

Why Are Investment Hurdle Rates So Sticky?

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Abstract

Firms commonly evaluate potential investment projects by comparing expected returns to a hurdle rate. Survey evidence suggests that hurdle rates have remained high and well above the weighted average cost of capital (WACC) in recent years, as has the *ex post* return on invested capital for Australian-listed companies. This stickiness is a marked contrast to the decline in interest rates. This article reviews the evidence for why hurdle rates are so far above the WACC, and why they have remained so sticky over time. Proposed reasons include the perception that returns available on potential projects are unrelated to the level of interest rates. In addition, firms may avoid reducing hurdle rates to minimise the risk of regret, and some business managers could view long-term declines in interest rates as temporary.

Introduction

Firms commonly evaluate potential capital expenditure projects by comparing expected project returns to a hurdle rate, which is determined by each firm and reflects the minimum acceptable rate of return for a project. Firms typically use hurdle rates that are well above the weighted average cost of capital (WACC) and are sticky (i.e. do not move much) over time. This result has been observed through several central banks' liaison programs in recent years, including in Australia, Canada, Sweden and the United Kingdom. Similar observations can

be traced back in the literature to at least the 1930s (Meade and Andrews 1938).

There are two major implications for central banks:

1. If hurdle rates are sticky, then business investment will be less sensitive to monetary policy than if hurdle rates were adjusted with interest rates, although monetary policy will still affect business investment through other channels.
2. The low sensitivity of business investment to interest rates could cause the neutral (or

equilibrium) rate of interest to be more sensitive to shocks in the aggregate supply of savings than otherwise. This is because if investment is not sensitive to interest rates, then interest rates will have to adjust further to bring savings and investment into equilibrium after a shock to the aggregate supply of savings.^[1]

Despite the important implications of firms maintaining sticky hurdle rates, the underlying reasons behind their stickiness are not particularly well understood.

This article describes movements in hurdle rates, the WACC and realised returns on capital in recent years, and reviews the literature to understand why some firms have been reluctant to reduce hurdle rates. Several recent developments aid this task. First, National Australia Bank (NAB) added a question on the level of hurdle rates to its quarterly business survey in 2015. Second, media coverage and commentary from executives have revealed insights on the investment decisions of large businesses, many of which have elected not to change hurdle rates (Richardson 2020; Thomson 2021). Third, more empirical studies have been published, complementing qualitative findings with evidence on the relative importance of the various reasons for hurdle rates being above the WACC.^[2] These developments allow us to improve our understanding of how firms consider potential changes to hurdle rates in the face of declines in the WACC.

Financial considerations for investment

Financial theory suggests that firms should invest in a project when the net present value of the project's cash flows is positive. A project's net present value will be positive when the return of the project is greater than the WACC. The WACC provides a measure of the average cost of capital for a company, or (equivalently) the average rate of return that debt and equity investors require when providing funding to a company. The WACC is calculated as the weighted average of the cost of equity (the cost of raising new shares) and the after-tax cost of debt (the interest rate when borrowing). It follows that firms should use a hurdle rate equal to the WACC when evaluating investment decisions.

This implies that lower interest rates flow through to a reduced WACC and to a lower hurdle rate, increasing the number of viable projects and thereby boosting investment.

The hurdle rate channel is not the only mechanism through which interest rates can affect investment. Lower interest rates boost investment through a variety of channels, including stronger demand for products, higher after-interest cash flows and higher net worth (as a decline in interest rates boosts asset prices). This variety of mechanisms makes identifying the hurdle rate channel difficult. In addition, changes in interest rates may reflect other information, such as the state of the economy or the perceived creditworthiness of the firm.

Studies have generally found that the user cost of capital affects investment, though the effects arise through components other than the cost of capital. Evidence that the cost-of-capital component affects investment is generally weak (Sharpe and Suarez 2021). La Cava and Hambur (2018) found evidence that interest rates appear to affect investment; however, they found no effect from the overall cost of capital, which is the rate more closely related to the hurdle rate channel.^[3]

Movements in hurdle rates, the WACC and returns on capital

A substantial body of evidence suggests that firms use hurdle rates that are well above the WACC. In liaison, firms have reported using hurdle rates of 12–15 per cent or higher, and note that these rates have not changed for many years (Lane and Rosewall 2015). Several firms also reported complementing these hurdle rates with stricter methods to assess investments, such as the payback period – that is, the number of years expected for the capital outlay to be returned by the cash flows generated from the project. Required payback periods of three to five years are common, implying a more aggressive threshold for investment than hurdle rates of 15 per cent.

