

ECONOMIC COMMENTARIES

What factors influence firms' investment decisions?

REGIONAL NETWORK, SPECIAL TOPIC 2017

NO. 10 | 2017

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Ida Nervik Hjelseth, Sara Skjeggstad Meyer and Mari Aasgaard Walle¹

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Business investment in mainland Norway has been relatively weak since the financial crisis, even though the key policy rate has been reduced to a historically low level. Through its Regional Network, Norges Bank has interviewed Norwegian firms about their investment level and the reasons for their investment decisions. This survey is designed to shed light on factors that may have contributed to dampening investment growth.

Over 75 percent of the firms surveyed reported that investment has been at an appropriate level over the past five years in relation to investment needs. The firms reporting that investment was too low in the period point to greater economic uncertainty and a lack of internal funds.

Internal funds are reported to be the most common financing source for business investment. Few firms report that access to external capital is an obstacle to investment. This indicates that Norwegian financial markets are functioning well. A third of the firms base their investment decisions on rules of thumb, where the interest rate level is of lesser importance. Nearly half use both economic models and rules of thumb. The direct effect of the interest rate on investment decisions through its impact on capital costs appears to be somewhat less pronounced than theoretical relationships would suggest.

Key words: Regional Network, business investment, investment decisions, financing, return requirements, hurdle rate, foreign ownership, monetary policy, financial stability.

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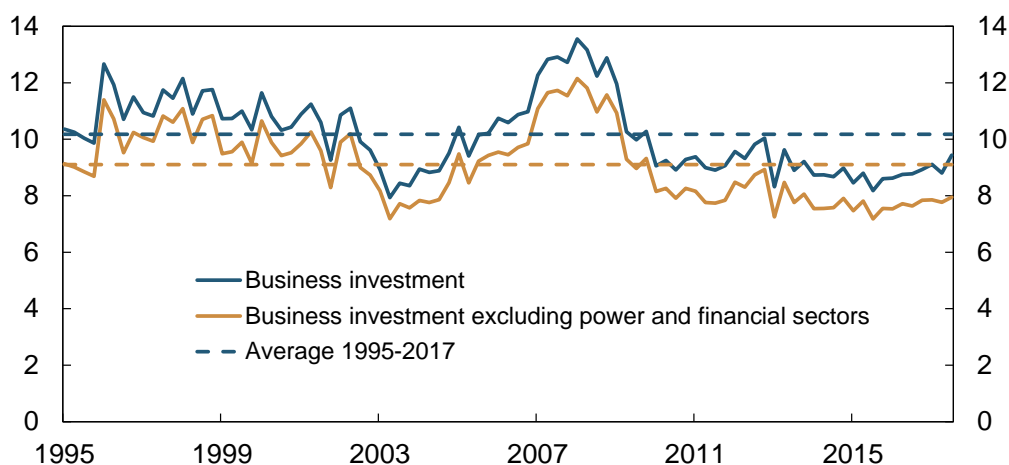
1. Introduction

Business investment is important for developments in the Norwegian economy and is crucial for production capacity and productivity growth in the longer term. Business investment fluctuates more over the business cycle than other demand components and is thus important for understanding cyclical developments.

For Norges Bank, developments in business investment are of particular interest. The key policy rate, which is the most important instrument of monetary policy, is assumed to be of considerable importance for firms' investment decisions. At the same time, Norges Bank has a special responsibility to promote resilient and efficient financial markets and payment systems. One characteristic of an efficient financial system is that participants seeking to make profitable investments have access to financial capital.

Business investment as a share of GDP for mainland Norway has averaged around 10 percent over the past 20 years (Chart 1.1.1). Since the financial crisis in autumn 2008, mainland business investment has been somewhat lower than pre-crisis levels and productivity growth has slowed. At the same time, interest rates have been historically low and the return on real capital relatively high. Other OECD countries have experienced similar developments. This raises the question of whether the effect of the key policy rate is less pronounced than we expected. Or have other factors, such as financial restrictions, uncertain demand growth and market failures, weighed on investment growth?

Chart 1.1.1: Business investment as a share of mainland GDP. Seasonally adjusted. Current prices. Percent. 1995 Q1 - 2017 Q3



Sources: Statistics Norway and Norges Bank

In the post-crisis years, weak developments in business investment in the OECD area have been analysed by international organisations and

authorities such as the OECD (Lewis, Pain, Strasky and Menkyna 2014), the IMF (Barkbu, Berkmen, Lukyantsau, Saksonovs and Schoelerman, 2015) and the BIS (Banerjee, Kearns and Lombardi 2015), using different methods such as traditional theoretical models. The results of these analyses suggest that investment in many countries has been held down by factors such as low demand, expectations of low profitability, and uncertainty surrounding economic developments and economic policy. In *Staff Memo 2/2015*, Andersen and Walle (2015) find, with the aid of model estimates, similar results for Norway.

A shift in economic sentiment is likely underway where developments in all of these factors are expected to reverse in the near term. Growth in the Norwegian economy has picked up, employment has risen and unemployment has declined. Investment may grow considerably faster than mainland GDP as the outlook improves. By obtaining more information about the factors driving investment decisions at the individual firm, we can gain a better understanding and perform better analyses of developments in business investment than by using macroeconomic variables only.

With the aid of Norges Bank's Regional Network, we have interviewed Norwegian firms about their level of investment and the foundation for their investment decisions. Here investment is defined as the maintenance of the existing capital stock and the purchase of new tangible or intangible fixed capital for business activities in Norway.² The survey seeks to provide answers to how firms assess their own investment over the past five years, what firms themselves perceive as the most important reasons for deviations from their preferred level of investment, what drives investment decisions and how investment is financed. Thus, the survey is also well suited to shedding light on the factors that may have pulled down growth in business investment.

This survey is comparable to a number of similar surveys conducted internationally (see eg Bank of England (Saleheen, Levina, Melolinna and Tatomir 2017) and European Investment Bank (2016)). Surveys by the Reserve Bank of Australia (Lane and Rosewall 2015) and Sveriges Riksbank (2016) focus in particular on the importance of the interest rate for investment decisions.

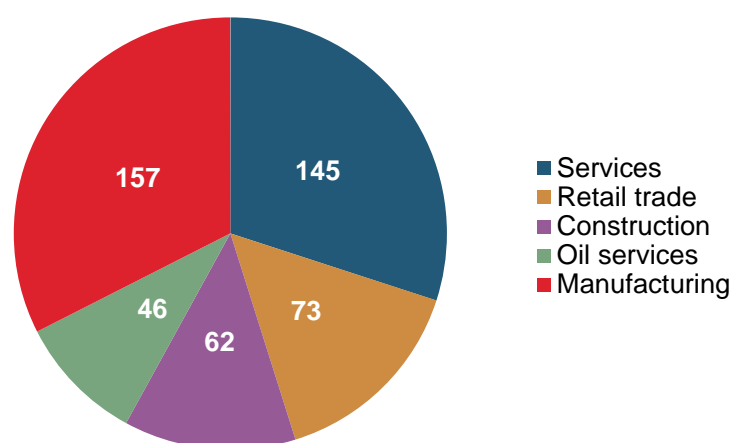
² Purchases of building sites and existing structures and acquisition of other companies are not considered to be investment in this context.

