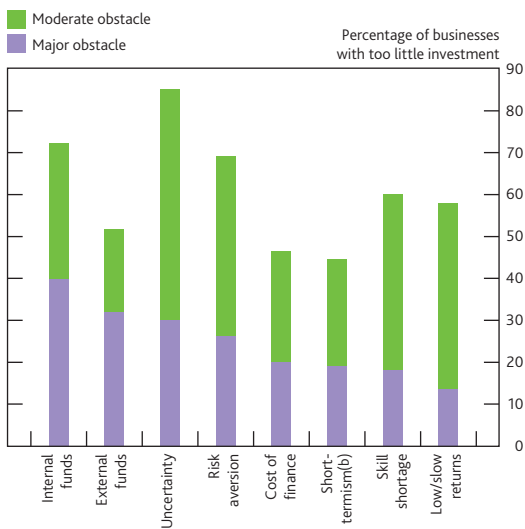
(1) See Jagannathan, Meier and Tarhan (2011).

(2) Hurdle rates in the survey are only slightly lower than the 15%–20% hurdle rates evident in the United Kingdom in the early 1990s (see Wardlow (1994)). It is worth noting that the structure of the economy was very different in the 1990s, and hence these estimates are not directly comparable with the current survey. The sample in the 1994 survey was also much smaller and focused on the manufacturing sector.

What may be the obstacles to investment?

The survey asked businesses that invested too little about the main obstacles to investment. This subsection considers the responses of those businesses that underinvested. Businesses were given a number of options, and they were allowed to differentiate factors that were a major, moderate or not an obstacle. They were also allowed to select multiple options.⁽¹⁾ Lack of internal funds was cited as the most common major obstacle to investment, closely followed by the lack of external funds (Chart 7).

Chart 7 Obstacles to investment over the past five years^(a)



Source: Bank of England Finance and Investment Decisions Survey.

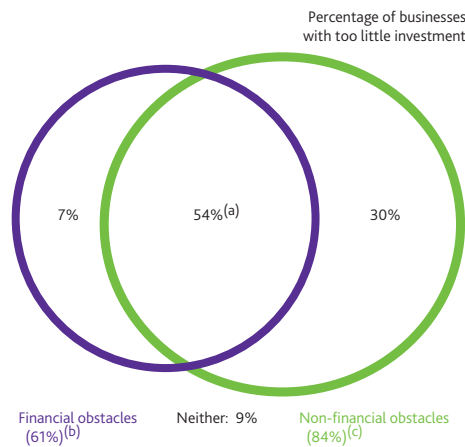
- (a) Question 8: 'If your business invested 'too little' over the past five years, what were the main obstacles to investing?'
- (b) 'Short-termism' arises when companies value short-term returns above investment that typically yields returns over a long-term horizon.

External funds were a major constraint on investment, both in terms of their availability, as well as in terms of their cost. Real economy factors such as uncertainty and risk aversion featured high up the list of moderate obstacles to investment.

There was some variability in these obstacles across different parts of the economy. For example, the share of small businesses that reported that external funds and the cost of finance was a major or moderate obstacle to investment was twice as high as the share of large businesses who reported these factors to be an obstacle. Similarly, lack of internal funds was a larger obstacle for small businesses relative to large businesses. For other obstacles listed in Chart 7, the differences across firm size were small.

It is useful to classify these obstacles into two broad categories: financial obstacles and real economy (or non-financial) obstacles. This was easy for all the listed options other than the lack of internal funds.⁽²⁾ We concluded that internal funds reflected elements of both. On the one hand, to the extent that internal funds are unavailable to

Chart 8 Major obstacles to investment



Source: Bank of England Finance and Investment Decisions Survey.

- (a) Lack of internal funds is included in the intersection of financial and non-financial obstacles.
- (b) Financial obstacles: lack of external finance, high cost of external finance and financial market pressure for short-term returns.
- (c) Non-financial obstacles: increased uncertainty about the economic environment, reluctance to take risk, too low/slow expected return, lack of skilled personnel, lack of public infrastructure, regulatory burden, higher/quicker returns from non-investment (eg mergers and acquisitions) and from investment abroad.

finance investment it could be classed as a financial obstacle; on the other hand, the size of internal funds is determined by corporate profitability including the pricing power of the company and consumer demand for their products, and so it could be classed as a real economic barrier. Therefore, internal funds were placed in the intersection of financial and real economy obstacles, together with firms that reported at least one financial and one non-financial obstacle as a reason for them underinvesting.

