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DISCUSSION PAPER

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Government Venture Capital and Europe's Innovation Strategy

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Government Venture Capital and Europe's Innovation Strategy[1]

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Abstract

This paper examines the role of government venture capital (GVC) in addressing persistent gaps in Europe's risk capital. Unlike the US, Europe faces fragmented financial markets, lower risk tolerance and low levels of private institutional investment. National and EU-level GVC programmes can support high-potential firms, crowd in private investment and promote entrepreneurship. Drawing on recent data and case studies, the paper analyses the rationale for public intervention, typologies of GVC models, design features and interactions with other policy tools. It also provides policy recommendations to enhance the effectiveness, strategic alignment, and governance of GVC programmes in Europe within broader industrial policy frameworks.

Keywords: entrepreneurship, innovation, ecosystems, risk capital, government venture capital, innovation policy, Europe

JEL codes: G24; L52; L26; M13; O380

1 Introduction

Governments around the world have turned to venture capital as a policy instrument to finance innovation. Government venture capital (GVC) funds - public or publicly-backed vehicles that invest equity or quasi-equity in innovation and growth-oriented innovative companies - has become a prominent feature of innovation policy in economies as diverse as the United States, Israel, China and much of Europe. However, the institutional forms these programmes take, the problems they aim to

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solve and their relationship with the private venture capital (VC) market fundamentally vary among political economies.

In the United States, government programmes such as the Small Business Investment Company (SBIC) played a catalytic role in the emergence of Silicon Valley, but today they occupy a marginal position[2] in a VC ecosystem dominated by deep pools of private institutional capital (Lerner, 2009; Nicholas, 2019).[3] In Israel, the Yozma programme seeded a world-class VC industry, but it was privatised within four years and eventually ceased to exist in its original form (Avnimelech & Teubal, 2006, Breznitz, 2007). In China, 'government guidance funds' have rapidly expanded under close direction by central and regional authorities, pursuing an explicitly state-directed model of innovation finance (Li & Ban, 2026). In each case, GVC reflected a particular configuration of state capacity, financial market structure and industrial policy ambition – and in each case the role of public capital evolved as the broader ecosystem matured.

Europe has had its own trajectory. Since the early 2000s, European governments and EU institutions have progressively expanded GVC activity, building an increasingly sophisticated set of instruments to address persistent gaps in early-stage risk capital (Berger et al., 2025; Moretti, 2024). Unlike the US and Israeli cases, however, GVC in Europe has not receded as the ecosystem has grown. It retains a structurally anchoring role – and, as we argue in this paper, it is likely to do so for the foreseeable future. This is because Europe's risk capital deficit is not primarily a matter of market immaturity that public intervention can temporarily remedy. It reflects deep structural differences in financial systems, institutional frameworks and demand conditions for entrepreneurial finance that set Europe apart from the US (EIB, 2024b; Draghi, 2024).