The evidence from liaison has been confirmed in surveys. For Australian firms, the earliest data known to the authors are from a 2014 Deloitte survey, showing that the median hurdle rate was around

13 per cent (Deloitte 2014). Likewise, the NAB Business Survey pointed to a mean hurdle rate of around 13 per cent in 2015, which is consistent with Bank liaison from around that time. NAB Survey data show that the average hurdle rate has been relatively steady over the past six years.

Meanwhile, the WACC for a representative BBB-rated non-financial business is estimated to be about 6 per cent, having fallen by around 2 percentage points since 2014 (Graph 1). This reflects a larger fall of around 3 percentage points in the cost of debt (as reflected by the yield on a seven-year BBB bond), while the cost of equity has declined by around 2 percentage points. The cost of equity has typically had a weight of around 60–70 per cent in the WACC over this period, meaning that the decline in the WACC has not been as large as the decline in interest rates might suggest. As reported in the *Australian Financial Review* in 2019, a number of firms stated they had considered reducing their hurdle rate in light of the decline in interest rates (Thomson and Boyd 2019). While some firms reduced their hurdle rate, many firms decided against doing so.

While we do not have a long time series for hurdle rate data in Australia, evidence from overseas suggests that hurdle rates have been sticky for a number of decades. For example, data for US firms show that the median hurdle rate stayed around 15 per cent from the mid-1980s until 2012 (Sharpe

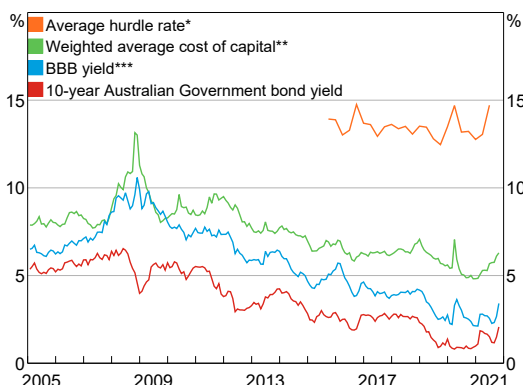
and Suarez 2021), over which time there was a significant decline in interest rates.

To the extent that companies evaluate projects by comparing the expected returns to their required hurdle rate, the overall level of returns on capital across the economy should be higher than the average level of hurdle rates (because the hurdle rate is the required expected return on a marginal project). Since businesses have been reluctant to reduce hurdle rates, possibly over a very long horizon, it follows that firms' *ex post* returns on capital should have stayed elevated. Indeed, an elevated level of returns on real assets has been noted for other countries, even as interest rates declined.^[4] Data from Australian-listed firms confirm this finding – the aggregate return on invested capital (ROIC) has been high and relatively constant over the past 20 years, notwithstanding a large decline in 2020 due to the COVID-19 pandemic (Graph 2).^[5]

The precise level of ROIC is difficult to pin down, as it is sensitive to the accounting assumptions used. Nonetheless, the stability in ROIC is robust to different estimation formulas, and is evident in the return on assets (ROA) (Graph 3).^[6] When resources companies are included, measures of returns are more volatile, reflecting the sensitivity of their returns to commodity prices.

Graph 1

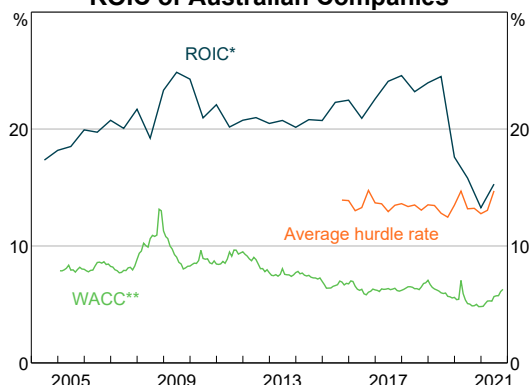
Hurdle Rates and the Cost of Capital



* Simple average across industries
 ** Weighted average cost of capital (WACC) is market-value weighted average of the cost of equity and the after-tax cost of debt for a BBB-rated non-financial corporation
 *** Yield on seven-year bonds for BBB-rated corporations
 Sources: ABS; Bloomberg; Morningstar; NAB; RBA

