UK Business Investment: Economists, Managers, Financiers

An Integrated Framework to Analyse the Past and Underpin Prospects

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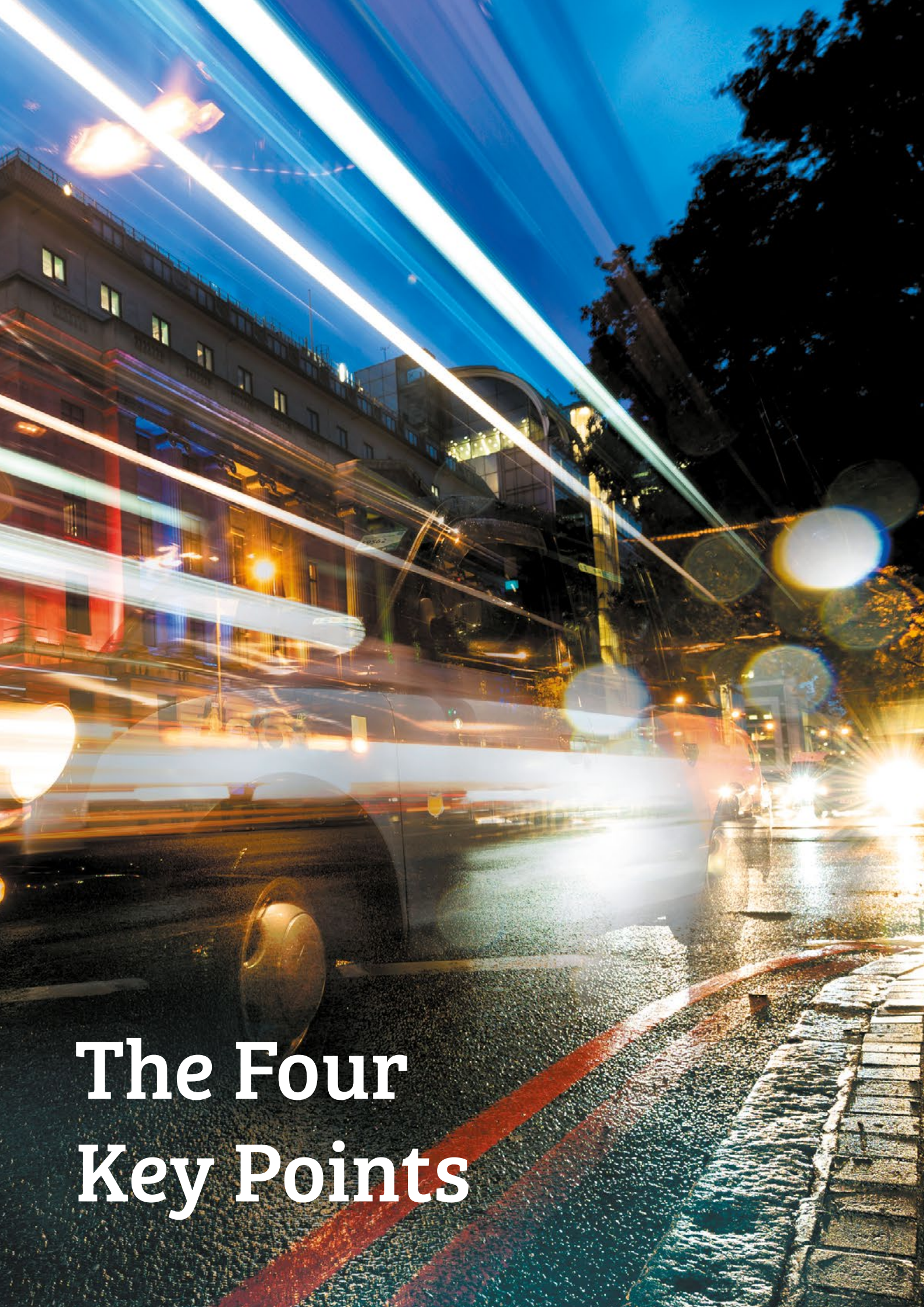


The Four Key Points

1

UK business investment has underperformed. Research on other countries suggests that while this is not a uniquely British problem, the UK does appear to face more headwinds. Slow growth in global trade, inequalities and increased uncertainties, and concentration of investment both by firms and by institutional investors are in focus for the UK.

2

Uncertainty is always detrimental to business investment, and here the decision to leave the EU is an important factor since domestic growth and access to global markets, along with available financing, were all affected. In the face of various kinds of uncertainty, research finds that UK managers and firms tip toward financial investments and/or hold higher cash buffers, both deleterious for business innovation and investment.

3

The concentration of UK business investment in the largest, foreign-owned firms, together with the concentration of institutional investors, means that an assessment of the relationships between size, ownership, and management, as well as market growth and global exposure is a basic starting point for understanding the dynamics of business investment in the UK.

4

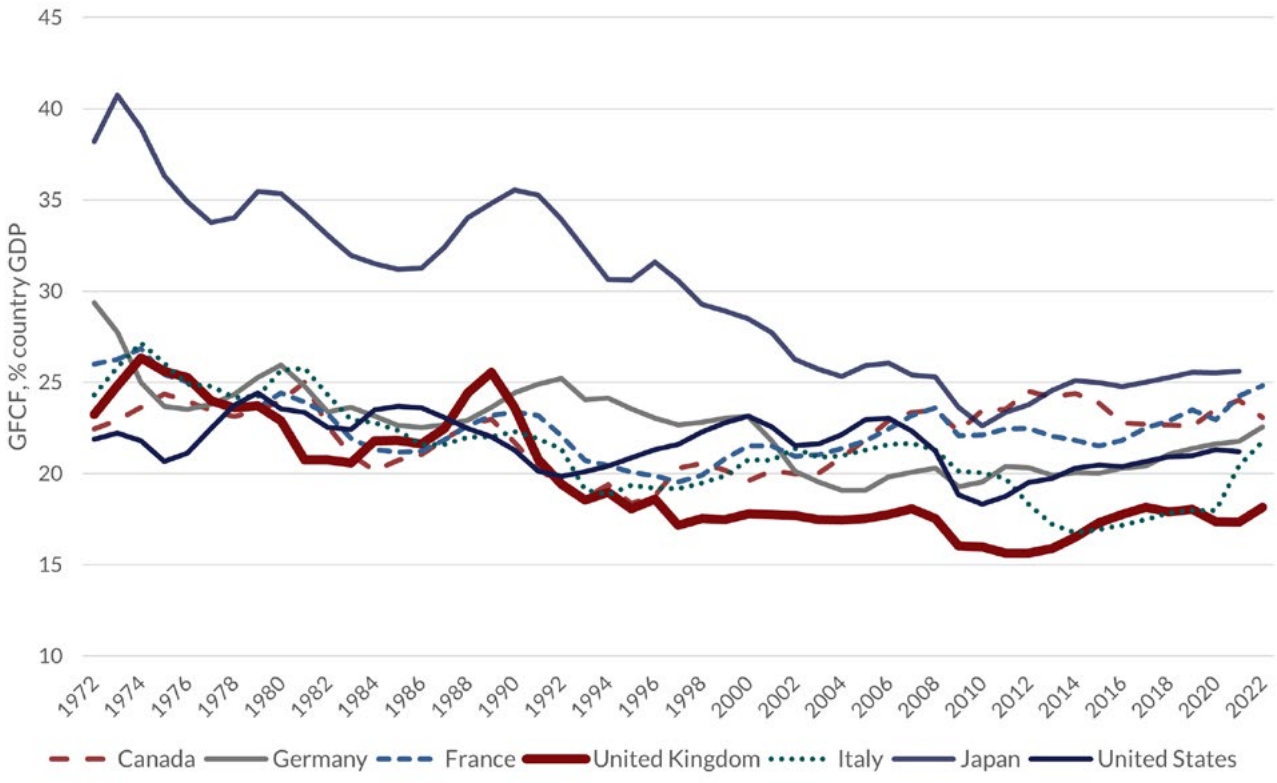
The three perspectives on business investment from an economist, a manager, and a financier are importantly intertwined. With the availability of firm-level data, investor-level data, and manager-level assessments, research can combine the three perspectives to get a view of what matters most for UK business investment.

1. Introduction

That UK business investment has underperformed is not a new observation. By various assessments UK business investment has been weak for decades, was particularly sluggish after the Global Financial Crisis, and has slowed further since Brexit and Covid (Alayande and Coyle 2023) (Figure 1a and 1b). Research on other countries also point to a capital deepening problem. Slow global demand growth, reduced competitive pressures, higher uncertainty of various types, underexploited agglomeration and network externalities, inequalities of place, rising financialisation and earnings management, and increased importance of institutional investors are variously cited as culprits holding back business investment. Are some of these headwinds more prevalent in the UK? This review will not fully answer this question, since UK-specific research has not investigated all these factors. The objective of this review is to outline an integrated framework for analysis of business investment, review literature germane to that framework for the UK and other countries, and point to research gaps that might be particularly fruitful for UK-focused research.