2. Survey sample and categorisation

The survey was conducted among the firms in Norges Bank's Regional Network during the interviews in contact rounds 2/2017 and 4/2017.³ The sample comprises a total of 483 respondents. All firms in the sample have reported an average annual investment level over the past five to ten years of NOK 100 000 or more. The division of firms by sector follows the same definitions as in the Regional Network. Agriculture, forestry and the power sector are not represented in the network. In addition, banks and the public sector were removed from the sample. We chose to exclude banks from the sample because their balance sheets are not comparable with the balance sheets of non-financial firms. For example, banks' debt is not an expression of investment in assets, but is an important input to banks' production. Large capital investments in the Norwegian power sector are long-term investments and largely politically determined, regardless of the business cycle. If we disregard investment in the power and financial sectors in recent years, developments in business investment were a little weaker compared with the average (Chart 1.1.1).

Most respondents are in services and manufacturing (Chart 2.1.1). If we compare the same sectors in the sample with the corresponding sectoral structure in the national accounts (measured by gross product), manufacturing is relatively larger in our sample and the service sector is smaller.

Chart: 2.1.1: Breakdown of respondent firms by sector. Unweighted. Number of firms



Source: Norges Bank

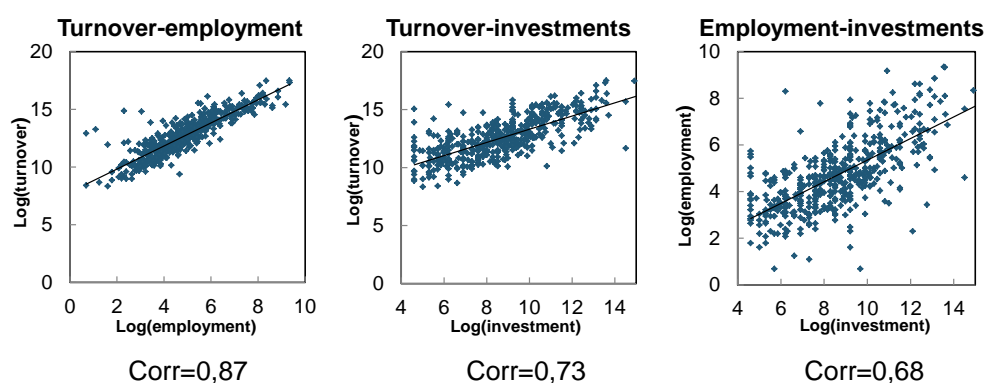
³ This survey was conducted as a special topic. The questions are not a part of the standard survey of Regional Network contacts.

In the analysis we distinguish between small, medium-sized and large firms based on the number of employees.⁴

- Small firms: below 50 employees (147 respondents)
- Medium-sized firms: 50-99 employees (82 respondents)
- Large firms: 100 employees or more (254 respondents)

To improve the comparability between the results of the survey and mainland business investment, we weight responses by firms' turnover, where appropriate. There is a good correlation between firm size measured by the number of employees and turnover, and both measures are fairly well correlated with firms' investment levels (Chart 2.1.2). The reason that we mainly do not weight the responses with the investment level is that investment is volatile. To avoid that large individual projects among firms in the most recent five-year period affects our results, we consider weighting based on turnover as more robust. Over time, the largest firms will presumably report the largest investment.

Chart 2.1.2 Correlation between turnover, investment and employment



Source: Norges Bank

3. Results of the survey

3.1 What are the main sources of business investment finance?

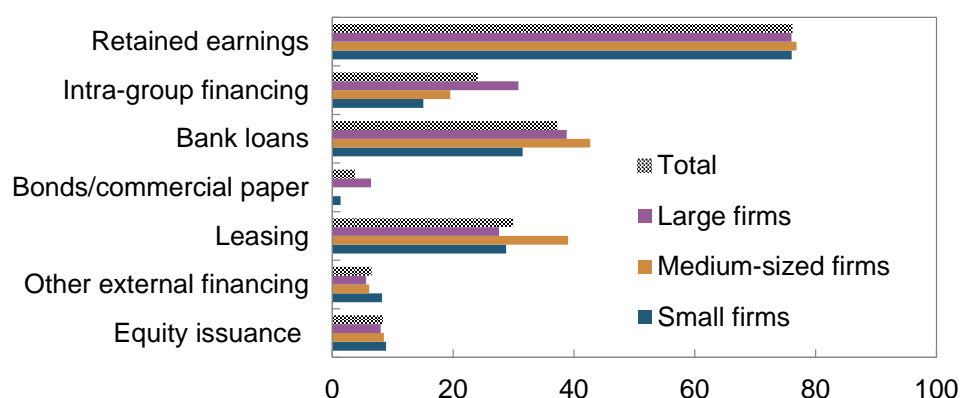
It is useful to identify how firms finance investment. Firms can rely on internal financing, various types of debt financing and/or injections of new equity. In addition, firms can acquire production equipment through leasing. According to the “pecking order” theory, firms rely first on internal funds, then debt and lastly issuing of new equity (Myers and Majluf 1984). The theory assumes that the existence of asymmetric

⁴ No clear definition has been established in Norway for what is considered a small, medium-sized or large firm. The Government, the Research Council of Norway and the Confederation of Norwegian Firm (NHO) define small and medium-sized firms as firms with fewer than 100 employees (Nærings- og handelsdepartementet 2012). We follow this definition and set a further limit for small firms at fewer than 50 employees.

information makes internal funding cheaper than external funding. When new equity is issued, part of the firm's value is transferred to new shareholders at the expense of existing shareholders. Therefore, debt financing is preferred to the issuance of new external equity.

The survey provides some support for the “pecking order” theory as internal funds are by far the most common source of financing and relatively few respondents have issued new equity (Chart 3.1.1). More than 75 percent of the firms in the survey reported that they have used retained earnings to finance their investment. Bank funding and leasing are the next most common forms of financing and are used by 37 percent and 30 percent of the firms, respectively. It is somewhat more common for large and medium-sized firms to finance investment with bank loans than it is for small firms. Leasing is most often used by medium-sized firms.⁵

Chart 3.1.1 Over the past five years, how have the firm's investments been financed? Unweighted. Percent



Source: Norges Bank

The firms were given the opportunity to report more than one financing source, but were not asked to rank them by size. However, the firms were asked to report their main source of financing.⁶ Of the firms that answered this question, 52 percent cited retained earnings as the main source of financing, followed by bank loans at 18 percent. This is consistent with the results of the Bank of England survey (Saleheen 2017).