Graph 2

ROIC of Australian Companies



* Return on invested capital (ROIC) is annual after-tax operating income divided by the sum of fixed assets and net working capital minus cash holdings; excludes financials and resources companies
 ** Weighted by market value measure of gearing for private non-financial corporations
 Sources: ABS; Bloomberg; Morningstar; NAB; RBA

Why are hurdle rates above the WACC?

There are several potential reasons for why hurdle rates are above the WACC, including because:

- there is insufficient managerial capacity to proceed with all available projects
- managers or owners are not diversified, so they are exposed to considerable risks relating to the performance of their firm
- there may be value in waiting for more information before making an investment decision
- managers may feel that there is a tendency to overestimate expected cash flows.

These are discussed below.

Capital rationing due to insufficient managerial or operational capacity

Firms may use high hurdle rates to screen projects because of insufficient managerial or operational capacity. At any given time, management or staff may not have the capacity to proceed with all projects that have a rate of return exceeding the WACC. Similarly, management may consider that proceeding with a marginal project might preclude investing in a higher-return project in the future.

When capital is rationed in this way, the level of the hurdle rate may become a secondary consideration. Instead, investment decisions may depend primarily on the perceived level of returns available on

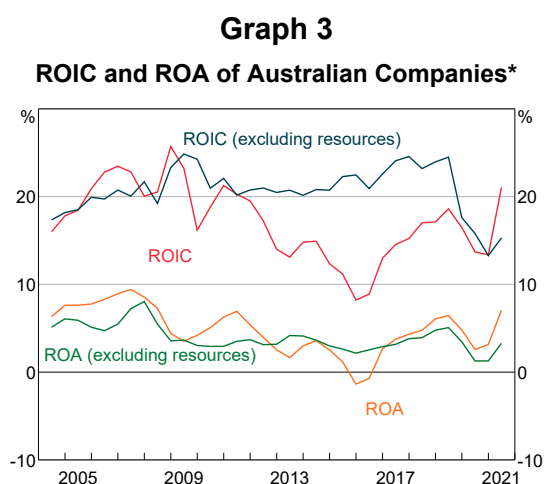
potential projects, in addition to the spare level of managerial or operational capacity. If firms perceive there are sufficient projects offering high returns consistent with current managerial capacity, then they will be content with a hurdle rate well above the WACC. As discussed below, it seems reasonable from the perspective of individual firms that perceived returns on investment opportunities may be unrelated to the level of interest rates. If true, then the hurdle rate will also be unrelated to the level of interest rates.

There is strong evidence that firms use high hurdle rates to ration capital due to insufficient managerial or operational capacity. Jagannathan *et al* (2016) found that firms reporting constraints on 'management or manpower' tend to use higher hurdle rates than other firms. Also, surveys have found that it is common for firms to forgo projects with returns exceeding the hurdle rate due to resource constraints, such as a shortage of labour or management's time and expertise (Graham and Harvey 2011). Some firms may also use high hurdle rates to ration capital between multiple business lines or regional operations, although the importance of this mechanism has not been tested in the literature.

Firm-specific risk and diversification problems

In the textbook case, the WACC provides investors with compensation for exposure to economy-wide risks, such as the effects of an economic downturn. Investors can diversify their investments, and so do not require compensation for taking on firm-specific risks. However, owners of companies might not be diversified in practice (particularly owners of unlisted companies), and so could require compensation for exposure to firm-specific risks.

Additionally, managers may also be highly exposed to firm-specific risks, including the reputational damage associated with loss-making investments (Scharfstein and Stein 1990). In this sense, a reluctance to use a lower hurdle rate may be a symptom of a 'principal-agent' problem between managers and shareholders. If hurdle rates were high to compensate managers for firm-specific risks, we may expect shareholders to push for lower hurdle rates at listed firms.^[7] The absence of this



* Return on assets (ROA) is net income divided by total assets; return on invested capital (ROIC) is annual after-tax operating income divided by the sum of fixed assets and net working capital minus cash holdings; excludes financial companies
Sources: Morningstar; RBA

pushback suggests that shareholders consider hurdle rates to be at an appropriate level. Alternatively, it may be that the dispersal of ownership makes it difficult for shareholders to influence a firm's hurdle rate, which may not be publicly known.