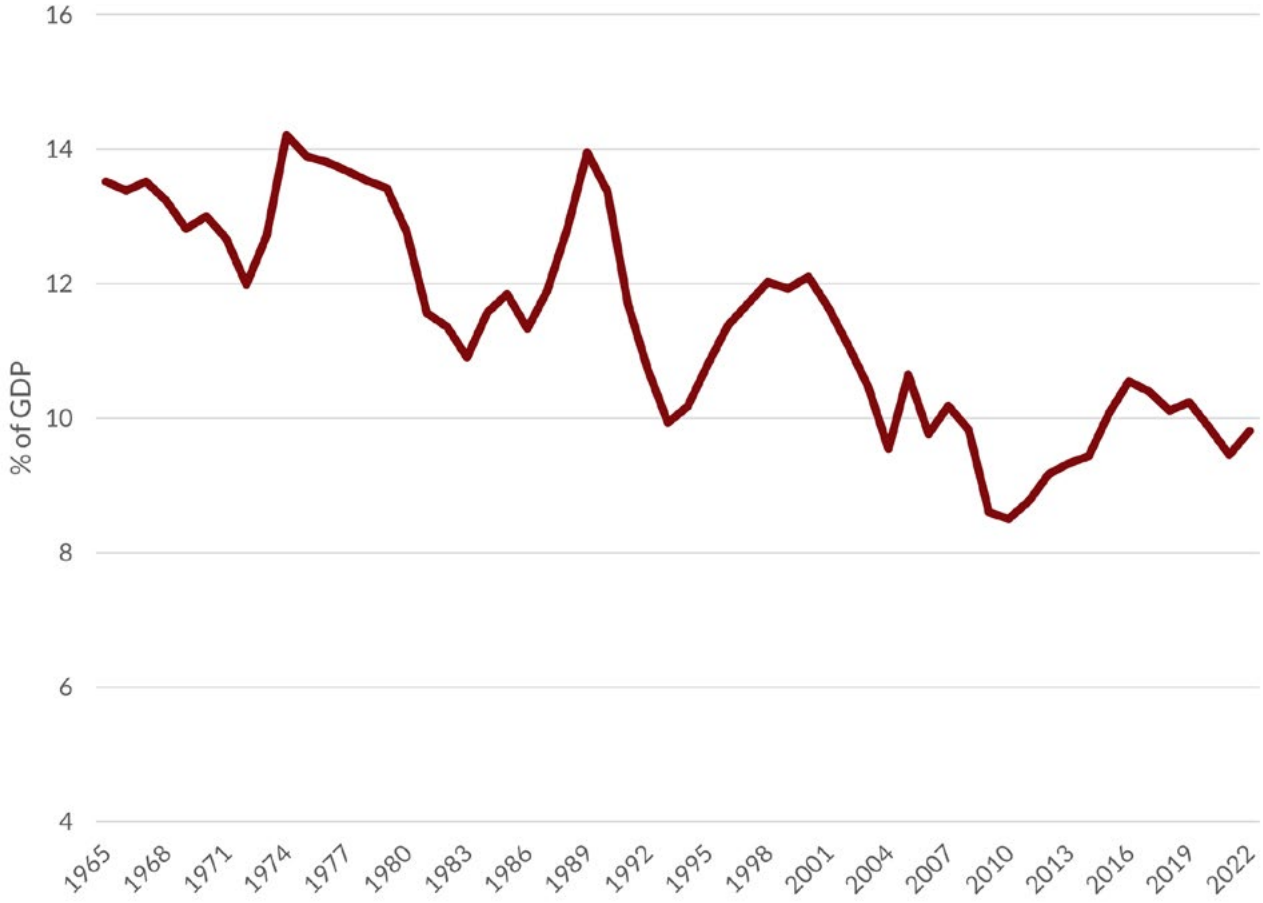
Business investment is the focus for the second year of The Productivity Institute's multi-year agenda, having considered productivity growth last year. Productivity growth is about the transformation of products, processes, and workplace practices, and in all three of these contexts, business investment plays a central role, whether that be investment in new ideas, in new locations for expansion, or in technology to change workplaces practices and production. In short, business investment and productivity growth increase the potential for the economy to deliver higher living standards. Business investment is not the only or the whole story – public investment and enhanced labour participation and skills are also needed. But the objective of this review is to take a fresh look at UK investment and point out directions for new research to both assess the past and offer perspectives on how to improve the UK business investment outlook and outcome.

Figure 1a G7 Gross Fixed Capital Formation as a share of GDP (current prices)



Source: Alayande and Coyle (2023) Investment in the UK: Longer Term Trends. Working Paper No. 040, The Productivity Institute.

Figure 1b UK Business Investment as a share of GDP (current prices)



Source: Alayande and Coyle (2023) Investment in the UK: Longer Term Trends. Working Paper No. 040, The Productivity Institute

This framework for assessing the literature integrates three research perspectives: that of the economist, the business manager, and the financial investor. Each of these perspectives has theoretical frameworks that consider factors relevant for business investment, which have been well researched in their own right, although more could be done with a UK focus. However, there is less analysis of how the perspectives integrate. When we think about it, an alignment of these three perspectives determine how much, what kind, and the geography of investment: 'Real' business investment, such as capital equipment, intangibles, or real estate; versus the competing use of funds, so-called 'financial' investment, such as cash holdings, M&A, or payouts through stock buybacks or dividends; and in what region and sector, at home or abroad. The literature considered here is not exclusively about the UK. Some focuses on the US or other countries, and some evaluates hypotheses using cross-country analysis. Synthesizing the three perspectives may offer new ideas for research on UK business investment that could support a fresh policy perspective.

What are some of the key elements of each of the three perspectives, the early notions of how they overlap?

The economist's perspective on investment is based on a simple equation: When the present discounted value of the future stream of earnings from an investment exceeds the cost of financing that investment, the investment will be undertaken. Complications immediately arise in any empirical assessment of investment drivers using this equation. How should the future stream of earnings be measured? What is the cost of capital? What is the horizon of the investment? Do the metrics differ for business investment versus financial investment, because the implications for potential output and productivity growth of business versus financial investment certainly do differ.

The manager's perspective adds on issues of self-interest, agency and information. In simple terms, managers ultimately make the investment decisions, and they have inside information about the operations of the firm and potential value of an investment to the firm's operations. But do they have the same objectives as the owners of the firm? Or of society more generally, one could ask. Would their assessment of the future stream of earnings, or cost of capital, or horizon for return on the investment match that of the ultimate owners or beneficiaries? Incentive compensation schemes and requirements for transparency of accounts are designed to align these objectives. However, even if those objectives are aligned and transparency complete, will this yield a more robust business investment outcome? If the owners of the firm (for example, stockholders) have high hurdle rates or short horizons, then business investment with a longer-term reward may suffer relative to a competing use of funds.

Moreover, managers' decisions interact with the financial investor, the third perspective. One view of the financier is simply as passive intermediary that provides a financial flow at the market price to the business investment decision made by incentive-aligned manager and owner. In reality, financiers are not so passive. Taking on a little bit more responsibility, financiers can help reduce the cost of capital via their role as information gatherers assessing the quality of the management and their investment decisions. More aggressively, as enforcers of reporting transparency and/or by building relationships, financiers could improve decision making within the firm and by owners, increasing the likelihood that profitable investments (in the economic sense) will be undertaken. Finally, with increased concentration of financial institutions, including the rising importance of institutional investors as shareholders, financiers can effectively own the firm, with business investment decisions driven by their objectives and attitudes towards cash flows, cost of capital, and investment horizon.

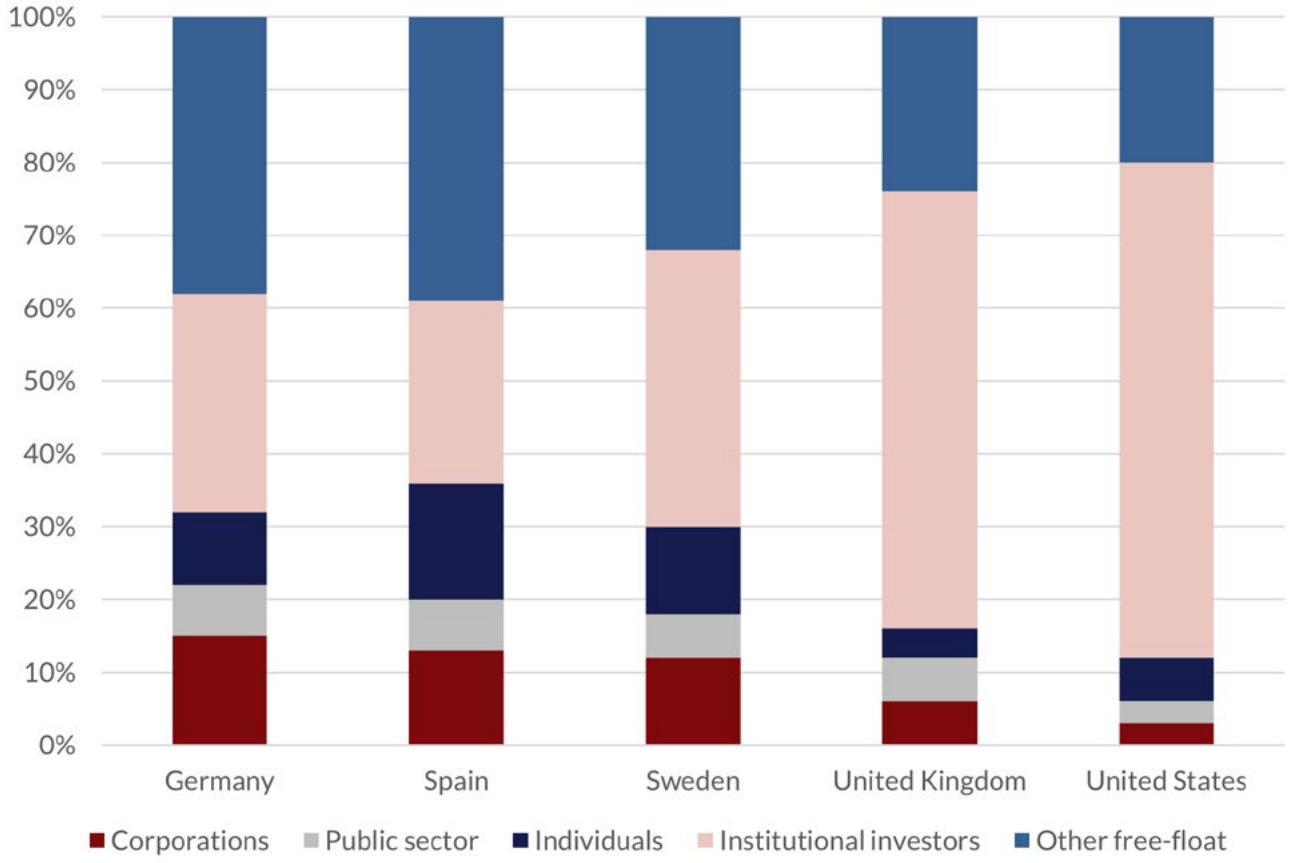
Before delving into research findings, it is useful to start with a couple of observations about the UK. Business investment in the UK is highly concentrated in a few firms – less than ½ of one percent of all UK firms account for more than half of all UK business investment. These firms are subsidiaries of multinationals, which have been stable leaders in the UK marketplace for 15 years (Hanappi, Millot and Turban, OECD, 2023). Following Brexit, however, foreign business investment in the UK appears to be increasingly related to local market conditions, including infrastructure, rather than for augmenting export potential. M&A underpinned by foreign financial institutions has focused on knowledge acquisition, which as an intangible is footloose so could be bought and then moved abroad (Driffield, Yuan, and Barragan 2023, a,b,c).