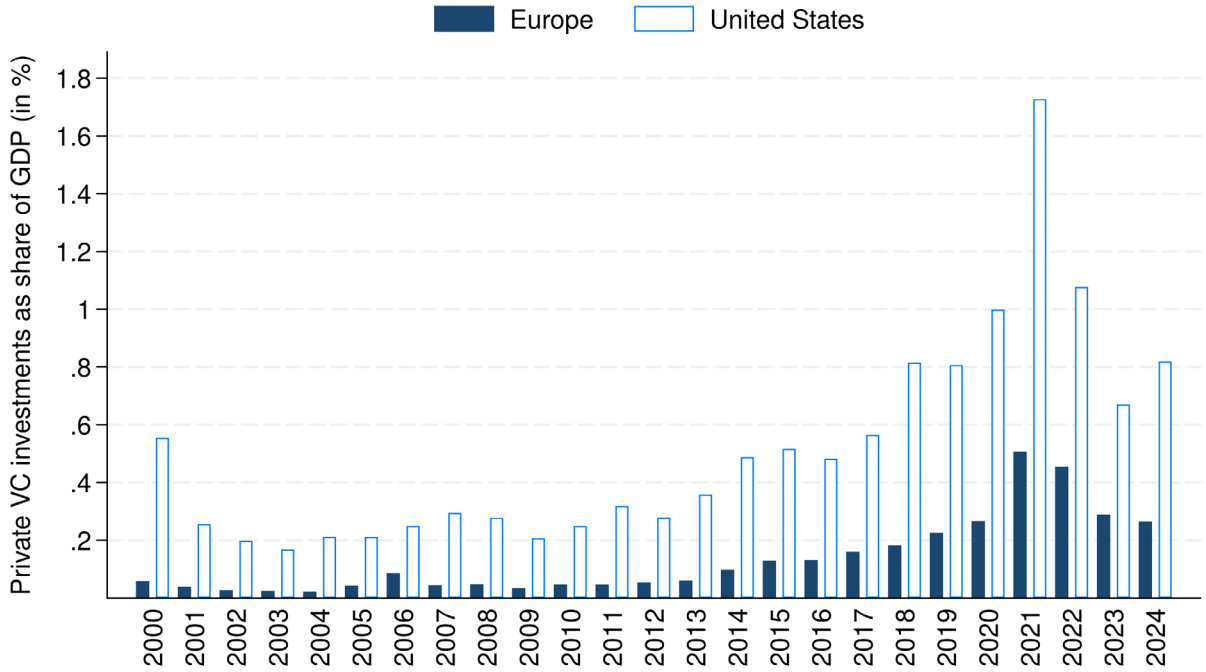
These differences are substantial. The US venture capital ecosystem is underpinned by a large and diverse institutional investor base – most notably private defined-contribution pension funds and university endowments – that channels patient capital into high-risk asset classes (Arnold et al., 2024; Gompers and Lerner, 2001). In Europe public pay-as-you-go pension systems dominate, household savings are disproportionately held in bank deposits rather than equities and equity markets are fragmented along national lines (Balakrishnan & Pradhan, 2025; Bhatia et al., 2019). US VC funds raise roughly seven times more capital than their European counterparts (Arnold et al., 2024). As a result, private VC investments in the US are almost three times larger – as measured by their share in GDP – compared to Europe (see Figure 1). European scale-up firms raise about 50% less capital in their first ten years than comparable US firms (EIB, 2024b). The gap towards the US does not seem to be driven by a lack of inventive capacity, but an inability to provide scale-up capital at later stages of firm development (OECD, 2026).

These financial gaps are compounded by regulatory fragmentation among EU member states – including different insolvency regimes, product standards and labour market rigidities – which raises the cost of cross-border venture investing and limits exit opportunities (European Commission, 2025; OECD, 2025). Europe's bank-centric corporate finance system, with conservative lending practices that favour incumbents over asset-light start-ups in knowledge-intensive sectors (Holmström, 2015), a 'middle technology trap' in which Europe is specialised in sectors of medium rather than high technological intensity (Fuest et al., 2024) and stagnating business dynamism (IMF, 2024; OECD, 2025) all reinforce the persistent equity gap for young innovative firms.

Figure 1: Private Venture Capital investments as shares of GDP in the US vs Europe, 2000-2021

[2] The Small Business Administration (SBA) still runs programmes in the US but their relative importance has decreased compared to the dominance of the private VC industry.

[3] In this paper we use the concept of 'entrepreneurship ecosystem' in the conception put forward by, among others, Isenberg (2011)



Note: Share of Venture Capital investments from private entities as a percentage share of GDP. 'Venture Capital investments' aggregates data on angel, corporate and early stage VC, equity crowdfunding, later stage VC, seed round and PE growth/expansion deals. Transactions involving direct investments by Government VC funds are excluded. 'Europe' includes data on the following countries: Austria, Belgium, Bulgaria, Switzerland, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, the United Kingdom, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Lithuania, Latvia, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Slovenia and Slovakia.

Source: Data from PitchBook, Government VC entities from Berger et al. (2024).

Unlike the US and Israeli cases described above, therefore, Europe's reliance on GVC is not a transitional phase. In the absence of deep pools of private institutional capital comparable to those in the US, public capital will remain a central pillar of European VC ecosystems for the foreseeable future. Even if ambitious reforms of European pension systems were enacted today, comparative evidence shows that building the requisite asset base is a multi-decade process. Countries that transitioned to partly funded pension regimes in the 1990s – such as Australia, Canada and Sweden – required over thirty years of gradual contribution increases and compound returns to accumulate risk capital pools per worker two to three times larger than those in PAYG-dominant economies such as France and Germany (Augustin et al., 2025). Without large capital pool alternatives stepping in, GVC is therefore not a bridge to an eventual private-only market. It is for the medium term at least a permanent structural feature of how Europe finances innovation.