A number of studies show that the financial position of a firm influences its cost of finance and consequently the firm's investment decisions

⁵ Relatively few firms report the use of bond funding. Norwegian firms have increased their use of the bond market in recent years, but there are still relatively few large firms that use this market. Power sector firms in particular are active in the bond market, and these firms are not represented in the survey sample.

⁶ The question was added as a supplementary question in the second contact round of the survey. About half of the respondents answered this question.

(Lewis 2014 and Stein 2003). The financial position influences both the need for and the price of external financing (the agent cost). The need for costly external funding is less for profitable firms that use the profits to increase equity and liquidity (internal funding). Such an improvement in the firm's financial position also reduces corporate credit risk. In isolation, this reduces the agency cost and consequently the price of external funding.

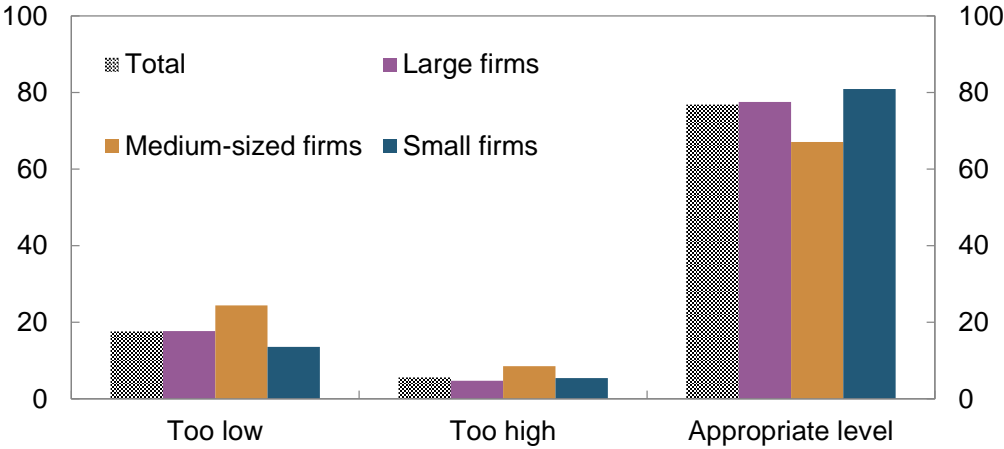
The survey indicates that access to internal funds and hence corporate profitability are of considerable importance for the level of investment. Furthermore, access to external financing, particularly bank loans, plays an important role in many firms' investment decisions, usually this is complementary to internal.

3.2 Firms' perceived level of own investment

The firms were asked whether their level of investment had been appropriate, too low or too high, given the firm's investment needs over the past five years (Chart 3.2.1). Overall, three of four firms reported that investments had been appropriate, while fewer than 20 percent regarded the level of investment as having been too low. Just over 5 percent reported that the level of investment had been too high. Relatively more large and medium-sized firms than small firms reported having invested too little. More than 80 percent of small firms reported an appropriate level of investment.

Since the majority reported an appropriate level of investment, it is assumed that business investment has been consistent with underlying economic forces. Nevertheless, it is important to emphasise that the responses in the survey are based on the firms' own perceptions of what is an appropriate, too low or too high level of investment. If many firms responded that the level of investment had been appropriate *given* the obstacles, such as tight credit standards, the share of firms that reported an appropriate level may be too high. In addition, there may be differences between what is perceived to be the appropriate level of investment from the firm's perspective and what is optimal from a socio-economic viewpoint.

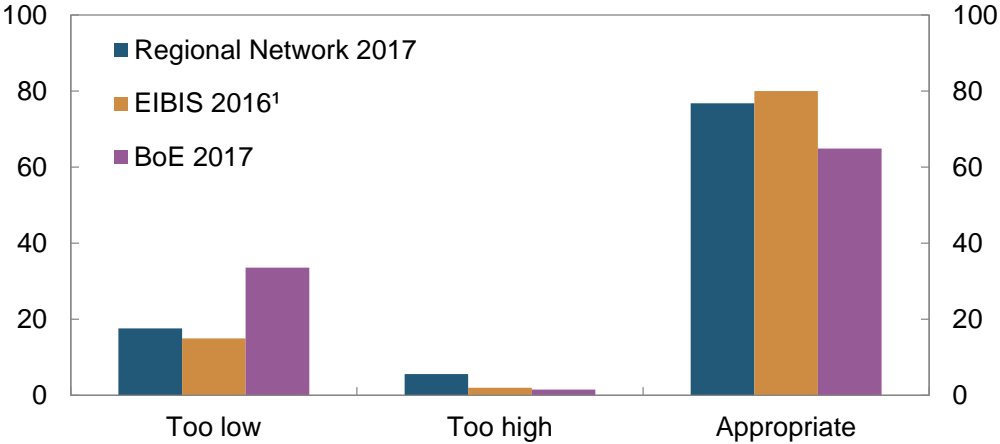
Chart 3.2.1 Relative to the needs of the firm, characterise the overall level of investment over the past five years. Share of the firms. Unweighted. Percent



Source: Norges Bank

The results of the survey are in accordance with findings of similar surveys, particularly from the EIB Investment Survey (European Investment Bank 2016) with responses from firms in all EU countries (Chart 3.2.2). A clear majority of the firms in the Bank of England survey (Saleheen 2017) also reported that business investment had been at an appropriate level, even though more firms in this survey reported that the level of investment had been too low.

Chart 3.2.2 Relative to the needs of the firm, characterise the overall level of investment over the past five years. Share of the firms. Unweighted. Percent

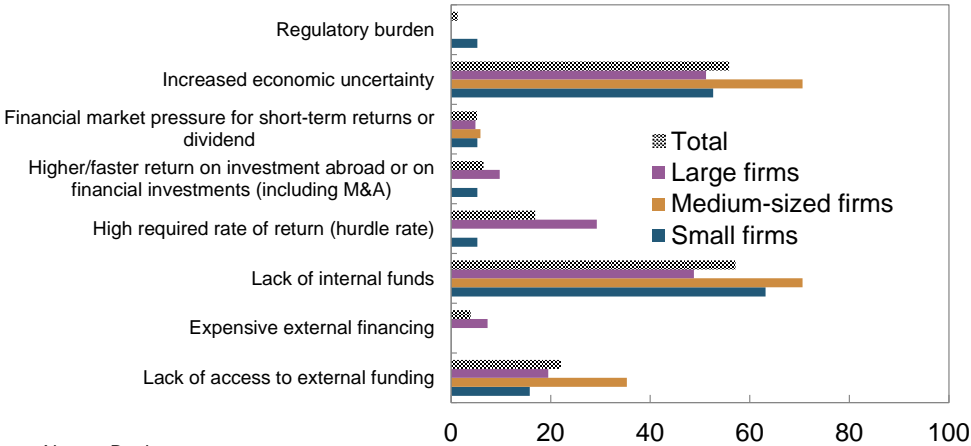


1) Columns do not add up to 100 because the respondents could also answer "don't know/refused" in this survey.
 Sources: European Investment Bank, Bank of England and Norges Bank

The firms reporting that they considered the level of investment during the period as lower than necessary were asked what had been the firm's main obstacle to investment. Almost six of ten firms gave weight to increased economic uncertainty and lack of internal funds as important reasons for underinvestment (Chart 3.2.3). Medium-sized

firms in particular emphasised these two obstacles to investment. Investment in small firms was particularly limited by the lack of internal funds, while large firms also emphasised high required rates of return as a reason for low investment. For more about the firms' required rate of return, see Section 3.4.