This classification shows that overall, 61% of businesses had at least one major financial obstacle, 84% had at least one real economic obstacle, with over half of businesses experiencing both (Chart 8). This suggests that a combination of economic and financial policies is likely to be needed to encourage productive investment.

Five explanations for underinvestment

This section considers five explanations for underinvestment.

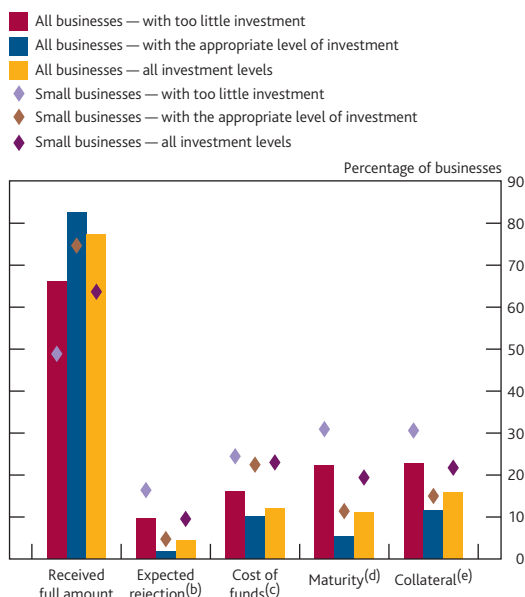
Unless otherwise stated, each of the five explanations below are evaluated based on comparing the responses of firms who underinvest relative to those who invest enough. It is differences in behaviour across the two firm types that allow us to make inferences about each explanation for underinvestment.

(i) Lack of access to finance

The survey shows clear evidence that businesses that underinvest face a variety of financial constraints (Chart 9).

(1) Businesses were given thirteen options to select from. Over 50% of companies that underinvested chose six or more barriers to investment.
 (2) The full list of options is documented in the notes to Chart 8. The main ones are shown in Chart 7.

Chart 9 Different types of financial constraints experienced over the past five years^(a)



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 five years, how far do you agree with the following statements?'.
 (b) Expected rejection: I do not want to apply for external finance as I believe I would be turned down (agree).
 (c) Cost of funds: I do not want to apply for external finance as I believe it is too expensive (agree).
 (d) Maturity: I am able to borrow at the maturity I need (disagree).
 (e) Collateral: is not a constraint for my business (disagree).

Around 83% of businesses that invested at the appropriate level received the full amount of funds they applied for in the past year, compared to 66% for businesses that invested too little. Businesses that underinvested also experienced higher loan rejection rates, were less likely to apply for funds for fear of being rejected and cited a higher cost of funds as an obstacle. Finally, they were also less able to borrow at the maturity required and faced greater collateral constraints.

There may be good reasons why the supply of finance to some types of businesses may be constrained. For example, information asymmetries between lenders and borrowers imply the need for monitoring or the posting of collateral (both of which can be costly).⁽¹⁾ Alternatively, the supply of finance may be constrained for undesirable reasons such as due to a lack of competition among lenders, or lenders being constrained in their capacity to lend due to planned deleveraging. While the survey provides evidence that businesses that invest too little are more likely to cite financial constraints, we cannot ascertain if these constraints are due to desirable or undesirable credit rationing.

Firms of all sizes face these different financial constraints, but smaller businesses were more likely to experience them. The diamonds in **Chart 9** show the percentage of small businesses in each of the categories. Small businesses that invested too little were less likely to receive the full amount of funds they

had requested from an external finance provider. And they were less likely to be able to access external funds because they could not borrow at the maturity required or did not have the necessary collateral.

(ii) Crowding out of investment by financial motives and short-termism

The economic literature describes 'crowding out' as a phenomenon whereby the rise in spending on non-investment leads to lower spending on investment.⁽²⁾ For example, firms may prefer to deploy available funds towards activities that offer faster rates of return over a shorter horizon than investment. Such faster returns could be gained through the purchases of financial assets, or activities such as mergers and acquisitions (M&A).

Businesses use available (internal and external) funds for different purposes — investment is just one of those uses. Other uses include holding funds as cash, paying out to shareholders or using funds to purchase financial assets, such as bonds and equity. How businesses deploy their funds across these different expenditures will depend on a variety of factors, including the profitability of each of these activities, as well as the businesses' preferences and priorities.