This observation has important implications for how we evaluate and design GVC programmes. Much of the existing literature treats GVC as a competing element in the private VC market and investigates whether government-backed funds crowd in or crowd out private investment and compares the performance of GVC-backed firms with those financed by private VC funds (Berger et al., 2024; Bertoni & Tykvová, 2015; Brander et al., 2015; Grilli & Murtinu, 2014). While these studies yield important insights, they depend on a framing that may not fully capture the European reality. In a context in which the structural preconditions for a large self-sustaining private VC market are absent, GVC is not a substitute competing with private capital. It is an integral component that enables a VC market which would otherwise be too small to fulfil its role in the innovation system. GVC provides the anchor

commitments, certification effects and co-investment capital without which many private VC funds would not reach a viable size and many early-stage firms would go unfunded.

The relevant policy question is therefore not *whether* Europe needs government venture capital but *how* GVC programmes can be designed most effectively to remedy the structural differences with the US, maximise the mobilisation of private capital – including from outside Europe – and support the development of a vibrant innovation ecosystem. This paper addresses this question. It examines the rationale, operational modalities and performance of GVCs in Europe and situates them on a broader innovation and competitiveness agenda. It builds on empirical findings in recent academic and policy literature, integrates insights from case studies and comparative experiences, and analyses GVCs in a policy mix including demand-side instruments, regulatory frameworks and complementary financial tools.

Specifically, the paper contributes to the literature by explaining the role of GVC in the European economic context and by providing an orienteering tool to understand the ways in which European governments do VC. First, it offers a categorisation and overview of the European models of GVC funds, including direct investment, fund-of-funds and hybrid co-investment models. Second, it introduces a theoretical framework to understand the different policy objectives that are achievable with these instruments and the inherent trade-offs. Third, it categorises the main channels of impact and reviews the evidence on the effectiveness and limitations of GVC programmes in Europe, highlighting best practices in governance and fund design. It concludes with reflections on the importance of complementing GVC instruments with a broader toolset of industrial policies for innovation.

The paper is structured as follows. The next section situates the paper within the existing literature on the role of venture capital and GVC for innovation. Section three introduces the three main models of European GVC. Section four identifies emerging best practices. Section five concludes with theoretical and policy considerations.

2 Existing Literature on the Role of Risk Capital in Innovation

Innovation is inherently risky, uncertain and cumulative. A cross-disciplinary body of literature has established that financing disruptive innovation, particularly in early-stage and high-tech ventures, presents a unique challenge that traditional financial institutions such as banks are often ill-equipped to address (Hall & Lerner, 2010; Lerner, 2009). Conversely, venture capital (VC) plays a critical role in enabling the experimentation and scaling that underpins transformative innovation (Gompers & Lerner, 2001; Kerr et al., 2014).

Over time the entrepreneurial finance literature has defined the conceptual contours of VC and identified its main channels of impact on innovation. At its core, venture capital is equity-based financing of young high-potential firms that lack the collateral or cash flow needed to secure bank loans (Gompers & Lerner, 2001). The VC model typically involves staged investments, active governance and close monitoring by investors who bring not only capital but also strategic guidance, networks and expertise (Gompers et al., 2020). This model has proven particularly effective in high-growth sectors such as information and communications technology (ICT) and biotechnology (Lerner & Nanda, 2020), and to a more limited extent in clean technologies (Ghosh & Nanda, 2010; van den Heuvel & Popp, 2023).

A rich empirical literature reveals the catalytic effects that VC can have on innovation outcomes. For US-based companies, Kortum and Lerner (2000) suggest that one dollar of VC investment is associated with roughly three times as many patents as a dollar of corporate R&D. Akcigit et al. (2022) show that VC-backed firms not only generate significantly more but also higher-quality patents than comparable

firms financed through other channels. Moreover, the patents produced tend to be more novel and influential, suggesting that VC not only supports more innovation but also more frontier-pushing innovation (Schnitzer & Watzinger, 2022).

Beyond innovation metrics, VC may have a profound impact on firm growth, market entry and industrial transformation. Although VC-backed companies account for only a fraction of all new firms, they represent about half of US public companies founded in the past 50 years and more than 90% of their total R&D spending and patent value (Gornall & Strebulaev, 2021; Lerner & Nanda, 2020). This shows the outsized influence of VC in shaping modern innovation ecosystems and national competitiveness.