Chart 3.2.3 If the investment level was too low – what have been the main obstacles to investment? Unweighted. Percent



Source: Norges Bank

Economic uncertainty and the lack of internal financing as reasons for underinvestment are consistent with the empirical results in Andersen and Walle (2015). By estimating empirical models, they find that a weak outlook and falling profitability are among the main explanatory factors behind the low level of business investment in Norway in the post-crisis years.

Regulatory burden, expensive external financing and other priorities affecting the use of capital appear to play a limited role as barriers to investment.

Neither does access to external financing appear to represent a significant investment obstacle for Norwegian firms. The survey shows that just over 20 percent of the firms that had underinvested reported access to external financing as an obstacle. This is significantly fewer than in the Bank of England survey (Saleheen 2017) and the European Investment Bank (2016) where 50 percent and 60 percent of the firms which underinvested, respectively, reported lack of external financing as an obstacle.

That access to external funding is not an equally important investment obstacle in Norway is supported by the firms in the business survey conducted by the Confederation of Norwegian Enterprise (NHO) among member firms for 2017. The proportion reporting that external financing

is considered to be a considerable obstacle has remained relatively low, around 10-15 percent since the survey was launched in 2010.⁷ This is despite the fact that external funding is an important financing source for business investment.

Whereas underinvestment appears to be closely related to financial uncertainty, particularly ample access to external and internal funding was reported as a reason for overinvestment among the firms reporting overinvesting during the period. Norway differs from other countries owing to a larger proportion of firms reporting overinvesting. If the responses are weighted by turnover, it is primarily oil service companies that reported overinvesting over the past five years. At the beginning of the five-year period, this sector was still characterised by high oil prices, solid profitability and optimism.

3.3 What criteria are given weight in investment decisions?

The firms in the survey were asked what criteria they gave weight to in their investment decisions (see Box 1).

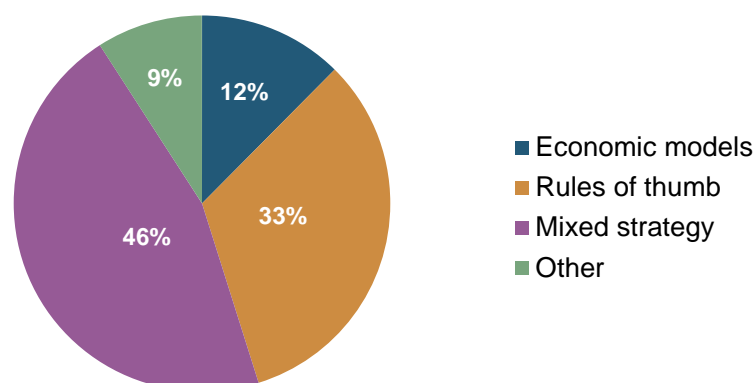
According to traditional investment theory, business investment is largely determined by changes in interest rates. Reduced market rates lower firms' capital costs and increase the number of profitable investment projects. On the other hand, surveys from other countries find that investment decisions are often based on rules of thumb in addition to, or instead of, traditional economic models (see for example Lane and Rosewall (2015) and Sveriges Riksbank (2016)). In practice, this may indicate that investment decisions are less sensitive to interest rate changes than implied by traditional investment theory.

The survey also indicates that investment decisions are often based on rules of thumb where interest rates are of less importance. The responses have been categorised based on whether the firms solely selected model-based alternatives, alternatives based on rules of thumb, both types (referred to as a mixed strategy), or other investment criteria. Based on such a classification, only 12 percent of the firms in the survey solely gave weight to economic models in their investment decisions (Chart 3.3.1). Among small firms, all of 71 percent reported that they only use rules of thumb. Many large and medium-sized firms also reported that they only use rules of thumb, but a relatively larger number of these firms used a mixed strategy compared with small firms.

⁷ In the business survey conducted by the Confederation of Norwegian Enterprise (NHO) all of the firms are asked what they perceive to be constraints on investment and not only those firms that report that they have underinvested. It is therefore reasonable that this share will be somewhat lower than in our survey.

A set frequency for replacement of equipment is the most common criterion for investment decisions based on rules of thumb. More than half of the firms reported using this criterion. It is reasonable to believe that this mainly applies to IT equipment. More than 40 percent of the firms primarily used only one type of decision-making model, while around 40 percent used two models.

Chart: 3.3.1 Types of investment decisions among respondent firms. Unweighted. Percent



Source: Norges Bank

The firms were asked to specify which criterion was most important in their investment decisions.⁸ Thirty percent reported an alternative characterised as an economic model, where positive net present value is the most common criterion, whereas the remaining firms gave weight to rules of thumb. Half of those who gave weight to rules of thumb emphasised a set replacement frequency. About 40 percent of the large firms responded that economic models are most important.

Among the firms that reported “other” criteria for their investment decisions, the majority responded that business investment is need-based or is part of the firm’s strategy.

⁸ The question was added as a supplementary question in the second round of the survey. About half of the respondents have answered this question.

Box 1: Criteria for firms' investment decisions.

Based on the survey, we divide criteria for investment decisions into two categories: economic models and rules of thumb.

Economic models are defined as investment decisions based on technical estimates of profitability using discounted cash flows.

- *Positive net present value*: Net present value (*NPV*) is a method for assessing the profitability of an investment given the investment cost (*I*) and the expected cash flow from the investment (*CF*) discounted by a discount rate (*r*) over the lifetime of the investment (*T*):

$$NPV = -I_0 + \sum_{t=1}^T \frac{CF_t}{(1+r)^t}$$

The firm invests if the investment project yields a positive *NPV* given the project's discount rate. The discount rate corresponds to the firm's required rate of return from the investment project.

- *Fixed required rate of return (hurdle rate)*: The firm uses a fixed minimum required rate of return.
- *Relative required rate of return*: The firm assumes the financing cost with a fixed premium as a minimum required rate of return.

For fixed and relative required rates of return, the investment may be assessed as profitable if *NPV* is positive or if the internal rate of interest (the discount rate yielding an *NPV*=0) is higher than the required rate of return. See more about the hurdle rate in Box 2.

Rules of thumb are based on the investment satisfying simple rules, rather than on profitability estimates of the investment project.