What about the other 50 per cent of investment? What are the characteristics of these firms? If we want to understand UK business investment, we need to explore to what extent the behaviour of the very small number of large international firms is similar or different from the many other UK domestic firms that account for the other half of UK investment.

Second, financiers in the UK also are concentrated. Institutional investors account for 60 per cent of market capitalization, split about half-and-half into foreign and domestic institutional investors (Figure 2a). The foreign share is particularly high in the UK. The top 3 institutional investors own about 23 per cent of each of the listed firms in the UK. (Medina, de la Cruz, and Tang, OECD, 2022 (Figure 2b)); so financial exposure is concentrated two ways. An institutional investor of particular note in the UK is the pension fund. In 2008 pension schemes invested about 25 per cent of their assets in UK company stock shares; but this share fell to 2 per cent by 2022.[1]

Over the same time period, the number of listed UK firms also fell. Understanding the incentives, constraints, and financial objectives of these various investors and how these interact with the managers' perspectives is important to understand business investment in the UK.

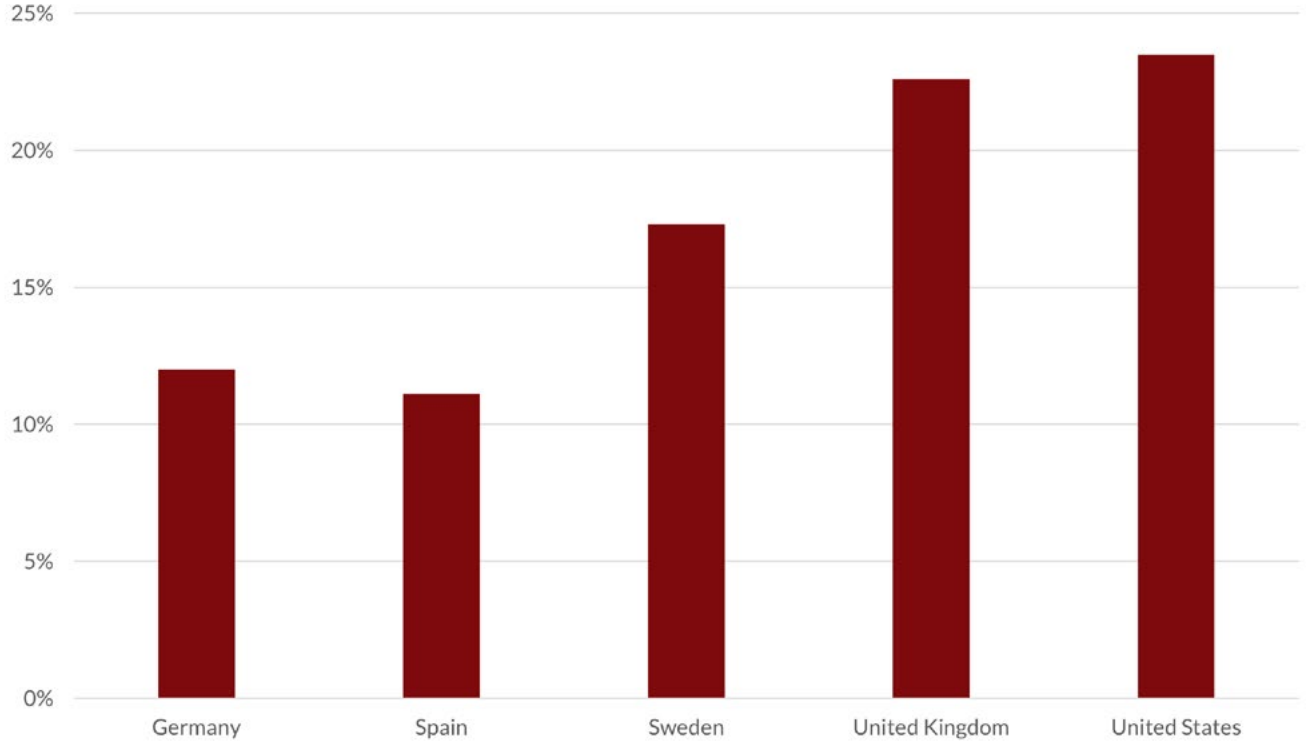
Figure 2a Ownership by investor category as a share of market capitalisation, end 2020



Source: Medina, de la Cruz, Tang. (2022). Corporate ownership and concentration (No. 27). OECD Publishing.

1 https://www.ons.gov.uk/economy/investmentspensionsandtrusts/datasets/ownershipofukshares

Figure 2b Ownership concentration by the top 3 institutional investors at the company level, end-2020



Source: Medina, de la Cruz, Tang. (2022). Corporate ownership and concentration (No. 27). OECD Publishing.

The following sections review research along the three themes of evaluating cash flows, estimating cost of capital, and aligning investment horizons, taking these and threading them through the three perspectives of an economist, a manager, and a financier.

2. Evaluating Future Cash Flow

Fundamental to the economist's equation on investment is evaluating the future cash flows associated with an investment, because these cash flows contribute to the earnings of the firm and therefore the returns to the firm's owners (through direct pass-through or through stock valuation), as well as to managers (through wages and incentive compensation plans). Cash flows comprise prices and quantities, and both are a function of product demand and the degree of competition in the marketplace. Business decisions to invest in new products (innovation), complementary investments (to augment existing capital and workers) or expand capacity (into new markets) therefore will be influenced by characteristics of both the buyer of the firm's products and its competitors. Of particular interest is how the rising importance of intangibles in business investment and winner-take-most network externalities might affect the dynamics of product demand and competition.

However, evaluating future cash flow is not just about assessing business investment prospects. Funds that could be allocated to business investment compete with alternative financial investments such as cash buffers, M&A, and payouts (including buy-backs, dividends, and bonuses). Evaluating the cash flow associated with an M&A investment is a dual to business investment because these two could be viewed as alternative ways to achieve the same outcome of higher cash flow, but through very different means, with potentially different implications for market characteristics going forward. For example, a firm could use its cash flows to pursue an investment innovation to upstage a competitor and expand its own market and earnings. Alternatively, the firm could use its resources to buy its competitor, which expands its cash flows and market share, but potentially at the expense of innovation and market competition. Financial investments such as buy-backs, dividends, and bonuses may be preferred to the manager and shareholder, depending on their time horizon and discount rate.

a) Market characteristics, competitive pressures, financial complementarities

A key driver of business investment is market demand for the product from home and abroad, in which the type of product and degree of competition can play important roles. But, the business investment decision is not taken in a demand vacuum; availability of complementary factors of production (skills, for example) also are relevant, as is availability of finance.

Consider a detailed study of the US as a research benchmark. The interplay of market characteristics and financial factors looms large in macro-data analysis as well as micro firm-level data analysis by Gutierrez and Philippon (2017 and Brookings, 2023). They find that traditional sources of financial frictions, such as credit availability, are not the story behind sluggish US investment. They find that the rise of intangibles, diminished competition, and short-term managerial horizon explain the slowdown in US business investment. Diminished competitive pressure comes from two sources: Reduced product competition but also concentrated financier ownership, via institutional investors. Given these pressures, firms are incentivised to spend their earnings on financial investments (such as buybacks and dividends which augment returns immediately) rather than augment the firm's capital stock (and, with some probability, earnings in the future) through business investment.

The factors of market characteristics and financial complementarities have been important for researchers examining productivity growth in the UK, with indirect attention to business investment. Riley, Rincon-Aznar and Samek (2018) evaluating sectoral data for 2011-2015, find that UK sectors most exposed to the global environment had worse productivity and investment outcomes as global demand softened. On the other hand, Fernald and Inklaar (2022) argue that lack of business investment was not the most notable driver of the UK overall productivity slowdown, rather poor performance of the mining sector was the main story. Coyle (2022) concluded that slowdown in productivity growth by frontier firms[1] was most relevant for slowing aggregate productivity growth; the role for business investment was not directly addressed. Driffield, Lavoratori, Temouri (2021) considering regional productivity (1980 to 2017) found that there was a decreasing statistical ability to explain variations in productivity amongst firms by ownership, location, sector, or size. The increasing unexplained residual, firm-level TFP[2] and the unexplained intra-regional variation productivity among firms could be due to characteristics of market regulation and competition as well as managerial and financier decision-making, which all were factors highlighted in the US study by Gutierrez and Philippon, cited above. A focus on business investment specifically using the datasets already assembled for this work on the productivity in UK could provide important new insights that aligns productivity and business investment research.

UK business investment has been addressed by Carella, Chen, and Shao (2023) using both macro and firm level data with an analytical strategy similar to Guitierrez and Philippon, cited above. In addition to the market concentration and financial constraints, they also explicitly address how the decision to withdraw from the favourable trading arrangement with the EU has affected UK business investment. They confirm that Brexit has had a negative effect on UK business investment. However, they also show that firms with higher retained earnings, presence of external long-term capital, and low levels of indebtedness invest more.

Therefore, whereas the decision to leave the EU is an important juncture, financial factors may have exacerbated the Brexit-related headwind for some firms. As compared to the US research findings, noted above, the financier appears to play a clearer role in the UK business investment equation. What of the manager? The direction of causality, from better managed firms to availability of finance to more business investment, and how those relationships are related to market characteristics, are studied in individual research hypotheses, discussed more below.

Additional studies address the consequences of the Brexit vote. Haskel and Martin (2023) estimated that UK business investment is 10 per cent lower on account of Brexit, although through what specific channel was not proposed. Two other authors do hypothesise and test specific channels. Gornicka (2018) determined that higher trade costs associated with Brexit reduced business investment, particularly by firms most exposed to the higher costs. Crowley, Exton, and Han (2019) calculated that 5 per cent more firms would have entered to export and 6 per cent would not have exited from exporting to the EU had Brexit not come into play. Since market size and market competition are related to the decision to undertake business investment, these higher costs and reduced entry and greater exit of firms from being exporters are specific ways that Brexit could have reduced business investment in the UK. Bringing in the manager's perspective, Bloom and van Reenen (2007) show that weak competition in the marketplace is correlated with poor management practices, thus linking the economist's view and the manager's view of how much business investment to do. Finally, resources devoted to managing Brexit-related costs could have been directed toward business investment instead, with positive consequences for firms and the UK economy.