However, a supply of VC is not a common feature in financial markets. It depends on institutional and business factors such as the depth of capital markets, the availability of patient capital from pension funds and endowments, and the existence of exit opportunities through IPOs or acquisitions. The legal and regulatory environments also matter (Beck et al., 2003; Lerner, 2009). Strong investor protection, efficient bankruptcy laws and favourable tax treatment of capital gains can all enhance the attractiveness of VC as an asset class (Edwards & Todtenhaupt, 2020; Hasan & Wang, 2008). In the US the presence of large private institutional investors, well-developed capital markets and a robust exit environment has enabled the emergence of a deep and resilient VC industry. In contrast, Europe's more fragmented financial system, lower risk tolerance, different labour laws and underdeveloped equity markets have historically restrained the growth of this industry (Bozkaya & Kerr, 2014; 20Lerner, 2009). Government venture capital in Europe has thus emerged as part of the policy efforts to proactively promote this financing model in Europe too.

A growing literature has started to study the impact of these policies. Most work finds a positive impact (Bertoni & Tykvová, 2015; Cumming et al., 2017; Grilli & Murtinu, 2014; Guerini & Quas, 2016), although some studies raise concerns about possible crowding out of private investors and other distortions (Da Rin et al., 2006). It should also be noted that all research on government VC faces the issue of cleanly differentiating between treatment and selection effects when assessing impact (Carter et al., 2021). GVC recipient companies are likely to differ from those receiving private VC and those that have never received any VC. Some important characteristics – like growth potential, innovativeness, motivation of the founders etc. – are difficult to observe and at the same time are likely to affect the type of funding firms receive. In addition, government VC and private VC may have different investment focuses. While the competitive advantage of GVC may be in financing ventures with relatively low returns and/or high-risk ('inferior ventures'), private venture capital may focus on financing ventures with relatively high returns and/or low risk ('superior ventures') (Wang, 2020). This distinction is important as it suggests that differences in performance between GVC-and private VC-funded firms may be explained by the fact that they target a different set of firms altogether. Overall, most of this work broadly focuses on the average impact of GVC. It does not instead go in depth into the heterogeneity that characterises all these different programmes on the continent, and neither into the details of the mechanisms with which GVC impact occurs.

To fill this gap, the remainder of this paper explains the different models of GVC funds that have emerged in Europe, the mechanisms with which they can help address market failures in early-stage innovation finance and how their effectiveness critically depends on design, governance and alignment with broader policy objectives.

3 Government Venture Capital in Europe

In response to the persistent structural and institutional deficiencies in private risk capital markets described above, European governments have progressively stepped into the venture capital (VC) ecosystem by creating and expanding government venture capital (GVC) funds. These initiatives

launched at the national, regional and EU levels have become a central pillar of Europe's innovation financing strategy, particularly since the early 2000s and the adoption of the Lisbon Strategy. Twenty years later, GVC in Europe seems to still play an anchoring role in European VC ecosystems. This makes Europe different from other cases in which states have played an important but temporary role. Although programmes such as the Small Business Investment Company (SBIC) programme contributed to the birth of Silicon Valley, today these schemes have a very marginal role (Lerner, 2009). In Israel, Yozma GVC seeded the country's VC industry, but it had a sunset clause: after four years it was privatised and eventually ceased to exist in its original form (Avnimelech & Teubal, 2006). Unlike such cases, where now deep pools of private capital dominate, GVC in Europe still accounts for a substantial share of early-stage financing. This continuing role in Europe has translated into increasingly sophisticated models and best practices to use GVC as a mechanism to crowd in private investment while addressing market failures. In other words, European GVC funds have evolved together with the growth of Europe's tech ecosystem. In this section we introduce the main models that have emerged, explain how they work and reference relevant case studies.