- *Required payback period*: The investment is assessed as profitable if the investment amount is paid back within a certain period.
- *Set frequency for replacement of machinery/equipment/technology*: The firm replaces capital at regular intervals. This is typical of IT equipment, for example.
- *Return in line with industry standard*: The firm estimates the investment project's profitability eg by applying a net present value calculation and using a discount rate in line with the standard for its industry.

Mixed strategy is defined as firms that base their investment decisions on more than one category.

In addition, some firms have reported "*other criteria*" for investment decisions. These may include both other economic models and other rules of thumb.

3.4 Does the firm apply a fixed required rate of return (hurdle rate) on investment?

A common assumption in economic theory is that firms base their investment decisions on a required rate of return (or hurdle rate) which depends on the cost of capital, which in turn is influenced by the lending rate (see Box 2). A lower lending rate should thus increase the number of investments that are considered profitable. Decisions based on a hurdle rate are included in the group of firms using economic models.

To investigate the extent to which changes in interest rates influence the hurdle rate, we asked the firms about their hurdle rate and whether it had changed in recent years. What was the reason for a changed or unchanged hurdle rate?

Box 2: Hurdle rate and how it is applied in investment decisions

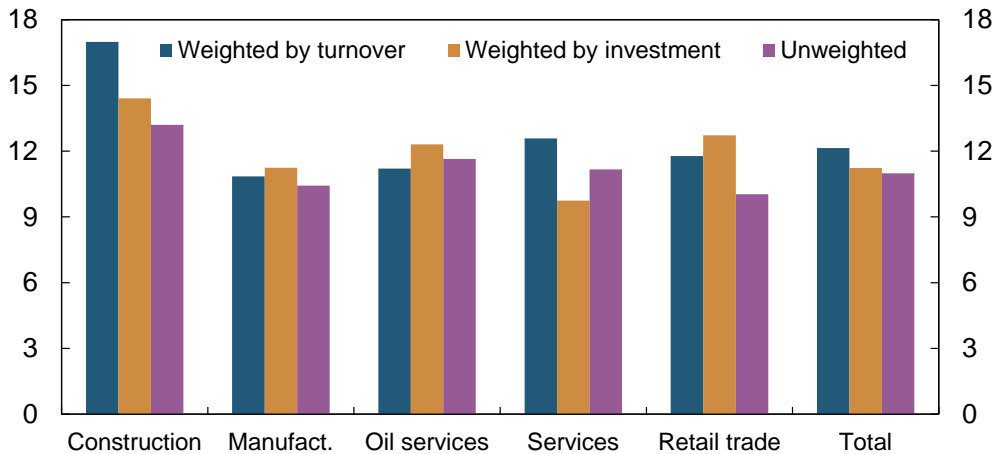
The required rate of return (or hurdle rate) means the minimum compensation required by the firm to invest in a new project. Higher risk requires higher returns. The hurdle rate is often referred to as the cost of capital. The hurdle rate is equal to the expected return on investing in a comparable project with equal risk. It is customary to divide the hurdle rate into two components: compensation for receiving the cash flow in the future rather than today (this compensation is set equal to the risk-free interest rate) and compensation for the uncertainty of the future cash flow (a risk premium).

The firm's cost of capital is a combination of the firm's cost of equity and its cost of debt. The cost of equity is the rate of return required by equity owners as compensation for the risk of investing in the company. The cost of debt, eg the interest on a bank loan, is affected by other kinds of risk, such as default risk. If a company has too high a debt ratio, its borrowing rate will be increased to compensate for the credit risk. If an investment is in line with the firm's existing business, the firm's cost of capital can be used as a discount rate in the profitability estimate of the investment. If the investment is in another type of business, a different discount rate must be used. Thus, the hurdle rate may be different from the firm's cost of capital.

To estimate whether an investment is profitable, it is common to estimate the present value of the project. See more about investment decisions in Box 1. The key policy rate is an important component of the cost of capital, both via lending rates and the risk-free interest rate that is applied in the estimate of the cost of equity.

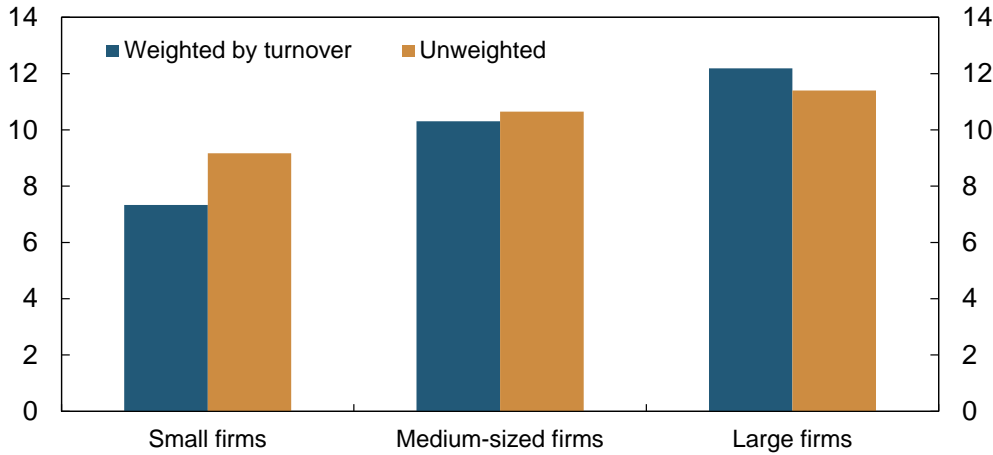
Just under 20 percent of the respondents reported applying a hurdle rate in their investment decisions. When the respondents are weighted according to turnover, the percentage is just under 50 percent. The average hurdle rate is between 11 percent and 12 percent, depending on weighting (Chart 3.4.1). The hurdle rate varies across sectors. Construction is the sector with the highest hurdle rate. Large and medium-sized firms have higher hurdle rates than small firms (Chart 3.4.2). The hurdle rate among the firms in Norges Bank's Regional Network is at the same level as that found in US and UK surveys (Saleheen 2017 and Jagannathan, Meier and Tarhan 2011).

