



The Growth Trilogy

Paper 2 – Venture Capital as 21st Century Growth Catalyst

May 2025



The Purposeful Company was launched in 2015. A consortium of leading FTSE companies, investment houses, business schools, business consultancy firms and policy makers, it has been examining how the governance and capital markets environment in the UK could be enhanced to support the development of value generating companies, acting with purpose to the long-term benefit of all stakeholders.

The Steering Group, co-chaired by Clare Chapman and Will Hutton, oversees its work. Members of the Steering Group act in their personal capacity, and their views may not be taken to represent the views of their organisation. Equally the conclusions and recommendations that the Steering Group draw from its work, this report included, are ours and not every specific proposal or comment should be taken to represent the views of each of our interviewees or our task force members, although they do support our overarching principles and aims.

Steering Group

Clare Chapman, Non-Executive Director and Acas Chair (Advisory, Conciliation and Arbitration Service)

Alex Edmans, London Business School

Will Hutton, President of the Academy of Social Sciences and LSE

Colin Mayer, Institute of Government Oxford University

Tom Gosling, London School of Economics, Adviser to the Steering Group

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Contact thepurposefulcompany.org

The Growth Trilogy

Venture Capital as 21st century growth catalyst is the second paper in The Purposeful Company's Growth Trilogy. In the less than four months since we published our first paper, the economic outlook has broached new levels of uncertainty. Nobody can foretell how President Trump's volatile trade policy will end, what other developments may provoke turmoil in the financial markets and how world trade, output and inflation will be impacted. Amid the heightened uncertainty and depressive real economic effects of a new era of high tariffs, growth expectations around the world are being downgraded.

This is likely to intensify the unwelcome cyclical downturn that venture capital has already been experiencing, with investment in 2024 retrenching to 2019 levels. The large backlog of unexited investments now looks set to increase, damaging subsequent rounds of investment. Given the importance of venture capital to innovation and growth, this is a matter of profound concern.

For at the heart of the Growth Trilogy is a very simple proposition. There is no growth without a critical mass of innovative, high growth companies operating at scale mobilised by purpose, and it is therefore a policy priority to ensure that the ecosystem of support is as healthy and fit-for-purpose as possible. For example at the core of the US's innovation and investment ecosystem, admired for generating high growth companies, sits venture capital. All the so-called 'Magnificent Seven' tech companies were the beneficiaries of venture capital investment and engagement.

Venture capital may represent a small fraction of new investment even in the US, but its importance can hardly be overstated. It is therefore gratifying that Britain's venture capital industry is the largest in Europe and third largest in the world. Interacting with Britain's other strengths, including a world-class research and science base, thriving sectors like the life sciences, creative industries and financial services, and an open pro-business environment, there is much to be capitalised upon.

In this respect the salience of this paper in the light

of Trump's challenges has increased. Our aim is to analyse the role of venture capital as the indispensable catalyst sponsoring high growth startups and scaleups and the institutions and processes that buttress it in the wider ecosystem. The range of issues we address – from the need to expand the pool of British risk capital in particular for scaleups, boosting corporate venturing, reconceiving public procurement to further strengthening the British Business Bank – have become more important in the face of these headwinds. Equally if the dismal long-term trends in productivity growth are to be reversed, we need venture capital to extend its reach into the realm of so-called deep tech – complex, expensive and capital intensive technologies – where its influence has so far been limited, but where some of potential transformative leaps in technology and thus productivity are likely to occur.

The British venture capital industry is developing quickly and there is some confidence that as it matures it is likely to move up the learning curve to match the Americans. However the open questions are how much more can be done to meet the challenges it confronts, allow British savers and investors the opportunity to share in the enormous potential value that may be generated and ensure that venture capital's catalytic impact is spread across every British region. Venture capital does not operate in a silo. The more collaboration between British regions, and the more crossovers with other neighbouring EU countries in what some call the New Palo Alto, the better.

This report will be followed by a third in the summer to round off the Trilogy, where we plan to complete setting out the range of policies and institutions that should populate Britain's venture ecosystem to promote purpose-driven, innovative startups and scaleups. Despite the current uncertainties, Britain is well-placed to emerge from the current economic difficulties better-placed than most – but only if it now decisively builds on the assets in its hands.

Clare Chapman and Will Hutton
Co-chairs The Purposeful Company

Executive Summary

Introduction

- The fastest-growing, most dynamic economies move quickly both in their embrace of the new and the pace at which they discard the obsolete. However there is evidence that discovering and developing the transformative technologies that drive sustained productivity growth has become harder.
 - Historical experience shows that technological and financial innovation are mutually dependent. Emerging technologies, with their changing needs and characteristics, require new arrangements for screening and monitoring entrepreneurs to improve the allocation of capital.
 - The development of venture capital (VC) – typically structured as a limited partnership that raises and deploys risk capital over a set period to invest in the equity of privately held, high-growth, and purpose-driven companies – is the latest illustration of the indispensable role of financial innovation in driving technological change.
 - The VC model has ignited the growth of some of the most successful and influential businesses in today's economies, where intangibles play an increasingly important role. By one measure, VC funds only 0.15% of new businesses in the US each year, yet accounts for the backing of nearly half of the companies that list on public markets.
- than those generated by the R&D investment of established companies. This is due not only to the higher-quality, more novel innovations produced by these businesses, which are often harder to protect with intellectual property rights, but also to the greater mobility of startup founders. Wider evidence links increased VC funding to improved aggregate outcomes, such as increased employment, income and total factor productivity.
- VC offers an effective solution to the challenges of financing intangible-intensive startups. Debt finance is inappropriate for new ventures that do not generate sufficient or predictable cash flows and whose assets are difficult to use as collateral, reflecting the underlying difficulties of valuing intangibles.
 - In response, VC has developed specific contractual and governance features: staged financing that allows investors to gather more information before committing additional funding; active engagement and oversight; the allocation of control and cash flow rights between investors and entrepreneurs is contingent on performance; and an emphasis on exit.
 - VC provides an array of value-added services: strategic and operational guidance; professionalisation of startup teams; reduction in time to product market; active matchmaking between portfolio companies along with connections to consumers and other investors; higher tolerance of failure; and post-IPO support that extends companies' focus on innovation and long-term growth.
 - Venture debt has emerged alongside VC to support startups, now used by over a third of startups in the US. By contrast, the UK venture debt market is in its infancy.

Chapter 2: Venture capital: its strengths as a source of purposeful capital

- VC firms not only create new growth companies but also generate significant positive externalities for the economy and society. Research finds that spillovers from VC-backed startups are seven times larger

Chapter 3: Venture capital: weaknesses as a source of purposeful capital

- VC investment has been disproportionately allocated towards a narrow range of asset-light, scalable technologies, including software and business services. Essential sectors in science, engineering and technology –collectively known as ‘deep tech’– have been relatively neglected. In the UK 83% of deals completed and 76% of funding raised has been directed towards digital tech businesses.
- Long development times, non-scalability and the reality of both technical and market risk all inhibit deep tech investment.
- A preoccupation with companies that have the potential to succeed at vast scale overshadows the 72% of so-called ‘bootstrapped’ companies that also qualify as high-growth. Revenue-led, they have grown largely through internally generated funds without recourse to outside equity. While they may not scale the heights of VC-backed companies, they are an important part of the growth story with distinct policy needs.
- Venture capital (VC) is highly cyclical, often experiencing periods of significant expansion followed by bracing retrenchment. During downturns, both the volume and quality of VC-backed innovation tend to decline relative to the broader economy, which can result in the neglect of promising companies. As the UK VC industry navigates the latest turn of this cycle – with investment in 2024 falling to its lowest level since 2019 – there is a significant backlog of equity-backed firms awaiting an exit – around 4,100 firms valued at more than £200bn. Even as the industry seeks to turn a corner, this backlog hampers the ability to recycle capital into new dealmaking and the next wave of innovation.
- Uncertainty, including recent global trade tensions, complicates predictions on when a sustained recovery will take root.
- The VC industry exhibits extremely high levels of concentration. The preferences of a few firms and geographic regions that hold a disproportionate amount of capital can skew upstream financing decisions and the types of innovation that are subsequently financed. The educational and socioeconomic backgrounds of these investors have similar impacts on the investment opportunity set.
- The focus on growth and risk-taking, combined with limited transparency, can create the pressure, opportunity, and rationalising culture for misconduct, which militates against purposeful business strategies.

Chapter 4: UK challenges in risk capital: a funding gap?

- Britain boasts the third-largest VC market globally and the largest in Europe by a significant margin. It is home to over 790 VC-backed companies with annual revenues exceeding \$25mn, including a sizeable number of unicorns and future unicorns.
- At the same time, the UK faces challenges in certain parts of the market, such as the transition from seed funding to Series A (£2–£10m) and the critical scaleup stage. In international terms, it performs relatively poorly at enabling VC-backed companies to raise large amounts of capital in later funding rounds and converting these companies into unicorns.
- The UK has leveraged its strengths in financial services to become a fintech global leader; however, investment gaps remain in deep tech, life sciences and R&D intensive sectors.
- Estimates of the equity gap – the annual shortfall in the supply of equity finance relative to potential demand– vary from £5bn to nearly £25bn, depending on the assumptions and choice of benchmarks.
- Foreign investors, particularly US funds and their beneficiaries, tend to dominate larger funding rounds. While domestic investors make up 91% of participants in funding rounds under £1 million, that share falls to 15% for funding rounds over £250mn.
- Foreign VC investors contribute access to invaluable networks, expertise and specialist information that supports firm growth. However there are concerns that the loss of strategic control to overseas investors is one of the reasons why firms relocate abroad, particularly to the US.
- Alternative sources of late-stage or scaleup finance have emerged in recent years, particularly from investors who traditionally focused on public companies. This funding, often domestic in origin, has played a significant role in helping domestic companies like Pragmatic Semiconductor expand their operations and cement a British identity.
- The UK is characterised by stark regional inequalities in access to equity finance. The equity gap relative to investment is largest in the East Midlands, Yorkshire and the Humber, and the Northern Ireland (though the absolute equity gap is still largest in London and the South East). The spatial distribution of entrepreneurship and innovation across the country, as measured by indicators like research council spinouts and the high-growth business population– is wider than the concentrated footprint of VC markets, and public agencies have had limited success in correcting these imbalances.

Chapter 5: Revisiting the venture capital model

- New funding and organisational models have emerged to support a wider range of innovation activities, including evergreen funds and venture studios. These models aim to better align financing with the complex needs and time-horizons of investments by increasing flexibility in fund length and changing the ways in which businesses are incubated and managed. While they remain relatively uncommon and present their own challenges, these obstacles are not insurmountable.
- Corporate venturing – the practice of directly investing corporate funds into external startups– offers a compelling solution. In 2024, it accounted for 56.1% of total US VC deal value and 22.8% of deal count. The Magnificent Seven alone invested nearly three times more in startups than all VC investment in the UK during the same period.
- Adoption of corporate venturing varies across countries, particularly when it comes to domestic companies supporting their local innovation systems. In the UK, the share of corporate-backed rounds coming from only domestic corporates (13%) is lower than other countries such as the US (43%), France (22%) and Germany (17%).
- To date, corporate venturing has not lived up to its promise, mainly due to the conservative way in which units are designed and monitored. Changes are needed in areas such as the internal organisation of CVC units, relationships with parent companies, budget commitments, investment process and approvals, deal targets, and the compensation and composition of CVC teams.

Chapter 6: Government's role in addressing market failures and supporting purposeful ventures

- Well-designed policies can help ease financial constraints for high-growth businesses and support broader innovation, but the effects are context-dependent. The role of government in VC has been no less important in the US, despite the common belief that its success stems overwhelmingly from free-market origins.
- Demand-side policies like public procurement are an important tool to scale high-growth businesses, especially in situations where market needs are poorly defined, and there is risk aversion among potential buyers. However, more needs to be done fully to leverage procurement, including better signalling, governance, and delivery, supported by stronger central and departmental ownership. Lessons can be drawn from the successes of the US Small Business Innovation Research (SBIR), often called 'America's Seed Fund', but also its failures, notably the importance of grants directed at proof-of-concept or prototyping work whose results can be shown to potential investors.
- There is a case for government funding to come with profit-sharing conditionalities, such as equity warrants.

- Smart public intervention is often through intermediary institutions that help match investors and investees, reduce information asymmetries and share resources like technology and expertise. Accelerators, incubators, venture competitions, crowdfunding platforms, shared technology transfer offices, Catapult Centres, IP brokers and regulatory sandpits all fall under this category. Many need to step up their game.
- There is scope to upgrade regional innovation ecosystems within the 'middle tier' of capabilities – areas with the capacity to absorb public investments in VC and R&D but without the higher costs of production associated with higher wages, rents, and congestion found in 'superstar' regions. Greater cross-regional collaboration could further enhance these ecosystems and should be encouraged, alongside locally delivered support.
- Another important area of focus is strengthening international collaboration – especially with the EU – by supporting promising networks of startup ecosystems and research hubs. For instance, more could be done to strengthen connections between London, Amsterdam and Paris and neighbouring cities –an emerging cluster often referred to as the 'New Palo Alto'.
- UK innovation policy is characterised by a deep-seated aversion to 'picking winners', instead favouring broad-based subsidies like tax credits. While this approach has had some success in stimulating investment and innovation, it may have unintentionally exacerbated regional disparities, among other things. Tax relief designed to encourage venture investment is internationally competitive, but it may not target the most binding constraints – particularly the barriers to financing deep tech with high social rates of return or for areas like corporate venturing, which play an important role in other countries' venture ecosystems.
- Public VC financing works best when it involves the private sector in investment screening, funds intermediaries rather than companies directly and uses matching requirements. Independence, including autonomy over budgets, hiring and remuneration is also important.
- Institutions such as the British Business Bank are widely recognised as successes. For example, UK university spinouts raise 4–5 times more external equity when supported by public funding agencies like the British Business Bank and Innovate UK, compared to those without such backing. This highlights their role in certifying firm quality in ways valued by the private sector, with further scope to build on these institutional assets, as glimpsed by initiatives like the Long-term Investment for Technology and Science (LIFTs) and the National Security Strategic Investment Fund (NSSIF). Frustration with the progress of the Mansion House Compact further underscores this role.
- Industrial policy should be prepared to accept losers as the price of backing winners. Without some failures, it is unlikely that policy is taking enough risks and is therefore less effective. Rather policy effectiveness should be determined by its ability and willingness to let losers go.

Conclusion

- The UK has many of the necessary elements in place with which to create a high growth, high innovation economy. If marshalled correctly the UK could replicate its fintech success in sectors such as health, education, life sciences and especially advanced manufacturing where there are multi-trillion pound opportunities. These fields will incorporate advances in AI but will also leverage distinct creative, scientific, and technological inputs.
- These future opportunities will lie to a greater extent outside digital technology hitherto the focus of much VC funding. To adapt to these evolving demands, the VC industry will need to embrace a more diverse range of capital sources and invest across a broad range of technologies, entrepreneurs and companies, and across all British regions.
- A prime aim of public policy must therefore be to increase the pool of British risk capital, to ensure more of this bigger domestic pie flows to venture capital, in particular to support later funding rounds for scale-ups where UK capital is currently acutely scarce and to engineer instruments that support VC in its innovation mission.
- We urge leveraging the success of existing institutions, such as the BBB, to attract additional private investment. This should be complemented by a more innovation-friendly approach to public procurement and increased support for intermediary institutions that support innovation while broadening venture capital's scope with new sources of entrepreneurial finance.
- Britain – government and investors alike – need to be more keenly aware of the priority of nurturing the purpose that animates company founders and as far as possible of retaining headquarters, research and high value-added production in the UK.
- Alongside creating an investable pipeline of high-growth businesses, policymakers must ensure viable exit options, striking a better balance between acquisitions and IPOs. A strong domestic equity culture –among both institutional and retail investors– is key to anchoring ownership and supporting deeper, more liquid public markets together with parallel vibrancy in private markets.

I. Introduction

The fastest-growing, most dynamic economies move quickly both in their embrace of the new and the pace at which they discard the obsolete. This is the well-known process of creative destruction that lies at the heart of innovation, with startups and scaleups as its principal drivers. As our first report in the Growth Trilogy argued, it is their innovations which render existing technologies redundant, force established firms to adapt or decline, shift resources to more productive uses and give rise to entirely new industries, jobs, and ways of working. If Britain is to get beyond managing stagnation and avoid falling further behind economically, it must take bolder action to support these firms in fulfilling their growth and innovation potential.

While a critical mass of successful startups and scaleups is one necessary precondition for innovation and the higher living standards that are so universally craved, other factors are in play – highlighted by the recent reaction of world financial markets to President Trump’s aggressive tariff policies. Abandoning the old and embracing the new with all the attendant risks is much easier against a background of rising demand and economic certainty which is not the case in the Spring of 2025. This is all the more important because the process of creative destruction driven by the adoption of transformative innovations was becoming harder even before this political and economic shock – certainly measured by the drop in underlying productivity growth to historically low levels since the financial crisis in all major economies. There is evidence that the ideas that drive innovation are becoming more expensive and difficult to find. Research efforts have certainly increased; however, there are questions about whether the productivity of these efforts has kept pace.¹ At the same time, emerging companies in varying industries are facing steeper entry barriers and must achieve even higher levels of productivity than in the past to compete effectively with established leaders.²

In this world the channelling of capital and resources to finance new ideas and help small, young firms grow into consequential, innovation-driven businesses has never been more critical as a foundation for business dynamism. Fit-for-purpose finance has always mattered for growth. That remains true today, but given these challenges –and just as importantly the exhilarating opportunities available– achieving it requires as much agility and innovation in the financial system as in the underlying economy.³

At the heart of this observation is the symbiotic relationship between financial and technological innovation: just as in the past, new technologies have necessitated the creation of new financial arrangements to screen and monitor entrepreneurs, improve capital allocation and meet the changing needs of the innovation process. This spans everything from the creation of new financial instruments to the development of new corporate structures and accounting and reporting techniques.⁴

In the late sixteenth and early seventeenth century, for example, supportive institutions such as joint stock companies, shipbuilding guilds, and merchant banks emerged to raise funds, screen and monitor shipbuilding for the new trade routes to the Americas, India and Asia. Two hundred and fifty years later the financing of vast railroads with their huge fixed costs and large geographic scope, demanded more liquid equity and debt markets to persuade savers to invest and lend at scale, along with specialised investment banks to manage the new markets. The former financial system had become obsolete. More recently, as the innovation frontier has pushed further forward with both new uncertainties but phenomenal potential returns, financial institutions and screening capabilities have been forced to evolve once again to keep pace with the intangible-rich businesses dominating the 21st century.

Enter Venture Capital (VC), the latest iteration of the vital, pulsing interplay between financial and technological innovation. It specialises in investing in young, entrepreneurial and, as observed in Paper I, purpose-driven companies. Typically structured as a limited partnership with a set term length, it provides not only risk capital but also guidance and oversight. The VC model has ignited and propelled the growth of some of the brightest and most influential businesses of the past several decades. In the past decade, alone, VC-backed businesses have globally created over \$29 trillion in enterprise value, a nearly tenfold increase over the period.⁵

Despite being a relatively small asset class, VC has excelled at betting on ideas that if initially seemed idiosyncratic have sometimes proven to be wildly successful. By one measure, venture capital finances

only 0.15% of new businesses in the US each year, yet accounts for the backing of nearly half of the companies that list on public markets.⁶ All the 'Magnificent Seven' tech companies were VC backed, and the wealth created by the stock market can be attributed to the substantial positive outcomes of buying and holding these types of stocks.⁷

Venture and growth capital's footprint reaches far beyond public markets: it has also made possible a roster of disruptive private startups and the technologies that they have incubated and supported. While smaller in comparison to the US, the UK's venture market – today the third largest in the world – has also helped startup businesses to flourish and grow, supporting domestic innovation and high-quality job creation.

In light of this experience, VC holds a unique position in the imaginations of policymakers, entrepreneurs and the informed public. Policies aimed at stimulating venture capital investment and markets have been implemented in various forms around the world and transcend political and ideological lines.⁸ In the UK, for example, few areas of economic policymaking have commanded more cross-party consensus than the push to increase pension investments in private assets, such as venture capital, as a strategy to unlock innovation-driven growth and generate diversification and higher risk-adjusted returns for savers. Labour Chancellor Rachel Reeves has sustained Conservative Chancellor Jeremy Hunt's efforts to unlock pension fund investment in VC, alongside other measures to support high-growth purposeful businesses.

We critically examine these arguments and assumptions in the final paper of the Trilogy, where we discuss potential policy solutions across the wider ecosystem. However, many questions remain unanswered, and commentators often fail to step back and assess the role of venture capital from first principles and how its activities – raising funds, making investments, exercising governance, and eventually exiting these businesses – affect not only the fortunes of individual businesses but also the broader economy.

In the first paper – Purpose, Innovation and Growth – we observed that many startups and scaleups are animated by purpose, although some founders more readily describe themselves as mission-driven. Purpose purely defined describes the ‘why’ of a business and mission the ‘what’, but in reality there are significant overlaps in practice between purpose and mission. It is hard to identify the why without making it concrete in terms of real goods and services. However they choose to describe themselves these companies exist because they have identified problems they believe only their teams can solve for their customers, and they recognise that big opportunities come from solving meaningful challenges. They also understand that a sense of purpose is a necessary, though insufficient, condition for driving profitability in a world of intangibles. At the same time, these businesses are powerful drivers of job and output growth and a source of positive spillovers which grow the pie for the benefit of all. Whatever the perspective, understanding how finance generally and venture capital in particular – the joint plumbing of the economic system – supports these activities is fundamental to assess its capacity to generate purpose-driven startups and scaleups, arguably one of its most critical purposes.

The growth of venture capital in recent decades is a powerful testament to the contribution it makes. But for all its undeniable strengths, the venture capital model also suffers from a number of limitations in its capacity to advance broad-based technological change. Furthermore, there are questions about whether the UK has an effective supply of risk capital, especially from British sources, in parts of the market which may be holding back some businesses’ ability to successfully commercialise their innovations. Finally, it is important not to lose sight of the fact that the supply of capital is only one piece of a larger interlocking innovation ecosystem. Without complementary measures to nurture and support innovation, even the best financial backing may fail to have its desired impact. Thinking through these issues offers ways to conceive how venture capital and entrepreneurial finance can be made to work more effectively. This paper aims to stimulate discussion and policy solutions to these important questions.

II. Venture capital: strengths as a source of purposeful capital

Entrepreneurs have long tried raising finance for risky ventures. Sophisticated contracting in illiquid, long-term investments characterised by skewed, low-probability, high-impact outcomes has a long historical tradition. Elements of today's venture capital industry can be found in the risk-sharing partnerships used by American whalers, the Dutch spice trade in the 16th and 17th centuries and even Genoese merchants during the Renaissance era. But the industry truly coalesced after World War II and took off in the US during the 1980s. This growth was driven by changes in tax and the policy decision to relax pension fund investment guidelines, reclassifying venture capital (VC) as a prudent asset class, paving the way for pension managers to invest in this space. Today VC is a global phenomenon, with the amount of capital available setting new records.

The industry has had a significant and disproportionate impact on society and the economy. One way to see the value of venture capital is to imagine taking it away. Researchers from the University of Chicago, the University of Pennsylvania, the US Census Bureau, and the Federal Reserve Bank of Atlanta develop a macroeconomic model to capture key features of venture capital, such as firm innovativeness, survival, and growth, as observed in US data. Their estimates suggest that, in a world without venture capital without its impact on innovation and the nurturing of entrepreneurial firms, aggregate growth would be 28% lower.⁹ In a similar spirit, other studies document a strong relationship between increased VC funding and aggregate outcomes such as employment, income and total factor productivity.¹⁰

These findings are consistent with the idea that VC firms generate significant positive externalities for the economy. Once a critical level of venture activity has been established, maintaining and growing it becomes much easier. Additionally, VC-funded startups contribute to the diversity and collective stock of accumulated knowledge, enabling further technological advances. Research estimates that spillovers from VC-backed startups are seven times larger than those generated by the R&D investment of established companies.¹¹

Part of the reason for this outsized impact is that VC-funded start-ups tend to produce intellectual property and wider knowledge that is of a higher quality and economic importance than that in the broader economy. This knowledge transfer is further amplified by the mobility of startup inventors, who help spread these valuable innovations across companies, as well as the fact that VC-backed startups often develop innovations in areas difficult to protect with intellectual property rights.¹² For example, VC money is found to be three to four times more potent as a source of capital for innovation than traditional corporate R&D. Furthermore, patents from VC-backed firms are significantly more likely to cite fundamental scientific research compared to those from other firms.¹³

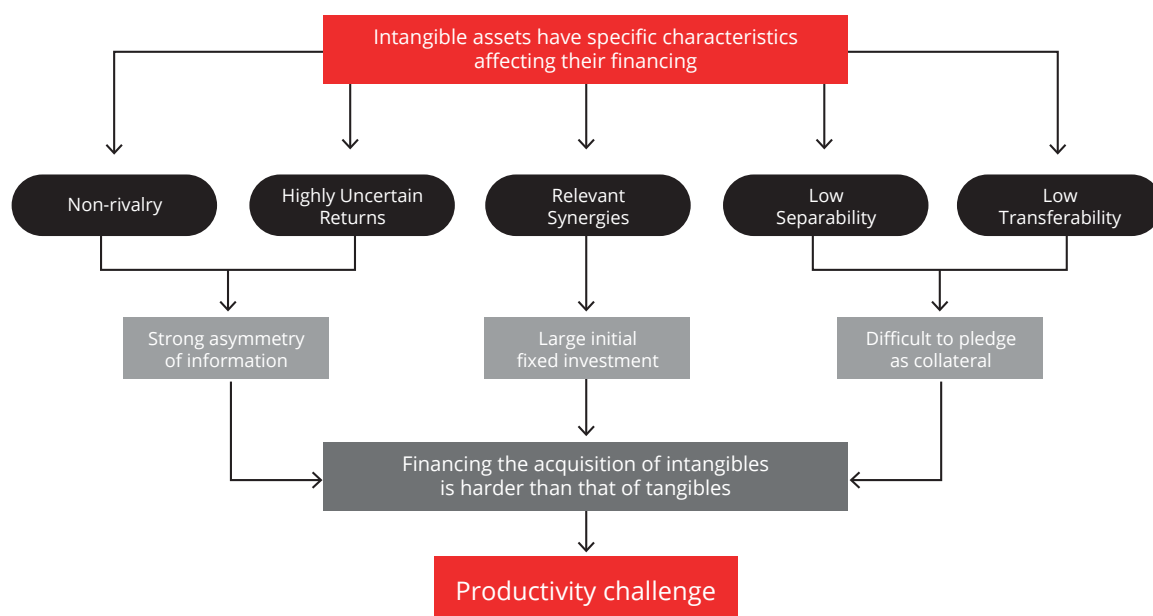
A notable strength of these studies is their use of natural experiments to identify causal effects, such as the policy shift cited earlier that freed pensions to invest in high-risk assets. These approaches lend confidence to the notion that VC investors do more than simply selecting firms with high growth potential – they also actively and successfully try to help invested companies to realise this potential.