Firm-specific risk, irreversibility and the value in waiting for more information

There is a second reason why firm-specific risk might influence hurdle rates. When the cash flows arising from investments are uncertain and when investments are irreversible, there can be value in waiting for more information to avoid the risk of taking on a loss-making investment. In these circumstances, investment decisions should not be based on whether the expected rate of return exceeds the WACC. Instead, firms should invest only when the returns are high enough to offset the lost value of waiting – or some estimate of that value, given it is likely to be hard to measure. The required rate of return in this case should be above the WACC by some margin.

Evidence supports the notion that firm-specific risk is associated with higher hurdle rates. Jagannathan *et al* (2016) found that around two-thirds of executives surveyed reported that risks unique to the firm influenced the firm's hurdle rate. They also found a positive relationship between the level of firm-specific risk implicit in a firm's equity returns and its hurdle rate. However, this study did not establish whether firm-specific risk influences the hurdle rate because of insufficient diversification or because there is value in waiting for more information (or something else). There is evidence that firm-specific risk weighs on investment due to both diversification issues and because there is value in waiting for more information, suggesting that both mechanisms might influence the hurdle rate.^[8]

Optimism bias

Some firms may have concerns that forecasts of project cash flows are biased upwards, such that the *ex post* return on capital will be lower than the expected return from the project. If so, using a hurdle rate equal to the WACC would lead to

accepting projects that reduce firm value, since the returns would fall short of those required by investors. Although using a high hurdle rate may seem intuitively appealing, doing so creates a bias against longer-term projects. This is because the values of longer-dated cash flows will be discounted more heavily. Further, optimism bias cannot explain the growing divergence between hurdle rates and the WACC, unless the perceived level of optimism bias has increased over time.

The evidence is mixed as to whether an optimism bias explains why hurdle rates exceed the WACC. Overall, surveys suggest that many firms in the United States appear conscious of optimism bias, but that it is not a key determinant of the level of hurdle rates.^[9] Data on the *ex post* return on capital, though imprecise due to measurement issues, provide tentative evidence that companies have earned a high return on capital in aggregate. This may suggest that concerns around optimism bias are unwarranted (see Graph 2 above).

Why are hurdle rates sticky?

There are several potential reasons why hurdle rates could be sticky, including because:

- risk and uncertainty may be perceived to increase when interest rates decline
- managers may reason that there are sufficient potential projects to engage managerial resources without reducing the hurdle rate
- firms may look through declines in interest rates because projects are long term and the WACC might increase
- the cost of equity may not decline with interest rates, causing the cost of capital to be more stable than otherwise
- the appropriate level of hurdle rates is uncertain
- there may be insufficient competitive pressure to reduce hurdle rates.

Risk/uncertainty increases when interest rates decline

Some firms have stated that risk has increased as interest rates have declined, or that risk tends to be higher when interest rates are lower. This

perception implies that the hurdle rate should be less variable than the WACC. As noted above, a firm's exposure to economy-wide risk is already reflected in the WACC. Nonetheless, it may be that firm-specific risk is perceived to increase when interest rates decline, which could justify a larger wedge between the hurdle rate and the WACC (as outlined above). However, it is not clear that firm-specific risk has trended higher over time as interest rates have declined. For example, a daily measure of annual firm-specific volatility for listed Australian businesses has been close to its post-2004 average during 2021 (Graph 4).

The absence of a long-term relationship between interest rates and firm-specific risk is perhaps unsurprising. While interest rates can decline during downturns, interest rates have trended lower over the past decade partly due to declines in the neutral rate – not simply because monetary policy has been successively eased over time (McCririck and Rees 2017). Alternatively, it may be that firms' perceptions of risk increase following negative shocks. The global financial crisis may have led firms to place high weights on the probability of downside tail risk events (Jones 2021).