3.1 Models of Government Venture Capital

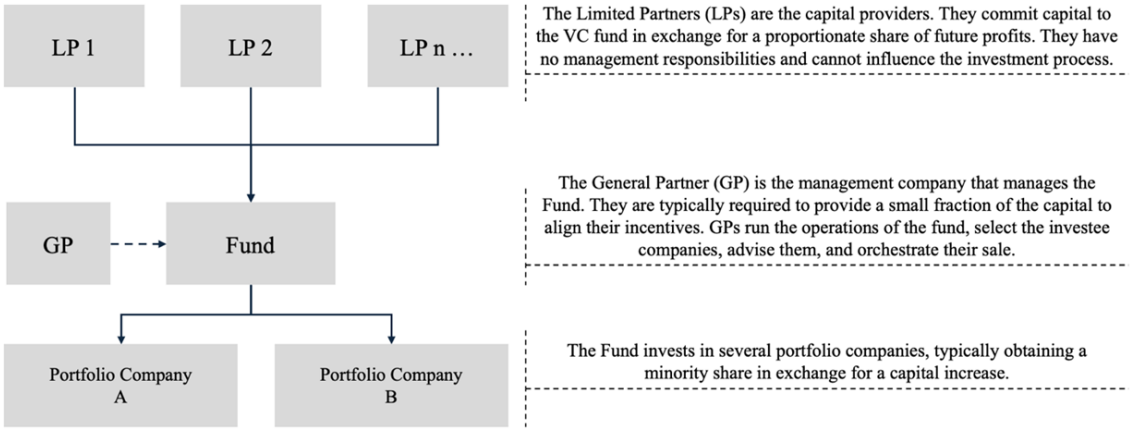
Three main GVC models have emerged in Europe: direct public investment in start-ups; fund-of-funds (indirect) structures that channel resources through private fund managers; and hybrid investment funds managed by a public entity blending public and private capital at the fund level. Importantly, however, all these models fundamentally replicate and follow the traditional structure of classic venture capital funds (Figure 2): the limited partnership.

Each of the three main GVC models differs in whether the public entity plays the role of limited partner (LP), general partner (GP) or both. Based on these combinations, we argue that each model is characterised by a trade-off between two variables: *policy steer* and *financial and operational leverage* (see Berger et al., 2025, for a taxonomy of GVC, and Moretti, 2024, for a comparative cross-country analysis).

By 'policy steer' we mean the ability of the public entity to direct capital – both public and private – to its policy priorities (Griffith-Jones & Naqvi, 2021). This tends to be greater when investment choices are directly made by public entities rather than market actors, and when the public side can impose strict conditionalities on private players (Bulfone et al., 2025; Mazzucato & Rodrik, 2026).

'Financial leverage' refers to the amount of private investment mobilised per unit of public resources deployed by the policy. A high-leverage policy is one in which one euro of public capital mobilises at least as much private capital. 'Operational leverage' instead refers to the amount of human resources, governance provisions and internal processing required to run the programme from the point of view of the state. Typically, the more actors involved and the more activities managed directly by the public side, the greater the operational complexity. Below we expand on each of the three GVC models introduced above and explain how these variables are affected.

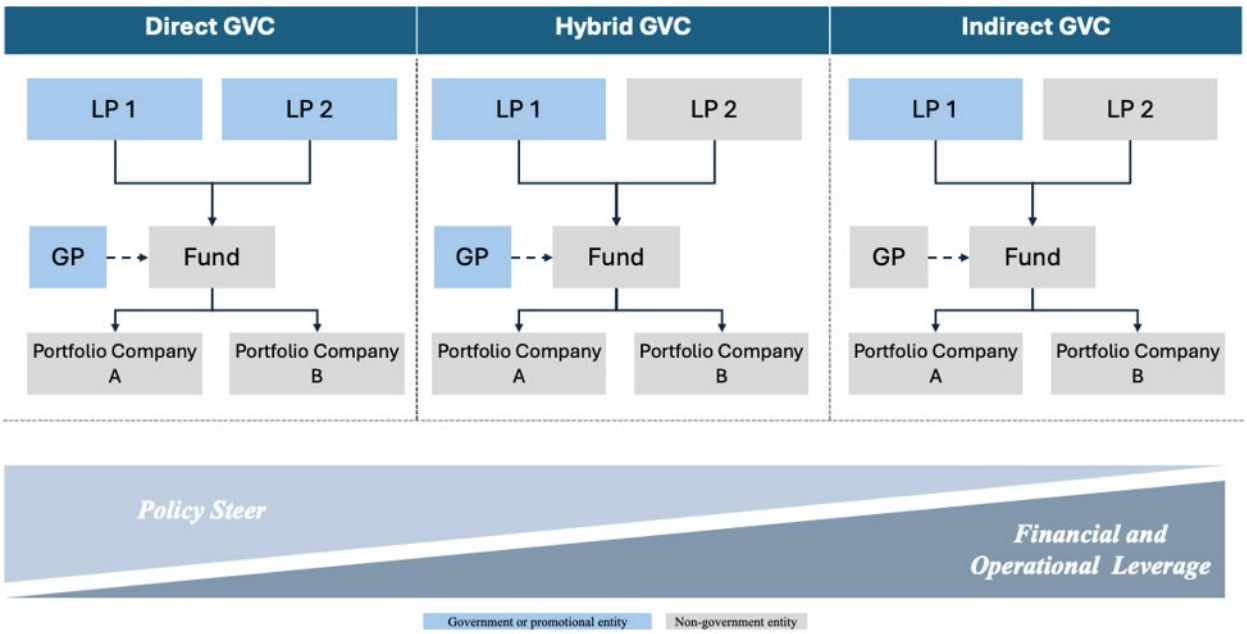
Figure 2: Classic Structure of a Venture Capital Fund: The Limited Partnership