Seen in this light, VC shapes economic outcomes in large part by affecting the quality of capital allocation, not just the quantity of investment. Specifically, it offers an effective solution to the challenges of financing high-potential, intangibles-intensive startups. Intangible assets, including purpose, are increasingly at the heart of firms' competitiveness and productivity but are characterised by uncertain returns, non-rivalry, large synergies, low redeployability – what Jonathan Haskel and Stian Westlake call the four S's: scalability, sunkness, spillovers and synergies.¹⁴

These features mean that intangible investments behave very differently from tangible investments such as factories and machinery, challenging the effectiveness of traditional financial intermediaries (see Figure 1). They tend to exacerbate information asymmetries, making the valuation of assets and their use as collateral difficult. Ventures often fail to generate sufficient or predictable cash flows to cover regular loan payments, further causing financial frictions. They are frequently led by scientists with little experience in managing profitable companies. As a result, firms seeking investment are often forced to rely on their own cash reserves or even pledge their homes to secure financing, which has its own problems.¹⁵

Figure 1:

The challenge of financing intangibles



Source: OECD (2021).¹⁶

Given the strong productive potential of intangible assets, the payoffs to relaxing these financing constraints in terms of aggregate productivity gains can be disproportionately large.¹⁷ In response VC has refined and pioneered various contracting and governance techniques to relax these constraints. This includes the use of multistage contracts, in the form of sequential rounds of financing, which are conditional on achieving certain technical or market milestones. This approach allows VC investors to gather more information before committing additional funding, helping them distinguish between good and bad investments while reducing risk. It is reinforced by financing agreements that carefully allocate cash flow rights, board rights, voting rights, and other control rights, making their allocation contingent on performance. Control shifts to VC investors when performance is weak and to entrepreneurs when performance is strong. In practice, this means that investors often hold a considerable share of the firm's revenues and a veto right over its decisions in early stages; but as the firm grows and accumulates retained earnings, control and cashflow rights are progressively returned to the entrepreneur.¹⁸ Finally non-compete and vesting provisions are common features of VC contracts, helping mitigate potential holdup problems between parties by increasing the cost for entrepreneurs associated with leaving the firm.

These partnership structures are not ends in themselves or mere carrots and sticks, but rather tools to support more active and collaborative forms of value creation. To some, this might seem like a distinction without a difference, but it creates the flexibility for parties to renegotiate governance arrangements in ways that improve both ex ante

and ex post efficiency in the face of market and technological uncertainty.¹⁹ Unlike the arm's-length transactions common in financial models and public markets, VC investors take an active role in the companies they fund. Though best seen as influential passengers – offering guidance, resources, and support while founders steer the company, rather than taking the wheel as private equity firms often do – their engaged yet non-controlling approach allows them to make informed decisions rooted in a deep understanding of the business, its market, technology, competitors, and customers.²⁰ Survey findings indicate that more than 25 per cent of venture capitalists engage with the entrepreneurs they fund several times a week, with an additional one-third maintaining weekly contact.²¹ Saul Klein, co-founder of LocalGlobe, one of the UK's most successful venture capitalists sets out his stall:

“The best companies and the best founders – the winning 99th percentile – are not dying for your money. You’ve actually got to persuade them to take your money and show how you can add value. Any venture capital firm, and probably a private equity firm as well, is optimising its operations to excel at sourcing, picking and winning to get the unicorns, the colts, the thoroughbreds while also focusing on building, financing and exiting successful investments. How do you, from the building side, help a company make its first hires? How do you help introduce them to critical customers? How do you help them navigate a difficult policy challenge? How do you connect them with the next round of financing?”

How do you advise them on whether to go public or not? And if they do go public, should they list in London or Amsterdam or New York? We talk about access, insights and engagements, and all of those characteristics go into the relationships we have with founders and their senior teams. When our portfolio goes public it does not represent the end of the relationship for us. We still hold shares in Wise for example and we first invested in them during their first seed round. We have long term confidence in them and we have that confidence specifically because of the years of access, engagement and insight built up over a long period of time.”

Sebastian Mallaby in his history of the VC industry *The Power Law: Venture Capital and the Art of Disruption*, builds on this picture, citing numerous examples of VC investors making decisive contributions to portfolio companies: “Don Valentine rescued Atari and then Cisco from chaos. Peter Barris of NEA saw how UUNET could become the new GE Information Services. John Doerr persuaded the Googlers to work with Eric Schmidt. Ben Horowitz steered Nicira and Okta through their formative moments”.²² An ingenuous illustration of these points is offered by Shai Bernstein, Xavier Giroud and Richard Townsend who show that when new airline routes are introduced that make it more convenient for a venture capitalist to visit and mentor portfolio companies, there is a measurable increase in both citation-weighted patents and successful exits.²³

The benefits of active governance under venture capital, along with the array of value-added services it offers, come in many different forms, including:

the professionalisation of startup teams²⁴; reduction in time to product market²⁵; board involvement²⁶; active matchmaking between portfolio companies to create strategic alliances²⁷; connections to consumers and other investors²⁸; strategic and operational guidance²⁹; and higher tolerance of failure.³⁰

The impact of VC ownership does not end at the IPO bell. When VC funds remain as shareholders or board members, they delay dividends, acquisitions, and entry into the corporate bond market. This behaviour is consistent with the view that VC funds actively extend the growth phase of the company, reinforcing its focus on innovation and long-term growth.³¹

The industry is no stranger to myth-making and bold claims. It is therefore revealing that entrepreneurs themselves testify to these benefits and many are willing to accept lower valuations in order to access a higher quality venture capitalist. Research shows that offers made by VCs with a high reputation are three times more likely to be accepted, and high-reputation VCs acquire start-up equity at a 10–14% discount.³² This is perhaps not surprising, given some evidence that such added value services account for roughly 40% of the performance differential between VC and non-VC backed firms.³³ Venture capital, in short, has proved itself as an essential adjunct of innovation and growth.

BOX 1:

The emergence of venture debt

Less remarked upon is the emergence of specialised venture lenders (VLs) that provide venture debt to startups. Contrary to the conventional wisdom that debt and startups do not mix, the venture lending market has grown surprisingly large in recent decades. It is now used by over a third of startups during their venture finance journey and in the US provides one venture debt dollar for nearly every seven venture capital dollars invested.

Venture debt has largely focused on providing financing to growth startups in the software sector, where venture debt is secured by confidence in future revenue and cashflows via scalable business models and positive commercial metrics and by confidence in future rounds of equity finance. Some companies that hold patents which can be used as collateral are also potential candidates for venture debt. There is an interdependence of VCs and venture debt providers; startups are sent to venture debt by VCs to use less dilutive funding to invest in growth and deliver a larger and more successful next round of equity financing, with the VCs carrying out a screening role of sending companies that are more likely to succeed to the next round of financing to the venture debt provider.

One important new sector for venture debt is IP-backed financing; lenders are becoming more sophisticated at seeing value in IP, which can often be used as collateral to secure loans. For example, research shows that venture debt financing can be tied to the firm-specificity of the patents, patent portfolio breadth and quality, the liquidity of the secondary market for the venture's patent portfolio and the presence of existing institutional equity investors.³⁴ Historically only the purview of specialised venture debt funds, now banks are paying serious attention to the value of the IP assets owned by a company. For example, the NatWest Venture & Growth Finance team has partnered with insurance brokers AON to provide venture debt to IP-backed companies in the deep tech, climate tech and

healthcare sectors. A value for the patent portfolio is independently undertaken and financing can be offered starting at £10m, making IP-based funding accessible to growth companies at scale. HSBC Innovation Banking also offers IP-backed companies venture debt across multiple sectors.³⁵

The use of venture debt has a number of advantages as a supplementary source of financing: it extends a company's cash runway and delays the need for further equity financing rounds, thereby minimising dilution and maximising shareholder value. By extending the runway, debt allows more time for information to reveal itself. If it is good news, the remaining capital can be raised at lower cost.³⁶ For VC investors, debt increases the entrepreneur's skin-in-the-game, ensuring the entrepreneur's payoff is more sensitive to VC investors, strategy choice, that boosts the marginal benefit of risk-taking.

For venture debt instruments to become commonplace, their visibility and accessibility must be improved. Specifically, leveraging IP as collateral will require enhanced safeguards, such as collateral protection insurance, due to uncertainties surrounding market acceptance, disposal routes, valuation, and the unfamiliarity with this asset class. While significant challenges are likely to persist in making major changes to accounting rules that encourage the inclusion of IP on company balance sheets, there is potential for new identification and valuation tools – such as the publication of license and assignment terms – to enhance the assessment of intangible assets.³⁷

Most importantly, the increasing number of lenders with growing experience in this space and the greater number of successfully financed scale-ups will set off a flywheel effect for future opportunities and growth in this market. More needs to be done to increase the availability of venture debt to UK businesses, where adoption rates are less than half of those in the US.³⁸

III. Not everything is rosy in the VC garden

Venture capital is playing an ever more salient and fundamental role in supporting the founder-led, purpose-driven companies so important in driving innovation and wider prosperity. But it also has some important shortcomings as a model for funding innovation and purpose. For example, as detailed in Paper 1, there are signs that VC investors have retreated from active participation in corporate governance in recent years. It is yet to be seen if this reflects a temporary pause or a more permanent change; however, it reveals gaps in how resources are allocated to different activities, with potentially adverse effects on the rate and direction of innovation in the wider economy. There are other challenges, notably the tendency to fund a relatively narrow band of technologies and business models; the industry's cyclical nature; and high levels of concentration, where a few firms and geographic regions – holding a disproportionate amount of capital – can have a significant impact on the types of innovation being financed. Understanding them better can provide valuable insights into how this crucial industry could operate yet more effectively.³⁹

i) The incentives and constraints of the venture capital model tend to favour a narrow band of technologies and business models

While venture capital investment around the world has boomed in recent decades, it has been disproportionately allocated towards a narrow range of technologies. Investment has been concentrated in asset-light, scalable technologies, including software and business services which are conducive to 'lean startup' approaches and exhibit strong network effects. Britain is emblematic of this trend where many tech unicorns operate in fintech,

including six of the country's leading challenger banks such as OakNorth Bank, Revolut, Starling Bank, and Monzo.

This is not to suggest that these startups lack purpose or mission. Fintechs are an important source of potential jobs and growth for the economy.⁴⁰ They provide challenge and competition for traditional financial services, improving accessibility, convenience, and efficiency. And they do social good by fostering financial inclusion among traditionally underserved populations. For instance, Wagestream, a financial wellbeing platform backed by investors such as British Patient Capital and Lombard Odier, is used by organisations like the NHS, Asda, Burger King, and Hilton. It allows employees to access earned wages early and offers services that support financial independence and security for low- and middle-income workers. Perhaps just as important, fintech has only scratched the surface of its potential.⁴¹

Similarly, digital innovation is not limited to lifestyle or gaming apps, though gaming itself may offer value as a means of personal expression, exercising competence and autonomy or sheer escapism – along with gamification techniques that enhance education, health, and productivity.⁴² Digital advances have touched everyday life in innumerable ways – from helping individuals improve their grammar or learn foreign languages, to enabling organisations to tame and put their data to work, to driving environmental solutions such as smart meters, smart infrastructure, and environmental monitoring.⁴³

But it does mean that a smaller share of available capital has been directed to critical areas of transformative science, engineering and technology. Essential sectors and big ideas with the potential to transform industries, economies, and lives – collectively known as ‘deep tech’ or ‘tough tech’ – have struggled to secure capital. This frustration is perfectly encapsulated by Silicon Valley’s Peter Thiel’s famous quip: “We wanted flying cars, instead we got 140 characters”. Thomas Ramge and Rafael Laguna de la Vera, in their insightful book *On the Brink of Utopia*, make this point even more provocatively, highlighting the connections between deep tech innovation and purpose:

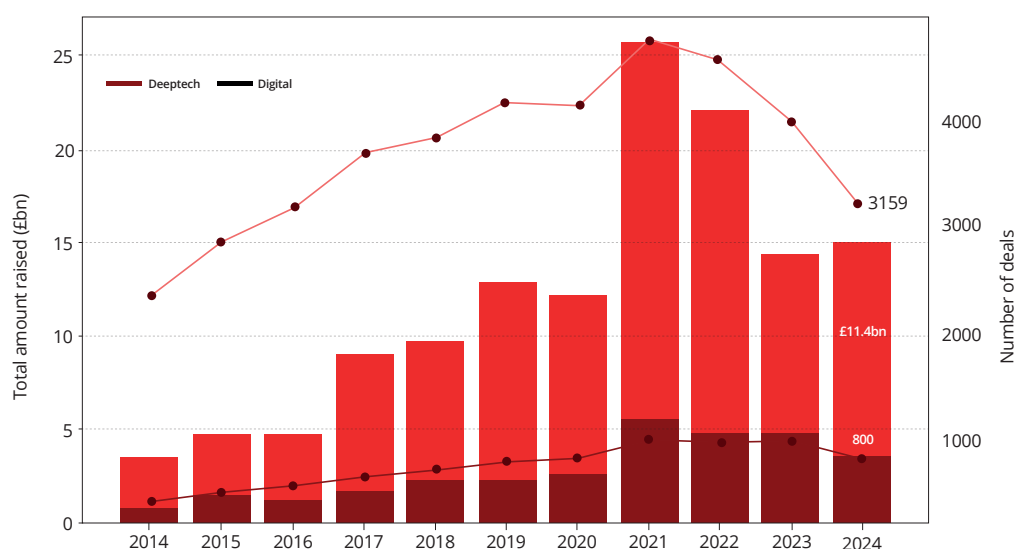
“A genuinely innovative leap does more than make our lives a little easier, it fundamentally improves living conditions for humankind. Think of the cultivation of einkorn wheat, the first sailboat, or the printing press. Think of the water closet’s effect on the spread of disease, how the use of fertilizers made urban living sustainable, or the way computers and the World Wide Web have affected just about everything. Then think ten years ahead about how mRNA, nuclear fusion, and vertical farming might have as big an impact. [Innovation] is not [just] about the next TikTok or iPhone. Silicon Valley’s and China’s platforms may well make our lives more convenient, but are they as “disruptive” as they claim? We knew how to shop before Amazon, and order taxis without Uber. And hasn’t political discourse become much more divisive thanks to Twitter [now X]?”

This emphasises the need for VC to extend its reach, especially considering the spillovers associated with deep tech (see *Figure 18 later*). In collaboration with Beauhurst, we develop measures that capture equity investment in high-growth deep tech and digital tech companies. Importantly, these measures attempt to reflect the underlying activities and technologies in use which contribute to potential funding challenges. For example, by reviewing sector classifications, company descriptions and reported operational activities, we are able to exclude digital businesses operating in deep tech sectors which are often classified as deep tech.

This analysis reveals that the majority of equity investment (76%) has been directed toward digital tech businesses, which also account for 83% of all deals (see *Figure 2*). In 2021, digital tech businesses attracted £20.3bn in equity investment, compared with just £5.5bn in deep tech. Over the past decade, Software-as-a-Service (SaaS) has comprised 17% of all deals – approximately 5.4 times more than CleanTech and 8.9 times more than pharmaceuticals (see *Figure 3*). It is worth noting that deep tech has held up better amid the current funding downturn and has been attracting an increasing number of digital tech businesses focused on innovations such as software for waste reduction and sustainable resource management. The total equity investment raised by these businesses has surged at an impressive 34% compound annual growth rate over the period. However, they still account for only a small share of total investment activity. Even with their inclusion in deep tech classifications, digital tech continues to dominate in both deal volume and value. This is consistent with broader research, which shows that VC-backed patents represent less than 3% of all Net-Zero patents, with the majority concentrated in non-deep tech fields like energy efficiency, transportation, and digital technology.⁴⁴

Figure 2:

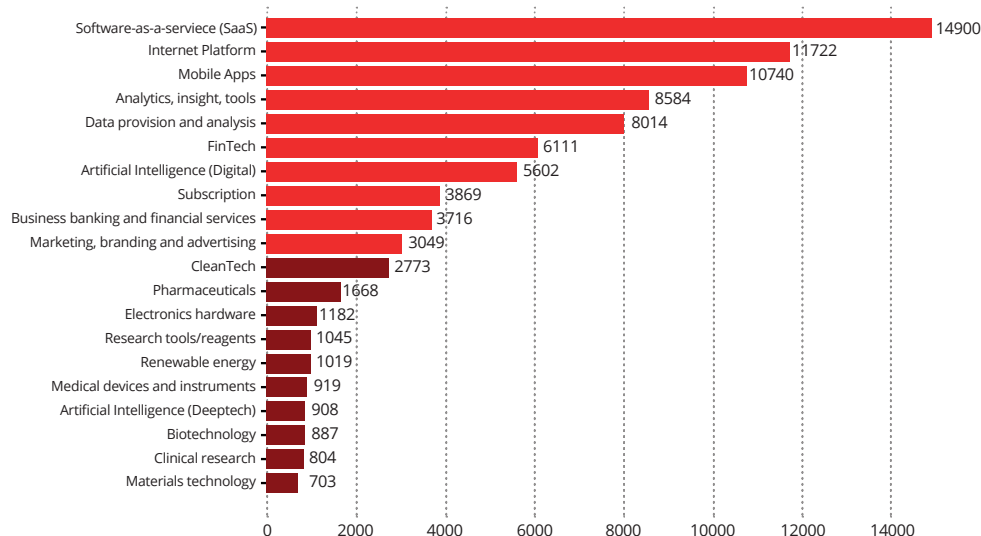
Equity investment in deeptech and digital tech companies: total amount raised and number of deals, 2014–2024



Source: Beauhurst (2025).

Figure 3:

Top digital and deep tech sectors by number of deals completed, 2014–2024



Note: AI (digital) primarily includes businesses focused on advertising, payment processing, and consulting. In contrast, AI (deep tech) prioritises companies actively engaged in manufacturing or developing deep tech technologies, ensuring only those directly contributing to technological innovation are included.

Source: Beauhurst (2025).

This retreat has been striking, though hardly surprising. While VC is often celebrated for providing patient, long-term funding, its model can also be quite restrictive in its ambitions and horizons. Investors typically raise funds for a fixed period –often seven to ten years – but the reality is that the window for demonstrating effective, active management is often far narrower. The process of selecting which startups to back can take years, and the exit strategy often requires just as much time. The structure of the venture model only amplifies this pressure: since funding is provided in stages, startups are expected to show tangible results much sooner, often within 12 to 24 months, just ahead of their next round of financing. This is further complicated by the shifting identities of investors with each funding cycle, which means that tacit or contextual knowledge about a business or technology's progress may be lost. Henry Whorwood, CEO of Beauhurst, makes this observation about the deleterious impact of too tight time horizons:

“An issue we have with conventional VCs and their ability to fund deep tech is that the original vehicles for venture capital in the 60s and 70s in California were modelled on oil and gas funds, which is why they were designed to have such clear 5–7 year time horizons. They were originally investing in assets where the timeline to profitability was predictable. So those were the fund structures to hand when entrepreneurs were saying ‘I’m creating a completely different tech based business model’, like a Fairchild Semiconductor and those other early companies. So remarkably the current issues still reflect this legacy. It’s time not just for more capital but for new fund structures.”

Without that change, the result is a stark mismatch between the pace at which investors demand to recoup their capital and the lengthy horizon that technology companies –especially in fields

like biotechnology and energy – need to realise their full potential. For example, while digital marketplaces can advance from Series A to Series D in as little as three years, climate technologies, given the current pace of innovation, often require up to seven years to scale and make a meaningful impact.

Another important factor behind the neglect of deep tech is the relatively low initial capital required to launch new digital ventures, lowering the costs of experimentation, making it easier to validate their potential. This flood of digital startups has sometimes inundated investors with proposals, leaving them with less time to thoroughly assess the value of each opportunity. Riding the wave of headline-grabbing digital and software success stories, some funds have defaulted to simple ready-made heuristics – think ‘the Amazon of’, ‘the Uber of’, or ‘the Netflix of’ – as a way to screen a venture’s potential, inadvertently creating blind spots that may have sidelined other promising opportunities.⁴⁵

These mismatches are compounded by the distinct technical risks (‘will it work?’) that deep tech ventures face, which go beyond the typical risks of startup commercialisation (‘will customers want to pay for it?’). The majority of ventures focus on building physical products that present challenges in terms of engineering, unit economics and scalability. In the early stages of prototyping, a firm might triumph in synthesising a small batch of a chemical or material crucial for in development. Yet, scaling this success into full-scale production is an entirely different battle—one that demands not only access to sufficient raw materials but also the implementation of stringent quality control and manufacturing processes. A powerful demonstration of this dynamic in action – indicative of the challenges of appraising deep tech investments – comes from the field of novel electrocatalysts for

hydrogen production (green hydrogen). Differing definitions of success – depending on temperature, pressure, and time parameters– often lead to misleading false positives. Solutions that were encouraging at first glance in controlled lab settings would fail under the stricter benchmarks required for large-scale commercial use, underscoring the wide gap between experimental breakthroughs and real-world application.⁴⁶

Put differently, the physical world of atoms and bits operates quite differently from the digital realm of bits. This complexity is especially apparent when one looks at the capital needs of industries beyond software. McKinsey estimates that the funding needed for early-stage climate technologies is five to six times greater than that for sectors like fintech or quantum computing. This disparity in capital needs becomes even more pronounced at the later VC stage, particularly for high-demand solutions in sustainable fuels, hydrogen, green power and circular economy initiatives.⁴⁷

For all this pain, VC investors might expect some gain. But in sectors like clean energy, the returns have often fallen short compared to the explosive rewards seen in digital and information and communication technology (ICT) startups. Even when a new technology such as a new energy source proves its viability at scale, it must vie for market share in a mature industry where products are highly commoditised and profit margins are razor-thin. This stands in stark contrast to ICT, where startups can leverage strategies like offering differentiated products, creating network effects, and making it costly for users to switch to competitors, to achieve enviable profit margins. Data from researchers Matthias Van Den Heuvel and David Popp underscores this gap: just 1.6% of clean energy startups that secure Series A funding deliver a 10x return for investors, compared to 2.1% of ICT startups and 2.6% of biotech ventures. The gap is even more striking when looking at

home-runs or investments with exponential returns. The clean energy sector's biggest success story to date, Opower, delivered a 56x return on Series A investment– impressive but dwarfed by ICT's outsized returns. In fact, 36 digital startups and 3 biotech companies have surpassed the 100x milestone, notably Snowflake (704x), Uber (781x), Facebook (832x) and Roblox (4651x).⁴⁹

Recent history somewhat complicates this picture. In the US, a decade after the collapse of Cleantech 1.0 and high-profile casualties like solar-cell maker Solyndra, the sector has rebounded despite recent political headwinds. The UK has also seen a sharp rise in early-stage clean tech investment, growing faster than AI and biotech between 2017 and 2021, albeit from a low base.⁵⁰ This revival has required a change in strategy. VC investors are partnering with corporate and industrial investors, as in the case of Boston Metal, a US startup backed by the Indian conglomerate ArcelorMittal alongside traditional VC investors to develop zero-emissions steel technology using electricity. Deep tech startups are also learning to adapt to the constraints of the VC model, developing modular solutions that can be slotted into existing operations with minimal disruption or risk.⁵¹

Nonetheless, the past still casts a shadow over the present. The fundamental challenges in bringing climate tech and deep tech to market, originating from advances in science and engineering, have not gone away. Despite the enthusiasm for early-stage startups and a ready supply of infrastructure and debt investors seeking fully de-risked opportunities, Series B stage –the pivotal 'middle' where technologies are demonstrated and scaled– remains a bottleneck. In the UK, it is estimated that from 2018 to 2022, an annual £1.5bn climate tech financing gap has emerged at Series B.⁵² This funding gap has had the effect of inflating early-stage valuations and leaving many promising startups at risk of stalling before they can truly take off.⁵³

Finally, it is important to recognise VC is not the only way to fund or achieve significant startup outcomes. While non-VC-backed firms, even when matched for quality, may not scale the same heights as their VC-backed counterparts, their collective impact is sizable due to their sheer numbers.⁵⁴ As David Connell of University of Cambridge observes, venture capital's focus on home runs can lead to the neglect of solid growth companies simply because they do not fit the 'moonshot' profile. He characterises these as 'soft' or 'revenue-led' startups, which depend on customer contracts as the basis of their business models.⁵⁵

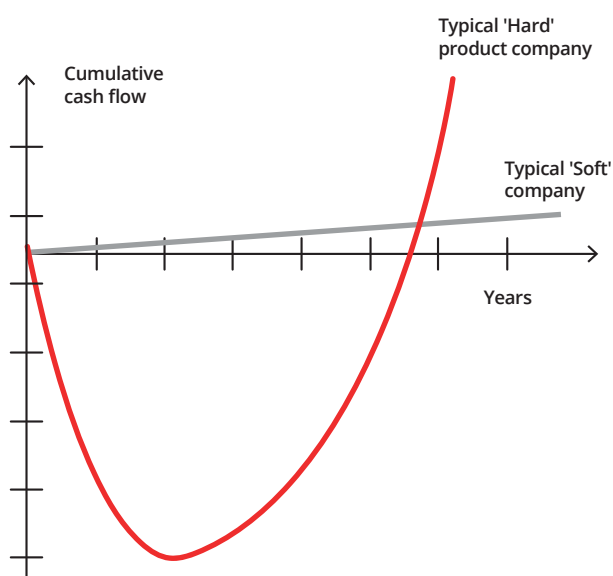
Founded by skilled scientists and engineers, these companies engage in R&D, design, and technical consultancy to address real-world customer challenges. Over time, this strategy can result in the creation of standardized, marketable products, leveraging their deep expertise, understanding of unmet needs, and the intellectual property developed through their projects.