Capital needs to be rationed due to insufficient managerial or operational capacity, and achievable returns are unrelated to the level of interest rates

If the hurdle rate is a by-product of capital rationing, then the level of the hurdle rate depends on two

factors: the desired amount of capital expenditure given operational and managerial capacity; and the perceived level of returns available on potential projects. Within this framework, hurdle rates could stay constant because firms sense that achievable returns from potential projects are unrelated to – and have not declined with – long-term interest rates.

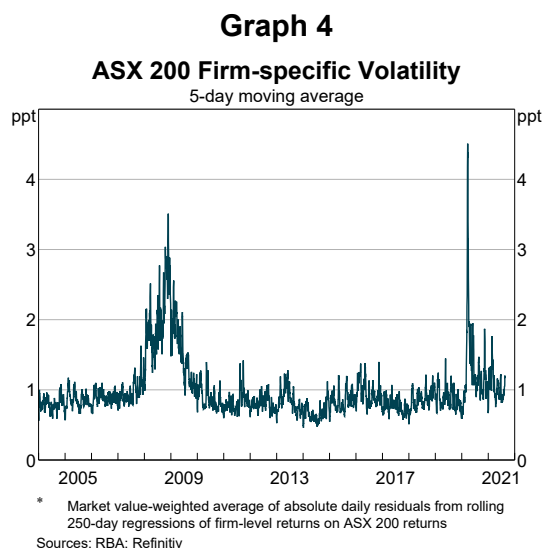
This line of reasoning is consistent with a refrain provided in liaison that approved projects tend to have returns well above the hurdle rate, so reducing the hurdle rate would have no effect on investment; US firms provided similar views (Sharpe and Suarez 2021). This reasoning is also supported by the level of *ex post* returns on capital being notably higher than average reported hurdle rates from the NAB Survey (Graph 2).

Sharpe and Suarez (2021) showed that firms with stronger expected growth reported that their investment plans would be less sensitive to changes in interest rates than firms with weaker expected growth. This could be because firms with stronger growth potential expect available returns to be above the hurdle rate, so the hurdle rate is less binding for these firms.

The WACC might increase, and projects are long term

Many firms have justified keeping their hurdle rate constant because their capital expenditure projects have a long time horizon. Some firms prefer to employ a 'through-the-cycle' approach to investment, recognising that rates may increase. This view appears to reflect a broad expectation that interest rates will revert to some long-term average, perhaps anticipating that declines in the neutral interest rate will be reversed. Even so, using a high hurdle rate will penalise more distant cash flows, creating a bias towards shorter-term projects.

Additionally, while some investment is very long term, a large portion of investment has a much shorter horizon. In liaison, many firms have reported complementing the hurdle rate with thresholds that favour short-term projects, such as payback periods of three to five years.



The cost of equity is not considered to move in line with interest rates

In the capital asset pricing model, the cost of equity depends on the risk-free interest rate plus a risk premium to compensate for a firm's exposure to economy-wide risks.^[10] Changes in interest rates would therefore influence the cost of equity and the WACC. However, firms may employ assumptions that result in a smoother profile of the estimated cost of equity, such as using a historical average for the risk-free rate (Graham and Harvey 2015). More generally, firms may assume a smooth cost of equity due to uncertainty around the parameters required to estimate the figure, such as the company's sensitivity to economy-wide risks. Some firms have also reported that, despite declines in risk-free rates, investors still expect high returns on equity.

The appropriate level of the hurdle rate is uncertain

Liaison information confirms that many firms set the hurdle rate using intuition or a rule of thumb, and there are genuine reasons why the appropriate hurdle rate may be unknowable. First, managers may have some intuition that there is value in waiting for more information, without precisely estimating the value of waiting. Second, managers may perceive the existence of optimism bias, without being able to exactly quantify its magnitude. Finally, if managers are basing their hurdle rate on the WACC, they may employ simplifying assumptions when calculating the WACC, and estimating what the WACC will be in the future can be difficult.

Ritov and Baron (1990) discussed two phenomena that discourage action in the presence of uncertainty: the perception of missing information encourages inaction, as people would prefer to be more informed before making a decision; and action can lead to greater regret than inaction. If the correct level of the hurdle rate is unknown then these psychological forces may discourage firms from reducing their hurdle rate.