Chart 3.4.1: Hurdle rate for business investment. Percent



Source: Norges Bank

Chart 3.4.2: Hurdle rate for business investment based on firm size. Percent



Source: Norges Bank

Since the early 2000s, the key policy rate has fallen to a historically low level (Chart 3.4.3). Banks' corporate lending rates have largely followed suit. The weighted average cost of capital (WACC) has been calculated to obtain a better estimate of the firms' actual cost of capital.⁹ The average cost of capital has not fallen to the same extent as the cost of bank loans. Equity ratios¹⁰ have risen since the financial crisis and in isolation have pushed up the average cost of capital. At the same time, the cost of equity has fallen slightly less than lending rates. In recent

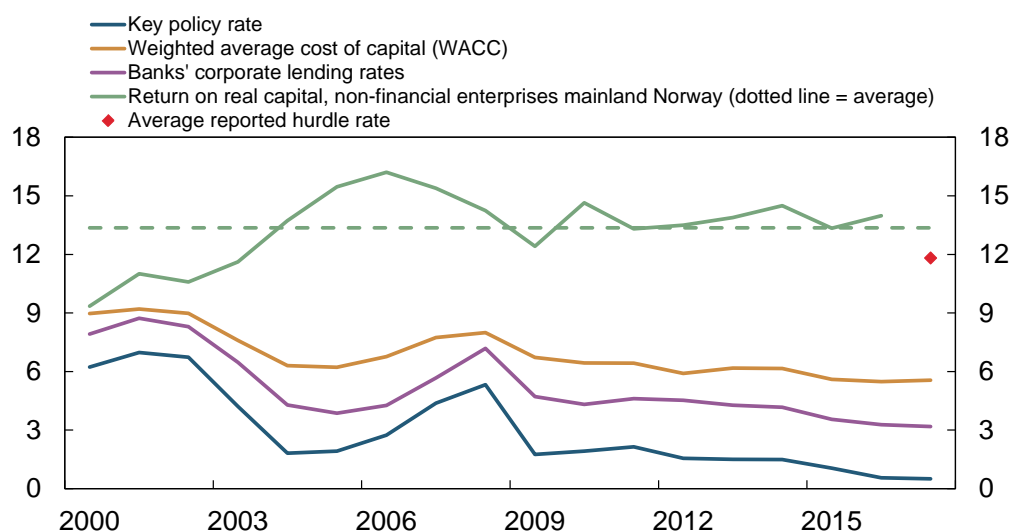
⁹ The weighted average cost of capital (WACC) is the estimated cost of capital of Norwegian firms that use equity and bank loans for financing. Cost of equity/return on equity is shown by the CAPM model, $r_e = r_f + \beta(r_m - r_f)$. r_f : risk-free interest rate, in this case five-year government bond. $(r_m - r_f)$: market risk premium, where r_m is the Oslo Børs Benchmark Index. The market risk premium is estimated at about 7 percent. This is somewhat higher than PWC (2016) finds in its survey. β is estimated at 1.15 by a simple regression. The left-side variable is an estimated index, using the Oslo Børs All-Share Index excluding finance and energy. For return on debt, average lending rates for non-financial firms have been applied. Equity ratios of non-financial limited companies in mainland Norway are applied to weight between the use of equity and debt. The calculation is intended as an illustration, and there is considerable uncertainty regarding the estimates.

¹⁰ Equity ratios of non-financial limited companies in mainland Norway.

years, mainland firms' average cost of capital has been at around 6 percent.

National accounts figures show that average return on real capital, defined as operating income divided by the capital stock of mainland non-financial firms has been markedly higher than the various measures of the cost of capital (Chart 3.4.3). This indicates that there are potentially profitable investments in the economy. According to economic theory, a profit-maximising firm invests until the expected marginal return on capital is equal to the marginal cost of capital. If the marginal return is nearly equal to the average return and new investment yields approximately the same return as existing capital, this may indicate that investment has been too low. On the other hand, average return may not have been a reliable measure of expected return, owing to weak economic developments in many countries in recent years (see Bank of England (2016)).

Chart 3.4.3 Return on capital, cost of capital and interest rates. Percent. 2000-2017¹¹

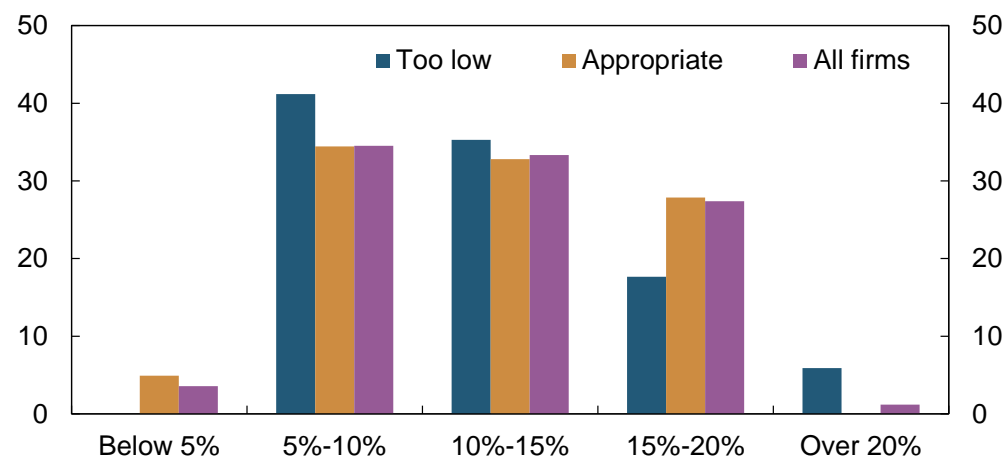


Sources: Statistics Norway, Bloomberg and Norges Bank

Even though reported hurdle rates appear to be considerably higher than the cost of capital, only two of ten firms reported a high hurdle rate as an investment obstacle. Of the firms that reported underinvestment over the past five years, almost 40 percent applied a hurdle rate of just between 5 and 10 percent, while the remaining firms applied a hurdle rate above 10 percent. Among the firms reporting an appropriate level of investment, around 60 percent reported a hurdle rate above 10 percent (see 3.4.4).

¹¹The 2017 figures are based on observations for Q1-Q3.

Chart 3.4.4 Hurdle rates by reported level of investment. Unweighted. Percent



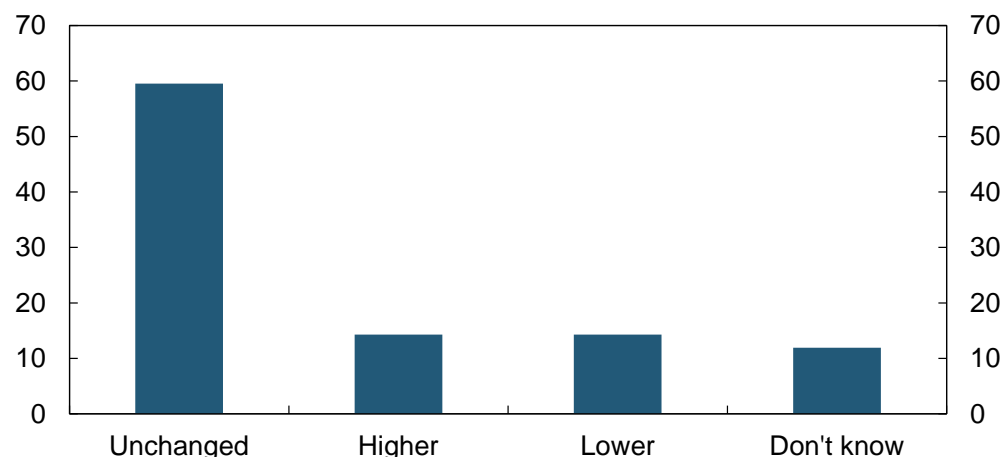
Source: Norges Bank

The hurdle rate for mainland investment should have fallen in recent years, reflecting low interest rates and a reduced cost of finance. However, 60 percent of the firms with a hurdle rate reported that they had not changed their hurdle rate since the financial crisis (Chart 3.4.5). The majority reported that the hurdle rate remained unchanged because it is part of a long-term board strategy and is therefore changed infrequently.¹² None of the firms reported maintaining a high hurdle rate owing to increased economic uncertainty. On the other hand, the board strategy to maintain the hurdle rate may perhaps be interpreted as an increase in the risk premium. Fourteen percent of the firms applying a hurdle rate have increased their rate in recent years. The majority of the firms reported that the increase reflects industry developments or changes in the macroeconomic outlook. The share of firms that had reduced their hurdle rate is 14 percent, and of these, close to half reported that the reduction reflects changes in lending rates.¹³

¹² The question was added as a supplementary item in the second round of the survey.