1 Frontier firms are those with the highest productivity growth in the sample
2 TFP is Total Factor Productivity, the residual in an assessment of total output relative to total inputs used in production. It is a measure of transformation of products, process, and workplace practices and in this context is a measure of innovation.

b) Regions, agglomeration externalities, and product and firm characteristics

A second topic that weaves through the three research perspectives is how proximity among firms relates manager capability, financial flows, and business investment. Among the attractors for business investment by an individual firm, or manager, or financial investor is the potential for gains from agglomeration, including of the type of agglomeration based on linking production of tradable products through production networks. Rich UK firm-level data, product-level data, and region-level data has spawned a set of research papers on these relationships and linkages. The new availability of region-specific business investment data (Becker and Martin 2023) opens up a new research front to evaluate business investment hypotheses at the regional level.

Existing research using UK sub-national data finds that tradability, skills, and agglomeration benefits go hand-in-hand with business investment to generate higher cash flows. Tradability is not necessarily about exporting globally, but about cross-regional product reach. OECD (2023) analysing UK city dynamics, argues for the complementarity of skill matching, network infrastructures, and business investment. Superior skill matching is a type of agglomeration across workers and firms operating within a region. Network infrastructures (such as transport and digital) promote external tradability; both are positively associated with business investment outcomes. Ortega -Argiles and McCann (2021) provide an overview of linkages and transmission of innovative investment from one UK region to another, which emphasises both agglomeration gains as well as benefits coming from the characteristics of the products. One concern is that whereas there are agglomeration gains, which can be accentuated by tradability of products including through better trade linkages, there is also the potential for footloose activities to leave.

On the other hand, agglomeration seems to be quite sticky, for better or worse. Mealy and Coyle (2022), McCann and Yuan (2022), Daams, McCann, Veneri, and Barkham (2023) and Rice and Venables (2023) consider agglomeration legacy, productivity, investment, and financial flows. The first paper applies the metrics of economic complexity usually deployed to understand country development patterns to UK regions. They find that activities do agglomerate, but into striated per capita incomes and growth potentials, e.g 'those that hath' higher value-added activities apparently gain more from agglomeration. This is echoed in Rice and Venables (2023) and emphasised in Collinson, Driffield, Hoole, and Kitsos (2022). The second paper argues that 'cumulative causation' lies behind the striated outcomes; that is, business investment growth and agglomeration benefits are positively correlated and build over time. The third paper focuses on financial investment and real estate valuations, which are relevant for business investment directly, and indirectly as collateral. They find that 'flight to safety' capital flows into London exacerbated existing income-striated regional performance. In sum, research finds a positive relationship between business investment and market growth, but attention to legacy effects and financial intensification in the context of regional inequality is novel.

Bringing in characteristics of firms, their size and managers, as well as their density in the region and proximity to other firms appear to affect agglomeration gains. Kauma and Mion (2023) (comparing the UK and France) and Innovation and Growth Think Tank (Bradley, 2018) address agglomeration and firm characteristics. The former argues that firm density and not firm size is what matters for agglomeration gains, whereas the latter argues that it is large firms that matter most for business investment and agglomeration gains. Narrowing the focus to R&D investment, Aitken, Foliano, Mariona, Nguyen, Rincon-Aznar, Vanino (2021) finds agglomeration gains in cutting edge product and market transformative innovation to be particularly apparent, whereas transfer of existing knowledge to smaller firms may depend on proximity. Bringing in the

manager's perspective, Henley (2022) using ONS data shows that firm size is inversely correlated with adoption of high-level management practices. So large firms, transformative innovation, and high-level management practices appear to intensify agglomeration gains according to UK research findings. These findings come from individual investigations; integrating these factors wholistically would be valuable to do.

Further, given the size distribution of firms (large versus small) and related business investment, more work in this area is warranted. A new dataset on regional capital stocks (Becker and Martin, 2023) combined with ONS data on regional specialization[3] and managerial metrics[4] would allow deeper analysis of these topics.

In assessments that focus on agglomeration and business investment in individual regions, Hatch Regeneris (2019) looking at Yorkshire, North West Productivity Forum (2021), Midlands Engine (2021), Haseltine Institute for Public Policy, Practice, and Place (2021) looking at Liverpool, and Rincon-Aznar, Marioni, Venturini and Robinson (2021) looking at Scotland all see transport as a key jumpstart for agglomeration; including to attract foreign investment. However, whereas transport brings people, ideas, and products into a region, it potentially enables them to leave as well. Management capability and skills-matching looms large in these assessments. There is some consideration of firm linkages, size, density, or ownership. But, more could be done to understand these firm characteristics, including the role for the financial investor, for business investment outcomes in a region.

c) Competing use of funds: financialisation

If businesses don't undertake investment in tangible and intangible capital, or real estate, or engage in research and development, what do they do with their earnings? Most businesses engage in a variety of lines of business. How financial activities within the firm interact with the primary production activity has been of increasing interest to researchers. Internal to the firm, financial activities and primary product production could go hand-in-hand, with products being sold financed through a lending arm of the firm, for example.

But the decision to deploy earnings for financial investment also has an external side, in that earnings can be used for M&A, or returned to shareholders (including managers) via stock buybacks and dividends. If the return, or perceived return, to any of these financial investments exceeds that of business investment, for whatever reason associated with cost of capital or time horizon or managerial or institutional objectives, then deploying earnings for financial investments would take precedence over business investment. So-called 'financialisation' is when financial investment dominates business investment in macroeconomic outcomes and when non-production activities dominate in micro firm-level data.

'Financialisation' encompasses a variety of hypotheses that focus on the implications for countries, firms, and individuals of an increased role for financial flows and related objectives in the conduct of the firm, where the business focus on production activities apparently is secondary. Karwowski, Shabani, and Stockhammer (2019) use cross-country data for 17 OECD countries to compare investment and debt burdens across two decades (pre and post GFC) with the rise of financial exposure. While they do find that increased financial exposures are associated with financial deregulation and higher asset prices, they do not find that such financialisation measures explain

3 Data available at: https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/thespatialdistributionofindustriesingreatbritain/2015

4 Data available at: https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures

the secular slowdown in business investment. Davis (2018) emphasises the role for shareholder value in underpinning financialisation. Klinge, Fernandez, and Aalbers (2021) emphasises the spatial (e.g. multinational) aspect.

Analysis using firm-level data is more nuanced. Using UK firm-level data, Tori and Onaran (2018) find that higher sales from production and operating profits from those sales are associated with higher business investment by the firm. But the greater the share of financial assets on the balance sheet and the greater the share of activities generated by non-operating profits, the less business investment was undertaken. These results are matched by Alexiou and Nellis (2016), also on UK data. Nuanced further still and looking at US data, Cupertino, Consolandi, and Vercelli (2019) find that an increased role for financial activities in firm profits is negatively associated with business investment overall. But firms seem to increase 'green' ESG investments, perhaps to garner attention from financial investors.

This link between the manager's internal decisions on types of investment (business or financial) and the outside investors (stockholders, banks, institutional investors) has been explored in more depth in the management and corporate finance literature. Managers and financiers play a very important role in the business investment decision, which in most cases appears to yield less business investment than what the economist's model would predict would be optimal. Delving into these topics is next.

3. Defining the Equilibrium Cost of Capital and Return on Investment

Key to the decision to invest – whether business or financial investment -- are the cost of capital and the return on investment. The economist's view says these should be equal at the optimizing investment choice. However, in practice these differ by several different wedges. Examining the sources of these wedges brings together the economist, manager, and financier perspectives.

What is the cost of capital, conceptually? It has a base of the risk free rate, usually proxied by the sovereign bond rate. However, very few firms borrow at such advantageous rates![1] Some firms might not even borrow at all to finance an investment: internal use of funds may be the only, or the cheapest, option. So, determining the cost of capital starts with internal funds, then considers the external finance premium—that is the premium paid to access the market for finance. The market for finance itself has both equity and debt possibilities. Quite a few factors, including manager preferences, will create a wedge between the risk-free-rate and the ex-poste weighted-average cost of capital (WACC) for the firm. If the manager successfully uses internal funds along with the overall capital structure of debt and equity to earn a return higher than WACC, this return-on-invested capital (ROIC) supports higher value for the firm. Ex-ante, the manager can't know whether any particular project will translate into a ROIC higher than WACC for the firm. The manager has to make a judgement whether the project is expected to do so. This so-called 'hurdle rate' for undertaking an investment project is a key factor affecting business investment outcomes.

On the other side of the table from the manager, who is deciding whether return on investment exceeds the cost of capital, is the increasingly complex landscape of financial players, who also are doing these calculations, but from their own perspective. For a banker, the expected return on a loan has to incorporate credit risk two ways, via a spread over a risk-free-rate and via a probability of default. For an equity investor, the expected return on the stock is calculated relative to alpha (return unique to the firm) and beta (risk premium associated with the firm) according to the capital asset pricing model. The cost of obtaining the information necessary to make these judgements is correlated with firm and project size and age, among other things. As we shall see, behavioural characteristics of the financier affect how they might do their own calculations.

Not only do WACC and ROIC depend on the structure of finance (debt and equity), but taxes, regulations, and metrics such as ESG designation need to be factored in. Uncertainty around those factors may be relevant, and affect hurdle rate, depending on the horizon of the investment and the structure of finance.

Even when projects are explicitly linked to financing, since any funds borrowed from a bank or raised through bond or equity issuance is fungible, WACC and ROIC are firm-level variables, regardless of whether financing was originally structured to match a specific investment. Further, whereas these calculations 'build-up' WACC from the bottom, managers may apply their own hurdle rate 'from the top' that could differ from the firm's WACC. The manager's choice of hurdle rate could signal prudence or could ensure buffers to account for the risk that the ex-poste return on the project is lower than the ex-ante expected return. This hurdle rate adds a wedge

1 It is rare, but not unheard of that AAA corporates can issue bonds at a lower rate than does the sovereign.

over WACC, and apparently both hurdle rate and wedge are key ingredients to the manager and financier decisions when evaluating whether to undertake an investment, be that business or financial.