What sets these ventures apart, however, is

their unique growth profile: while they grow and generate revenue rapidly—some even avoiding a cash-negative phase entirely—their slower, shallower growth trajectory once profitable makes them less appealing to many VC funds (see Figure 4). As a result, most of these companies will seldom get through the door of VC investors—despite this model being the foundation for some of the UK's most successful startups—such as Arm Holdings, Abcam and Oxford Instruments. The emergence of DeepSeek, the small Chinese AI lab that stunned the world by building a large language model rivalling the state of the art without raising outside money, also demonstrates the potential of this approach. This situation points to the need for a different framing to engage with such companies—one that likely involves smaller-scale investments, longer time horizons, a more hands-off management style, and a stronger emphasis on demand-side interventions, such as enlightened public and private procurement policies oriented at supporting this category of innovative scaleups.

Figure 4:

Typical Cash Flow Profiles for Successful 'Hard' and 'Soft' Companies



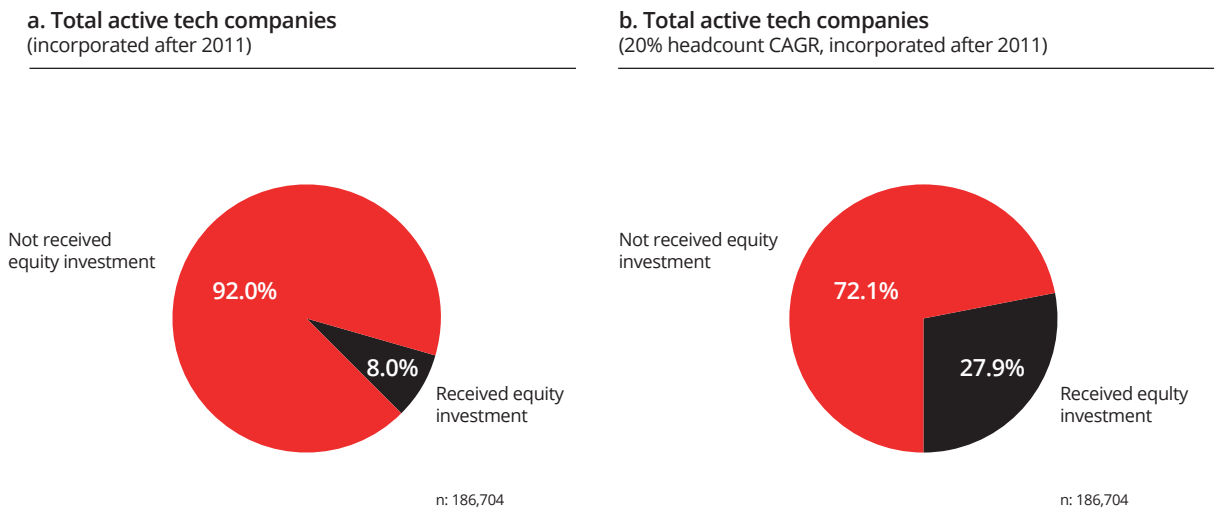
Source: Connell and Probert (2010).

This approach is also referred to ‘bootstrapping’, that is, the process of starting and growing a business with minimal external funding or investment such as venture capital instead relying on personal savings, sometimes loans from family and friends and supplemented by revenue from early operations. To flesh out this phenomenon, we define bootstrapped companies as active, private UK businesses operating in the technology sector that have not received equity investment (see Figure 5a). We further refine this definition to include only high-growth businesses that have experienced at least 20% compound annual headcount growth,

on the basis that these are the types of businesses that make strong candidates for equity investment, unlike stagnant businesses that would never have qualified.⁵⁶ Notably, these businesses currently account for 72% of all high-growth companies (about 6,870), showing that bootstrapping is common and often a deliberate choice by founders wishing to retain control and avoid ownership dilution (see Figure 5b). Many of these businesses have also obtained patents and large innovation grants and exhibit a relatively broad geographical distribution.

Figure 5:

Bootstrapping status of active private UK tech companies



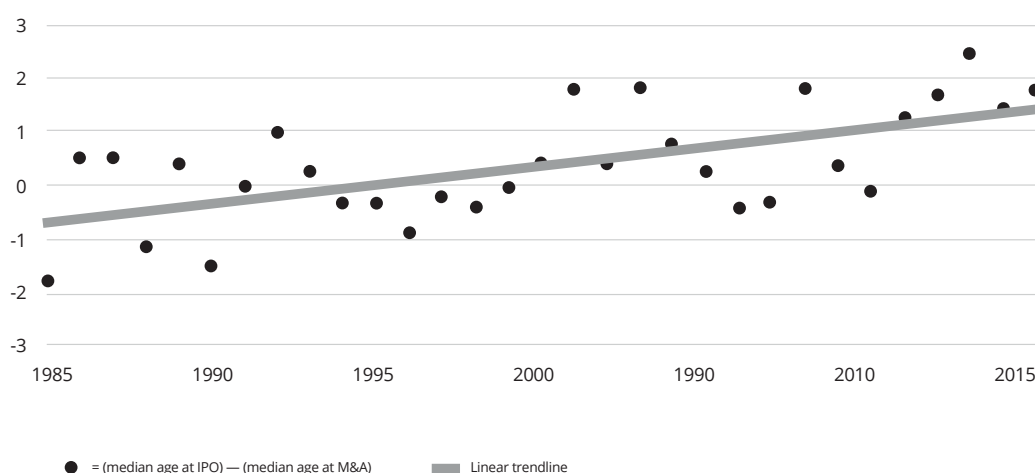
Source: Beauhurst (2025).

Beyond technology and business models, the incentives and structure of VC ownership can bias the growth strategy of venture-backed businesses. Many investors prefer acquisitions as an exit strategy over continued operation and an eventual IPO. A critical factor is time: acquisitions provide a quicker exit and a faster path to liquidity, directly impacting investor returns. The longer a fund lasts, the more VCs need larger or more frequent successes to maintain the same rate of return. The widening gap between acquisition and IPO exit

timelines has only reinforced the preference for acquisitions, particularly since an IPO rarely marks the actual exit for VCs, who often face lengthy lock-up periods before they can cash out (*see Figure 6*). In many cases, this additional time does not provide enough value to justify the delay for VCs – an issue we explore in greater depth in Paper III. As a consequence, the risk is that businesses may be sold to trade buyers before they can fully mature, limiting their growth potential and full economic contribution.

Figure 6:

Additional time needed to exit by IPO rather than by acquisition for VC-backed businesses (US)



Source: Lemley and McCreary (2020).

ii) A tendency to boom and bust

The cyclical nature of the venture capital market can further limit its effectiveness in financing innovation.⁵⁷ During market booms, an influx of capital often fuels inflated valuations, encourages funding of lower-quality ventures, and undermines investment discipline as firms overextend themselves. However, these expansions are typically unsustainable, eventually culminating

in reduced returns. These swings are further accentuated by the structure of venture funds, as well as information lags inherent in the innovation process. These lags can cause overshoots, as the true ceiling or limit of such technologies remains unknown during the early stages of investment and development. Policymakers may amplify these effects by viewing surges in activity as a license or justification to introduce additional subsidies, even as the returns on public investment are falling.⁵⁸

Less understood is the impact of VC cyclicalities on the real economy and social welfare. Even if investing activity falls during downturns, it is not necessarily the case that the quality of investment will follow suit.⁵⁹ To examine this question, one recent study compares the innovation activity of firms supported by venture capital (VC) with broader innovation trends across the economy. Consistent with prior work, the authors find that patents filed by VC-backed firms are more general, original, highly cited and economically significant than patents as a whole. However, venture-backed innovation is also far more sensitive to economic conditions than general innovation activity. Thus, the number of patents applied for by VC-backed firms as well as the quality of those patents declines more steeply during recessions. One possible explanation is that investment opportunities for venture capital are more cyclical relative to the broader economy. An alternative explanation is that VC's appetite to fund more novel innovation declines during recessions. Each driver has somewhat different implications. Specifically, under the second interpretation and the one favoured by the authors, shifts in capital supply mean that otherwise investable projects sit idle and opportunities are missed as venture capital market swings from feast to famine.⁶⁰

The collateral damage can be felt far and wide. Research has found that following the collapse of the technology bubble in the early 2000s, many startups with technologies that had nothing to do with IT failed to raise additional funding, simply because they had the bad luck of belonging to the same portfolio as IT startups.⁶¹ Josh Lerner draws attention to a similar 'long winter' during the 1970s when many companies at the forefront of the personal computing hardware and software revolution withered on the vine. Ultimately, these technologies were delayed rather than abandoned, but they might have come earlier and had a larger

impact on society had the venture market not been stuck in the doldrums.

The fallout from boom-bust cycles can have other consequences too, ranging from wasteful duplication to a souring of enthusiasm that deters future investment – such as the lingering scepticism following the cleantech bubble of 2005–2008. More broadly, these patterns can accentuate swings in entrepreneurial activity. For example, job seekers, especially higher quality candidates, tend to shift their searches toward more established firms and away from early-stage start-ups during downturns. This is analogous to a flight to safety and can lead to a marked deterioration in the quality of human capital available to start-ups, harming their ability to innovate, scale and drive economic growth.⁶²

The bout of inflation and rising interest rates that began in 2022, following a boom in which investors chased companies with exaggerated growth stories – even in optimistic circumstances – has led to a dearth of exits and distributions. With paper gains difficult to convert into cash for LPs, the ultimate providers of capital, recycling funds into new venture commitments has proved challenging. This gridlock has dampened deal activity and increased the chances that promising businesses go unfunded.⁶³

This indigestion has been particularly acute for early-stage investing, which involves longer holding periods and greater uncertainty than later-stage or growth-stage investment. But there has also been pressure on VCs holding onto unicorns collectively worth trillions, even as larger, late-stage deals continue amid investor excitement for AI.⁶⁴ In 2021, over 354 companies globally reached unicorn status, but only six of them have gone public since then.⁶⁵ In some cases, the stifled exit market has pushed investors to accept any liquidity they can find— even at a loss.⁶⁶ The growth of active secondary markets, including new continuation funds, has helped cushion these pressures, though it may also have delayed the more fundamental repricing and adjustment needed for a lasting recovery in exit markets.

The UK has been no exception. It is estimated that there are over 4,100 equity-backed firms, collectively valued at more than £200 billion which have yet to exit. In regional and sectoral terms, the share of unexited businesses is particularly high in Northern Ireland (86.4%) and cleantech (92.8%). Of course, the founders of and investors in many unexited businesses often have no immediate aspiration or intention to exit, not least as companies are staying private for longer.

businesses raise larger amounts of capital and complete additional funding rounds. To measure exit readiness, we construct a composite indicator, combining these two indicators. Each indicator is normalised to a 0–1 scale to ensure comparability, after which a composite score is recalculated for each active company, established after 2000, using equal weights assigned to each indicator.⁶⁷

We limit the analysis to companies incorporated after 2011 since this is when Beauhurst started collecting comprehensive funding data. Using the average (mean) score of companies that went public via IPO between 2011 and 2024 as a benchmark, this analysis identifies 898 unexited companies that meet or exceed that threshold. Additionally, 1,945 unexited companies surpass the average score of those that exited through acquisition over the same period (*see Figure 7*). Results remain consistent when the median is used. Among the high-scoring companies that have not yet exited, Monzo stands out by a significant margin. It is followed by companies like Revolut, Atom, Tandem, what3words, and Sofant Technologies. Expanding the indicator to include factors such as latest post-money valuation and time between earliest and latest fundraising presents a similar picture, with some interesting wrinkles.⁶⁸

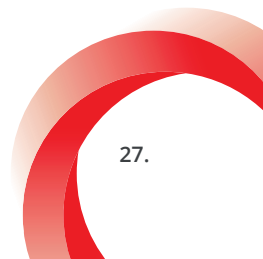
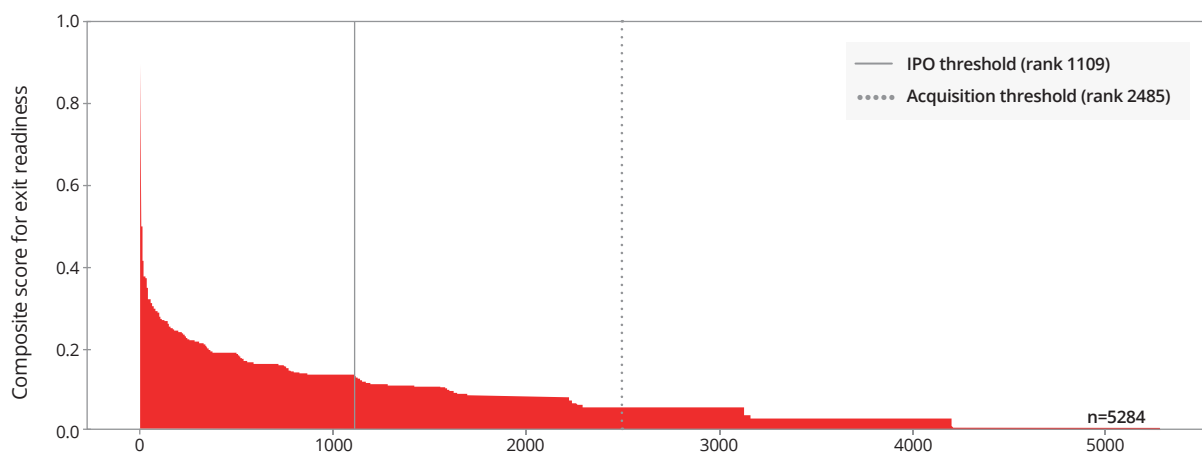


Figure 7:

Exit readiness index scores for equity-backed exited and unexited companies, incorporated after 2011



Source: *Beauhurst (2025)*.

Hopes for a strong rebound in exit activity have been tempered by recent global economic uncertainty, suggesting that current headwinds may persist. Even if exits resume, a combination of significant overhang and heightened uncertainty could make it more difficult for returns to meet expectations. Despite these challenges, investor enthusiasm for AI remains undimmed, early-stage companies have more time to grow into their

valuations, and market disruption continues to create new investment opportunities. However things play out, all of this serves as a clear reminder of the industry's inherent volatility – its impact on investment and exits – and the important role policy can play in moderating the adverse sides of these dynamics.⁶⁹

BOX 2:

Uncertainty, tariffs and the VC cycle

Recent US tariffs have jolted the global trading system, shaking foundations that took nearly a century to build. Of course, facts continue to evolve. At the time of writing, the US government has pulled back from the brink of a full-blown trade war and its most severe economic consequences. Whether this encouraging respite proves lasting will depend on future deal-making, retaliatory actions, policy reversals, and other developments. But with uncertainty still running high, risks to the economy and innovation activity are not far away.

Beyond their direct effects on prices and competition, the imposition of tariffs has introduced fresh policy uncertainty into the global economy – a subtler, yet no less powerful, force that seeps into decision-making and undermines

the confidence of both investors and businesses. In this respect, tariff-induced uncertainty is merely the latest symptom of a deeper malaise: what former Bank of England Governor Mark Carney has called economic post-traumatic stress disorder – a condition marked by a relentless rise in uncertainty since the Global Financial Crisis. This condition stems from a volatile mix of forces: the rise of populist movements, the shockwaves of a global pandemic, grinding military conflicts that have reignited old geopolitical rivalries, chronic fiscal and monetary imbalances and other structural challenges such as climate change and AI. In the words of one commentator, the global economy is now a ‘perpetual uncertainty machine’.⁷⁰ This can be seen in Figure 8, which shows that economic policy uncertainty began long before the recent focus on tariffs.

Figure 8:

Global Economic Policy Uncertainty, January 1997 to January 2025



Note: The index is a GDP-weighted average of national economic policy uncertainty indices for 20 countries, based on newspaper coverage of policy-related economic uncertainty. For the US, it also uses the number of federal tax code provisions set to expire and disagreement among economic forecasters to measure the level of uncertainty regarding the path that policy and policy-related macroeconomic variables will take in the future.

Source: <https://www.policyuncertainty.com/index.html>

History and experience reveal a familiar pattern: when the path ahead is extremely foggy or drifts beyond view, consumers grow cautious, delaying major purchases, while businesses pull back on hiring and investment. Time and again, uncertainty –whether rooted in policy shifts, geopolitical tensions, or trade disputes– has been closely tied to a decline in economic activity.⁷¹ One study, for instance, finds that rising trade policy uncertainty, driven by increased sabre–rattling between the US and China, reduced US investment by about 1.5% in 2018.⁷² Needless to say, that period now seems almost quaint in comparison to today. As of the time of writing, the daily average of a popular index measuring trade policy uncertainty in 2025 is over 3.5 times higher than it was in 2018 which marked a nadir during the first Trump administration.⁷³ Even if tariff-induced uncertainty comes down, it is still likely to remain above this benchmark.⁷³

The negative impact of uncertainty appears even more pronounced in venture capital, where early-stage investment decisions already operate on the edge of market and technical risk and high levels of illiquidity – factors that enhance the option value of waiting for additional information about future economic prospects.⁷⁴ Evidence suggests that policy uncertainty leads to more financing rounds, a smaller share of investment amount in the first round, a reduced likelihood of successful exit through acquisition, and lower levels of cross–border VC investment. It may also deepen geographic divides in access to capital, as startups headquartered in cities with a high concentration of global VC investment appear more insulated from the drag of uncertainty.⁷⁵ Secular enthusiasm for AI, backed by long–term capital expenditures from tech giants, helps to moderate some of these effects but does not override the broader caution driven by uncertainty.

Even if we are past the peak of tariff uncertainty, uncertainty is capable of reshaping deal flow in

private markets. In uncertain times, buyers often retreat or demand steep valuation discounts, creating a pricing disconnect that stalls exit activity – a concern given the large backlog of aging, unexited deals. Klarna’s decision to delay its long–anticipated IPO –a leading ‘buy now, pay later’ lender and online payments provider– serves as a vivid example of these risks. The same logic applies to acquisitions.⁷⁶ These pressures should ease, but they could intensify in the event of a recession or downturn. In a more extreme and less likely scenario, heightened uncertainty and stock market declines could trigger a ‘denominator effect’, leaving institutional investors over-allocated to private assets and forcing them to scale back commitments.

The sectoral effects of tariffs and uncertainty are associated with a range of outcomes. At a basic level, higher tariffs might shift investment strategies – at the margin – away from deep tech, hardware, and biotech startups. While there are limits to how far globalisation and its cat’s cradle of supply chains can be unwound – limits that may yet encourage further policy de-escalation – activities reliant on manufacturing, physical inputs, and cross–border collaboration remain vulnerable to new trade barriers. The risk is greatest for scaleups that have reached a stage where exporting and overseas expansion are viable ambitions.

However, even startups outside these areas are not fully insulated. Many software and service firms depend on critical IT infrastructure. For example, tariffs on imported servers, equipment, and components such as semiconductors could prompt cloud – computing providers to pass higher costs down the chain, raising the price of data services. For startups with limited resources, these additional costs may be difficult to absorb. In principle, some SaaS companies could see demand

weaken as customers affected by tariffs reduce spending on non-essential services to protect their margins. Segments such as extended reality (XR), which rely on strong complementarities between hardware and digital content, could also be exposed – particularly given that much of the early adopter base is in the US. Another wildcard is that trade restrictions and tensions extend to services.

Whatever the magnitude of the effects, this is a reminder that international trade, production, and consumption are deeply interconnected. For example, Beauhurst's database of private companies – including many high-growth, equity-backed businesses – reveals that 1,889 UK businesses generate at least 90% of their revenue from international trade, creating particular exposures and risks in a more fragmented world.⁷⁷

The future is unknowable, especially as economic and non-economic shocks become increasingly knotted together.⁷⁸ The zigzagging of tariff policy we have seen is itself a manifestation of this underlying uncertainty. On the positive side, it highlights some of the constraints on even the most mercurial behaviour, but it also illustrates that optimism is a fragile commodity – one that must be balanced with caution and preparedness.

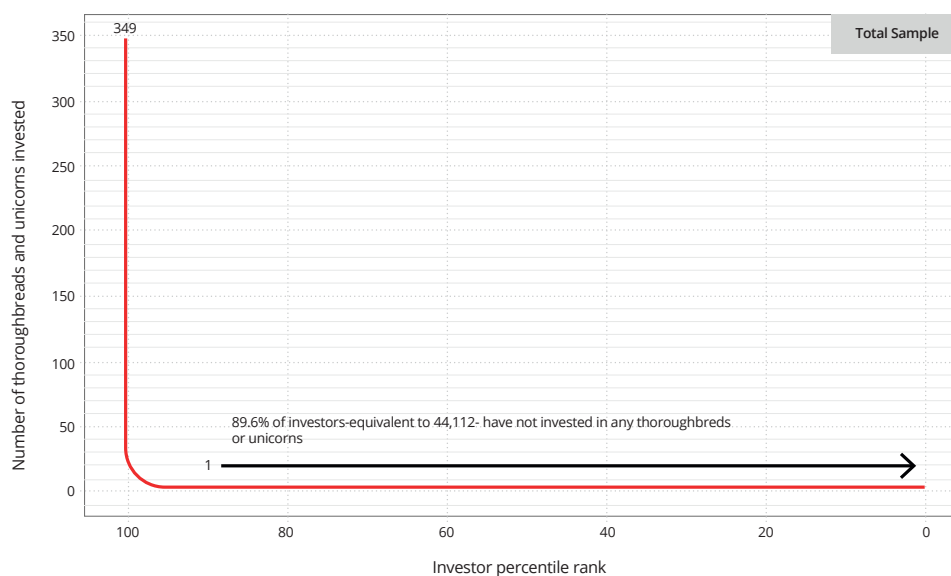
iii) Concentration and the outsized influence of a few large investors

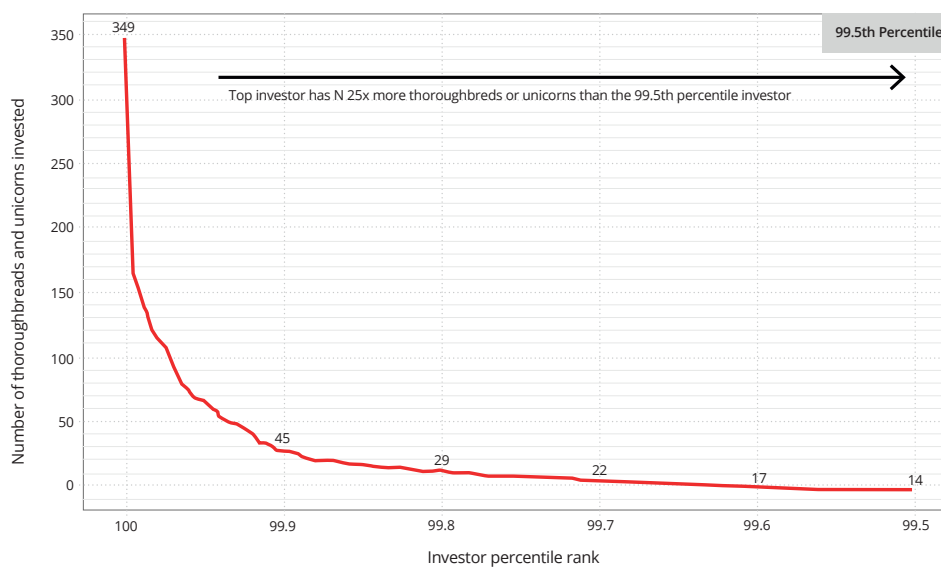
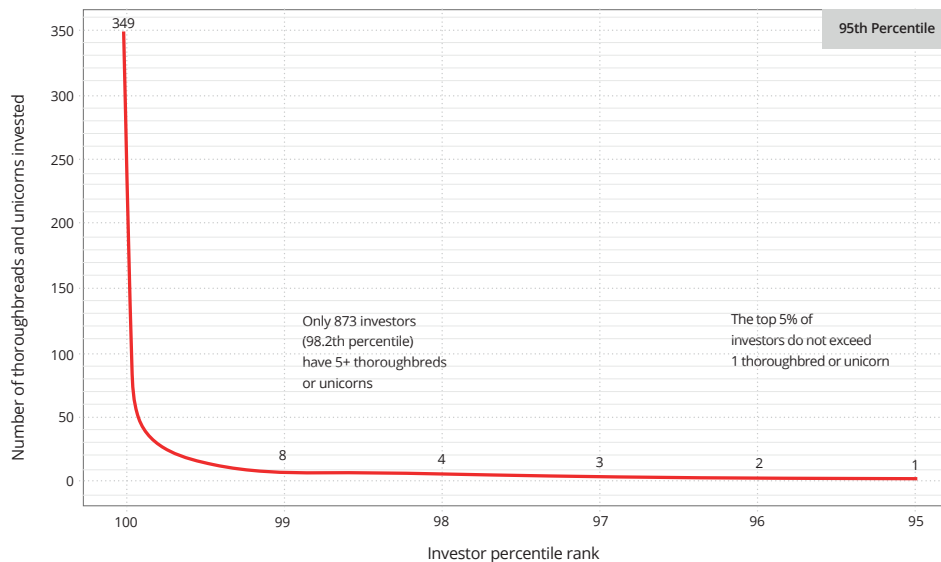
A final significant constraint limiting venture capital's ability to support innovation is the industry's strikingly high level of concentration. Between 2014 and 2018, the top 50 investors – approximately 5% of venture capital firms – accounted for half of the total capital raised in the US. In Europe, investors have also gravitated towards size, although smaller vehicles play a more prominent role in funding compared to the US. This trend towards

concentration has been driven, at least in part, by the relative consistency in the performance of top venture capital funds, which has enabled a small number of higher-performing firms to raise ever-larger funds. This is illustrated in the figure below, which shows how outcomes in venture capital follow a power law: a small number of active investors back the vast majority of thoroughbred and unicorn businesses. Even when zooming in on the top of the distribution, the performance gap between the most successful investors remains significant (see Figure 9).