There is no competitive impetus to reduce hurdle rates

Some companies have noted that their competitors have not been investing and there has not been much competitive pressure to reduce hurdle rates. If there was greater competition between firms to invest, or if competitors reduced hurdle rates, then there would be greater impetus for other firms to lower hurdle rates and increase investment.

Farhi and Gourio (2019) argued that rising market power is one of the key drivers of the increasing wedge between returns on private capital and the risk-free rate. If returns on private capital are related to the level of hurdle rates, then a rise in market power (decrease in competition) may be partly driving the stickiness of hurdle rates. Separately, if hurdle rates are high because there is value in waiting for more information, then an increase in competition may cause firms to lower their return thresholds. This is because the threat of a competitor investing in a similar project reduces the value of waiting for more information, thereby lowering the optimal hurdle rate.

Conclusion

Data from the NAB Survey suggest that hurdle rates have been broadly stable on average since 2015. Similarly, we find that *ex post* returns on capital have been steady for non-resources firms over the past decade. The stability of returns stands in contrast to the decline in interest rates, but it is consistent with the stability in hurdle rates.

Empirical studies suggest that hurdle rates may be set well above the WACC to ration capital in the face of insufficient operational or managerial capacity. There is some evidence that firm-specific risk influences the level of hurdle rates, although the exact mechanism is unclear. At the same time, there is a strong theoretical argument for firms to use a high hurdle rate to account for the value of waiting for more information. However, there is little direct evidence that this reason is important in practice.

There is less empirical evidence on why hurdle rates are sticky. Some firms appear to use hurdle rates to ration capital when there is insufficient managerial or operational capacity to take on all potential

projects. This means there may be no impetus to reduce these rates so long as there are enough potential projects to engage existing resources. Further, if the optimal hurdle rate is uncertain, keeping the hurdle rate steady could be appealing to avoid the risk of regret. Remarks from business managers also point to other reasons why firms have not reduced hurdle rates, such as an expectation that much of the decline in interest rates will

be temporary and that shareholders' required returns on equity have not declined. Further, while the WACC has fallen with lower interest rates, the fall has been smaller than the decline in long-term bond yields would suggest. This is because the largest determinant of the WACC is the cost of equity, which has declined only slightly in recent years. ✎

Footnotes

- [*] The authors are from Domestic Markets Department.
- [1] However, dwelling investment is highly sensitive to interest rates, somewhat mitigating this effect.
- [2] See Banerjee, Kearns and Lombardi (2015); Jagannathan *et al* (2016); Sharpe and Suarez (2021).
- [3] More broadly, in Australia non-mining business investment over the past decade has been at low levels compared with history, and mining investment has declined since its peak in 2012 (Debelle 2017). A low level of business investment since the global financial crisis has also been noted in other advanced economies (Banerjee *et al* 2015).
- [4] See Banerjee *et al* (2015); Jones (2021); Farhi and Gourio (2019).
- [5] Return on invested capital is annual after-tax operating income divided by the sum of fixed assets and net working capital minus cash holdings. For operating income, we use earnings before interest and tax.
- [6] Return on assets is annual net income divided by total assets.
- [7] Firms that reduced their hurdle rate closer to the WACC could, in principle, invest in more value-adding opportunities. This would lead to a higher company value, albeit at the expense of a lower percentage return on a larger capital stock.
- [8] First, Panousi and Papanikolaou (2012) showed that investment is more sensitive to idiosyncratic risk at firms with higher rates of ownership by managers. This points to a principal-agent problem caused by insufficiently diversified managers. Separately, Bulan, Mayer and Somerville (2009) reported suggestive evidence that optionality is important. They argued that heightened competition reduces the option value of waiting, since firms could be pre-empted by rivals.
- [9] Survey evidence has shown that around 40 per cent of firms have reported either rejecting projects with a positive net present value due to concerns around optimism bias or adjusting hurdle rates upwards to account for optimism bias (Graham and Harvey 2011; Jagannathan *et al* 2016).
- [10] The capital asset pricing model is commonly used by firms in the United States and Europe (Graham and Harvey 2001), and is commonly employed in Australia (Lane and Rosewall 2015).

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