Note: The figure presents a stylised picture of a limited partnership structure**.**

Source: Authors' elaboration.

Figure 3: Main Forms of Government Venture Capital



Notes: a typology of government venture capital (GVC) investment models, direct, hybrid and indirect, and their relative balance between policy steer and financial and operational leverage. LP indicates limited partner; GP stands for general partner.

Source: Author's elaboration partly based on Berger et al. (2025) and unpublished dissertation work by Antonia Watzinger (RWTH Aachen University) for GVC models, and on Griffith-Jones and Naqvi (2021) for insights on policy steer and leverage.

3.1.1 Direct Public Investments

With direct GVC, the public entity typically operates as both an LP and a GP. In other words, a team working for a public institution manages capital provided by the state. As such, direct-investment models have the highest degree of policy steer. These funds have full autonomy in directing capital to their public policy objectives. Governments can theoretically use them to target specific sectors,

technologies or regions that receive little interest from private markets. The high degree of policy steer is why this model appeals to political authorities, which see it as a sophisticated financial vehicle to implement their industrial policy ambitions. A frequent policy ambition, for instance, is to use direct GVC to invest in strategic technologies or support 'national champions.'

In practice, however, the degree of policy steer of these funds in Europe is constrained by two factors. First, as these programmes are often expected to generate positive financial returns, they generally face the same structural constraints as private VC funds looking for high-return prospects and feasible exit opportunities within 5-7 years after investment. Of course, de-prioritising financial outcomes is a potential policy choice, but a highly risky one. It opens the door to non-rigorous investment practices, capture by short-term political interests and general uncertainty about the programme aims (Lerner, 2009). Crucially, it risks crowding out private actors, which cannot similarly afford to forgo financial results.

Second, and relatedly, most European direct GVC funds operate on a strict 'private co-investment' basis. This means that the GVC fund would not make any investment unless a private investor is willing to participate in the round on exactly the same terms – so-called *'pari passu.'* In practice this model helps to avoid the abovementioned market-distortion and political risks. Importantly, it also ensures that the programme does not formally breach European state-aid regulation, which prevents public institutions from providing private enterprises with capital on non-market terms (apart from a few exceptions).[4]

This model is epitomised by Bpifrance Direct Investment, which in some years has been the most active VC investor in Europe (Thiemann & Volberding, 2021). With over a dozen direct vehicles, some specialised in certain sectors and other more generalist and/or stage focused, it provided the French ecosystem with over 1.5 billion euros from the launch of the public bank until the COVID-19 pandemic, when yearly investments were further increased (Moretti, 2024). However, several other countries have adopted similar models (CDP Venture Capital in Italy, Coparion in Germany, Tesi in Finland and Investinor in Norway). At the supranational level, the largest such initiative is the European Innovation Council Fund – a 4-billion-euro vehicle that co-invests in high-potential deep-tech start-ups across the continent.

It is important to note that in most of these cases, despite the co-investment mechanisms, these GVC funds operate like any fully-fledged fund. They have their own investment teams and conduct independent due diligence on all investments. A different more 'automatic' model also exists. Especially during the COVID-19 pandemic, governments deployed direct GVC funds operating on a 'matching basis,' investing semi-automatically or with minimal internal due diligence when a partner private investor requested it, to quickly provide a lifeline of capital to start-ups that were running out of cash due to the lockdowns (see, for instance, CDP Venture Capital's Fondo Rilancio). In the past, the European Investment Fund (EIF) used a similar model to systematically co-invest with business angels (BAs) through the European Angels Fund (EAF; 800 million euros).