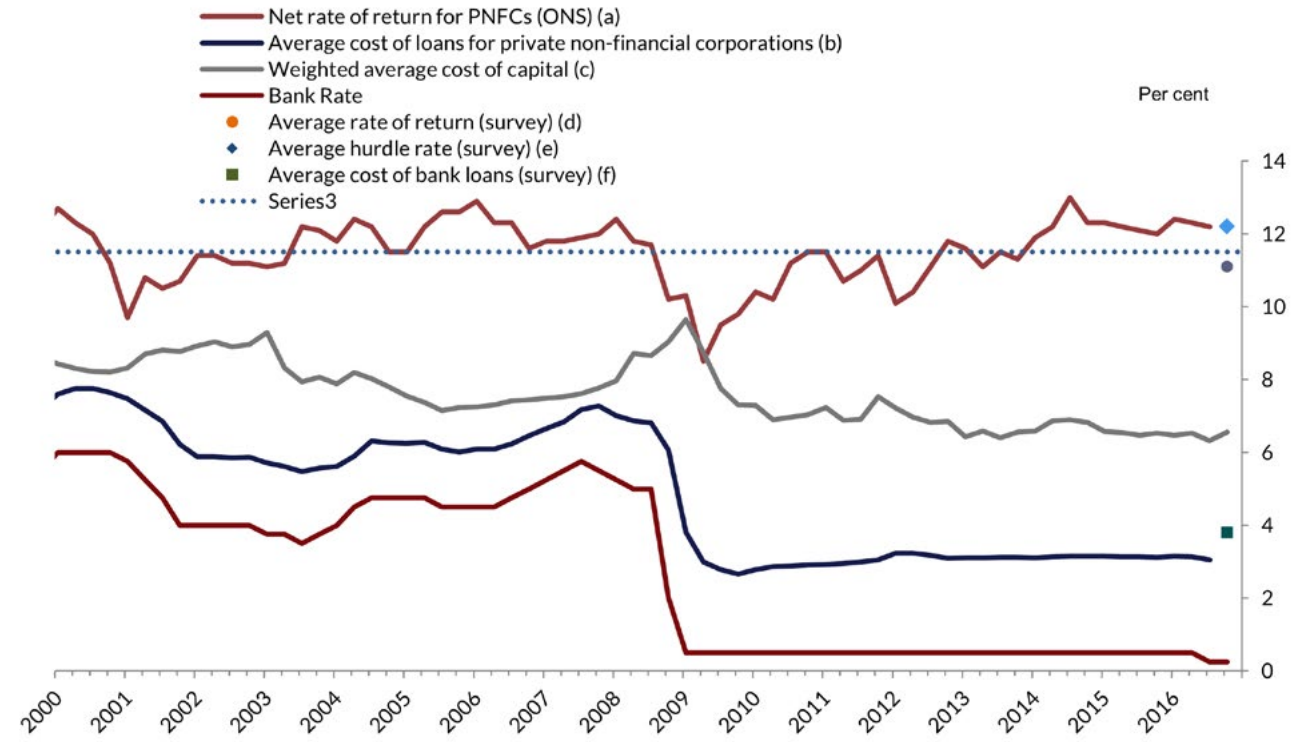
The ex-ante hurdle rate and exposte WACC and ROIC are endogenous to market structure (such as competition, agglomeration, taxes, regulations, and so on) as well as to a manager's strategic choice (such as incentive compensation plans, earnings grooming, and so on; these to be discussed more below). In empirical assessment of macro data, it has been a persistent puzzle that the cost of capital, often proxied with the risk-free-rate, has not seemed to matter much for investment outcomes. Having outlined the various alternative measures of the cost-of-capital and wedges among them, this should not be a surprise. As firm-level data have become available, how to best to calculate WACC, ROIC, and hurdle rate and what determines them has become a keen focus of research. Doing so has helped to understand the role these measures play for business and financial investment choices. More research on WACC, ROIC, and hurdle rate using UK firm-level data and surveys could provide important insights relevant for the past and current UK business investment situation.

a) Discount Rate, WACC, ROIC, and Hurdle Rate Wedges

There has been some research using UK data on WACC and hurdle rate, but it needs updating. A new assessment of ROIC, and more work is needed to ferret out the reason for the wedges, why they vary, and how these variables affect business investment outcomes. In a 2016 survey, the average hurdle rate across UK businesses was 12 per cent, substantially higher than the calculated WACC of around 6.5 per cent. (Melolinna, Miler, and Tatomir, 2018) Further, there was a notable distribution around these averages (Figure 3a). The wedge for small firms was larger, which is consistent with what Jagannathan, Matsa, Meier, and Tarhan (2016) find using US data. These authors conclude that limited managerial capacity can top-up the internal risk premium over WACC. Evaluating this finding using UK management survey information, which is available from ONS (footnote 5) would be valuable research project. See also ONS (2021).

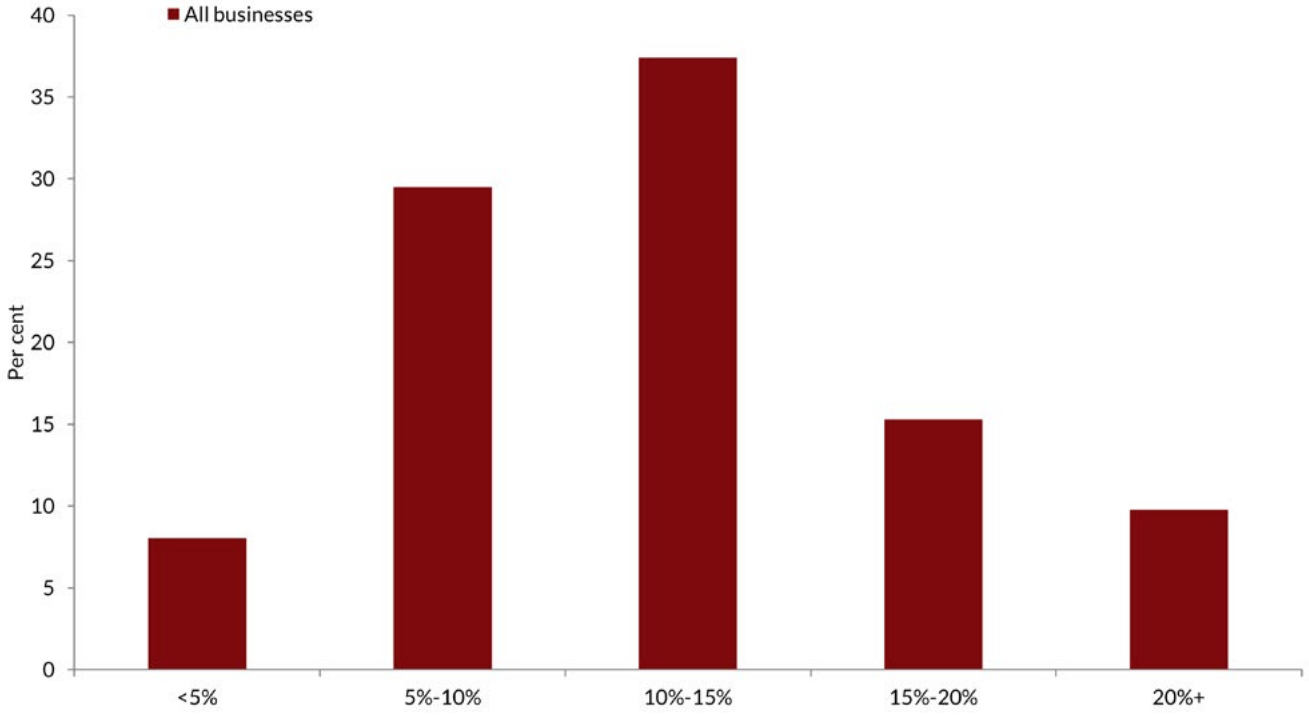
Another finding from 2016 is that the average UK hurdle rate was not as variable as the WACC (see Figure 3b). A sticky or rule of thumb approach to hurdle rates was confirmed in text analysis of survey responses. Melolinna, Miler, and Tatomir using these survey data as well as calculating in several ways firm-level WACCs confirm that business investment became relatively inelastic to WACC after the GFC (when policy and financing rates were low and stable). What did appear to matter for business investment was not the hurdle rate itself, but relatively infrequent changes in the hurdle rate. Looking again at estimates and behaviour of the hurdle rate and calculating WACC and ROIC for the size and sectoral distribution of firms could be a fruitful area for new research on UK business investment.

Figure 3a Rates of Return on Capital; cost of capital compared to survey measures



Source: Saleheenm Levina, Melolinna, Tatomir. (2017). The financial system and productive investment: new survey evidence, Quarterly Bulletin, 2017Q1, Bank of England.

Figure 3b Hurdle Rates: Evidence from the Finance and Investment Decisions Survey



Source: Melolinna, Miller, Tatomir (2018). Business investment, cost of capital and uncertainty in the United Kingdom—evidence from firm-level analysis. Bank of England.

In detailed and cutting-edge research on US companies in global markets, Gormsen and Huber (2023) confirm that dynamic wedges are key to how managers make business investment decisions. Using corporate earnings calls of US companies (2002 to 2021), they create an extensive database of firm-and-location specific hurdle rates. They find that firms' hurdle rates deviate substantially from their calculated WACC, that this wedge varies over time, and that this variable wedge is importantly related to business investment by the firm.

Thinking back to the economist's view, WACC and hurdle rate should be the same since investments returning a hurdle rate equal to the cost of capital (as measured by WACC) should be undertaken. What are some of the reasons for the wedge?

First, managers are told to aim above WACC. In McKinsey (2020) a report that is focused on CEO and Board behaviours to achieve long-term goals, "According to a fundamental principle of corporate finance, companies create long-term shareholder value only when their ROIC exceeds their cost of capital. Companies must therefore devote their resources to endeavors that produce returns in excess of the cost of capital over time. " According to Gormsen and Huber's research, managers would appear to choose a large wedge to convey investment acumen and prudence to financiers and shareholders.