The academic literature has suggested that changes to the structure of corporate governance and executive compensation may result in a situation where short-term gains are valued above investment that typically yields returns over a long-term horizon. This is known as 'short-termism'.⁽³⁾

The survey finds some evidence of such short-termism among firms that underinvested. This evidence draws solely on the sample of firms that underinvested as this question was only posed to that subsample of companies. 80% of publicly listed businesses that underinvested answered yes when asked if financial market pressures for short-term returns were an obstacle to investment. 40% of privately owned businesses also answered yes. While it may be surprising that private businesses, that do not have shareholders to pay out to, were also affected by this factor, our interpretation is that this reflects the broader macroeconomic environment of impatience that favours returns today over the equivalent value of returns tomorrow. Indeed, companies owned by private equity or venture capital funds may also have owners who are incentivised to realise shorter-term returns. Family-owned businesses may also be keen to ensure that any rates of return from investment are matched to the returns that they can gain by deploying the money elsewhere, such as through investments in financial markets.

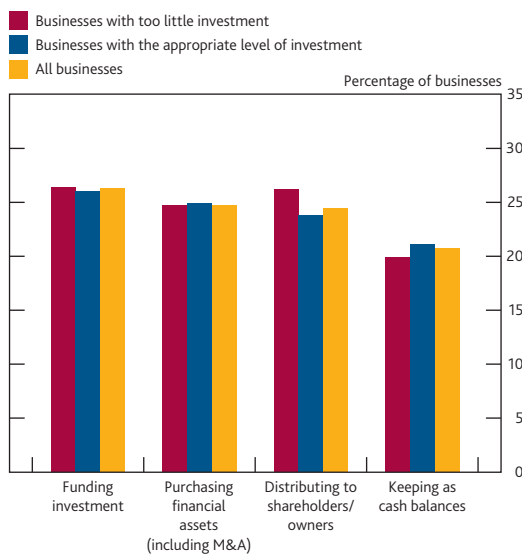
(1) See Akerlof (1970) and Stiglitz and Weiss (1981) for a distinction of good versus bad credit rationing.

(2) See Orhangazi (2008), Lazonick (2007), Milberg and Winkler (2010) and Almeida, Fos and Kronlund (2016).

(3) See Haldane and Davies (2011).

The survey asked all firms about how they prioritise the use of the internal funds that they have available. We found that there was great variability across firms. Just over 25% of firms prioritise investment, 25% prioritise the purchase of financial assets, 25% distribution to shareholders; and 20% prioritise holding their funds as cash balances (Chart 10).⁽¹⁾ And there was not a lot of difference in the behaviour of firms who underinvested relative to those who invested at the appropriate level, or across firm size. The fact that 75% of firms did not prioritise investment suggests that policies that promote access to finance will not necessarily ensure that all businesses with productive investment opportunities will use their funds for investment. Businesses also need to be incentivised to prioritise using their funds for investment purposes.

Chart 10 Most important uses of internal funds^(a)



Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 17: 'When you think about using internal funds what do you generally prioritise?' Options provided to firms include: funding investment; distribution to shareholders/owners (including dividends and share buybacks); keeping as cash balances; and purchasing financial assets (including M&A).

(iii) Businesses reluctant to invest in an uncertain environment

When uncertainty about future outcomes is greater, even if businesses see profitable investment opportunities, they may decide not to invest or to postpone investment until a more favourable macroeconomic environment emerges.⁽²⁾⁽³⁾ This type of behaviour is perfectly justified from a rational business point of view, but it may not be optimal from a macroeconomic or social perspective. The survey suggests that increased uncertainty about the future economic environment and the business owner's reluctance to take on risk were the main non-financial obstacles to investment (Chart 7).⁽⁴⁾ And uncertainty was an obstacle for firms of all sizes. Earlier external studies have also found that increased uncertainty has been an important cause of weak investment since the crisis.⁽⁵⁾

Among other factors, a lack of skilled personnel plays some role in underinvestment (Chart 7), with lack of public infrastructure and regulatory burdens cited as less important.