¹³ Note that this results in a relatively small sample and that the findings must be interpreted with caution.

Chart 3.4.5 The share of firms reporting a changed or unchanged hurdle rate after the financial crisis. Unweighted. Percent



Source: Norges Bank

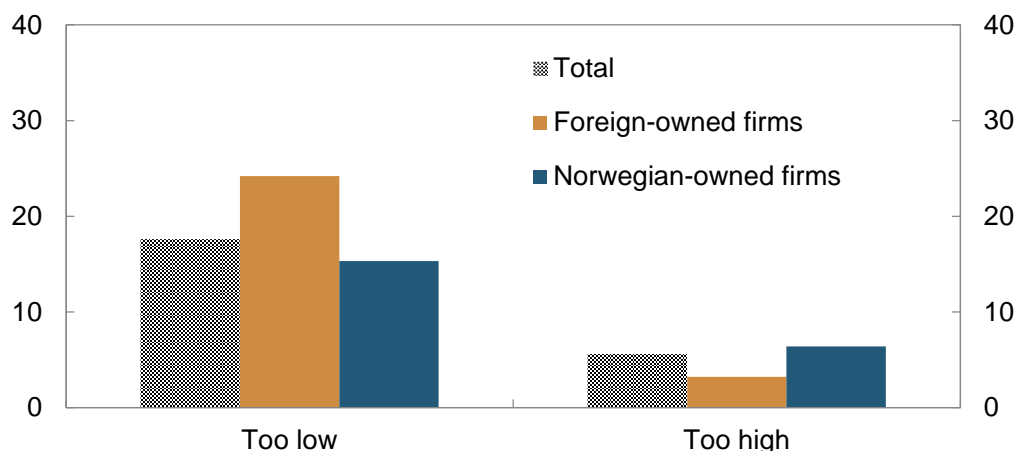
3.5 Effect of foreign ownership

It is a perception from previous Regional Network surveys that investment by foreign-owned firms is constrained by a lack of parent company funding. The present survey indicates that foreign-owned firms have experienced a somewhat greater degree of underinvestment over the past five years than Norwegian-owned peers.

About one in four firms in the sample is owned by a foreign parent, the majority of which are large firms. This is consistent with the degree of foreign ownership of large firms in mainland Norway.¹⁴ Twenty-four percent of foreign-owned firms in the sample judged their level of investment as too low, while the share of Norwegian-owned firms reporting underinvestment was only 15 percent.

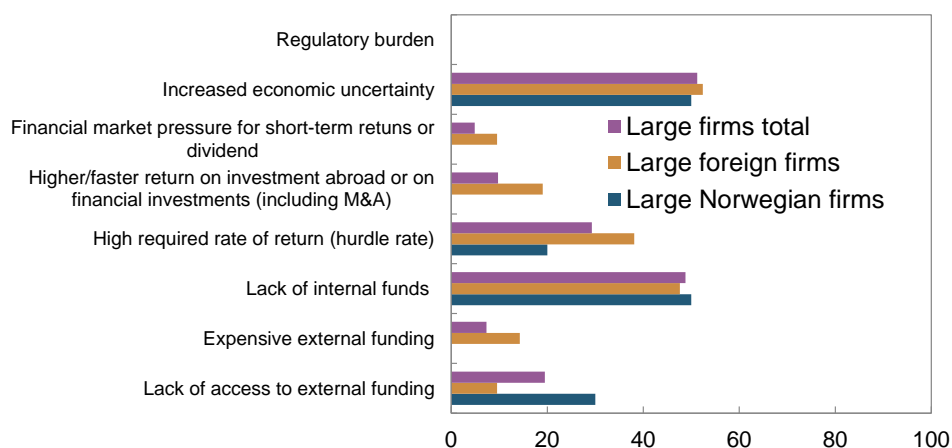
¹⁴ Firms with more than 100 employees in the sectors included in the survey sample. See Statistics Norway for statistics on foreign-controlled firms.

Chart 3.5.1 Relative to the needs of the firm, characterise the overall level of investment over the past five years. Share of firms. Unweighted. Percent



Source: Norges Bank

Chart 3.5.2 If the level of investment is too low – what has been the main obstacle to investment? Only for large firms. Unweighted. Percent



Source: Norges Bank

Increased uncertainty about the real economy and a lack of internal funds are important obstacles to investment for both Norwegian-owned and foreign-owned firms, but a large number of foreign-owned firms report earnings targets that are difficult to meet as investment obstacles (Chart 3.5.2).¹⁵ A relatively higher number of firms reported high hurdle rates¹⁶, a preference for short-term returns over increased investment or better opportunities for returns elsewhere, such as outside Norway or

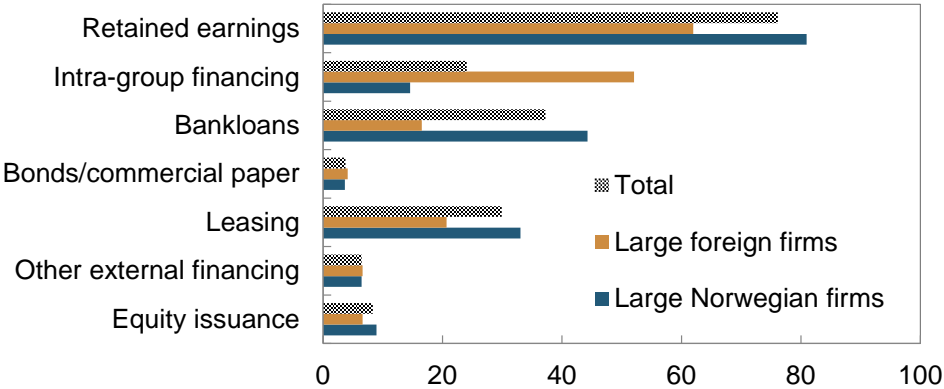
¹⁵ Since the distribution across small, large and medium-sized firms is different for Norwegian-owned and foreign-owned firms, we focus only on large firms. Note that this entails a relatively small sample and that the results must be interpreted with caution.