What factors affect the wedge? Gormsen and Huber (like Gutierrez and Philippon) find that marketplace competition matters. Firms with market power in their product market are more likely to evidence a high ROIC and stable wedge and do not need to pursue capacity-enhancing business investment because earnings can be achieved through prices instead of volumes. This is consistent with what Fuss and Vermulen (2004) found in a different research inquiry—that business investment is less responsive to price variation than quantity variation.

In contrast, firms facing competitive pressures in the marketplace appear to undertake more business investment to keep their competitive edge, perhaps through R&D, so make decisions based on a lower hurdle rate and narrower wedge over WACC. It would appear that tightness of capacity utilization and degree of product market competition could matter for which among the various concepts -- lower WACC, higher hurdle rate, or wedges -- is the cost of capital concept favoured by managers.

There is research on these concepts that focuses on the financier's perspective (acting as an owner) rather than the manager's perspective. Thomsen (2021) shows surveys from the Danish Council on Expected Returns that WACC for private equity finance varied little post GFC despite interest rates falling to near zero because at the same time, the equity valuations were increasing. For private equity, hurdle rates were 8 per cent regardless of time horizon, which implies a time-varying wedge over the risk-free-rate as well as over other types of finance, such as high yield corporate bonds. Such a high hurdle rate for business investment may well be associated with using internal funds for financial investments, such as buybacks or M&A. Therefore, the missing business investment puzzle (in favour of financial investment) at low policy rates and high equity valuations is internally consistent with the high WACC and time-varying wedge. A 2021 Fortuna Advisor report specifically outlines how a company can calculate a ROIC for share buybacks, as 'a sign that management teams are taking active steps to be good stewards of investor capital, rather than just providing an artificial boost to EPS performance by reducing the share count'.

Other factors such as waiting for better projects or uncertainty about cash flows appear to be less important for the various measures of the cost of capital. That is, a hurdle rate higher than WACC could be a way to account for poorly performing projects, or the tail risk of bankruptcy. But,

Dobbs (2019) does a scenario analysis that incorporates into a higher hurdle rate a reasonable cost of potential bankruptcy. He finds that even this higher hurdle rate is not a viable story for the sluggish business investment trends of recent decades.

Foreign vs domestic ownership could matter for both WACC (through access to international debt and equity markets) and ROIC (through global management practices). There are plenty of potential research projects with a UK focus given the concentration of UK business investment by subsidiaries of multinationals as noted in the introduction. In one specific area – taxes – domestic and foreign ownership appears to matter quite a bit. Bilicka (2019) using confidential UK corporate tax returns shows that foreign flag multinationals in the UK report much lower taxable profits compared to domestic standalones. Some of the difference comes from higher leverage at the foreign owned multinational, since leverage provides an interest-tax shield. However, many UK multinationals, particularly those with a higher share of intangible assets and headquarters in tax havens, report no profits. We know these foreign multinationals are major investors in the UK. Is the tax effect on WACC the key to a lower cost-of-capital concept and does this translate into more business investment or not?

Widening the scope of analysis beyond the UK, Hanappi, Millot and Turban (2023 OECD) construct a multi-country firm-level dataset for 1999-2021 covering 25 mostly European firms and 27 industries to investigate the relationship between business investment and corporate taxation. They find that the elasticity of business investment to changes in effective taxes fell after the GFC. They conclude that some types of business investment are less sensitive to taxes, specifically buildings. Business investment undertaken by large firms, those part of MNC groups, and those investing particularly in intangibles have become less sensitive to taxation. Although they use a variety of fixed effects that would account for this reduced sensitivity, they note that certain factors are not accounted for explicitly in their econometric exercise and could be correlated with the finding of reduced tax sensitivity after the GFC, including higher economic uncertainty, reduced access to finance, increased financialisation, and increased product market concentration. While tax as a key factor in WACC versus hurdle rate should stay in focus, these other characteristics of the firm and the marketplace are equally, if not more, important and could be hypotheses addressed in new work on the UK.

b) Short-termism, the Cost of Capital, and Markets and Managers

With a high and sticky hurdle rate (albeit varying wedge) increasingly the focus for some researchers to explain the relationship between the cost of capital and business investment, other authors have zeroed-in on a related explanation – the shortening of the time horizon for evaluating the profitability of a business investment. Dallas (2012) has a wide-ranging discussion of reasons for short-termism, some of which has been the focus of econometric analysis.

The topic of short-termism is not new to UK researchers. Miles (1993) using UK stock market data, found that cash flows with longer-term maturities were discounted at rates much higher than short-term cash flows, even accounting for leverage, taxes, and term premium. To be consistent with efficient market pricing, these longer-term cash flows would require an unrealistic rise in the risk premium over time. Grinyer, Russell, and Collison (1998) took another stab, determining that short-termism in the UK was related to how managers believed their firm would be valued by the capital markets (which is consistent with the McKinsey quote above). Davies, Haldane, Nielsen, and Pezzini (2014) looked again. They found that managers at public firms prioritised dividends over business investment and discounted future cash flows at higher rates. Private firms invested more than did publicly listed firms, supporting the notion that 'market appearances' matter.

On balance, this research concludes that various calculations of the cost of capital appear to be higher than would be optimal for business investment (from the economist viewpoint), and that the interplay of market requirements and managerial behaviour could be the problem.

This link between short-termism inside the firm, business investment, and financial markets is developed further by several authors. Olesinksi, Opala, Rozkrut, Toroj (EY Poland, 2014) using data on European firms conclude that business investment is positively related to CEO tenure, as is firm performance. Cummings and Knott (2018) using US data find that R&D investment is undermined by hiring of outside managers, who understand the innovation projects less well; and who fragment R&D activities reducing intellectual spillovers; and who prioritise harvesting development outcomes for saleable products at the expense of research investment. Anderson, Bahaj, Chavaz, Foulis, and Pinter (2023) find that a longer relationship between a bank and a firm reduces the sensitivity of business investment to real estate valuations as collateral. Banking relationships between the firm's Board and the firm's bank also reduce sensitivity to collateral. In this research, longer-tenure managers and bank relationships appear to reduce the cost of capital.

Short-termism also is driven by market expectations, often spurred by a firm's own guidance and management incentive compensation plans, with macroeconomic consequences. Barton, Bailey, Zoffer (2016, FCLT global) analyzing a survey of more than 1000 of McKinsey C-suite respondents find that pressure for short-term results was increasing, emanating from inside the company (Board and Executive team), as well as outside the company (public companies felt more pressure than private ones did). Even though only 28 per cent of investors surveyed felt that 'consistently meeting quarterly earnings targets' was important for their view of the firm's value, 70 per cent of CEO respondents would cut R&D or intangibles in order to meet earnings targets. And, 80 per cent of managers surveyed in McKinsey (2020) cut R&D to meet earnings targets and 30 per cent would cut customer service or product quality. The disconnect between what the investors say they want and the behaviour of managers is a potential area of research. For example, do management compensation plans play a key role in the short-termism outcome of lower business investment? As discussed below in the context of earnings management, the answer appears to be yes.

Several business organizations have dug more deeply into management attitudes, pressures, and outcomes at the firm level and for the US macroeconomy. Orsagh, Allen, and Schacht (July 2020, CFA institute) did an update up their 2005 assessment of firms' corporate strategy and performance, and macroeconomic outcomes. In the 2020 survey, management incentive compensation packages based on share price were driving short-term earnings management even though this behaviour reduced long-term corporate performance. In empirical evaluation of the potential gains to a longer-term horizon for business investment the authors found that the firms in the higher quintiles of capex, R&D, and SG&A spending had higher earnings in future periods, hence the benefit to the firm and its shareholders of avoiding squeezing business investment. This same conclusion was reached by Koller, Manyika, and Ramaswamy (2017). Based on a constructed 'corporate horizon index', firms with a longer-term focus had both higher revenue and average earnings growth, returned more to shareholders, and added more employees. Companies characterised as having a longer-term focus, spent on average almost 50 percent more on R&D than other companies.

Using both detailed firm-level data as well as a streamlined general equilibrium model, Terry (2015, published 2023) pulls together these various strands but comes to a somewhat different conclusion. Consistent with the findings cited above, he finds that firms meet earnings targets by cutting R&D. Additionally, he notes that CEO pay gets cut if the target isn't met. He incorporates

these incentives for CEOs to meet their targets at the expense of R&D into an endogenous growth model. He finds that cutting R&D increases firm value by about 1 per cent (thus benefiting shareholders in the near term), but at the expense of slower macroeconomic growth and lower societal well-being of about 1 per cent, implying a trade-off between a firm's narrower and shorter-term objective of shareholder value versus the broader and longer-term macroeconomic growth and societal value through the channel of R&D. The nuance from his work relative to the others cited above is how much firm value is increased or not by cutting R&D. It appears that the time horizon for evaluating firm value matters, and therefore the incentive-based horizon of the manager is key.

Much of the business literature concludes that it pays from both a micro and macro perspective to be long-term when considering business investment decisions. What is holding firms back from operating long-term? One area of research focuses on the interplay between financial markets, including institutional investors, and managers, including their incentive compensation plans (ICP). The Kay Review of UK equity markets and long-term decision-making (2012) evaluated these issues, concluding "that short-termism is a problem in UK equity markets, and that the principal causes are the decline of trust and the misalignment of incentives throughout the equity investment chain… Increased fragmentation, driven by the diminishing share of large UK insurance companies and pension funds and by the globalisation of financial markets which has led to increased foreign shareholding. This fragmentation has reduced the incentives for engagement and the level of control enjoyed by each shareholder."

4. Aligning the Objectives of Managers and Financiers

The third theme to link the perspectives of an economist, manager, and financier is how to align the objectives, especially the time horizon, of these three actors. Taking the economist's view as the benchmark, the variables in the decision function to undertake an investment are cost of capital and number of years of cash flow associated with the project. Under the economist's view business investment is optimised because the pattern of cash flows are known, as is the cost of capital, and any projects can be financed at that cost. There are no information asymmetries, uncertainties, or other factors. Many caveats have already been discussed. However, turning to the interaction between the manager and financier, there are additional complexities because of information asymmetries between the 'insider' manager and the 'outsider' financier. See Jensen and Meckling (1976) for the seminal discussion of the basic topic.