Figure 9:

Distribution of VC investors (global) by number of unicorns and thoroughbreds invested





Top 5

Investor	Number of thoroughbreds and unicorns invested
SEQUOIA	349
TIGERGLOBAL	285
Accel	180
INSIGHT PARTNERS	171
al6z	169

Note: Analysis of 49,229 active VC investors globally as of February 2025. 'Thoroughbreds' refer to businesses with over \$100 million in annual revenues, while 'unicorns' refer to businesses with a valuation exceeding \$1 billion. Where a business is both a thoroughbred and a unicorn, it is only counted once. However, not all unicorns are thoroughbreds, and not all thoroughbreds are unicorns.

Source: Dealroom (2025).

The degree to which this market structure is economically or socially optimal is a subject of debate. What is clear is that large funds are in a position to act as gatekeepers determining which companies get backed, influencing for better or worse the overall direction and priorities of the venture ecosystem.

Financing risk, a critical factor, is often overlooked in the literature due to the implicit assumption that all firms with positive net present value will secure funding. However, this assumption ignores the harsh reality that even profitable new ventures can fail to take off unless investors across the funding spectrum – both upstream and downstream – coordinate their investments over time.

These risks are particularly acute for early-stage investors, who manage smaller sums of capital and typically target startups in their most nascent stages, well before these companies generate revenue or become profitable. Promising projects often flounder without securing follow-on funding from larger late-stage investors. This dependence places immense pressure on early-stage investors to align their decisions with the preferences of their larger peers.⁷⁹

The influx of capital into the venture capital industry has only heightened this dynamic. Late-stage investors, flush with money, increasingly target potential unicorns – firms with scalable business models that can absorb significant amounts of capital, making them relatively more valuable than other firms. Early-stage investors, in turn, respond by shifting their own focus. Instead of funding a diverse array of startups to encourage

experimentation, they increasingly concentrate on firms that exhibit early signs of becoming unicorns. This paradoxically reduces early-stage experimentation, a key driver of innovation, and can result in inefficient outcomes.⁸⁰

Concerns about a few investors acting as gatekeepers becomes even more significant when we consider who they are and where they are located. Many top venture funds are clustered in just a few places, most famously along Sand Hill Road in Silicon Valley. This concentration is especially valuable for complex, knowledge-based activities. By bringing together entrepreneurs, talent, customers, and capital, these hubs make it easier to share resources, match needs, and exchange ideas.⁸¹ Over time, these processes have only grown stronger, boosting innovation and productivity—but also reinforcing the power of these select networks. The same processes may have also led to the marginalisation of innovative activities in other cities or parts of the world. Today, hubs like Silicon Valley and London feel ‘closer’ to each other in social, institutional and cognitive ties than to other parts of their own domestic economies. Venture firms outside these hubs might have prioritised entirely different types of businesses, leveraging their unique understanding of local strengths and needs to develop alternative financing mechanisms and governance models better suited to those priorities.⁸²

This is not merely a speculative notion. Research highlights how China’s rise as a global hub for venture capital investment and entrepreneurship – spurred in part by favourable government policies that challenge traditional patterns of economic

specialisation and comparative advantage – has transformed the landscape of technological innovation, focussing on areas overlooked by the US-led system and high-income countries.

As China's influence has grown, investors and firms have increasingly prioritised challenges that align with local needs, taking into account differences in income, culture, geography, and infrastructure development. A prime example is DeepSeek whose sudden emergence we cited earlier. It has found innovative ways – known as knowledge distillation– to maximise limited computing power for building its models, a key concern in resource-constrained environment, which is common in low-income parts of the world. A similar impulse is reflected in sectors like agricultural technology, education technology, and health technology, where innovations have been designed to match local conditions and priorities.⁸³ These choices have not only solved important local problems but provided a blueprint for startups in other emerging markets. This impact is evident in measurable improvements in outcomes in other developing countries, including business formations, successful firm exits, patenting activity and socioeconomic well-being. Perhaps most intriguingly, China's rise has fostered a growing pool of serial entrepreneurs who are expanding into industries outside China's direct leadership, diversifying innovation into areas that are even more relevant to local needs.⁸⁴

The limitations of a VC industry where a small number of financiers act as gatekeepers extend beyond geographic focus—they are also rooted in its demographic composition. The top firms are disproportionately dominated by graduates of elite business schools and remain underrepresented by women and minorities. This is not simply a matter of equity; it has further skewed the types of innovation funded, the entrepreneurs who gain access to resources, and the extent to which stakeholder-oriented approaches are embraced.

Diversity also includes cognitive diversity – differences in perspectives, thinking styles, and problem-solving approaches. Many venture capital investors, especially outside the US, come from finance, consulting, or banking backgrounds rather than having a PhD, MD or other STEM training.⁸⁵ This poses a particular challenge for deep tech and R&D intensive companies, where investors may struggle to evaluate the technical and financial viability of investee technologies because of this knowledge gap – a deficit that Britain's new Science and Technology Venture Capital Fellowship programme aims to address.⁸⁶

It is also less common – again, in contrast to the US– for investors to have experience in a startup or scaleup business. Some estimates suggest that in Silicon Valley, over 60% of the partners at top VC funds were previously founders or chief executives, compared with just 8% in Europe.⁸⁷ While this aligns with certain value creation strategies, it can sometimes leave a gap when it comes to entrepreneurial expertise or technological knowledge – both critical for supporting a startup's growth.⁸⁸ Interestingly, research shows a clear edge for VCs who have walked the walk as successful founders, with these founder-VCs achieving investment success rates 6.5 percentage points higher than their professional VC counterparts.⁸⁹ There is also evidence that the educational and professional backgrounds of executives at investee companies can significantly influence outcomes. For example, studies indicate that the practice of appointing chief executives with MBAs boosts profitability but often at workers' expense, as these firms fail to deliver higher sales, greater investment, improved productivity, or stronger employment growth.⁹⁰

Gender diversity, in contrast, appears to unlock tangible benefits. Sophie Calder-Wang and Paul Gompers (2021) provide compelling evidence in an intriguing paper that gender diversity drives better firm outcomes through the application of causal methods in a field that is often plagued by methodological flaws, overhyped conclusions, and plain wishful thinking. They use the number of daughters venture capital partners have as an instrumental variable for gender diversity, arguing that the gender of a venture capitalist's children is random and unrelated to other factors that might directly affect firm performance, but that parenting a daughter instead of a son may shift gender attitudes in a more egalitarian direction. They find that having more daughters is associated with a higher proportion of female partners and, in turn, improved deal-level outcomes and fund-level excess returns. Specifically, they estimate that a 5% increase in the representation of women among active partners increases a fund's excess internal rate of return by 4.2%–4.7%.⁹¹

This is supported by other research. Using data from AngelList, a platform connecting investors with start-ups, Michael Ewens and Richard Townsend find that male and female investors show clear gender-based preferences in the companies they back. These preferences cannot be explained by differences in startup quality, industry focus, communication barriers, or risk preferences. Instead, they are consistent with a 'birds of a feather' effect, where venture capitalists tend to favour working with or investing in people who resemble them. Notably, male investors' preference for male-led startups does not yield better outcomes –these startups actually underperform compared to the female-led ones they show interest in.⁹²

Limited diversity remains a persistent issue in venture capital. In the US, as recently as 2019, fewer than 15% of new entrants into VC firms and

VC-backed businesses were women. The racial and ethnic composition of this population is also highly skewed. Data for the UK is sparser, but it paints a similar picture. According to the British Business Bank, all-female founder teams have secured £2.0 billion in announced equity funding over the past decade. In contrast, all-male founder teams raised £6.5 billion in announced equity funding in 2023 alone. This means that, within just one year, all-male founder teams attracted more than three times the amount of funding that all-female founder teams have raised over the past ten years.⁹³ Put differently, for every £1 of VC investment in the UK, all-female founder teams get less than 2p.⁹⁴ These issues are further reflected in the low gender diversity in senior investment roles at VC and PE firms, where women hold just 11% of these positions, and 13% of firms have no women on their investing teams.⁹⁵

On the other hand, the policy implications are far from straightforward.⁹⁶ On one hand, organic initiatives that raise awareness of gender issues, such as those sparked by high-profile court cases, can break down structural barriers and improve team performance.⁹⁷ On the other hand, mandating diversity mandates on entrepreneurial teams may have unintended consequences. Rather than improving outcomes, such mandates risk breeding resentment, sharpening conflicts and impairing communication, notably the ability to convey tacit information and make joint decisions in a timely and productive manner.⁹⁸

These biases and heuristics are not isolated – they are the visible tip of a cognitive iceberg, with a large, unseen bulk lurking beneath the surface of market participants' awareness. This hidden influence subtly shapes decisions and actions, often in ways participants fail to recognise. But are these actions truly efficient? The answer is less clear. While some evidence suggests these mental shortcuts can streamline decision-making and improve assessments of entrepreneurial quality, they also create substantial frictions and roadblocks in the process of gathering and interpreting information.⁹⁹

Research demonstrates how a popularity bias – where investors base decisions on what's trending – can amplify random fluctuations and distort downstream fundraising outcomes.¹⁰⁰ Even when stereotypes reflect some aspects of economic or social realities, such as the traits of successful entrepreneurs, investors often exaggerate these traits in their decisions. This can lead them to overlook predictably strong entrepreneurs who do not fit the stereotypical mould.¹⁰¹ This matters in an industry where deal sourcing reigns supreme – and the ability to look outward and cast one's networks far and wide to find potential deals is arguably the most important driver of value creation and success.¹⁰²

This issue is magnified by the high-pressure nature of venture investing, where ambiguity, tight deadlines, and cognitive overload dominate decision-making. In these conditions, it is little surprise that investors often fall back on instinct or 'gut feelings.' For example, one study using machine learning analysis of pitch videos finds that startups with passionate and warm delivery styles are more likely to secure early-stage funding – even though they often underperform in the long run.¹⁰³ Likewise, there is evidence that first impressions often distort fundraising outcomes, with charm frequently eclipsing crucial managerial skills, though these biases tend to diminish as investors gain more experience, highlighting the importance of learning-by-doing.¹⁰⁴

BOX 3:

ESG considerations in venture capital

While conceptually distinct from purpose, ESG considerations have served as a concrete way to align startups and scaleups with the needs of broader stakeholders. Given the disruptive potential of VC-backed businesses – especially as many remain private for longer – this agenda has attracted increasing attention.

Yet despite growing interest, ESG in VC remains in its infancy compared to other asset classes. As the sector begins to engage with ESG, early ‘teething issues’ have become apparent. Most frameworks were designed for public markets – not the scrappy, resource-constrained startups that dominate VC portfolios. As a result, early-stage investors often face reporting expectations that are burdensome, impractical, and disconnected from the materiality thresholds relevant to a startup’s stage of growth.¹⁰⁵

The experience of other sectors has shown that heightened scrutiny from limited partners (LPs) can be a powerful catalyst for ESG adoption. However, these pressures are arguably weaker in VC markets. One compelling theory points to the role of power law returns in shaping asset owner behaviour. Since the bulk of VC returns are concentrated in a handful of top general partners (GPs), LPs may be reluctant to challenge them on ESG issues for fear of rocking the boat and jeopardising access to future funds.¹⁰⁶ Research shows that this dynamic can give GPs considerable leverage in their relationships with LPs.¹⁰⁷

On the other hand, VC investors are recognising that they cannot stand apart from broader societal shifts – not least because public markets, a critical exit mechanism, attach weight to ESG factors, as suggested by the IPO of Deliveroo.¹⁰⁸ For tech investors, particularly those funding software and internet startups with significant carbon footprints, questions of materiality are becoming harder to ignore.¹⁰⁹ Indeed, operating at the technological frontier, VC investors often find themselves

as canaries in the coal mine, encountering the consequences of changing perceptions about what is considered financially material.¹¹⁰ A good example is the rise of explainable AI, an issue barely on the public radar just a decade ago. Today, there is a growing expectation that AI systems should not only be error-free but also capable of explaining the reasoning behind their decisions, recommendations, or predictions – failure to do so may lead to liability risks.¹¹¹

This trend is reinforced by the rise of new VC-specific organisations and service providers, such as Venture ESG and ESG_VC, and the development of tools like the UN PRI’s responsible investment due diligence questionnaire (DDQ). The industry has also advanced in areas like materiality assessments, with ESG reporting startups, including Atlas Metrics, ESGGen, Impact Nexus, and specialised carbon accounting platforms, strengthening these efforts.¹¹² These providers help investors and portfolio companies gather, disclose, and assess data, creating a common framework for performance evaluation. Despite variations in adoption between North America and Europe, these initiatives are gaining momentum.¹¹³

Finally, we may be looking in the wrong place if we equate ‘doing well by doing good’ solely with an explicit commitment to ESG, especially given the confusion and controversy surrounding the topic. Paper I presented evidence that companies with a stronger sense of purpose tend to perform better financially, particularly ones which rely on innovation and intangible assets for value creation and have patient, long-term owners. Many ESG goals can be recast within the framework of purpose, which positions investment in ESG and stakeholders as a strategic means to create value for investors.

This is not to say that purpose makes these issues 'go away' – in the sense that they no longer feel like an external imposition or a box-ticking exercise. While win-win outcomes do exist, they are far from guaranteed – especially given the increasingly large footprint of disruptive startups and the technologies they create. Purpose and the incentives shaping the high-level decisions of VC funds can pull in different directions, as highlighted in Paper I. The need to survive, followed by the pressure to grow, can create the conditions that encourage problematic behaviour. An asymmetric approach to risk – one that prioritises upside over loss mitigation – means that VCs can be indifferent to why a startup fails, whether for benign or more ethically questionable reasons.¹¹⁴

IV. UK challenges in risk capital: a funding gap?

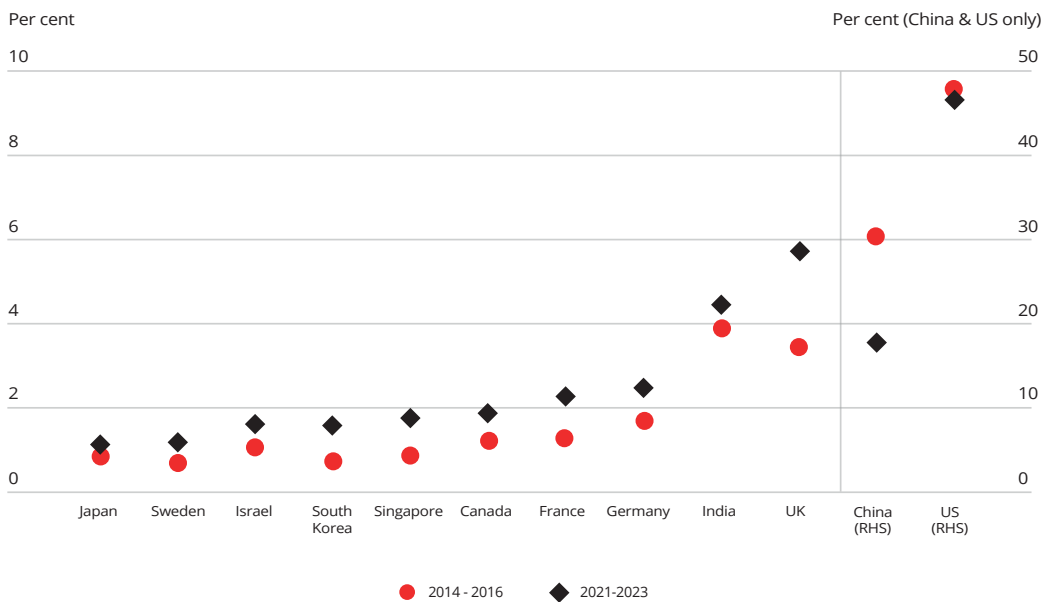
The previous sections examined the benefits and limitations of the venture capital model as an instrument for funding innovation. We now shift our focus to the British context, exploring how its distinctive features amplify or mitigate these issues. In many ways, the UK venture capital market is a remarkable success story. It boasts the third-largest VC market globally and the largest in Europe by a significant margin, attracting more investment in recent years than France, Germany, and Sweden combined (*see Figure 10*). Over the past decade, the UK has seen an increase in investment of 523%, growing at nearly twice the rate of the global average (270%). In particular, it occupies a

commanding place in the seed stage of the market where it is second only to the US.

This success stems from the UK’s core strengths in innovation – world-class research, a highly skilled and cost-effective workforce, thriving regional clusters, and a pro-entrepreneurial climate, all underpinned by stable and predictable legal and regulatory institutions. The result is a growing pipeline of over 790 VC-backed businesses across the UK that exceed \$25 million in annual revenue and are primed to grow even further.¹¹⁵

Figure 10:

Share of global VC investment by country, 2014–2016 vs. 2021–2023



Source: British Business Bank (2024).

However, evidence suggests that young innovative businesses struggle to access the finance they need to grow. Diagnosing and measuring the exact size of the gap is not straightforward, as it requires constructing a counterfactual scenario –but, on what basis? For example, how should one define a gap: is it a company that wouldn't survive without investment or one that simply grows more slowly? Nonetheless, there are enough empirical clues and fingerprints to suggest a shortfall in the supply of equity finance relative to potential demand, and that this is acting as a headwind on the growth ambitions of innovative businesses.

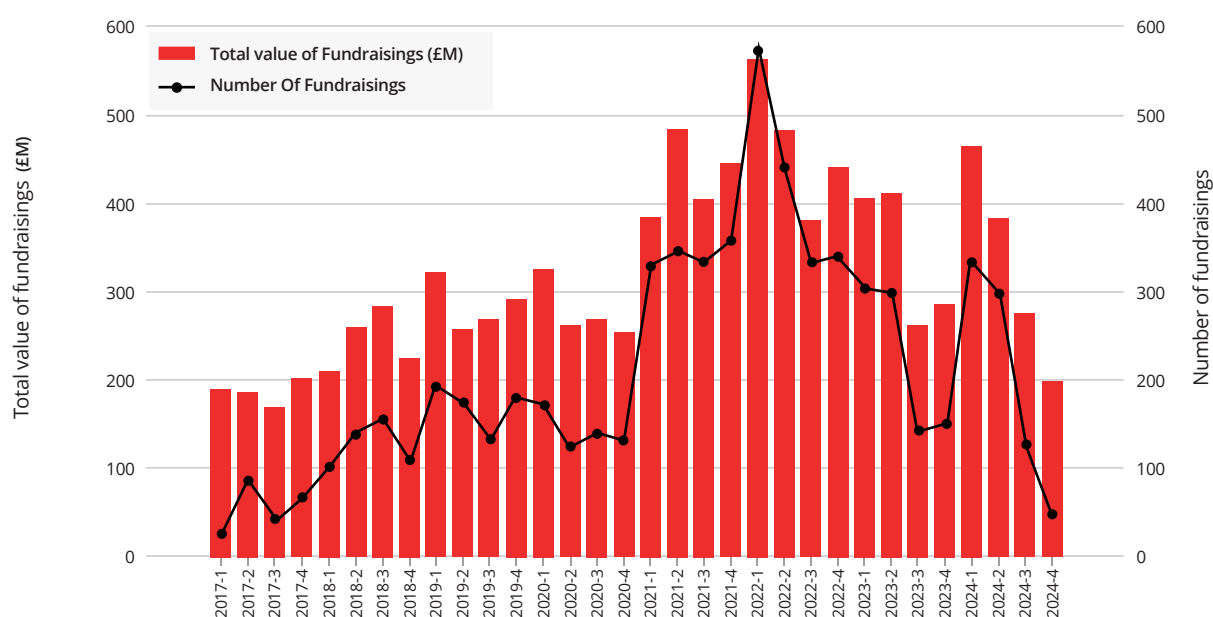
Policymakers outside the US, where markets are thinner and lack a critical mass of investors and intermediaries who have experience, know these challenges all too well. This is not to say that these

are felt equally across all these stages. Indeed, some like Andrew Williamson, CEO of Cambridge Innovation Capital believe that raising money at the pre-seed and seed stage, for instance is, if anything, too easy.¹¹⁶ Aided and abetted by tax relief schemes such as SEIS and EIS, this has had the effect of distorting the market.

On the other hand, there is troubling evidence that the UK is beginning to lose its edge in areas where it has historically excelled, such as startup support for companies seeking to raise between £2m and £10m which corresponds to the transition from seed funding to Series A. Roughly half a billion GBP less in Series A capital is being deployed now compared to just two years ago –and attests to some of the challenges and uncertainties highlighted in the previous section (see Figure 11).¹¹⁷

Figure 11:

Quarterly equity investment (£2-10m) by PE/VC in UK early-stage companies (2017-2024)



Source: Beauhurst (2024).

These funding challenges can create a cascading effect – eroding investor confidence, straining resources, diverting management focus, and ultimately slowing a startup’s momentum. More subtly, the difficulties of raising capital for current or future funds can lead to unnecessary caution or risk aversion among VC investors, who feel compelled to justify every pound spent. Additionally, these funding challenges exacerbate existing gaps in scale-up support, a well-documented bottleneck in the venture ecosystem dating back to identification of the Macmillan Gap in the late 1920s.¹¹⁸

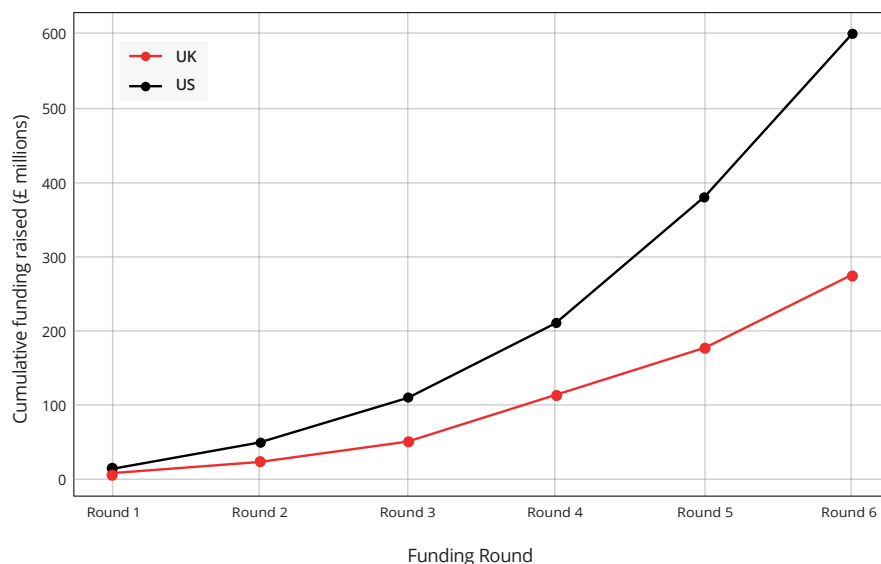
Funding constraints at the scale-up stage have received plenty of attention, but they are not always explicitly defined. Stephen Nundy, Partner and Chief Technology Officer at Lakestar, elaborates on this point, noting that writing cheques of £10–30 million is particularly challenging. It comes with all the trials of early-growth and late-growth investing without necessarily offering the comforts of either. Early-stage investing, for example, involves making decisions with limited information and a high degree of uncertainty, but there is also something liberating about this latitude: “I’d argue that early stage investing, zero to four, five million, is the easiest or happiest place to invest. You invest off of your heart and your stomach. There’s no data. It’s completely vision based. You’re putting in a small amount of money, if it goes to zero no-one’s going to complain because you know that you took a risk”. By contrast, writing cheques of £75–200 million carries higher stakes, but there is also more clarity about a company’s prospects, the product having been significantly de-risked. For Nundy, there needs to be greater focus on the step before:

“When we talk about scale up funding I think there’s a misnomer here as to what quantum of cash we’re talking about. No-one should be under any illusion that investing twenty, thirty, forty, fifty million into a company is easy. The company could still go to zero, making it harder to recover as a fund manager if you take too many of those hits in any one fund generation. At the same time, there’s still a lot of risk that’s happening [and] you have to do a lot more homework at that stage. You really have to understand how the company is performing? You have to spend a lot more time with the company and looking at the data, you have to understand really what is the momentum behind the product and the efficiency. Is this company good compared to other companies?”