(iv) Inertia in firm behaviour may deter investment

This may happen if businesses do not change the rules that guide their investment decisions very often. The survey supports this hypothesis. About 20% of businesses had not reviewed their investment targets within the past five years, although 23% had reviewed them since the EU referendum (Table C). This is even more likely to be the case for the businesses that invested too little and for small businesses. And when businesses did review their targets, most of the time (56.4%) they left them unchanged.⁽⁶⁾ This evidence suggests that the rules and set targets that companies use to determine investment tend to be quite sticky, which may help explain the persistently high hurdle rates, despite large falls in interest rates.

Table C Direction of change at the latest review of investment targets

Time last reviewed targets ^(b)	Direction of revision ^(a)			Total (per cent)
	Up/tighter (per cent)	Down/looser (per cent)	Unchanged (per cent)	
Since the referendum	4.2	8.3	10.9	23.4
In the past year but before the EU referendum	6.3	7.0	14.5	27.8
One to three years ago	5.5	6.2	11.2	22.9
Three to five years ago	1.6	1.4	3.8	6.8
Not within the past five years	1.6	1.6	15.9	19.0
Total	19.1	24.5	56.4	100.0

Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 15: 'When you last reviewed them, in which direction did you revise your set targets?'.
 (b) Question 14: 'When was the last time you reviewed the targets you set for investment expenditure?'.

(v) Some businesses may be discouraged from investment

This may be the case if some businesses are still scarred from the financial crisis because it lowered returns from earlier investment; 37% of businesses report that their expected rate of return on investment is higher than the rates of return they have realised from recent investments (Table D).⁽⁷⁾ The proportion is even higher for small businesses (44%). And businesses that invested too little were more likely to have higher expected rates of return than had been realised,

(1) Numbers do not add up to 100% because not all firms ticked all the boxes.
 (2) See Bloom (2009), Bloom, Bond and Van Reenen (2007) and Dixit and Pindyck (1994).
 (3) This effect might be stronger in a less competitive environment. Businesses are more likely to postpone investment if competition does not push them to invest and innovate.
 (4) For a discussion of how uncertainty about the future economic environment, including as a result of the outcome of the EU referendum, may be affecting investment see Bank of England (2017).
 (5) See McKinsey Global Institute (2012).
 (6) Somewhat surprisingly, more businesses have loosened than tightened their targets since the EU referendum, which might reflect businesses adapting to a sustained low interest rate/low growth period.
 (7) For a summary of the scarring effects of recessions see Irons (2009).

Table D Expected and realised rate of return

Realised rate of return (past five years) ^(b)	Percentage of firms	Expected rate of return ^(a)				
		<5%	5%–<10%	10%–<15%	15%–<20%	20%+
<5%		4.7	9.1	3.6	1.5	0.6
5%–<10%		0.0	15.6	8.0	2.6	1.1
10%–<15%		0.0	2.2	19.4	5.7	1.8
15%–<20%		0.1	0.1	2.9	8.3	3.2
20%+		0.1	0.0	0.8	1.7	6.8

Source: Bank of England Finance and Investment Decisions Survey.

(a) Question 6: 'If you were given the funds that you required to implement a desired investment project, what total rate of return would you expect?'

(b) Question 5: 'Thinking now of all the investment projects completed in the past five years. On average, what is the total rate of return realised on those projects?'

compared to those who felt they had invested at the appropriate level. Assuming that these differences between expected and actual returns existed in recent years, it is possible that some businesses may have become discouraged from investing. A key question is how this disappointment of expectations may play out over time. It could lead businesses disappointed by the lower-than-expected returns eventually to revise down their hurdle rates to more realistic levels. Or it might discourage businesses from allocating their funds to further investment.

The survey found that firm investment hurdle rates were highly correlated with the actual rates of return that businesses had reported. This reflects a self-sustaining feedback loop, and equilibrium, at around 12%. In other words, if businesses do not invest unless they expect to receive around 12% (hurdle rate), that will be consistent with an outcome of actual rates of return around 12%.

As noted above, these rates of return are well above the weighted average cost of capital. The weighted average cost of capital has fallen from an average of around 8% before the crisis to around 6.5% since the crisis, but that fall does not appear to be reflected in company hurdle rates. This could be because businesses perceive the cost of finance to be higher than it actually is, or because they find it difficult to judge the appropriate level of hurdle rates when faced with large changes to their nominal interest rate environment or risk environment.⁽¹⁾

To conclude, the survey found that there is no single factor that can explain underinvestment in the United Kingdom. Instead, there is evidence that underinvestment is likely to be caused by a mix of financial barriers to investment (lack of access to finance and lack of incentives to invest) and real economic barriers to investment (uncertainty, inertia, and discouraged investors). The implication of this finding is that different types of policies are likely to be required to tackle these different obstacles.