On the one hand, managers could choose business investment projects as per the economist's view: A straight-forward discounted cash flow based on project cash flows with no wedge between WACC and hurdle rate. However, management literature is full of analysis of behaviours ranging from 'empire-building' and 'hubris' (undertaking too much investment, either projects or M&A) to managers having a so-called 'national culture' of long-termism. Already discussed is the wedges between WACC, ROIC, and hurdle, that varies on account of manager behaviours and perceptions. By the same token, financial institutions are not necessarily time-horizon neutral, since they have objectives and incentives as well. Therefore, the business investment outcome likely will be influenced by inside and outside structures that may or may not align the potentially different time horizons of manager and financier.

What are some of the tools to help align managers and financiers to a common understanding of valuation of business investment projects? On the manager side, incentive compensation packages (ICP) are designed to align their behaviours with the objectives of financiers and shareholders. However, ICPs can also lead to strategic decisions on both actual investment as well as presentation of financial accounts that flatter the manager at the expense of the business investment outcome. On the financier side, due diligence involves gathering information on the firm and the investment, which helps to improve transparency of a firm's balance sheet and operations. Such transparency can discipline managers' presentation of both project and firm earnings which helps to reduce information asymmetries between managers and financiers.

These manager-financier interactions toward information exchange should, in principle, yield a higher (and more stable) business investment outcome at the firm, closer to the economist's ideal. But, as will be discussed more below, matters get more complex the tighter is the relationship in decision-making between the financier and business manager. This becomes more apparent the more concentrated are financiers in the ownership of the firm, which is a characteristic of the UK environment.

Before getting to that complexity, consider what are the incentives and objectives of the financier who provides funds to the firm to undertake the real business, or any other type of investment? There is an increasingly complex landscape of financial players, but to simplify for the moment the framework for analyzing this topic. For a banker, the expected return on

a loan needs to incorporate credit risk two ways, via a spread over a risk-free-rate and via a probability of default. For an equity investor, the expected return on the equity is calculated relative to the alpha and beta (risk premium) familiar from the capital asset pricing model. Only if these returns are greater than a risk free financial investment would the financier undertake real business investment or a riskier financial investment. Therefore, the financier's objectives and decisions – for example the time horizon--may be important for the observed outcomes of financial structure on the balance sheet of the firm, which as noted, play several roles in the economist view of investment. Institutional investors have become much more concentrated in recent times, both as a shareholder of firms that might ordinarily compete in the marketplace, and as a large shareholder in an individual firm.

Financiers are not 'atomistic' intermediaries only interested in transparency to discern the true cash flows, discount rate, and project horizon. Financiers as bank lenders often have a horizon based on regulations. Financiers as individual shareholders have time horizons and risk preferences as varied as they are people. Financiers as institutional investors (II) create portfolios on behalf of shareholders, including 'styles' associated with risk and horizon. (See Çelik and Isaksson (2013) for a framework outlining the complexity of II incentives.)

Research evaluates how the incentives of the financier, ranging from bank lending to institutional investors might influence the business investment outcomes of the firms that they finance. At the same time, managers' incentive compensation plans increasingly influence earnings reporting, time horizon, and investment choices.

Because financiers are as heterogeneous as are mangers, it is not surprising that research is piecemeal with narrow hypotheses, and results mixed as to what affects business investment. Moreover, especially for the role for II in investment decisions, given the US dominance and active equity markets there, most research looks at the US. However, as noted earlier, UK institutional investors account for 60 per cent of market capitalization, which is exceeded only by the US and Iceland. The top 3 institutional investors own about 23 per cent of each of the listed firms in the UK, similar to that for the US. (Medina, de la Cruz, & Tang, 2022). These concentrations suggest that research using UK data on the relationship between business investment and these two types of concentration might be valuable, to include as well the observation already noted the concentration of business investment in a few large multinationals.

a) Narrowing the Information Asymmetry, the Role for Financial Due Diligence

As information gatherers and performing of due diligence on behalf of all investors and shareholders, financiers investigate overall firm performance, in particular, analyzing balance sheets and earnings statements. These activities help narrow the information asymmetry between insider managers and outsider financiers, which could reduce both WACC and the WACC-ROIC gap and support business investment. Roychowdhury, Shroff, and Verd (2019) provide an extensive overview of the topic of investors as information gatherers.

What are the ways in which financial due diligence and financial disclosure might enhance business investment? Financiers can establish relationships with firms and thereby have access to inside information, as discussed above on short-termism and bank relationships.

Intangibles is a key type of investment where inside information may be of particular relevance. Intangibles as a type of business investment is rising, is a key source of productivity growth, but also is prone to measurement challenges and therefore collateral valuation difficulties, all of

which is relevant for the information asymmetry. (See Corrado, Haskel, Jona-Lasinio, and Iommi, 2022.) In the UK, investment in some types of intangibles (software and databases) has been weak, but investment in other types (branding, marketing, organizational capital) has been strong (van Ark, de Vries, and Erumban, 2023). In the national accounts, not all types of intangibles are included, which could resolve some of the apparent deterioration of business investment as measured (Bailey et al, 2022).

Demmou and Franco (2021) have a comprehensive discussion and review of the financing challenges facing investment in intangibles. Considering the issue just for the UK, Adu-Ameyaw, Danso, Uddin and Acheampong (2022) investigate various hypotheses relating firm characteristics and intangible investment. In this research, investment in intangibles is positively associated with higher cash flow, especially for large, young, and private firms, but not for public firms. Because public firms have greater transparency of accounts and attention from analysts, this seems to moderate the valuation challenge of intangibles so that these firms need to depend less on internal cash flow for intangibles investment.

More generally, for the totality of the manager-financier relationship, encouraging or mandating earnings reporting is one approach to narrowing the information asymmetry. Researchers have looked at the relationship between earnings reporting and firm performance, including business investment. For the UK, Pozen, Nallareddy, and Rajgopal (2017) report on what happened when the UK required mandatory quarterly reporting in 2014 and then dropped that requirement in 2017. They conclude that the reporting requirement (or lack there-of) did not affect business investment. Following the requirement to report, firms gave more qualitative views of current performance and guidance on future objectives. More analysts covered these reports and accuracy of future prospects improved. When reporting was no longer mandatory, only 10 per cent of firms choose to stop reporting, mostly smaller firms, and analyst coverage of those firms fell.

Analyst coverage of a firm apparently reduces the external finance premium, but there may be 'free-rider' effects. Research by Badertscher, Shroff and White (2013) using US data find that public firms' reporting benefits private firms in that sector, even if they do not report, with increased business investment resulting from the lower uncertainty regarding sectoral prospects factoring into the assessment of firm-level risk. Boone and White (2015) exploit the discontinuity of institutional ownership at the boundary between the US Russell 1000 and 2000. Those at the top of the Russell 2000 versus the bottom of the Russell 1000 index have more institutional shareholding, analyst assessment, and greater management disclosure, which is associated with more liquidity and lower costs of trading. In principle, these reduce the external finance premium, and could (depending on the manager's hurdle rate) increase business investment; although the authors do not test this hypothesis.

Unfortunately, earnings reporting and analyst or institutional coverage can have a downside. Frequency of earnings reporting has been cited as shortening the time horizon of managers, which would tend to widen the wedge between WACC and hurdle rates, as already discussed. Hadani, Goranova, and Khan (2010) confirm that institutional investors promote earnings disclosure to reduce the information asymmetry, but activist investors incentivise earnings management. This implies that it is important to try to distinguish between reported earnings and managed earnings. One study that tries to get at this issue looked at the behaviour of reported earnings right at the target date. In principle this distribution of making or missing the earnings target should be about balanced above and below the target (controlling for general market conditions and so forth). In fact, more firms 'just made' earnings than 'just missed' earnings, suggesting active management of investment priorities to actively manage earnings. (Bushee, 1998; Terry, 2023).

Moreover, institutional investors have incentives and objectives too that affect business investment outcomes, and these may or may not align toward a longer time horizon or more business investment. For example, Bushee (1998) using US data on II ownership and firm-level R&D spending finds that II ownership share in the firm along with the 'style' of the II matter. Over all institutional investors, if the share of the firm held is high, the firm is less likely to delay R&D in order to make earnings goals – in this case the II discipline aligns time horizon of the manager to be longer. However, that outcome is reversed if the II has a high turnover and momentum 'style'. This notion that 'style' matters is emphasised by McKinsey (2020, CEO Boards) in its effort to promote a longer-term horizon for both firms and II.

According to Cella (2019), using US data the financial monitoring function doesn't necessarily increase investment, since some firms invest 'too much'. In this case of the 'empire-builder' (so-called when managers take on debt to finance more projects relative to peers and relative to the firm's past history) a larger II stake in the firm disciplines this behaviour more. Since the investment category in this study includes both business and financial investment, it is not clear what happens to just business investment.

The relationship between the II's ownership stake and its impact on firm choices is studied in Gutierrez and Philippon (2018). Using the discontinuity in institutional share ownership between the Russell 1000 and 2000, they show that II ownership is associated with higher payouts and lower business investment, and this outcome is more pronounced if the industry sector is highly concentrated in the Herfindal sense. The importance of product market concentration and financier concentration, as discussed before, comes through again.

II national ownership can matter too for investment. Ferreira, Massa, and Matos (2010) find that foreign II ownership is highly correlated with M&A activity in the same national market. In the context of its role as information gatherer, the foreign II and national target have a stronger relationship when the local market is less transparent. Choi, Fedenia, Skiba, and Sokolyk (2017) using a very detailed dataset on II in many countries determine that nationally and sectorally concentrated portfolios are positively related to risk-adjusted returns; the notion is that information gained through concentration outweighs any losses from lack of diversification in the portfolio. However, as noted in other research above, such concentrations may reduce business investment.

Given the concentration of both UK multinationals and institutional investors, more research on this topic might be warranted. Indeed, because of this potential for concentrated financiers to drive a private firm's decisions, Posner, Morton, and Weyl (2017) consider whether anticompetitive behaviour rules should be applied to IIs or more generally to financial institutions.