Therefore, it is not surprising that financial constraints begin to widen at this stage. For example, UK companies secure considerably less funding than their US counterparts between rounds three and five (see Figure 12). This is not an isolated case. In comparator countries such as Germany, France, and Canada, deals completed during later funding rounds also tend to be larger on average than those in the UK.

Figure 12:

Cumulative average deal size by round for companies raising their first round in 2015–2016 (£ million)

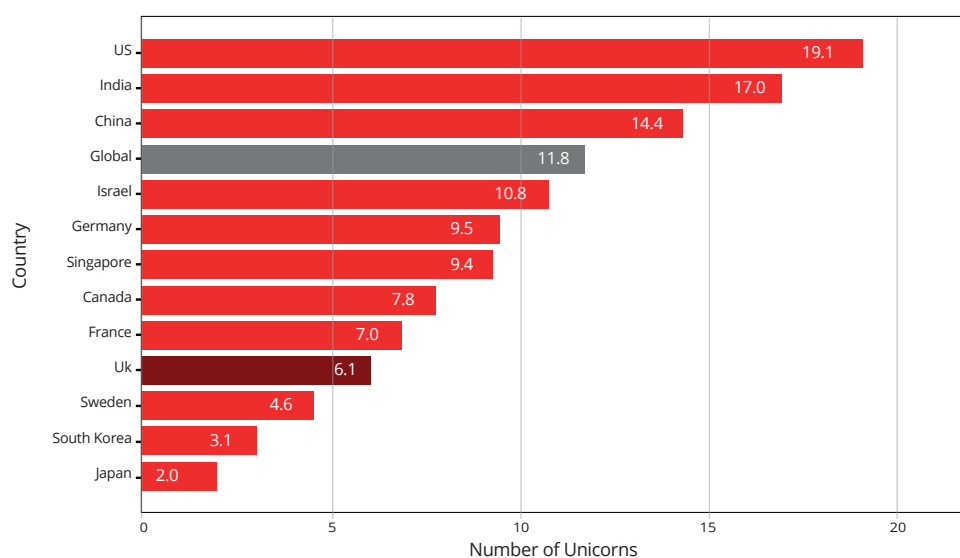


Source: British Business Bank (2024).

A possible consequence of these differences is that fewer innovative companies are able to become into world-class players. Consistent with this observation, there is evidence that the UK is less efficient in creating unicorns (see Figure 13).

Figure 13:

Number of unicorns per 1,000 VC-backed companies, 2021–2023



Source: British Business Bank (2024).

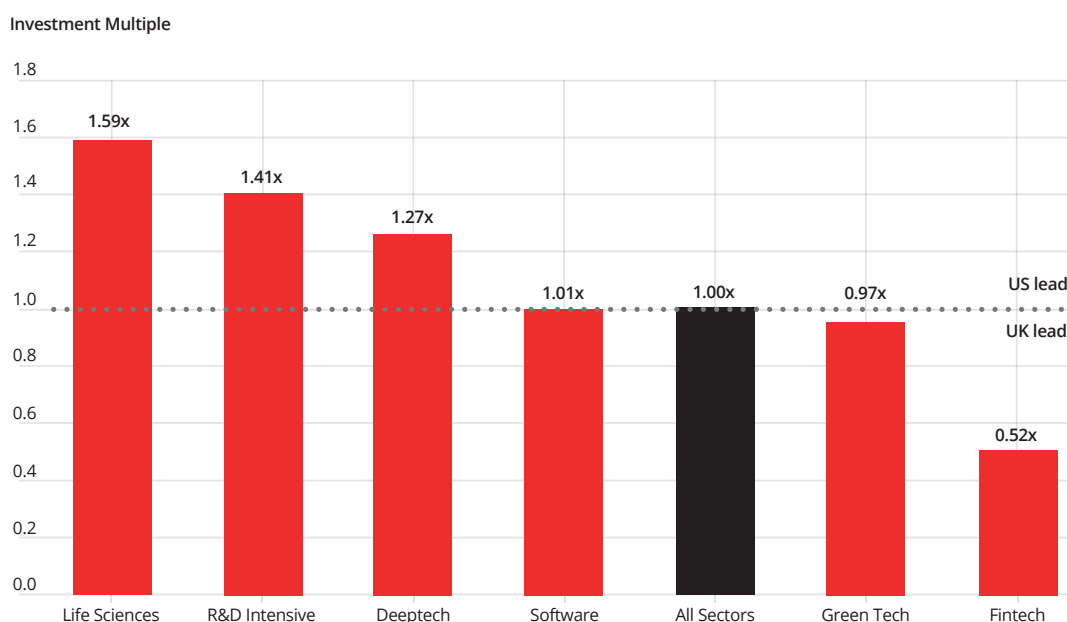
Given their significant capital needs, these trends are also reflected in sectoral gaps in areas such as life sciences, deep tech and R&D intensive sectors. Between 2021 and 2023, the US raised 1.59 times more investment in life sciences, 1.41 times more in R&D-intensive sectors, and 1.27 times more in deep tech on a GDP-adjusted basis. On the other hand, this gap is much narrower than it was 5–7 years ago; life sciences is the only sector where the gap has remained relatively stable. At the same time, the UK actually invests more than the US in sectors such as fintech and has closed the overall

VC investment gap with the US again on a GDP-adjusted basis. This progress, however, may have more to do with the UK entering the VC cyclical downturn later than US markets rather than from structural causes.

These headline results are presented in the figures below, which illustrate the latest US–UK VC investment multiples and their evolution over time (see Figures 14 and 15). A value above one indicates that, relative to GDP, the US invests more than the UK, while a value below one indicates the opposite.

Figure 14:

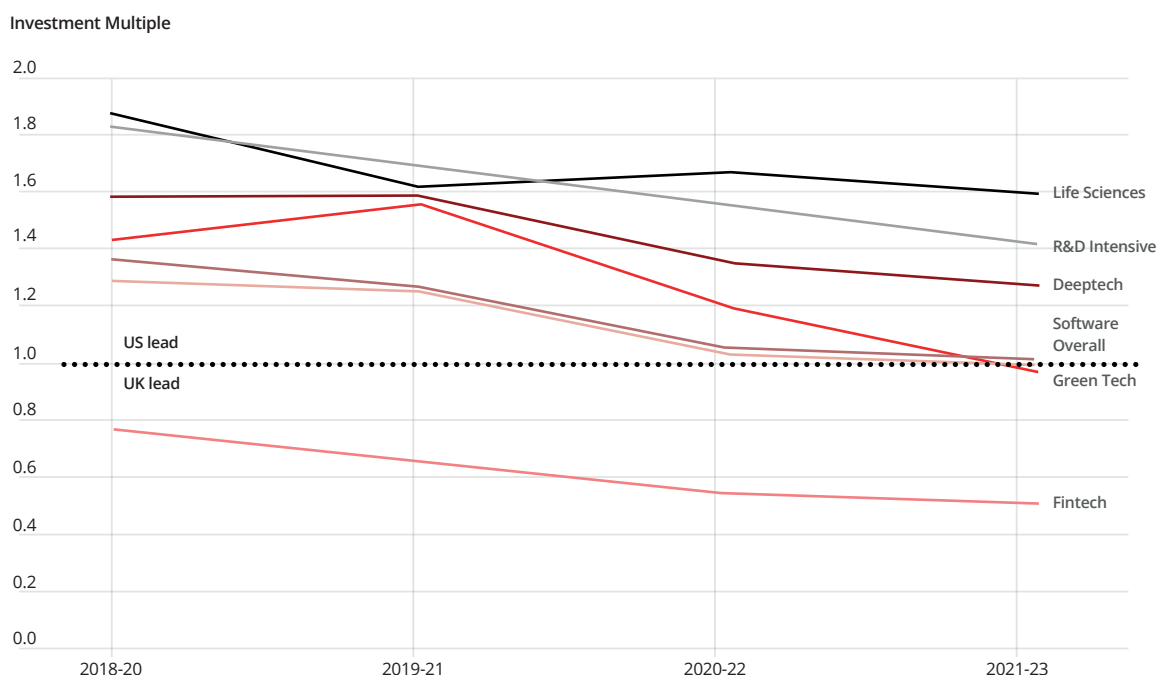
US–UK VC investment multiples by sector, GDP-adjusted (2021–23)



Source: British Business Bank (2024).

Figure 15:

UK-US VC investment multiples (GDP-adjusted) by sector over time



Source: British Business Bank (2024).

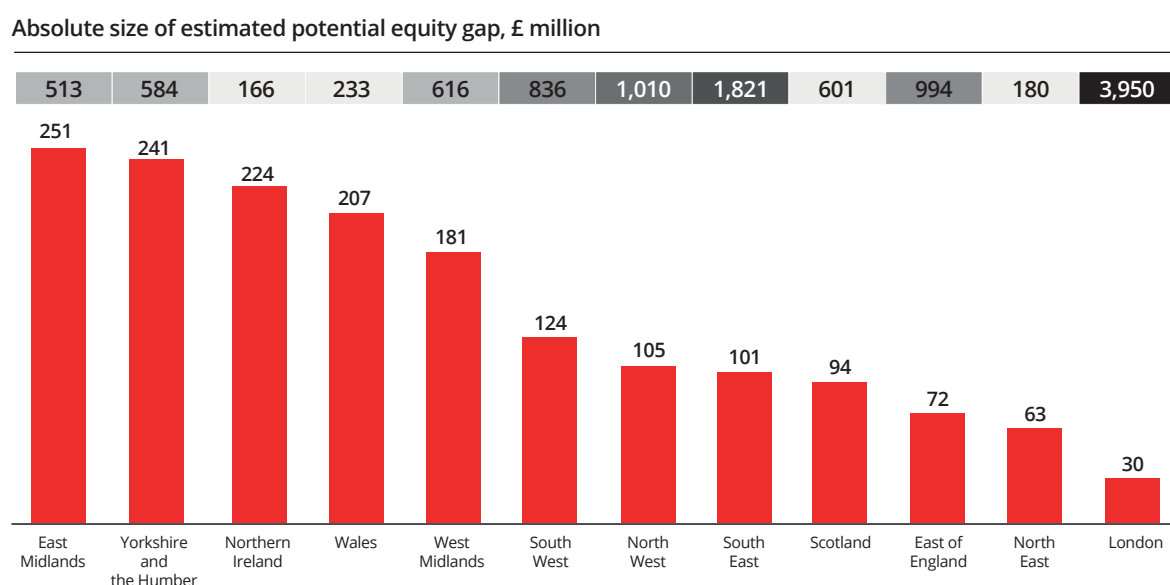
Putting it all together

The equity gap can be calculated in different ways; however, regardless of the method used, its magnitude is sizeable. Far from being static, the gap reflects an annual flow, with missed opportunities in one year being permanently lost in the next. The ScaleUp Institute identifies a structural gap equal to £5–£10 billion every year – excluding cyclical elements – in terms of growth capital.¹¹⁹ Researchers at Leeds University use propensity score matching (PSM) to profile the characteristics

of firms that have successfully secured equity financing. They identify potential investment targets with similar characteristics that have not yet secured funding, summing the imputed value of these deals and estimate an annual ‘equity gap’ of approximately £11.6bn across seed, venture and growth stages.¹²⁰ When disaggregated by region, the gap is largest in absolute terms in London. However, as a share of actual funding, it is highest in the East Midlands (251%) and Yorkshire and the Humber (241%) (see Figure 16).

Figure 16:

Estimated equity gap (2021) as a proportion of total equity deal flow in 2019–2022, %



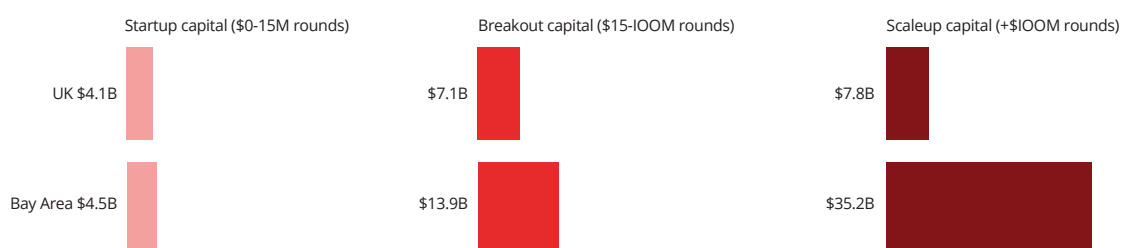
Source: Oliver Wyman (2024) based on Kacer and Wilson (2023).

Others have analysed the gap by benchmarking the additional investment the UK would need to close the gap with the best-performing international comparators such as the San Francisco Bay Area in the US, where markets are functioning relatively smoothly. The Council for Science and Technology reports an annual funding gap of nearly \$30 billion

between the UK and Silicon Valley for funding rounds exceeding \$100 million, resulting in a substantial cumulative shortfall over time (see Figure 17). Access to scale-up capital is particularly critical, as companies now need to generate over \$500 million in revenue to go public on leading exchanges like the NYSE and NASDAQ.¹²¹

Figure 17:

Total capital raised at startup, breakout and scaleup funding rounds, UK vs. Bay Area, 2023



Scaleup capital, UK vs. Bay Area, 2013-2023 (cumulative amount raised from \$100M+ rounds)



Source: Dealroom (2024).

None of this necessarily means that domestic scaleups are destined to hit a brick wall as they grow. Companies, particularly larger unicorns, still have plenty of ways to meet their financing needs. However, the path to growth often comes with more strings attached. One concern, highlighted

by organisations like the BVCA, is that the largest cheques –from £10–100 million– tend to be written by foreign investors, particularly US funds and their beneficiaries when it is UK investors who are first picking winners (see Figure 18).¹²²

Figure 18:

Top seed and late-stage investors in UK by thoroughbred, colt, future unicorn and unicorn investments

SEED STAGE				LATE STAGE		
	Investor name	Country	Count	Investor name	Country	Count
1	LocalGlobe	UK	29	BlackRock	US	32
2	Seedcamp	UK	20	Insight Partners	US	20
3	Passion Capital	UK	20	Vitruvian Partners	UK	17
4	Index Ventures	UK	10	Index Ventures	UK	17
5	Episode 1 Ventures	UK	10	Coatue Management	US	15
6	Samos Investments	UK	10	Target Global	Germany	13
7	Venrex	UK	9	General Catalyst	US	13
8	Amadeus Capital Partners	UK	9	Accel	US	11
9	Balderton Capital	UK	7	IP Group	UK	9
10	HV Capital	Germany	6	Business Growth Fund	UK	9

Note: Analysis of 751 investors in the UK, based on all active investors in the last 12 months with at least 1 investment in unicorns, future unicorns, thoroughbreds or colts as of February 2025. 'Thoroughbreds' refer to businesses with over \$100 million in annual revenues; 'colts' refer to businesses with \$25–100 million in annual revenues; 'unicorns' refer to businesses with a valuation exceeding \$1 billion; and future unicorns refer to businesses with a valuation between \$250 million and \$1 billion. Businesses can belong to more than one category at the same time. Late stage are all investments with entry stage at Series B+. See Dealroom for definitions.

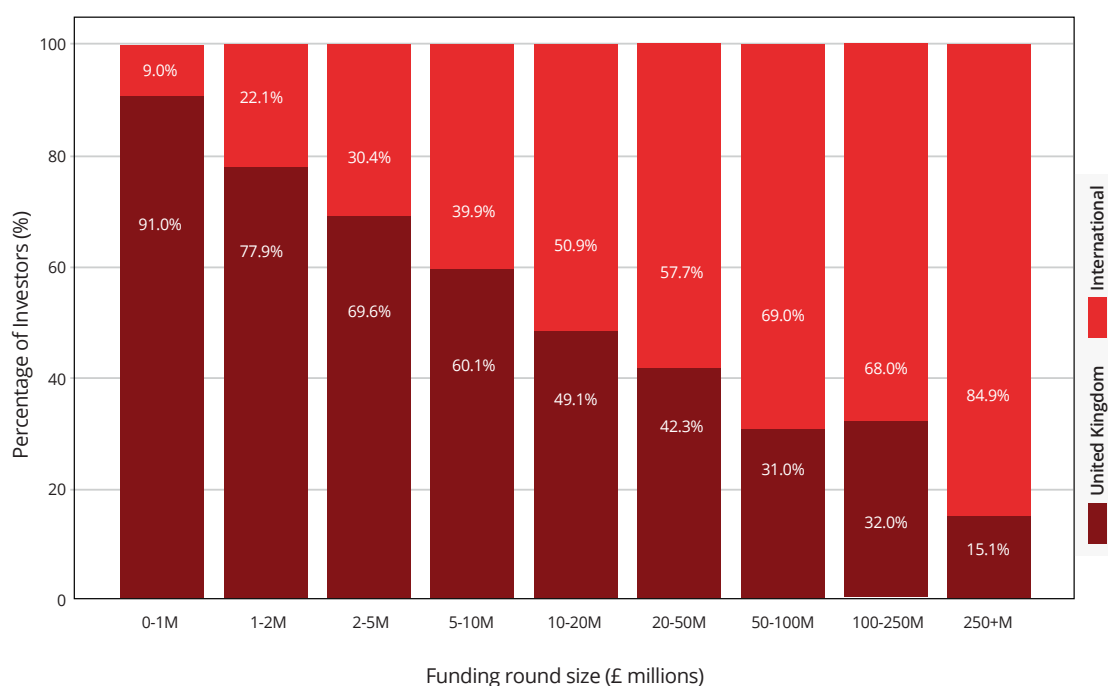
Source: Dealroom (2025).

This trend becomes even more evident when analysing foreign investor participation in larger equity funding rounds. At a granular level, the

data reveals a sharp increase in foreign investor involvement as funding rounds grow in size (see Figure 19).

Figure 19:

Comparison of domestic and international participation (%) in equity funding rounds by deal value, 2014–2023



Note: Due to limitations in data availability, the chart presents a simple count of investors participating in deals of various sizes, without weighting or factoring in the amount each investor is contributing. Additionally, there is limited systematic data on the limited partners (LPs) of VC funds and their backgrounds. Therefore, caution is advised when drawing conclusions based on GP-level data. Based on 29,966 observations for which there is disclosed investor data.

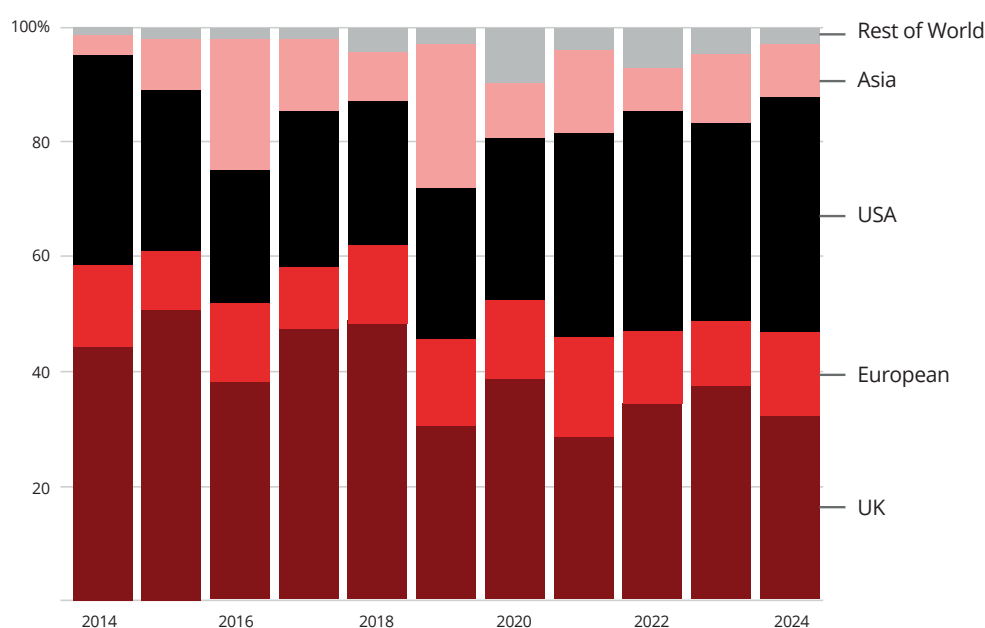
Source: Beauhurst (2024).

Interestingly, there is a temporal aspect to this phenomenon: when looking at total investment amount, the share coming from the UK has declined

from 45% in 2014 –an amount that was arguably already low in the first place– to 32% in 2024 (see Figure 20).

Figure 20:

UK Global venture capital by global regional destination (\$bn)



Source: Dealroom (2025).

James Mitchell, Head of Strategic Partnerships at Phoenix Insurance, underlines these trends. The UK does not boast enough large VC funds even to entertain serious engagement with later rounds of funding, which of necessity falls to overseas investors.

“There simply aren’t that many substantive UK pools for capital with the accompanying expertise that are able to write five or six cheques for one to two hundred million pounds to support scaleup. Instead of a one hundred million pound fund you need one/two billion pound funds. Without them UK businesses are compelled to look for capital on a global basis as they grow and scale. That’s what we need to try to transform in the next few years.”

This imbalance reflects several developments. In part, US funds tend to be larger. As a case in point, successful UK fund managers attract significantly less investment for follow-on funds compared to their US counterparts. By the time UK venture fund managers are raising their fifth fund, the gap is striking, with their American peers being nearly three times larger.¹²³ In turn, this may reflect the limited scale and concentration of UK asset owners, such as pension funds, which hinders their ability to diversify into venture capital and similar types of funds. The lack of scale may also prevent UK asset owners from developing in-house research and due diligence capabilities, as well as negotiating lower investment fees—factors that further narrow their scope to invest in these typically more complex and expensive asset classes. Other factors also contribute, notably the asset allocation decisions of UK pension funds who have been reluctant to invest in venture capital, as we will explore in Paper III. Whatever the precise cause, it is not surprising that the majority of capital flowing into UK private assets comes from global pension funds, with international investors contributing 16 times more than British pension funds.¹²⁴

Funding from international sources brings important benefits. Without it and lacking UK funding, companies would otherwise struggle to scale up, foregoing growth in sales, profitability, and employment both at a firm-level and across the local economy. Foreign VC investors also offer access to invaluable networks and expertise. Under the right circumstances, their larger scale creates opportunities for sharing information and innovations across their portfolios, further supporting the growth of the companies in which they invest.¹²⁵ The benefits of foreign VC often exceed those provided by domestic VC funding, highlighting the crucial value these investors bring to the innovation ecosystem.¹²⁶

But the dominance of foreign VC in later funding

rounds –and the extent to which the UK has become over-reliant on them, in part because of the lack of comparably large pools of domestic risk capital backing UK VC– has brought challenges. Companies receiving overseas investment are more likely to exit abroad. In the post-pandemic era, an increasing number of UK startups have opted to incorporate in the US, lured by superior access to capital, a more intrepid consumer base, and favourable tax treatment for American venture funds investing at home. While understandable, this trend – if taken too far – raises concerns about the erosion of strategic control, the displacement of high-value activity beyond national borders, and, ultimately, the UK’s ability to capture long-term value from its most promising businesses. There is also evidence that foreign buyers, by increasing demand and pushing up acquisition prices, help spur startup formation, but may also encourage too many startups to sell prematurely rather than scale to maturity. These costs can be significant, particularly when they hinder the accumulation and transfer of scale-up expertise within the domestic ecosystem.¹²⁹

Saul Klein’s primary concern is the sheer loss of economic value to British savers, investors and government from the scale of overseas involvement, but also observes that whether from the point of view of British founders or of early stage British VC investors that ‘it’s not just being able to capture the value as companies scale up, but it is also about protecting your rights when outcomes occur’ so ‘making it doubly important to participate in later founding rounds’. However as a self-avowed advocate of open trade he recognises the value of foreign VC investment, but thinks that British ownership needs to double from current levels to strike a better balance between the upsides and downsides.