Policy implications

This section draws out how the findings of the survey improve our understanding of the way in which businesses make investment decisions and the nature of the barriers to investment, and how this may relate to MPC and Financial Policy Committee (FPC) policymaking.

The MPC is responsible for delivering price stability. Understanding the drivers and obstacles to productive investment can improve the MPC's understanding of productivity and the supply side of the economy. When financial and real obstacles weigh on investment that can also lower growth in productivity and incomes.⁽²⁾

Moreover, monetary policy works in part through investment. Information about the degree of business inertia and reliance on rules of thumb can improve the MPC's understanding of the monetary transmission mechanism.

For example, consider businesses that use rules of thumb to guide investment — ie only invest when certain rules are met, such as only investing if the firm happens to be in a predetermined cycle for replacing capital. If those criteria are not met, investment is unlikely to take place. So in response to a cut in Bank Rate, these rule-based businesses will not increase investment, and hence output. Alternatively, for businesses that use economic models to determine investment decisions, a cut in Bank Rate is likely to make the cost of borrowing cheaper today, which on its own is likely to boost investment and output.

As long as the proportion of companies using different approaches is constant over time, then empirical estimates of the impact of changes in Bank Rate on investment would capture the average effect in the economy. But if rule of thumb behaviour had increased over time then that would suggest a weakening of the monetary transmission mechanism. The current survey only tells us about rule of thumb behaviour at one point in time, and it would be useful to monitor changes to this type of behaviour over time.

The FPC is responsible for delivering financial stability, in part to support the stable provision of financial services to the real economy, including financing for productive investment. The survey finds that businesses that describe themselves as investing 'too little' find it harder to access finance. But equally these same businesses tend to prioritise non-investment activities (such as shareholder payouts or the purchase of financial assets for short-term returns) over long-term investment. The literature calls this 'crowding out',

(1) See Bank of England (2015) and Wardlow (1994).

(2) For a recent discussion of the factors that may be currently weighing on investment and productivity see Bank of England (2017).

where use of funds for non-investment means that there is less left for investment. This means that financial policies that increase access to finance may not on their own be effective at encouraging greater productive investment. In addition, complementary policies may be helpful to incentivise businesses to prioritise productive investment.

Conclusion

This article began by trying to uncover the relationship between the financial system and productive investment using a new survey of businesses.

While the survey is broadly representative of industry and firm size, one limitation of the survey is that it underrepresents young businesses (eg start-ups). Another is that the survey provides information about business behaviour at a single point in time, so we cannot infer anything about how decisions today compare to the past. Further analysis of the results will inform whether there is value in repeating the survey in its current form.

The survey showed that two thirds of businesses have been able to invest at the appropriate level over the past five years, based on their own interpretation of the term. Taking these results at face value, the financial system appears to be enabling the majority of businesses to exploit the productive investment opportunities that they face. One third of businesses reported investing too little due to a variety of perceived financial and real economic barriers.

All businesses were asked about how they made their investment decisions. A large share of businesses did so using

rules of thumb rather than using economic models. Such use of rules of thumb may make businesses less responsive to changes in Bank Rate and the cost of finance than might otherwise be expected. Over a third of firms used a combination of strategies, such as imposing a required rate of return — or hurdle rate — on any investment.

The average investment hurdle rate across UK businesses was 12%, with some variation across businesses. This compares to a weighted average cost of capital of around 6.5%, suggesting that firms are targeting returns nearly two times the cost of capital. Businesses reported changing their hurdle rates infrequently. A high investment hurdle rate may be one reason why businesses underinvest.

For businesses that underinvest, lack of internal funds was cited as the most common obstacle to investment. Financial obstacles were also cited — a high cost of finance, lack of access to finance or financial market pressures for short-term returns. There were some differences in responses across businesses, for example, financial obstacles were a greater barrier for small businesses. Real economic obstacles were another important reason for underinvestment. That included uncertainty about the future economic environment, inertia or discouragement from investment due to lower-than-desired rates of return on existing investment.

The survey shows that underinvestment is likely due to a mix of financial and real economic obstacles. In fact, around half of the businesses that underinvested experienced both real economy and financial obstacles to investment. Therefore a combination of economic and financial policies is likely to be required to encourage greater productive investment.

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