¹⁶ On average, the foreign-owned firms report a 1.2 percentage point higher required rate of return compared with Norwegian-owned firms.

in financial investments. In addition, all of the firms reporting expensive external funding as an investment obstacle were foreign-owned.

Foreign-owned firms in particular financed investment by relying on intra-group funding (Chart 3.5.3). Among the foreign-owned firms that had underinvested over the past five years, intra-group financing was more common than for firms that reported that investment was appropriate or too high. Foreign-owned firms relied less on bank loans and leasing than Norwegian-owned firms.

Chart 3.5.3 Over the past five years, how has the firm's investment been financed? Unweighted. Percent



Source: Norges Bank

The results support the perception from previous Regional Network surveys, and indicate a greater degree of underinvestment among foreign-owned firms and a greater reliance on parent company financing for these firms' investments. This may indicate that investment by such firms is more dependent on the economic situation abroad and less dependent on economic developments and financing conditions in Norway.

4. Conclusion

On the basis of this survey, investment growth over the past five years appears to be consistent with underlying economic forces. Over 75 percent of the firms in our sample regard the level of investment in the period as appropriate, given the firm's needs.

Around one of five firms regard the level of investment over the past five years as too low, primarily owing to increased economic uncertainty and a lack of internal funding. A lack of internal funding may reflect poor profitability. A large share of firms reporting underinvesting in the period are foreign-owned. For a majority of these firms, intra-group financing is

the most important source of financing. Foreign corporate groups appear to give less weight to Norwegian cyclical developments.

Internal funds are the main source of financing for the firms in our survey. In addition, around 40 percent of the firms turn to bank loans to finance investment. Few firms cite access to external capital as an obstacle to investment, indicating that Norwegian financial markets appear to be functioning well.

The average hurdle rate among our respondents is around 12 percent. The hurdle rate for half of the firms applying such a rate has remained unchanged since the financial crisis. This return requirement may appear to be somewhat high, since the interest rate has fallen to a historically low level and corporate lending rates are currently at around 3 percent. The average cost of capital has fallen slightly less than lending rates and is at around 6 percent. National accounts figures show that the average return on real capital has been markedly higher than the various measures of financing costs. At the same time, we find that a third of the firms in the sample use rules of thumb in their investment decisions rather than financial profitability analyses, where the interest rate is incorporated directly.

Owing to widespread use of rules of thumb and high, unchanged hurdle rates, the direct effect of the interest rate on investment decisions through its impact on capital costs appears to be somewhat less pronounced than theoretical relationships would suggest. The large share of investment financed by equity and rising equity ratios may also have reduced the impact of the interest rate on the cost of capital.

We find no indications that the indirect effect of the interest rate via the demand channel is not important for business investment. An expansionary monetary policy stance has likely helped to sustain business investment through the period. Higher demand, improved profitability and reduced uncertainty ahead will likely give a boost to business investment.

The survey is unable to provide an answer to the question of whether the response of business investment to interest rates has changed in recent years as comparable observations from previous periods are not available.

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Appendix: Special topic questionnaire, Round 4 2017 – Investment decisions

NORGES BANK
ECONOMIC COMMENTARIES
NO. 10 | 2017

Special topic, Round 4, 2017 – Investment decisions¹⁷

WHAT FACTORS INFLUENCE
FIRMS' INVESTMENT
DECISIONS?

Firm:	
Sector:	
Turnover in 2016:	NOK
Number of employees:	
Average annual level of investment over the past 5-10 years:	NOK
Is the firm's parent company/owner a foreign entity?	<input type="checkbox"/> Yes <input type="checkbox"/> No

1. Relative to the needs of the firm, characterise the overall level of investment over the past 5 years

- o Too low an investment level (go to Question 1a)
- o Too high an investment level (go to Question 1b)
- o Appropriate investment level (go to Question 2)

1a. If investment level was too low

What have been the main obstacles to investment? (*tick all that apply*)

- o Lack of access to external funding
- o Expensive external funding
- o Lack of internal funds (at firm and/or corporate group level)
- o High required rate of return (hurdle rate)
- o Higher/faster return on investment abroad or on financial investments (including M&A)
- o Financial market pressure for short-term returns or dividend
- o Increased economic uncertainty
- o Regulatory burden

1a. If investment level was too high

What have been the main reasons for overinvestment? (*tick all that apply*)

- o Availability of external funding
- o Reasonably priced external funding
- o Ample access to of internal funds (at firm and/or corporate group level)
- o Low required rate of return (hurdle rate)
- o Lower/more long-term return on investment abroad or on financial investments (including M&A)
- o Financial market pressure for long-term returns
- o Less economic uncertainty
- o Regulations have mandated investment

¹⁷ Here investment is defined as the maintenance and purchase of new tangible or intangible fixed capital for business activities in Norway. Purchases of building sites and existing structures and acquisition of other companies are not considered to be investment in this context.

2. What criteria are given weight in the firm's investment decisions? (tick all that apply)

- 1. Firm has a fixed hurdle rate (requirement for minimum expected total return)
- 2. Firm has a relative required rate of return (requirement for minimum margin above funding costs)
- 3. Positive net present value
- 4. Set target payback period
- 5. Set target frequency for replacement of machinery/equipment/technology
- 6. Return on investment in line with industry standard
- 7. Other:.....

2a. Which criterion is most important? (choose only one)

Criterion no.:.....

3. If the firm/corporate group has a given hurdle rate on investment, what is it?

.....%

- Don't know (go to Question 4)
- The firm does not have a fixed hurdle rate for investment (go to Question 4)

3a. Has the hurdle rate changed since the financial crisis? (tick all that apply)

- No, unchanged hurdle rate (go to Question 3b)
- Yes, higher hurdle rate (go to Question 3c)
- Yes, lower hurdle rate (go to Question 3c)
- Don't know (go to Question 4)

3b. If NO, why hasn't the hurdle rate changed? (tick all that apply)

- Owing to economic uncertainty, a lower interest rate is compensated for by a higher risk premium
- The current interest rate is not regarded to be at a normal level
- The level of the hurdle rate is of secondary importance to other decision factors
- The hurdle rate is a long-term strategy from the board and is therefore changed infrequently
- The cost of capital is little changed through the period
- Other:.....

3c. If YES, why has the hurdle rate changed? (tick all that apply)

- Changes in lending rates
- Changes in macroeconomic uncertainty
- Changes in uncertainty concerning industry developments
- Changes to adjust to industry standard
- Other

4. Over the past five years, how has the firm's investments been financed? (tick all that apply)

- 1. Retained earnings
- 2. Equity issuance
- 3. Intra-group funding
- 4. Bank loans
- 5. Bonds/commercial paper
- 6. Leasing
- 7. Other external funding

4a. Which funding source has been used most? (choose only one)

Funding source no.:.....