The stability of foreign venture capital may also be called into question in a world where globalisation and cross-border flows potentially give way to greater segmentation of markets, economies, and policies. An example in point is Andreessen Horowitz, one of the largest VC firms in the world, which recently decided to shutter its UK office less than two years after announcing its much-touted move to London in order to refocus on its US home market. This decision remains a marginal case for now and may have more to do with the crypto-friendly stance of the current US administration.¹³⁰ It should not overshadow the substantial number of US and foreign VC funds that have established local operations in the UK, drawn by attractive investment opportunities. However, some interpret it as a possible sign of shifting commitment and a more localised approach to investment. The flipside is that a shift from globalisation to localisation could increase 'home bias', leading more British investors at the margin to favour domestic assets.¹³¹

The growth of domestic public market investors and other intermediaries in the venture and growth financing space, supported by acquisitions, is beginning to reshape these patterns.¹³² Armed with deep pockets, strong brand recognition, experience of navigating the IPO process and the ability to provide post-IPO market price support, they bring distinctive strengths to firms at this stage of their lifecycle.¹³³ This is especially true at a time when some VC firms are starting to reduce the size of their funds and curb the pace of their investments.¹³⁴ For equity financing rounds over £100 million, roughly 56% of deals between 2014 and 2023 involved at least one nontraditional investor such as an asset manager, bank, hedge fund or sovereign wealth fund, while 27% of deals involved at least one domestic nontraditional investor.

Alex Seddon, Head of Catalyst, M&G's £5 billion, purpose-driven, flexible private markets strategy

that offers growth equity for later funding rounds, explains the skills that an investor like M&G brings to the table:

"M&G's Catalyst strategy is playing a different role, providing long-term institutional capital at scale, which is required for break-out companies to scale at pace. Over the last three years, our investment strategy has highlighted that the best companies curate their capital tables: they have different kinds of investors playing different roles. For example, they might choose to have sector specialists, to provide in-depth and hands-on scaleup support. With Catalyst, we find that people like to partner with us, because we sit within a larger institution. As such, we can bring unique capabilities from across the M&G's business, bringing wider expertise to the table. As an example, the scale and breadth of M&G's £100bn equities business means we can connect our investee businesses with a broader ecosystem of companies that could potentially be suppliers or customers of theirs. In addition, we help our investee companies with their governance and, as they approach public markets, we can give them guidance on salient topics."

Robert Natzler, investment manager on the Private Companies Team and deputy manager of The Schiehallion Fund at Baillie Gifford, frames the contribution of traditional asset managers like this:

"To an early stage venture capitalist, 'expertise' looks like a very deep but narrow knowledge of a particular set of technology thematics, and a sense of who in the community working on those thematics is talented. Because of this, early venture capitalists are normally based in a single geographic cluster. You can see a big part of their job as essentially doing outsourced R&D for large firms, who will eventually come in and be the buyers of the companies the venture capitalist backs. At the later stages of private growth investing, expertise looks differently. You have to understand where

companies fit in global supply chains, and you have to understand who their competitors are going to be globally, across a wide number of different countries. That's where being a global investor, like Baillie Gifford, with a specialism in business model analysis, starts to give you a better toolkit for the task than being a local deep-but-narrow technology investor who understands their local cluster in massive detail."

A case in point is Pragmatic Semiconductor, a UK-based semiconductor manufacturer that produces ultra-low-cost, physically flexible chips capable of adding intelligence across the gamut of everyday objects. Pragmatic's £183 million Series D round was co-led by M&G's Catalyst and the then UK Infrastructure Bank (UKIB) – now rebranded as the National Wealth Fund – was a watershed moment. With additional backing from the British Business Bank, Cambridge Innovation Capital, North East Development Capital Fund, Finance Durham Fund, and Northern Gritstone, this investment marks the largest-ever venture round for semiconductors in Europe, with over half of this funding coming from UK sources. This investment will create the country's highest-volume semiconductor manufacturing site, expanding Pragmatic's international ambitions and supporting a range of applications, including sustainability, the 'circular' economy, accessible healthcare and national security. Recent trade tensions have only reinforced the importance of the country having reliable and independent access to critical technologies and infrastructure.

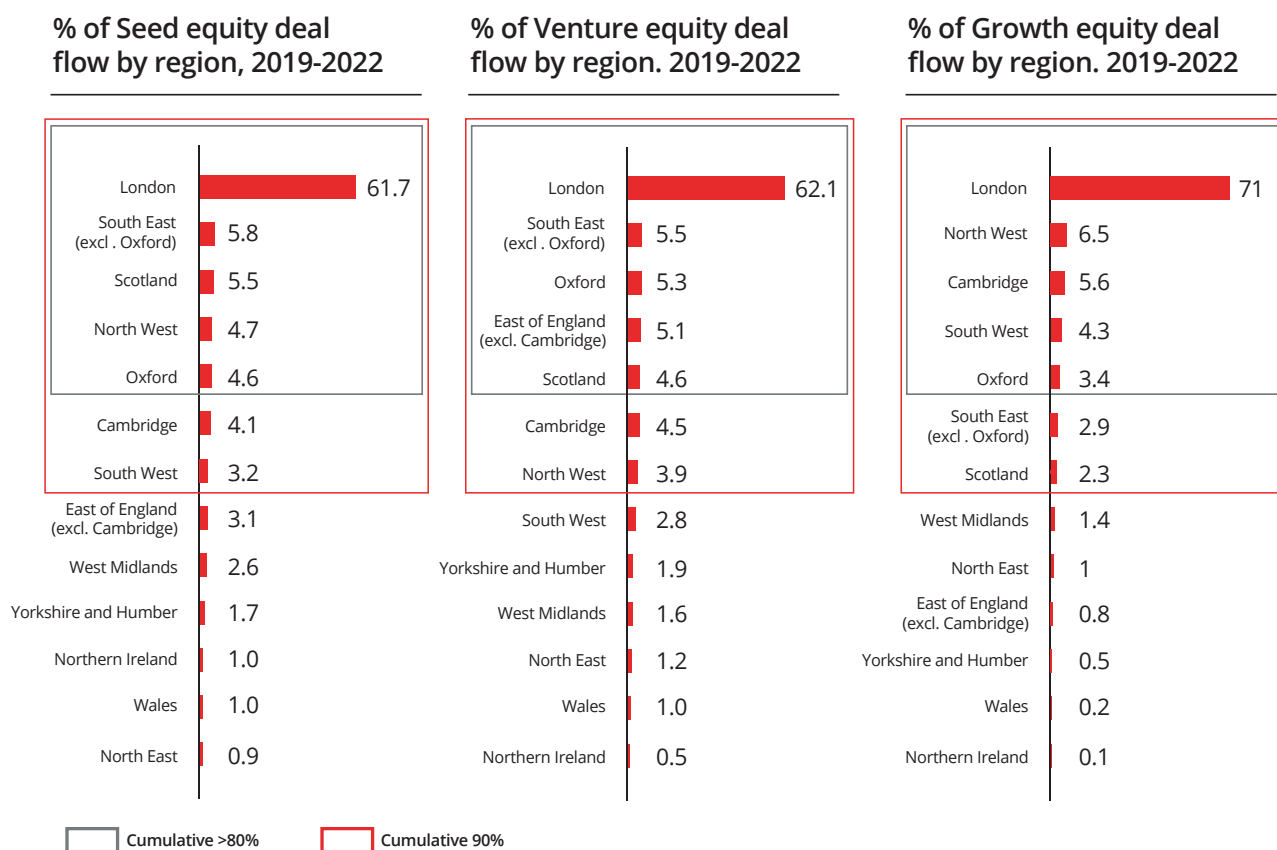
These examples of coordination are encouraging, and there is hope they will be further strengthened by emerging initiatives like the Long-term Investment for Technology and Science (LIFTS). Besides creating value at the firm- or project- level, the goal is to generate a demonstration effect, unlocking more domestic capital to invest in – and share in the success of – British high-growth

companies. However, this trend is in its infancy and remains vulnerable to the forces of inertia. There are policies aimed at overcoming these challenges, including efforts to promote pension fund consolidation, which could lead to shifts in domestic asset allocation towards venture capital, as well as initiatives to build a domestic critical mass of experienced investors and founders at the scaleup stage. However, it remains uncertain whether these strategies will be successful. Despite their benefits, traditional asset managers are better understood as complements rather than substitutes for traditional VC investors. Stephen Nundy highlights the limitations of bringing such investors on board as active strategists for the company's growth and success, as they tend to be more risk-averse. This is further supported by academic literature, which finds that mutual funds are more focused on ensuring a route to liquidity and mitigating the downside through provisions such as redemption rights.¹³⁵

The UK is marked by sharp geographical and regional inequalities, and access to venture finance is no exception. The geographical concentration of the VC market can be seen in the Golden Triangle of London, Oxford and Cambridge which captures around 70–80% of venture capital investment. The dominance of London is even more pronounced and unchallenged, particularly for growth equity finance (see Figure 21).¹³⁶

Figure 21:

Regional % of total equity deal flow by growth stage (Seed, Venture, Growth)



Source: Oliver Wyman (2024).¹³⁷

A possible explanation for these patterns is the limited presence of high-quality startups worth funding outside the Golden Triangle, creating a gap in attractive investment opportunities.

While this possibility cannot be entirely ruled out, it is not consistent with the existence of an equity gap, as documented by Kacer and Wilson that supports a supply-side interpretation – a tale of ‘too few good investors’ (see Figure 12). It is also striking that the spatial distribution of innovation and entrepreneurship across the country – measured by metrics like research council spinouts and the high-growth business population – extends far beyond the concentrated footprint of VC markets.¹³⁸ Once differences in universities’ research bases and resources are taken into account, spinout production rates at larger research universities – whether inside or outside the Golden Triangle – are strikingly similar. In short, innovation capabilities are more widely distributed.¹³⁹

The success of Northern Gritstone, an investment company that declares that its animating purpose is to focus on university spin-outs and IP-rich businesses in the North of England to help release and capitalise on the region’s potential dynamism, but also to profit from the strategic and arbitrage benefits of backing ventures that are not oversaturated with capital investment. This is ‘profit with purpose’ as its Chair Lord Jim O’Neill emphasises. He recalls how at the company’s first AGM, Oliver Coppard, the newly appointed Mayor of South Yorkshire, highlighted that two of Northern Gritstone’s first three investments – at time when Gritstone was still getting its feet wet – were spin-outs from the University of Sheffield: Iceotope, which has developed precision liquid cooling technology to prevent data centres from overheating and enable computers to perform at maximum efficiency, and Opteran Technologies, which has re-engineered insect brain patterns to drive advancements in autonomous machines.

Remarkably, the capital deployed into these two ventures alone exceeded the total amount of venture investment allocated to all of South Yorkshire over the previous two years.

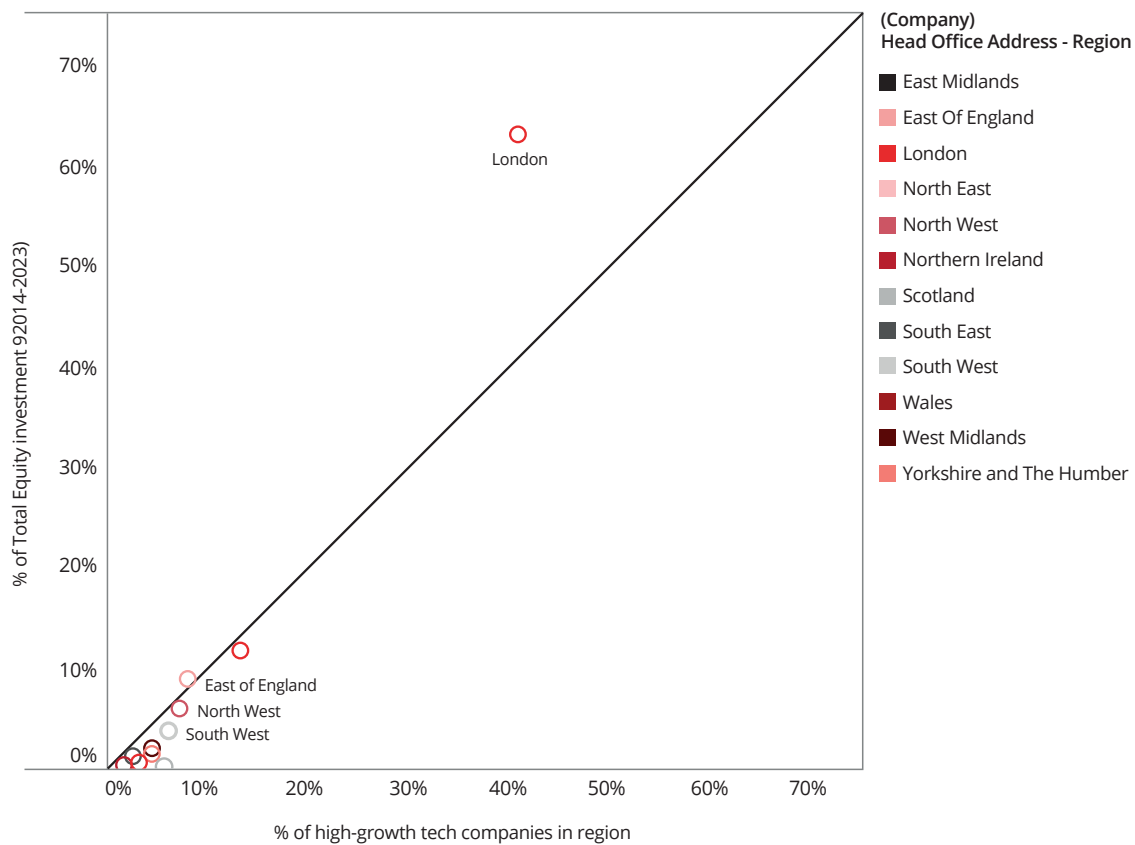
As O’Neill reflects,

“That’s both beautiful to have experienced and heard, and it justifies Gritstone’s existence in a visceral way – but at the same time, it highlights the pitiful state of affairs when it comes to how little investment reaches some parts of the North.” This is despite the fact that, as O’Neill points out, “In terms of what the UK has to offer the world in this modern, complex era, we have sixteen to eighteen universities that consistently rank in the world’s top one hundred – that’s four times our share of global GDP, and actually a higher percentage than the US. And critically half of those universities are in the North of England, located in areas with very weak productivity.”

This geographical concentration may be in part due to the fact that building relationships and exchanging information, both during pre-investment due diligence and post-investment monitoring, is easier and less costly across shorter distances.¹⁴⁰ Whatever the reason, spatial disparities not only persist but widen in later rounds of follow-on equity financing, as evidenced by differences in exit sizes, the average number of funding rounds, and the total capital raised (see Figure 22).

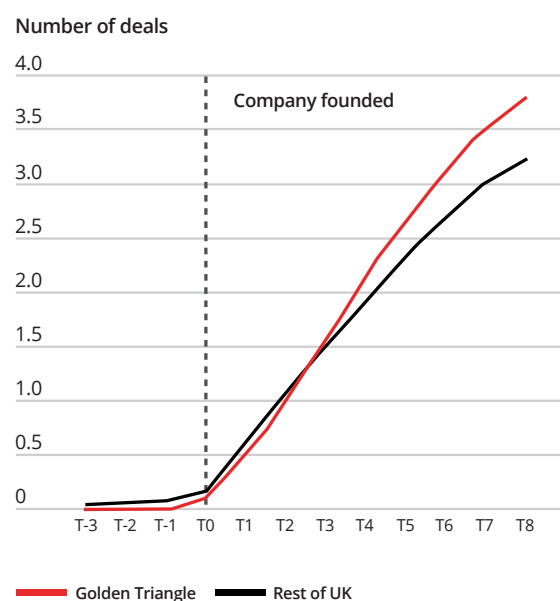
Figure 22:

Correlation between number of equity investments in a region and the proportion of UK high-growth firms located in that region

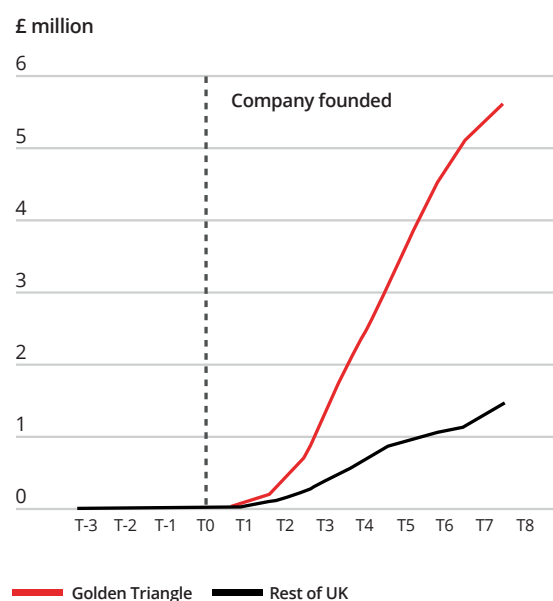


Source: Beauhurst (2024).

Average cumulative number of external equity deals. geographic comparison ('research council spinouts' founded between 2010 and 2014)



Median cumulative value of external equity deals. geographic comparison ('research council spinouts' founded between 2010 and 2014)



Source: British Business Bank/Beauhurst (2023).

Recognising the entrenched nature of these cold spots, public institutions like the British Business Bank have stepped in with targeted initiatives. Programmes such as the Northern Powerhouse Investment Fund (NPIF), the Midlands Engine Investment Fund (MEIF), the Regional Angels Programme, and the Cornwall and Isles of Scilly Investment Fund (CIOSIF) all aim to expand the availability of finance in underserved regions – but they are tiny besides the scale of the problem. Equally the British Business Bank (BBB), despite its genuine intent, has made only limited progress in tackling regional inequalities. It only began to prioritise these issues in 2018, and as a result, its

impact has been modest. Just over half (52.1%) of the BBB's equity deals are concentrated in London, closely mirroring the broader equity and VC market, according to the BBB's own figures.¹⁴¹

Against this backdrop, policymakers must remain vigilant to the potential unintended consequences of their decisions, ensuring that well-intentioned actions do not inadvertently create new challenges or exacerbate existing problems. Pension fund consolidation is an important goal, and it may be that when the large funds that emerge will increase their asset allocations to VC all around the country. However the ultimate resting place must also allow for the ongoing presence of schemes

located in particular localities, and transitionally as pension fund schemes grow larger, there is a risk that investing in smaller projects will become uneconomic, reducing capital flows to local initiatives.¹⁴² Lord O'Neill, for example, is acutely sensitive to this risk, noting that more than half of the £300 million that Northern Gritstone has raised comes from local investors, primarily northern local authority pension schemes. Experience from running the Enterprise Capital Funds (ECF) programme –launched by the government in 2006 to boost early-stage equity finance for high-growth potential businesses– suggests that this concern is anything but theoretical.¹⁴³

Such risks highlight the wider need for regional support to be more locally focused, rather than relying solely on top-down, centralised processes. Stephen Welton, Chair of the British Bank, is particularly passionate about having this local presence and intelligence:

“There is no substitute for having people in a locality, in a community, plugged into the business network, to drive understanding and connectivity. Not only does this uncover a pipeline of opportunities but crucially the ability to convert that pipeline. If we want to rebalance the economy, and perhaps it's not rebalancing, it's more growing other parts of the economy outside of London and the Southeast, a powerful and practical way to do that is to ensure there is enough capability on the ground to deliver more capital to the right sort of companies. If I put my previous hat on, with the Business Growth Fund (BGF), I absolutely believe in the power of that argument which is why, when we set up BGF I was really keen that we had a strong regional presence, and so had fourteen regional offices. Ostensibly it's more expensive to have that infrastructure, but I would argue the return on that investment is considerable because it unlocks the delivery of capital on a local basis. To that point BGF's strongest region over the last decade has been the North with offices in Manchester, Leeds and Newcastle. Investors should go to where the companies are ... not the other way round.”

V. Revisiting the venture capital model

The structural biases of venture capital, and growing dissatisfaction with the current model, have spurred interest in alternative approaches to incubating and growing new ventures.¹⁴⁴ The paper has documented how the structure of the VC market can favour short-term innovation, whose downsides are displayed most tangibly in the relative neglect of deep tech and other technologies that require years of unstructured experimentation before they can be commercialised and generate returns.

The ten-year fund model might seem like the natural order of things, but there is little that is inevitable about it. As pointed out by Henry Whorwood of Beauhurst earlier, it is, in some respects, an accident of history.¹⁴⁵ A logical solution therefore is to increase flexibility in fund length, better aligning it with the nature of the investments being made. This shift is evident in the growing adoption of evergreen fund structures, which are perpetual capital funds and do not have a fixed end date. These funds allow for continuous investment and reinvestment in portfolio companies, while giving investors the right to subscribe and redeem within certain limits over time. In this way, funds can pursue long-term strategies without the pressure of a ticking clock or the temptation to rush into overheated sectors. To ensure stability and long-term alignment, evergreen funds also typically include terms that stipulate conditions for investments and redemptions such as notice periods, minimum investment durations, and fees for early withdrawals. Palo Alto's Sutter Hill Ventures (SHV) – one of the oldest VC firms in the Valley – is perhaps the most well-known example of a firm successfully operating within an evergreen framework. Notably, it has used this approach to make fewer, larger, and more focused investments, in contrast to the wider industry trend of providing a little funding to an increased number of startups.

A complementary solution to the challenges facing long-term innovation lies in reimagining how startups are grown and supported.¹⁴⁶ In recent years, the venture studio model has emerged as a distinctive organisational form. Rather than funding existing startups by having entrepreneurs pitch their ideas to investors, who then decide whether to invest, venture studios create multiple startups in-house by incubating their own ideas or those from partners. Once ideas demonstrate evidence of product and market fit, the studio then finds managerial talent to help grow them. While the traditional model maintains a healthy distance from the entrepreneurial team – helping to mitigate the risk of entrenchment that may arise in some settings – the venture studio model prioritises deep engagement and a hands-on approach, making it particularly suitable for complex, iterative, and high-impact activities. Venture studios in the US such as Third Rock, Flagship Pioneering, and Atlas Venture, exemplify this model, particularly in deep tech areas like therapeutics and agri-tech. These studios often identify promising data and intellectual property from research institutions, license it, and conduct further testing to potentially launch new companies. Startups like Moderna and Ginkgo Bioworks are prominent examples of successful ventures emerging from such studios, showcasing the potential of this approach.

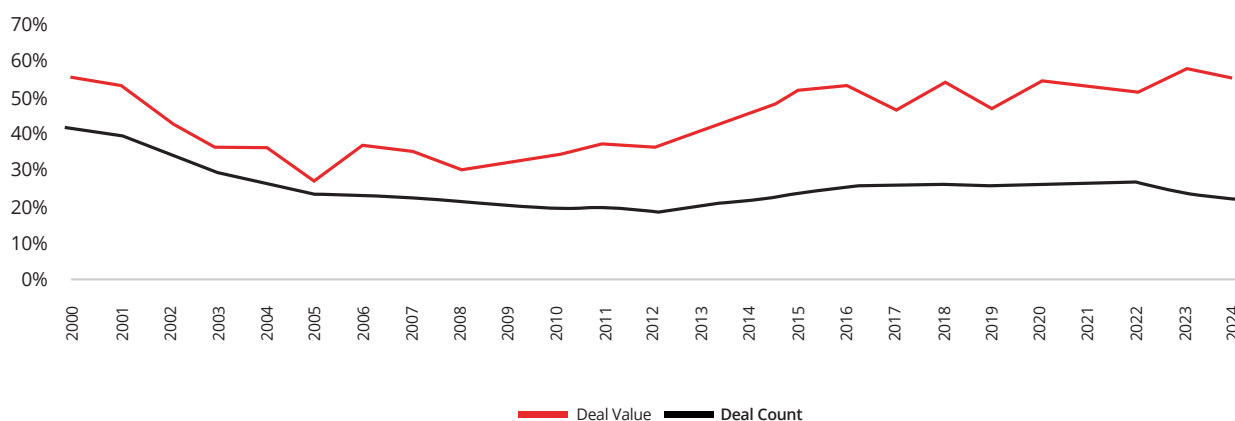
These alternative arrangements are still relatively uncommon. Key hurdles – such as liquidity, transparency, costs, and education – impede the broader adoption of long-term funds. The open-ended nature of evergreen funds introduces new complexities, including managing continuous capital inflows and outflows, recalculating net asset value (NAV), and handling the administrative demands of periodic investor exits and entries. Similarly, venture studios face their own challenges, including high funding costs, talent acquisition and retention, risks of diluted focus, and issues around equitable equity distribution. Despite these challenges, the blend of flexibility offered by evergreen funds and the hands-on involvement of venture studios retains many attractive features. If applied thoughtfully, this blend has the potential to open up new pathways for innovation and encourage not just additional capital but diversity of capital.

The corporate venture capital (CVC) model through which companies invest directly into startups, usually as a strategic investor with a minority stake, is another area ripe with promise. There is a significant growth opportunity for the UK to incentivise scale-up investment from corporates. Corporates can provide growth capital as well as industry expertise, R&D resources and commercial opportunities for product development. In turn, corporates can gain access to the latest technologies and market trends through their equity stakes in new businesses.