The issue of financier concentration is not just about institutional investors and market-based finance. Ryan, O'Toole, McCann (2014) use a multi-country sample of about 120,000 SMEs across 20 European countries for 2005-2008 to investigate market concentration in banking. They find that SMEs in a more concentrated banking system face more financial constraints which reduces investment. Considering SMEs by size, the smallest ones seem to gain access to finance through their banking relationship. But, for larger firms, the deleterious effects of banking concentration appears to dominate. The role of the banking system may be of particular interest in the UK, given the findings of Ekpu and Paloni (2016) that large banks no longer make their profits from lending, with only small banks apparently serving that credit function.

In the UK, one institutional investor and the evolution of its portfolio stands out: Pension funds. In 2008 pension schemes invested about 2/3 of their assets under management into equities and property, with about ¼ of their assets held in UK company stock shares. By 2022 about 1/3 was invested in equities and property and only 2 per cent in UK stock shares. The shift has been toward bonds, particularly UK gilts. Bunn, Mizen, and Smietanka (2018) investigate the relationship between business investment, pension deficits, and the 'style' of the Pension Regulator. Firms making their own decisions, and faced with pension deficits paid lower dividends, but kept up their business investment programs. Firms that made non-voluntary contributions to the Regulator reduced both dividends and business investment, the more so if the firms faced financial constraints. Further analysis of what role this specific institutional investor may play in affecting the time horizon of UK firms with regard to business investment would seem to be warranted.

b) Management incentive compensation plans, earnings management, and investment

An extensive theoretical and empirical literature since Hölmstrom (1979) studies managerial compensation contracts, especially incentive compensation plans (ICP). Research suggests that ICPs promote 'earnings management' (that is, either adjusting real investment or changing accounting so as to flatter the targets of the ICP) and that this behaviour is negatively related to business investment. As discussed above, financier due diligence can push back against earnings management, but the research finds that financier discipline only goes so far to alter manager behaviours. As the ultimate decision-maker this is not surprising: already noted is the importance of managers in choosing a hurdle rate that is higher than WACC. Additional research shows the role for ICP.

Earnings management is importantly related to managers' objectives, the valuation of projects, including time horizon. A variety of research focuses on US data. Edmans, Fang, and Lewellen (2017) find that if mangers have an ICP with near-term vesting of equity, then business investment in R&D falls. The resulting positive earnings revisions flatters the ICP, the manger gains, but at a cost to the firm through lower business investment. Similarly, Almeida, Fos, and Kronlund (2016) find a discontinuity in firm buyback strategy at the EPS target boundary, with firms more likely to increase buybacks to meet the earnings-per-share target. Increasing the use of resources for buybacks reduces business investment, even if the ratio is not one-to-one. Further, Cooper, Gulen, and Rau (2016) find that over-confident CEOs (the 'hubris' style of Celli) tend to have ICP that focus on long-term value of the firm. These would appear to be good stewards of superior firm performance, but in fact they tend to pursue more business investment and more M&A both financed by more debt, which overall yields poorer future stock market performance. All told, ICP matter for business investment, but the channels are nuanced and detailed.

Research on the UK by Adu-Ameyaw, Danso, and Hickson (2022) investigates the relationship between ICP type and investment type looking at a sample of UK FTSE 350 firms. The background hypothesis is that Executives with an ICP featuring a stock bonus should be incentivised to invest in intangible assets (research, intellectual property, brand, and so forth) which are seen as more risky or, as previously discussed, are seen as harder to evaluate or to be used as collateral. Executives with an ICP featuring a cash bonus should be incentivised to invest more in fixed capital, which is seen as less risky or as in other research, more easily used as collateral. Their results align with the hypotheses, suggesting the ICP type and investment type matter. In either case, Executives are incentivised to invest more when the company is growing, thus coming full circle to the macroeconomic and competitive environment.

As discussed in the previous section, financiers can act as managers if their ownership of a firm is significant enough. A look into the ICPs for financiers reveals that potential role in promoting a particular investment decision by the firm. In a 2020 ESMA survey, for two of the most common fund types, namely equity funds and fixed income funds, around 27 per cent of respondents indicated that the variable component of remuneration for identified staff was over 50 per cent. 40 per cent of respondents noted that ICPs featuring stock options contributed to financiers advocating investment decisions by their portfolio firms that contributed to short term investment outcomes. Therefore, ICPs may align both manager and II toward a common incentive, but that might not be one one associated with more business investment.

The Kay Review, discussed earlier in the context of short-termism, took on this topic as well, recommending to "tackle misaligned incentives in the remuneration practices of company executives and asset managers, the disclosure of investment costs, and in stock lending practices [and] encouraging asset managers to hold more concentrated portfolios judged on the basis of long-term absolute performance".

5. Uncertainty: Always Detrimental, Through Multiple Channels and Types

A central challenge to estimating cash flow, determining cost of capital, or deciding on investment horizon is uncertainty. Uncertainty negatively affects investment; and this is borne out by the research, whether focusing on economic fundamentals, manager choices, or investor perceptions. But there are nuances regarding what type of uncertainty seems to matter, what might be the transmission channel of the uncertainty, how a manager might deploy a company's earnings instead of for business investment, and how a financier might react in making a financing decision.

Firm-level data from the Euro area confirms that demand uncertainty negatively affects business investment. Fuss and Vermeulen (2004) find that uncertainties about quantity demanded has a more negative effect on business investment than do uncertainties about prices received. This is consistent with capacity utilization in production being more salient for the investment decision.

Looking at research on the UK and different types of uncertainty. Although Redl (2017) considers GDP, not business investment, he disaggregates uncertainty into financial, political, and macro-global components. He finds that the negative impact of macro-global uncertainties on GDP are worsened by financial uncertainties (as measured by credit spread or currency jumps). But controlling for both financial and global uncertainties, political-electoral uncertainty exacerbates negative GDP outcomes. Both agreeing and disagreeing, John Mills (2021) argues that exchange rate uncertainty shrinks the global market, holds back manufactured goods exports, and through that channel cash flows and business investment opportunities.

One challenge when evaluating uncertainty is there is no 'base case'. But policy variability in the UK appears to take a toll on business investment. Coyle reprising her March 2023 testimony to the House of Commons Treasury Committee, "... we have had at least 18 changes in capital allowances since 1984... In other words, some aspect of the allowances system has changed every other year. When businesses are being asked to make very long-term investments, this is clearly not good for planning." (Coyle, 2023).

Westwood, Sensier, and Pike (2021) consider institutional factors. Variability can come from policy that is too-centralised, that is uncoordinated with devolved decision-making process, and that may also be affected by local preferences for (or against) certain types of investment, particularly in network infrastructures. In the specific case of policy variability toward public investment in green technologies, Geels, Pereira and Pinkse (July 2021) find that the synergies between public and private investments in the UK (as compared to France and Germany) are smaller, in part because the public funding overall was smaller and the biggest recipients of funds were the riskier technologies (such as hydrogen and CCS), but also because the policies vary over time.

Several papers put uncertainty at the center of the investment decision, but then ask, what do managers do if higher uncertainty dis-incentivises business investment? These papers bridge the economist's view, the manager's view, and the financier's' view. In Smietanka, Bloom, and Mizen (2018) heightened economic uncertainty is associated with managers holding a larger cash buffer. This higher cash buffer negatively affects business investment, but cash payouts (financial investment) also were lower. In other words, uncertainty means the UK firm operates inside both the current and future production possibility frontier.

Econometric analysis of cross-country data shows several ways in which policy uncertainty affects business investment. Using country-firm panel data, Yung and Root (2019) find that controlling for national institutions and culture, higher policy uncertainty negatively affects business investment and firm value as managers groom earnings instead. Julio and Yook (2012) using cross-country data find that business investment was about 5 per cent lower during electoral years as firms 'wait to see' the outcomes. If firms postpone business investment, they may instead deploy earnings in financial investments, including buybacks and dividends.

Finally, inflation uncertainty is channeled through finance to affect a firm's investment decisions. Fischer (2013) using matched loan-to-firm data for small businesses in the Dominican Republic finds that increased inflation uncertainty reduces fixed investment, consistent with uncertainty raising potential bankruptcy costs. Similar to Smietanka, Bloom, and Mizen (2018) firms shift resources toward working capital instead. This analysis could be replicated using UK data, especially in light of Covid loans and the high and variable inflation of recent years.

6. Observations and Research Topics

The three perspectives on business investment from an economist, a manager, and a financier are importantly intertwined. With the availability of firm-level data, investor-level data, and manager-level assessments, research can combine the three perspectives to get a view of what matters most for UK business investment.

Research opportunities that emerge from the three perspectives considered together include:

Given the concentration of UK business investment in the largest, foreign owned firms and the concentration of institutional investors, an assessment of the relationships between size, ownership, market growth and global exposure is a basic starting point for understanding the dynamics of business investment in the UK. A rigorous contrast with smaller, domestically oriented firms that either do not borrow or borrow from banks could be an important counterpoint.

A clear view of the cost of capital and dynamic wedges between the bottom-up WACC and ROIC and top-down hurdle rate is key. How do these concepts vary by firm size, firm ownership, including financial ownership? Are these concepts affected by manager characteristics including ICP? Tax factors may be particularly relevant, given existing research findings.

Controlling for cost of capital and management factors, how is business investment (of various types) vs financial investment (of various types) related to competition and concentration in the firm's marketplace and in financial and ownership relationships, including by UK pensions and foreign financiers. Equity valuations and M&A activity may make this topic particularly pertinent for the UK.

Controlling for the cost of capital and management factors as well as the overall market environment and the characteristics of firms, how do various uncertainties, including economic and geopolitical, domestic policy and electoral influence the investment horizon and therefore business investment? Updating and extending previous research on the UK to more granular firm-level data would be valuable.

To tackle these questions, using the abundant and detailed firm-level data on balance sheets and income statements, the data on management characteristics, and the type of financing would allow a staged approach from a basic econometric specification a la economist perspective to one much richer that incorporates the manager and financier perspectives. Given the relativity in the size distribution of firms versus the incidence of business investment by firms in the UK, the key role for foreign ownership in UK firms, and the concentration of financiers, exploiting the variation in the data along these dimensions is important for an improved understanding of business investment behaviour.

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