Corporate venture capital (CVC) has steadily grown in importance across countries, industries, and technological fields. Since 2014, CVC has accounted for more than 46% of total US VC deal value and 21% of deal count, driven by CVCs' participation in the megadeals of mature startups (see Figure 23).¹⁴⁷ In 2024, the Magnificent Seven invested nearly three times more in startups than all VC in the UK.¹⁴⁸

Figure 23:

US VC deal activity with CVC participation as a share of overall US VC deals



Note: This includes US VC deals with known investor information only. It excludes deals from the denominator if it is unknown who made the investment. As of December 31, 2024.

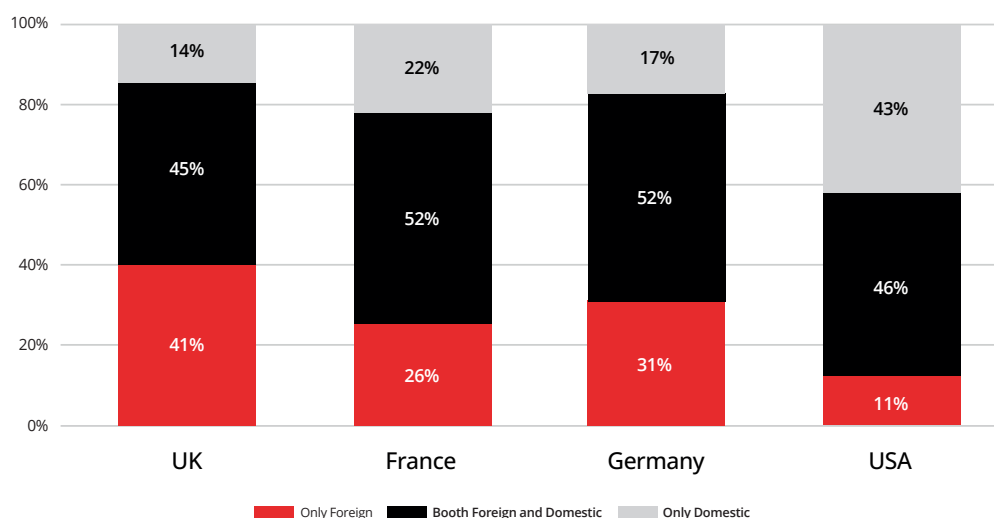
Source: Pitchbook (2025).

However, the adoption of CVC varies significantly across nations, particularly when it comes to domestic companies supporting their local innovation systems. For example, the share of corporate-backed rounds in the UK coming from only domestic corporates is lower than other countries such as the US, France and Germany (see Figure 24). It is further evident in the country origin of the largest corporate investors by deal count, led by Google, Salesforce and Tencent.¹⁴⁹ Only a third of these investors are British (see Figure 25). Indeed, even in cases where formal investments

do not occur, there are signs that domestic corporates remain less proactive in supporting local startups. As Stephen Nundy observes, many domestic companies are reluctant to adopt startup technologies, even when they could serve as potential customers. By contrast, consider how major US tech companies have been among the first to commit to purchasing electricity from emerging fusion energy startups. This reluctance may be an under-acknowledged reason why UK startups gravitate toward, and possibly list in, overseas markets.

Figure 24:

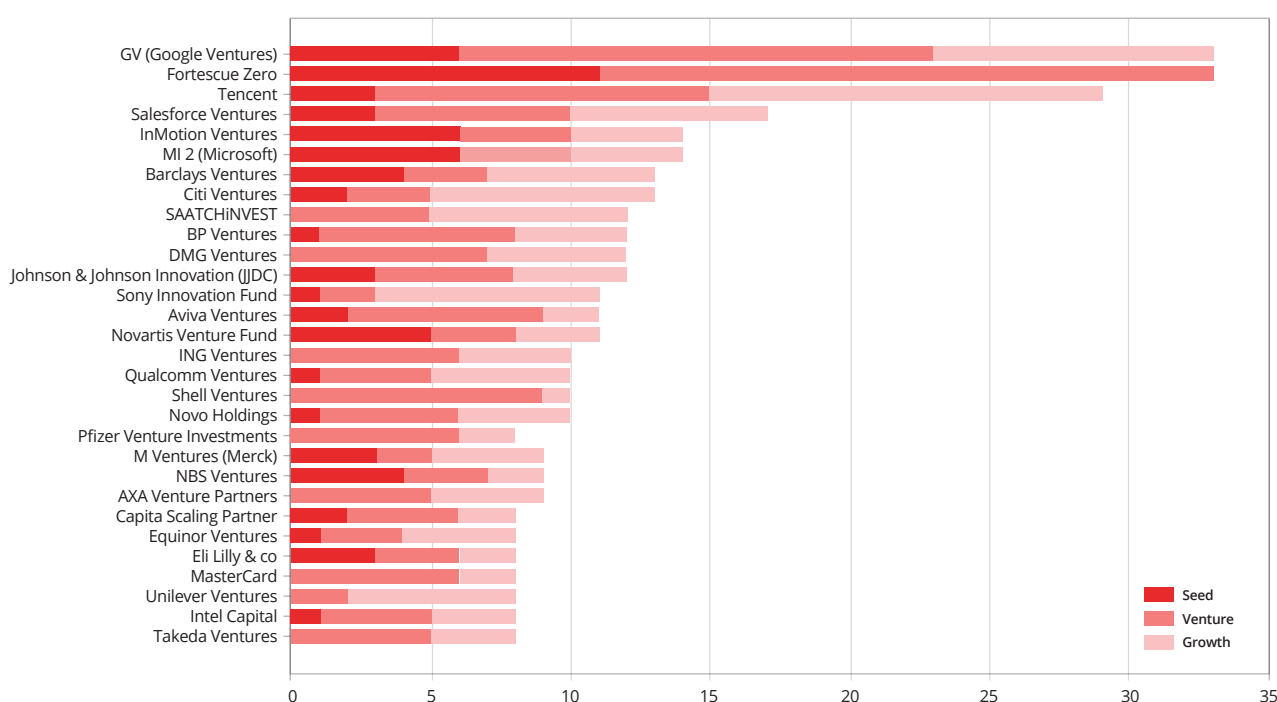
Participation of foreign and domestic corporate investors in CVC-backed rounds (2023)



Source: GCV (2024).¹⁵⁰

Figure 25:

Top corporate investors in UK private companies by deal count and funding stage, 2014–2023



Source: Beauhurst (2024).

In part, these disparities reflect differences in the policy environment for corporate venturing. Countries such as the US, Israel, France and Germany have competed aggressively to incentivise this activity, including organising business enterprise forums, supporting co-investment initiatives, and providing fiscal incentives. In the UK, the Corporate Venturing Scheme (CVS) was introduced in 2000 for a ten year period as part of an initiative to promote corporate venturing activity. The scheme allowed: investment relief against corporation tax of 20 per cent of the amount subscribed for full-risk ordinary shares; deferral relief from tax when the shares were sold and the funds reinvested; and relief against income if shares were sold at a loss. The shares would have to be held for at least three years to gain full tax credit. The scheme, however, was not

renewed after it expired in 2010. Despite the minor bureaucratic challenges surrounding its operation, the scheme was generally viewed positively. In light of positive evaluations, some have called for its reinstatement, with proposals including increasing the proportion of relief against corporation tax to between 30 and 50 per cent, as well as raising the size of a qualifying target company to better reflect the typical upper limit of investments made by average-sized venture funds today.¹⁵¹

Corporate venturing as it is frequently practiced is not a panacea. Many corporates grapple with realising the full potential of their CVC units, prompting some to question whether simply acquiring startups outright, rather than investing in them, is a more worthwhile strategy.

This challenge manifests in several ways. CVC investors often adopt a cautious, risk-averse approach, focusing on projects that offer immediate cash flow or enhance existing operations, rather than pursuing innovative and potentially disruptive business models.

As a result, these arrangements overlook crucial aspects of venture investing, such as the high burn rate of startups, the need for multiple funding rounds, and the long lifecycle of ambitious ventures. Many units are designed, monitored, and evaluated in ways that conflict with these needs. Notwithstanding notable exceptions like SAP's Sapphire Ventures, most CVCs are granted only a limited degree of autonomy, hampering their ability to make credible commitments to portfolio companies. In the US, survey data reveals that 36% of CVC units lack approved budgets and must seek approval for every individual investment, leading to a more opportunistic and sporadic investment approach. A further 22% of CVC units are restricted to annual commitments, with budgets allocated and approved each year. In stark contrast, only 7% of CVC units operate as standalone funds with extensive autonomy. Moreover, only one-quarter of CVCs are evaluated on a long-term basis of five years or more.¹⁵²

This conservatism extends to deal sourcing, the investment approval process, compensation and the composition of CVC teams. While corporate VCs are meant to focus externally, as they are taking stakes in independent startups, they often end up being surprisingly parochial. One study reveals that, on average, their LinkedIn network is only about half the size of that of institutional VCs, highlighting the narrower pool of connections from which they can draw to identify exceptional ideas and deals.¹⁵³ Corporate VC units are also frequently hindered by complex approval processes, encountering delays and obstacles at multiple stages along the

way. Many are required to partner with a business unit or obtain a business unit sponsorship while investment committees are typically made up of parent-company executives with veto power. This structure often skews priorities toward maintaining the status quo, which can be especially disabling for units with a strategic rather than purely financial mandate. Attracting and retaining the right talent is another challenge, given the difficulty of replicating the compensation schemes of institutional venture capital firms while maintaining consistency with firm-wide pay scales.¹⁵⁴

Solutions do exist. By addressing these structural issues –granting greater autonomy, simplifying the approval process, expanding networks, and aligning compensation with long-term goals– corporate venture units can unlock their full potential and deliver greater value for both their parents and startups. More ambitiously, they have led to calls for more fundamental changes in corporate venture operating models. Some have proposed the creation of venture carveouts in facilitating moonshot projects, drawing on their success in addressing the complexities of commercialising technologies like autonomous vehicles.¹⁵⁵ In this model, a corporate parent partitions some of its assets to create a separate legal subsidiary – essentially, a new company – that can be owned by outside investors and employees. The strength of a carveout lies in its ability to combine the corporate parent's intellectual property and long-term strategic commitment with the patient capital of private investors and the high-powered incentives of employee ownership. Importantly, it also provides a degree of insulation from the conflicts and agency costs that would otherwise arise among these various stakeholders. One way or another Britain must learn from these debates and find its way to closing the gap between it and the CVC capabilities of other advanced economies.

VI. Government's role in addressing market failures and supporting purposeful ventures

Governments at every level –national, regional, and local– are embracing ambitious strategies to position venture capital and industrial policy as catalysts for innovation, entrepreneurship, and economic growth. Yet, the critical role of public initiative, subventions and institutions is often overshadowed by the popular narrative that Silicon Valley's meteoric success was due to freewheeling, unfettered capitalism and anti-government political ideals. It was all due to the invisible hand of the market, even if the state's visible hand – in particular the Pentagon and its smart procurement agency DARPA (Defence Advanced Research Projects Agency) – was obviously influential. While it may not always have amounted to a coherent government vision or plan, and perhaps lacked intentionality, the role of government is difficult to deny.¹⁵⁶

The rationale for such policies is straightforward to articulate, even if demonstrating their effectiveness –at the very least, showing that they resolve more distortions than they create– has sometimes proved elusive. One of the most widely recognised motivations for public intervention is that it addresses information asymmetries. This occurs when projects with both private and social value struggle to secure funding due to a lack of a proven track record, tangible assets, or easily measurable and relatively certain returns. Additionally, public intervention is often seen as essential for addressing externalities – situations where the social value of a project exceeds its private value. In such cases, public investment may be justified from a societal perspective, even if the project itself is not immediately profitable, as in the case of a loss-making startup likely to generate significant knowledge spillovers benefiting other businesses.

These justifications form the basis for tax relief schemes like the Enterprise Investment Scheme

(EIS), Venture Capital Trusts (VCTs), and the Seed Enterprise Investment Scheme (SEIS).¹⁵⁷ EIS and VCTs, for instance, provide investors with up to 30% upfront income tax relief. Additionally, any gains made on successful investments are exempt from capital gains tax, and loss relief is available if the investments fail, among other things.¹⁵⁸ These schemes appear effective at attracting investment in early-stage businesses, which, in turn, contribute to a well-functioning conveyor belt of funding. There is some evidence that they have led to crowding-in, with, for example, subsidised equity attracting more non-equity funding rather than simply substituting private investment that would have occurred anyway. This is partly attributable to strict rules preventing their use and misuse by firm insiders.¹⁵⁹

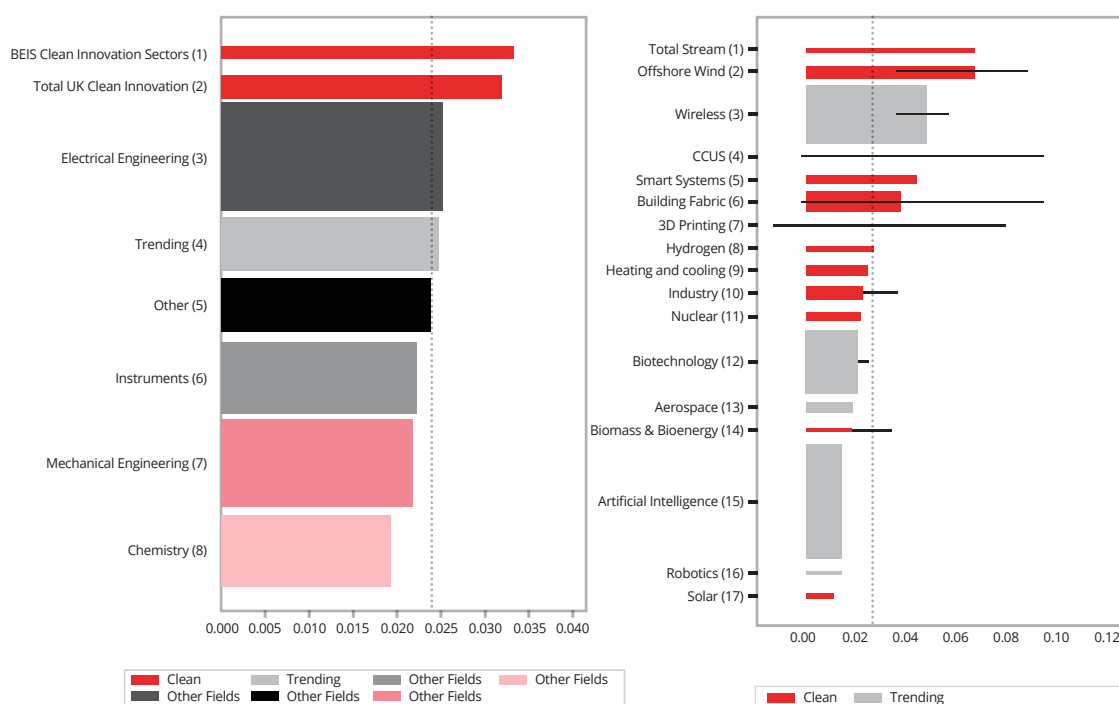
At the same time, there is a growing debate about whether these incentives could be more effective and better targeted. For example, the London Stock Exchange points out that EIS, SEIS and VCT carry no penalties if a company chooses to leave the UK, whether by moving its incorporation, headquarters, or listing overseas, and recommends that these schemes should be made more geographically restrictive. Concerns have also been expressed about their impact on pre-seed stage financing, despite indications that money is not a binding constraint, while others call for modifying or expanding the focus of these schemes. For example, the House of Commons Treasury Committee has called for higher age and funding limits within these tax relief schemes, noting that firms outside of London typically take longer to establish themselves and the well-known challenges faced by high-potential, maturing businesses in scaling up to the next level. However, HM Treasury has rejected this suggestion, citing concerns that expanding schemes would displace investment away from the early-stage firms they are designed to support.

This concern is overly restrictive. One of the most important themes that has emerged from this paper is that an one-size-fits-all approach to innovation is likely to fail. What defines an early-stage innovative firm varies considerably across different market and technological contexts. For example, deep tech startups often face much longer development timelines compared to their digital tech counterparts. These firms are also the source of significant knowledge spillovers. Research by economists Ralf Martin and Dennis Verhoeven highlights this point, as they estimate the expected economic returns of a subsidising a

particular technology field.¹⁶⁰ They find that clean technologies, notably tidal stream and offshore wind, generate the largest spillovers, with returns that are more than twice the average return across other categories. Carbon capture, usage and storage (CCUS), smart systems and building fabric – additional examples of deep tech – are also fields that boast higher than average social returns (see Figure 26).¹⁶¹ The spillover effects of larger or late-stage innovative businesses in these areas, due to their size, footprint and integration within the wider innovation ecosystem, are thus likely to be proportionately larger.¹⁶²

Figure 26:

Within UK social returns to R&D subsidies in the UK by technological field



Source: Martin and Verhoeven (2022).

Notes: Expected returns to government R&D subsidies (IstraX) by technology field (y-axis) and 95% confidence bands. The (vertical) width of a bar indicates the size of a particular technology grouping by number of innovations. The x-axis shows the estimated returns within the UK to a £1 additional subsidy in the field. Left-hand figure compares Clean innovation fields ('BEIS Clean Innovation Sectors' groups sectors as described in Appendix 2; 'Total UK Clean Innovation' uses the EPO 'Y02'-class to group patents into climate-change-mitigating technology) to other broad technology fields. Right-hand figure benchmarks particular Clean innovation subfields to a number of Trending subfields that have been identified as interesting subsidy targets. Dotted line represents the weighted average across technology fields.

In principle, the various public policies that influence the growth of startups and scaleups encompass areas such as tax, education, pensions, planning, technology and standards, intellectual property, immigration, and more. In addition, the growing focus on the role of purpose in intangible-based businesses underscores the increasing importance of policies like employee ownership and other innovations in corporate governance. Together, they aim to ensure an investible pipeline of listed and unlisted UK companies, capable of matching any potential increase in the deployment of investment capital.

It is not the provenance of the Growth Trilogy comprehensively to review all these policies, but it is worth emphasising that over time various governments have cycled through various policy frameworks. Initially, efforts centred on a blanket supply-side approach – focused solely on building innovative capacity and human capital. Over time, however, these have evolved into a more systemic approach that complements supply-side measures with demand-side policies aimed to assure firms and investors that there will be markets for their goods and services, while also addressing coordination failures that hinder effective interaction between supply and demand.

This broader approach enables a more accurate diagnosis of the barriers to entrepreneurship, along with more targeted solutions. The climate

transition is a case in point, highlighted in the US in the early 2010s. While factors like clean energy's high capital intensity and lengthy development timelines played a role in this pullback, the far more significant driver was the presence of demand-side market failures. To demonstrate the causal impact, one recent study exploits a natural experiment: the loss of the Democrats' filibuster-proof majority in the Senate after the unexpected victory in 2010 of little known Republican, Scott Brown, in a special election to replace the late Ted Kennedy. This event constituted an exogenous negative shock to demand expectations, delivering a crippling blow to the passing of a comprehensive climate bill and future policy support for clean technologies. In response, VC investors significantly reduced their allocation to clean energy companies.¹⁶³

I) Public Procurement

This episode underscores the importance of interventions such as public procurement, open innovation, crowdsourcing, and supplier development programmes are palpably crucial in surmounting demand-side barriers, and whose withdrawal or acceleration can have a measurable impact. These interventions are especially important in sectors where needs are still emerging and poorly defined, and where firms and potential buyers exhibit significant risk aversion. Such policies have been instrumental in the rise of groundbreaking industries like microelectronics, semiconductors, robotics, nanotechnology and renewable energy helping to drive down costs and improve reliability while providing invaluable feedback.¹⁶⁴

In the UK lead customers – whether public or corporate – have also played a pivotal role in the success stories of British bootstrapped startups, many of which have evolved into globally relevant companies.¹⁶⁵ With £300–400bn spent annually on procurement, the UK public sector has the potential to be an even greater force in shaping the success of innovative businesses.¹⁶⁶

David Connell, of Cambridge University's Judge Business School, argues a similar approach is needed to seize the opportunities of AI and other general purpose technologies, drawing on the lessons that history offers:

“The government is convinced, rightly so, that AI is going to have huge applications in both the private and public sectors. Now those applications will be applications of AI – not creating major new AI technology, at least in the first instance. So the best way to stimulate the AI industry in the UK is to encourage the public sector, and also private companies, to place contracts with new small, state of the art businesses to develop applications from them. Which is exactly what the Wilson government did in the 70s when microprocessors were seen as having the same huge potential widespread application across government. It was a policy that provided the first contract and thus funding for Acorn. The best means of developing a new technology is through encouraging customers to place contracts with innovative suppliers to develop applications for them. For startups, these kinds of contracts have often triggered the development of proprietary products. Mike Lynch's Autonomy was an example. There is no need to reinvent the wheel. Let's repeat what has worked successfully in the past.”

Hermann Hauser, founder of the British chip manufacturer Arm and co-founder of VC firm Amadeus Capital, echoes a similar sentiment: ‘I would take an order [from a government] over a grant any day.’ A good example of this approach is the use of pre-commercial public procurement, which enables firms to secure research contracts for prototyping and developing solutions that meet public sector needs. Initiatives like the US's Small Business Innovation Research (SBIR), often called ‘America's Seed Fund,’ and the UK's Small Business Research Initiative (SBRI) (now called Innovate UK Contracts for Innovation) are designed around these principles.¹⁶⁷ Since its launch, the SBRI has awarded over £500 million in R&D contracts, and it is estimated that participating companies experience annual revenue growth over 30 per cent; every £1 awarded through the programme has yielded £1.53–4.07 for the UK economy, based on firm impacts alone.¹⁶⁸

However, despite its promise, the scale and impact of the SBRI have yet to match the success of its much larger and more influential American counterpart. This deficit is partly due to a lack of central and sometimes departmental ownership, which has led to patchy adoption or implementation across departments. Some programmes, such as those at NHS England and the NC3Rs (National Centre for the Replacement, Refinement and Reduction of Animals in Research), stand out for being well managed. However, many other programmes, particularly the Ministry of Defence (MoD), have struggled to capture the attention of senior officials, secure meaningful budgets and fully capitalise on opportunities such as support for dual-use technologies. More broadly, significant hurdles remain in integrating SBIR contracts into mainstream commercial procurement processes, preventing their full potential from being realised.¹⁶⁹

To tackle these challenges, bodies such as the Council for Science and Technology have put forward a number of practical recommendations. A culture that supports the co-creation of innovative solutions and risk-sharing may, in turn, spur the development of new policy tools. In this respect there is a strengthening case for the public sector as a meaningful buyer to request equity warrants so that it is able to participate in the financial upside of innovation, as is commonly done in the private sector.

Finally, the UK can learn valuable lessons from the US SBIR (Small Business Innovation Research) programme to calibrate its own efforts. Closer analysis shows that the real value of SBIR lies in the Phase I awards, which fund feasibility assessments and have been found to increase a firm's chances of receiving venture capital as well as boosting patenting and revenue. By contrast, Phase II awards have more muted effects. This discrepancy is attributed to adverse selection: startups that show promise in Phase I often secure private investment without requiring further government support. By contrast, Phase 2 awards tend to go to a relatively small number of companies that resemble 'mills', experts at churning out SBIR applications but are not necessarily the most innovative. These companies are adept at navigating onerous application and reporting processes, often submitting hundreds of applications each award cycle. Despite these recognised flaws, the lion share of funding still goes to larger Phase II awards, and the programme's design appears almost unchanged from its inception. A better approach to promoting innovation may be to 'let a thousand flowers bloom' by awarding more one-time grants to small, young firms, rather than fewer larger grants that support firms through multiple stages of technology development.¹⁷⁰

II) Intermediate Institutions

Understanding how innovation systems deviate substantially from the ideal of perfect markets and the role of policy in coordinating supply and demand, reveals other opportunities for supporting promising businesses. In recent years, there has been a growing focus on intermediary institutions. These institutions, often carefully rooted in towns or neighbourhoods where innovation activity is clustering, are stepping in between startups and venture capital (VC) investors to help improve the efficiency of finding, screening, and matching investment opportunities. Intermediaries play a key role in correcting the UK's criticised 'hub-no-spokes' model by spreading technology, expertise, talent, and funding from the country's centres of excellence to its large number of underperforming, low-productivity companies.¹⁷¹

Accelerators, incubators, crowdfunding platforms, catapult centres and IP brokers fall under the broad category of intermediary institutions. One study finds that venture competitions—where founders pitch their technologies and business models to a panel of judges — improve employment, financing, and survival outcomes, not by directly easing financial constraints through cash prizes, but by offering a low-cost evaluation and certification of a startup's quality. These effects appear to be particularly strong for startups in science-based or deep-tech sectors, possibly due to their reliance on more objective performance indicators, where quality is easier to assess.¹⁷² Evidence also suggests that public grant funding and investment can play a similar role in certifying firm quality.¹⁷³ This may partly explain why UK university spinouts, on average, raise 4–5 times more external equity capital when funded by public funding agencies such as the British Business Bank and Innovate UK than those who have not received such support. These spinouts are also associated with higher survival rates and stronger employment outcomes.¹⁷⁴

Regulatory sandboxes have become an increasingly popular and effective tool for reducing informational barriers in innovation-driven markets. By temporarily relaxing selected regulatory obligations, these sandboxes allow companies to conduct small-scale, live testing of innovative products in a controlled environment. In particular, they provide a space for businesses, regulators and other stakeholders to come together and gain a better understanding how new technologies can be scaled up in ways that are purposeful and ethical. This approach has been widely adopted in sectors like fintech, transport and energy, where it has not only facilitated innovative market entry but also helped startups raise additional capital.¹⁷⁵ Philosophically, this is part of a broader trend by governments to encourage flexibility, experimentation and divergence in the early stages of emerging technologies, with regulation introduced later, at the most appropriate point in their life cycle.¹⁷⁶

Intermediaries are also essential bridges for collaboration between public institutions, especially in an innovation context, where progress is seldom linear. The casual view that it is possible to plot a neat path from early grants to Innovate UK funding and then venture capital oversimplifies reality.¹⁷⁷ In practice, every company's journey is unique, requiring different support at different times. This underscores the importance and the challenge of seamless coordination between public institutions – ideally ensuring there are no gaps or cliff edges in the funding escalator and that support is backed by robust mechanisms for data sharing and joint due diligence as promising companies scale.

The line running from market failures to policy interventions to purposeful outcomes is far from straight or straightforward. It can have several branches, as the chequered history of industrial and entrepreneurship policy around the world makes abundantly clear.¹⁷⁸ In the UK attempts to embed more localised and focused efforts of policy delivery, vital for success, have been consistently obstructed by excessively centralised policymaking and frequent policy churn. Britain's proclivity for centralised command and control policy making and delivery, lacking iteration let alone coordination with the local and no thoroughgoing devolution, has been all too evident.¹⁷⁹

In fairness designing and implementing effective policies entails difficult trade-offs, where accepting some undesirable outcomes is often the necessary price for achieving other, more desirable ones. Policymakers face the delicate task of finding the right scale for venture initiatives. If initiatives are too small, too regional, or too narrowly focused, they risk spreading resources too thin, failing to attract high-quality investments, or making little measurable impact. Conversely, initiatives that are too large can lose focus, swamp local markets, and become vulnerable to inefficiency or regulatory capture. Policy walks a tightrope.

III) Regional Clusters and Collaboration

Policymakers supporting entrepreneurship and innovation face another difficult trade-off: balancing efforts to boost national productivity while narrowing regional productivity gaps. These goals will occasionally align: for example, many emerging clean technologies in the UK are located in less prosperous areas such as Derbyshire and Nottinghamshire, Cornwall and the Isles of Scilly, and Lincolnshire. Here, targeted support can drive innovation and reduce disparities. But in reality, achieving this balance is not straightforward. The demand for

fairness has, at times, directed public investment toward unpromising entrepreneurial projects or propped up declining firms and industries.

UK innovation policy is dogged by erring on the side of caution, driven by a deep-seated aversion to 'picking winners'. This hesitancy has inadvertently reinforced existing regional divides. For example, the UK's public and higher education R&D expenditure is extremely modest by international standards. But, compounding the weakness, public R&D funding has been disproportionately concentrated in the already productive 'Golden Triangle' area; in fact, it is even more concentrated than private sector R&D investment, which can be seen as a proxy for a region's ability to absorb and harness innovation.¹⁸⁰

This imbalance also stands in stark contrast with the broad-based strengths of UK universities in innovation (see page 55 and endnote 138).

A promising approach, in this respect, involves greater public support for regional innovation ecosystems within the 'middle tier' of capabilities – areas with the absorptive capacity to maximise public investments in VC and R&D and the resulting agglomeration economies, while avoiding the higher costs of production associated with increased wages, rents, and congestion found in superstar regions.¹⁸¹ Initiatives like Northern Gritstone exemplify this strategy and offer valuable lessons not only for other regions but also for strengthening connections within the national innovation ecosystem. Strategic initiatives – such as the successful SETsquared partnership of the universities of Bath, Bristol, Cardiff, Exeter, Southampton and Surrey, the recent partnership between Innovate Cambridge and ID Manchester, and the emergence of businesses such as Pragmatic Semiconductors – headquartered in Cambridge with manufacturing and facilities in Durham – illustrate how the UK's London-centric hub-and-spoke

model can be expanded to support innovation and economic rebalancing, while respecting the path-dependent nature of these processes. Andrew Williamson, CEO of Cambridge Innovation Capital and an early investor in Pragmatic Semiconductor, believes it is a model that he would reproduce 'in a heartbeat':

"When they founded the business more than ten years ago they had some novel IP on which to build a novel process. I think it's fair to say if the Centre for Process Innovation (CPI), which is in Sedgefield, had not existed Pragmatic might never have got started. It offered the multi-million-pound tools that one needs to prove out, prototype, and demonstrate a novel, in that case semiconductor manufacturing process.

So once they'd proven out the process and they were able to raise venture capital – we were in the first venture round – then your mind turns to what to do with this process. Where are the chip design strengths in the UK? Well ARM in Cambridge is pretty high on the list. And on top, Cambridge offers access to capital, to expertise and to talent. And just being part of an entrepreneurial ecosystem where it's just more fun and easier to do this stuff when everybody around you is doing the same thing, rather than you're the only entrepreneur in the pub and everyone else is a bank manager. So they kept the CPI link in Sedgefield and came down here, built the R&D Centre in Cambridge on the Science Park which to this day is a massive part of Cambridge's innovation ecosystem infrastructure.

And then obviously when they got to the scale where they wanted to build large factories then the questions are: where is a low-cost access to land and to energy and where access to a workforce which is less about high-end design of chips and more about running shift workers who are used to working

in advanced manufacturing facilities? And lastly where is there some legacy semiconductor expertise? Durham is the perfect place for all of that. So that's where they built Pragmatic Park.

Some of the team members are going up and down quite a bit but a lot of the activities are segmented so that it works. I'm not a fan of two locations in the early stages of a business, because you spend too much time trying to make sure the communication is good, rather than getting on with doing stuff. But I think they did it at a stage where it made sense.

One of the challenges with the types of businesses typically backed by venture capital is that while they are highly scalable, they also operate a relatively small number of employees. It is not sustainable if we end up with just a few Cambridge PhDs becoming millionaires, sitting in small offices in front of massive computers. This model of combining two parts of the country with very different strengths seeks to move beyond that. I would replicate it again in a heartbeat."

Building on this experience, government support should be given to regions that seek to collaborate and can develop a business case, identifying their strengths, opportunities, and potential bottlenecks to innovation.¹⁸² This shares similarities with calls for the establishment of a British Regional Investment Bank, (or turbo-charging the British Business Bank's current efforts) where new funds would be created to maximise cluster opportunities in close alignment with regional industrial policy. Within this framework, private investors would be encouraged to bid to manage the individual funds associated with each cluster, with the expectation that contributions match public investment.¹⁸³

IV) International Linkages: a New Palo Alto?

The Trump administration's aggressive protectionist policies have emphasised the degree to which the UK and the EU have not only common trade interests vis-à-vis the US but also with each other – and not only in promoting trade but innovation, startups and scaleups. The 2024 Draghi report uncompromisingly set out the EU's growth and innovation deficiencies and called for the EU and its member states to reproduce the innovation ecosystem that has worked well in the US.

However a crucial reference point is the recognition that Europe already has assets and a dynamism on which investors, entrepreneurs and governments can build. Dealroom, a leading data provider, draws attention to the New Palo Alto (NPA), a supercluster of innovation and research hubs which lie within a 4–5 hours commuting radius. The area stands out for its economic diversity and specialisation, connecting cities with strong industrial and manufacturing heritage such as Eindhoven, Glasgow, and Manchester, with world-renowned centres of culture, policy, and academia including Amsterdam, Cambridge, Edinburgh, London, Oxford, and Paris. Reflecting this strength, the New Palo Alto ranks third worldwide in unicorn count and first in the number of startups founded by university alumni. Together, these companies account for nearly half of Europe's total startup enterprise value and more than 40% of all European unicorns.

Of course, none of this should overshadow Europe's broader innovation strengths. For example, Europe has a per-capita concentration of AI experts among software engineers that is 30% higher than the US and nearly three times higher than China.¹⁸⁴ Many of the Magnificent Seven's foundational models have been quietly built on the work of European researchers.¹⁸⁵ Hotspots of technological excellence

and entrepreneurship can be found across the continent, reflected in the rise of centacorns – companies with valuations of over \$100bn – such as Spotify (Sweden), SAP (Germany), in addition to ASML, Booking.com, and Prosus (Netherlands), and Arm (UK), highlighting the breadth of activity.¹⁸⁶ Cities such as Stockholm, Berlin, London and Paris have emerged as vibrant founder factories, providing a training ground for operators to learn how to start and scale successful businesses, which has spurred further local entrepreneurship and flywheel effects.¹⁸⁷

For all its promise, the region has yet to capitalise on the opportunities before it. Europe – and the aspiring New Palo Alto – remains a severely underinvested region, a vision outpacing its backing.¹⁸⁸ Too few European champions have diversified beyond their core and built broader, compounding ecosystems that distinguish the world's leading tech companies. A restrictive and uneven regulatory landscape – spanning the EU's AI Act, NIS2, Digital Services Act, and GDPR – has struggled to strike an effective balance between safety, risk, and the rewards of innovation.¹⁸⁹

European leaders are calling for closer co-operation with the UK on defence, with a common European defence fund, but that should extend to innovation – not only to support cutting edge defence and security technologies but innovation more generally. A first step is the recognition and celebration of what exists to foster VC and investor interest. A second would be the creation of a pan-European legal framework for start-ups to standardise the administrative processes, from company formation to investment structures that often suffocate VC investment. The proposal, dubbed 'EU In', has been backed by the founders of top tech companies such as Stripe, Supercell and Wise. It should also pave the way to a more pro-innovation approach to regulation. A third step would be building a closer relationship between different funding

programmes, such as France's Tibi scheme, aimed at catalysing institutional investment, given that Europe's pension funds, with over \$9 trillion in assets under management, invest only 0.01% in European venture capital.¹⁹⁰

V) Managing the innovation policy portfolio

In the UK, the heavy reliance on subsidies and grants for business R&D – making up 80% of policy funding – raises questions about the effectiveness of the current approach in fostering innovation across diverse sectors and business models. While the R&D tax credit scheme has spurred innovation by reducing companies' corporation tax and offering credit payments based on R&D spending, outcomes vary significantly, with implications for additionality, reach to intended beneficiaries, complexity, administrative burden, and value for money.¹⁹¹ For example, the Research and Development Expenditure Credit (RDEC), designed to incentivise companies to invest their own funds in R&D, offers limited benefits to start-ups funded by 'sweat equity', businesses conducting R&D under contracts for paying customers, or creative industries businesses that partly rely on investment in Arts, Humanities and Social Sciences-related innovation, areas largely excluded from official definitions of R&D.¹⁹² If we take this bias seriously, it highlights the need for a more balanced, cost-effective policy mix that directs resources toward other forms of support.¹⁹³

Ultimately, the success of industrial policy depends far less on consistently picking winners. Policymakers should emulate the VC industry, where making decisions to back what turn out to be losers is understood to be less costly or painful than the risk of passing over an investment that could have become a once-in-a-decade success story. Like any portfolio decision, if a government's industrial policy does not include some ventures that fail, it is a warning light that policy is not taking

enough risks and is unlikely to be effective. Instead, policy effectiveness should be determined by its ability and willingness to let 'losers' go.¹⁹⁴

However, ensuring that governments can pull the plug on unsuccessful ventures and minimise the costs of mistakes challenges deeply ingrained habits, and thus requires a robust set of institutional safeguards. These safeguards protect public agencies from politicisation and the whims of the budget cycle, empowering them to make long-term decisions and, when necessary, take unpopular actions. At the same time, maintaining this independence is not without its challenges. Policymakers must ensure enough distance to avoid being captured by the most powerful interest groups or deterring market actors due to concerns about interference in decision-making.¹⁹⁵ However, this distance must not become so great that it hinders healthy public-private dialogue or the ability to gather valuable market intelligence.

Independent governance is a key design feature of initiatives designed to boost entrepreneurial finance, as seen in institutions like the New Zealand Venture Investment Fund and the Canada Pension Plan (CPP). These arrangements work best when institutions are organised as constitutionally independent from government, so having vital autonomy over budgets, hiring and remuneration, crucially allowing them to pay market rates for talent. While financial constraints may limit the range of skills that public and quasi-public organisations can attract, designing schemes that balance tangible rewards with less costly yet often more valuable intrinsic incentives can yield significant benefits. Research finds that VC partners' human capital is two to five times more important than organisational capital in explaining performance of individual VC investments. Encouragingly it suggests that talent is not tied to specific organisations and can be captured by others through smart hiring and remuneration practices.¹⁹⁶

Insisting on matching funds offers an additional safeguard, leveraging commercial information and insights and thus limiting the politicisation of what must be commercially-driven decision-making.¹⁹⁷ This is often supported by private sector involvement in investment screening and funding intermediaries like privately managed VC funds.¹⁹⁸ The power of matching funds is illustrated by Yozma, a \$100 million initiative launched by the Israeli government in the 1990s, which provided 40% of the capital for new venture capital investments, helping ignite Israel's VC industry.¹⁹⁹ Matching funds are often complemented by first-loss structures and buyback options, providing a range of downside guarantees and upside incentives.

These arrangements are more easily said than done. Their success hinges on observing key design features, like setting the appropriate matching rate and effective criteria for eligibility. Set too low, the matching rate is unlikely to fix market failures; set too high, it risks crowding out private capital and opening the door to political interference. Matching funds work best when aimed at investors with a proven track record in high-growth startups – too much flexibility invites unqualified players. The same risks apply to market tools like investor tax credits, which are available to any company that meets eligibility criteria.²⁰⁰

Institutions such as the British Business Bank, which acts as a major limited partner through its investment in VC funds and co-investments and has built up an impressive track record, align well with these principles as do UK policymakers' preference for matching requirements.²⁰¹ Michael Moore, Chief Executive of the British Private Equity and Venture Capital Association (BVCA), highlights the fruitful collaboration between public institutions and private capital investors.

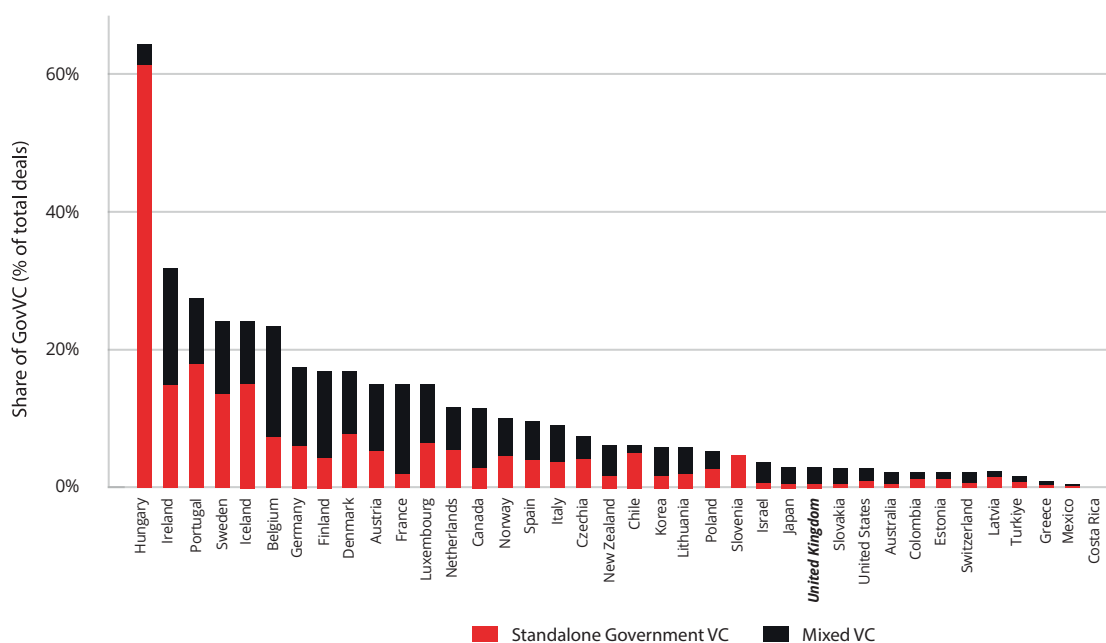
Commenting on the role of the British Business Bank, he enthuses:

“It’s a hugely important cornerstone in a lot of the funds that wouldn’t otherwise get established. It sends out some really good signals to other institutional investors to come and be part of something worthwhile, underpinned by the nature of the diligence the bank does.”

At the same time, Moore is under no illusions that this support is all quite small beer in the grand scheme of things (see Figure 27). While recognising the good work of the British Business Bank, some, like Stephen Nundy, believe it could spread its wings more and, in particular instances, assume the role of a lead investor and price maker, rather than merely following deals as a price taker.

Figure 27:

Share of Government VC deals (% of all Venture Capital deals) across OECD Member countries, 2000–2022



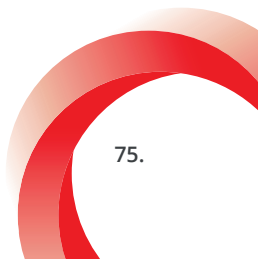
Note: The figure above shows government venture capital deals expressed as a share of total venture capital deals for OECD Member countries for the period 2000–2022. Standalone Government VC are deals where only GovVC investors participate, Mixed VC are deals where both Government and Private VC investors take part. The Government VC investment for Israel includes investments made in Israeli companies by TDJ Pitango Ventures (a Polish GovVC entity).

Source: OECD (2024).

Against this backdrop, there are growing calls for the government to significantly boost funding for the British Business Bank. However, this should not be seen as a substitute for, but rather a complement to, increased involvement from pension funds whose upstream asset allocation decisions about venture investment are fundamental – particularly given ongoing concerns about the limited ambition and slow pace of venture support under the Mansion House Compact.²⁰² Some go so far as to call the Compact performative – a formulaic parade of workshops and consultation documents – contrasting its approach with the resolve and commitment of the Tibi Initiative in France. Progress is advanced on Mansion House Compact 2, expected in July 2025, in which signatories will re-commit 10 per cent of DC pension funds over which they have discretion to the private markets by 2030, along with declarations of intent on which they will report annually. The BVCA go further with the final report of their expert panel urging Britain to reproduce the Tibi initiative via a proposed NOVA programme

(New Opportunities for Venture and Growth Accelerator), a new fund of funds to be managed by the British Business Bank and a directory of venture capital houses and funds to act as a ‘shop window’ of possibilities to investors at home and abroad. For Saul Klein unless the UK savings industry can move the dial itself fast and decisively to double UK venture capital flows, the government must soon step in.

Like everything else, the devil is in the detail. Independence should not be mistaken for a lack of accountability. Wherever public support is expanded and greater independence follows, it should be accompanied by robust oversight, particularly by an authority with a direct stake in outcomes and significant political clout. On a broader level, some advocate adapting the model of central bank independence and inflation targeting for coordination and monitoring purposes. Under such arrangements, agencies are given clear mandates and substantial autonomy to meet targets while being periodically required to report on their activities and explain any missed targets or deviations in outcomes.²⁰³



VII. Conclusion

The rapid growth of venture capital over the past few decades validates the salience of VC's innovative approach to the funding and growing of new businesses, proof of the longstanding truth that technological and financial innovation go hand in hand. VC is leading the financial system's need to provide funding on more engaged and knowledgeable terms than in the past, sequencing rounds of investment and adding genuine added value to the startups and scaleups in which it invests. Today's technological possibilities and their accompanying complexity demand such a response if a critical mass of innovative startups are successfully to fulfil their early promise. Nobel prize winner Professor Kenneth Arrow observes that 'venture capital has done much more, I think, to improve efficiency than anything',²⁰⁴ while financial journalist and commentator Sebastian Mallaby's view is that VC is 'the great third institution of modern capitalism'.²⁰⁵

What stands behind these observations is that many of the most successful consequential companies of our times originated with VC backing. At the same time, the last two decades have also highlighted inherent structural challenges that are vital for the industry to recognise and compensate. If Britain is to break out of its current economic stasis, a necessary if insufficient precondition is a vigorous fit-for-purpose VC industry, especially as technological change accelerates.

The UK can include strong research based universities, a pre-eminent science base and an innovative presence in a range of twenty-first industries and technologies amongst its strengths; it now needs to build a generation of great companies, mirroring the success it has enjoyed in sectors like fintech or the creative industries, and reproduce it in sectors such as advanced manufacturing, renewables, health, life sciences and education where the opportunities are reckoned to be many trillions of pounds.²⁰⁶

Venture capital, having until recently tended to focus on software and digital technologies, will need to spread its wings. As Saul Klein notes:

"The first phase of venture, beginning in the 1970s, was actually dominated by science more than software. Then from 1994 to COVID, which is when I would say we ended the second era of venture, it almost looked like it was the other way round. Software companies that were building on top of engineering, technology and science infrastructure were the big winners – Netflix, Uber, Airbnb, Facebook, Google, et cetera. In my view it flipped from 80/20 science/software, to 20/80 the other way round. However, if you really think about what gave Google, Amazon, Apple and others their spectacular growth and competitive advantage in that era, it was actually the science and not just the software. Google was, and still is, the biggest manufacturer of semiconductors and data centres in the world. Amazon has built a huge distribution and logistics infrastructure, which is hard engineering and technology, as well as their AWS data centres. Our view is the next era of venture will be 50/50 science and software."

Encouragingly VC in Britain is a rapidly growing industry and has the capacity to reinvent itself as tastes, market demands and technology shifts. But equally the twenty-first century economy is likely to develop in unexpected and cross-cutting directions as technologies simultaneously lower some costs but also require more costly capital-hungry infrastructures to meet the demands of advanced science and deep tech. Much of the economic landscape will be transformed by AI-driven breakthroughs – for example, in biotechnology and life sciences, where revealing the DNA foundations of living organisms, which are essentially an information storage and transmission system, will have implications for everything from food and medicine to materials and consumer goods.²⁰⁷

The British financial system will thus need to step up its entrepreneurial capacity, of which VC is an essential component, to meet a complex gamut of financing demands with varying time horizons, risks and returns which in turn will demand diverse funding sources and new specialisms. At the same time there will be many startups, as at the moment, who will have bootstrapped themselves to success through their own internally generated funds without having accessed external finance in their early years – but for whom the next phase of growth will require external funding. It will be crucial in the promotion of economy-wide innovation that VC adapts to all these demands, investing across a broad range of technologies, entrepreneurs and companies, and across all British regions.

A prime aim of public policy must therefore be to increase the pool of British risk capital of which pension fund consolidation is a necessary if insufficient precondition, to ensure more of this enlarged domestic pie flows to venture capital, in particular to support later funding rounds for scale-ups where UK capital is currently acutely scarce and to engineer instruments that support VC in its innovation mission. VC cannot deliver this vital national task alone. In particular the success of existing institutions such as the British Business Bank (BBB) need to be built on, with it and other public agencies partnering with the private sector to ensure the best possible monitoring and appraisal of funding bids. In this respect LIFTS and the NSSIF are hopeful forerunners of the right direction of travel, but so far too little risk capital has moved in their direction. The crisis in the paucity of UK risk capital coming forward for later funding rounds needs to be decisively remedied.

As importantly there needs to be a much more innovation-friendly approach to public procurement, in particular to support 'bootstrapping' companies. Techniques need to be developed – involving the BBB,

government departments and Innovate UK – to help government take procurement risks, even potentially allowing it to share in the success of the companies it supports. Innovation grants need to be more carefully calibrated to help firms through the multiple stages of technology development. The intermediate institutions supporting venturesome innovation – from accelerators to the Catapult network – and additional source of entrepreneurial financing – corporate venturing for example – that together help derisk and foster innovation need to be developed and nurtured. More broadly tax policy needs to be carefully calibrated and focused to buttress these aims.

There is also a need for effective place-based policy that supports the diffusion of innovation across the country and builds stronger ties between regions. At the same time, policy must recognise that capital, markets, ideas and talent necessarily cross borders with accompanying cluster effects; venture capital just as scaleups do not operate within national silos. Initiatives to promote European collaboration on defence should be matched by measures aimed at capturing similar benefits from collaboration on innovation, notably on regulation, movement of talent and funding.

All these measures will be more effective if the complementarities between public and private markets are recognised and strengthened. Each has distinctive strengths but also shortcoming that are mitigated by the other. As observed in Paper I, the traditional public-private divide – characterised in corporate law by a highly regulated public realm and a lightly regulated private realm – has come under increasing strain as the two realms diverge even further and young, disruptive firms remain private for longer while reaching substantial scale. Policymakers and regulators should continue to monitor this situation.

These measures will also work better the more a stronger equity culture in the UK can be created to produce an enlarged flow of UK risk capital – from both institutional and retail investors – to anchor ownership and support deeper, more liquid public markets together with parallel vibrancy in our private markets. In particular there needs to be stronger ‘offramps’ to allow companies to exit as they choose with a better balance between the current dominance of exit by acquisition, often abroad, compared to the low number of IPOs. Britain – government and investors alike – needs to be more keenly aware of the priority of nurturing the purpose that animates company founders and as far as possible of retaining headquarters, research and high value-added production in the UK.

Get all this right and Britain could become a genuine high growth, high tech economy populated by a new generation of purpose-driven growth companies, in the process offering greatly enhanced returns to its savers as they play a part in generating more economic growth. Some of the necessary building blocks are in place, but gaps need to be closed and the necessary capital and entrepreneurial finance mobilised – all part of a root and branch overhaul of Britain’s wider financial and innovation ecosystem to which we turn in the last paper in the Growth Trilogy.

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The Purposeful Company

thepurposefulcompany.org

info@thepurposefulcompany.org

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