Following the framework outlined in Figure 3, these GVC funds have the highest policy steer but limited financial and operational leverage. In most of the examples mentioned above there is no guarantee of how much private capital will match the public resources. In the case of co-investment funds, it is also hard to argue that the impact of the GVC fund is truly one of 'catalysing private capital' since – by construction – the GVC fund can only join private venture capital funds (PVCs) in an investment they

[4] See, in particular, Commission Regulation (EU) No 651/2014, known as the General Block Exemption Regulation (GBER), https://eur-lex.europa.eu/EN/legal-content/summary/general-block-exemption-regulation.html.

would pursue anyway. The operational complexity is high, because the investment processes are fully internalised by the public entity, and thus requires very high state capacity.

3.1.2 Indirect GVC (Fund-of-Funds)

Indirect models involve the government acting as an LP in private VC funds, often with a fund-of-funds structure. In this setup, the public entity typically 'anchors' PVC funds by providing critical initial commitments (although almost always less than half the total) that increase the likelihood that a fund will reach the minimum size it needs to operate.

In this model, the public entity negotiates upfront with the PVC fund, but after it has committed capital it delegates all investment decisions to the GP – a fundamental feature of the limited partnership model. Upfront negotiations instead usually revolve around the governance of the fund and the compensation model. GVC agencies do not attempt to have a say in the investment decisions. Instead, they try to avoid potential conflicts of interests and misalignments of incentives by the fund management team (Moretti, 2024). The key policy requirement they demand is a 'local investment requirement' (LIR). As a minimum these GVC funds require the fund to invest in local companies an amount equivalent to the public capital committed to the fund – however, the 'multiple' required can be much higher, depending on the agency.

This model has been instrumental in developing national VC industries and it has been used extensively in Germany, France and Spain and by the European Investment Fund (EIF) in Europe. Since the early 2000s, the EIF has played a key anchoring role in the development of the fund-of-funds model, investing in hundreds of VC and private equity funds across the continent.[5] Its mandate to catalyse private capital while adhering to commercial standards has had a powerful certification effect, enforcing best practices in governance, transparency and fund management (Moretti, 2024). National-level institutions such as Bpifrance (France), KfW Capital (Germany), Tesi (Finland), Fond-ICO Global (Spain) and CDP Venture Capital (Italy) have followed similar strategies. Increasingly, the EIF and national promotional institutions (NPIs) collaborate with the aim of building cross-national European funds.

In the framework presented, this approach gives the government the *least* policy steer: it has no say in selecting individual start-ups. However, it typically achieves high financial and operational leverage. Public commitments as low as 20 million euros can anchor a 100 million fund, unlocking a multiple of the public amount from private LPs. Early 'anchor' commitments and the public entity negotiating the limited partnership agreement signal credibility, making private investors more willing to join as they can tag along without renegotiating the terms and knowing that the fund will reach the minimum viable size to operate. Operationally, a small team in the agency can deploy billions across the ecosystem through private intermediaries. For instance, from 2012 Spain's ICO invested over €1 billion in five years with fewer than 10 staff (Moretti, 2024). This is because evaluating and selecting funds can be a much more standardised and predictable process than investing in start-ups. The main challenge lies in balancing conditionality. Too few conditions can turn public funding into an untargeted subsidy, shifting most of the risk to the public side. Too many, however, especially too strict geographical multipliers, can stifle the industry, forcing sub-optimal investments and deterring top-tier private VC funds from joining the scheme. Successful programmes combine strong governance requirements with ample investment strategy flexibility for the PVC funds.

[5] For details on EIF operations and certification effects, see Kraemer-Eis et al. (2016).

3.1.3 Direct Hybrid Funds

Hybrid funds take the form of a close coordinated cooperation between a public LP and a private one (or more), which agree to commit capital to a fund managed by a public or a state-linked entity. The aims are typically threefold: to mobilise private capital, to introduce private-sector discipline in the public fund and to attract corporate limited partners seeking early access to innovation. The multi-stakeholder nature of this model means it is a less common but noteworthy alternative to direct GVC funds.

The German High-Tech Gründerfonds (HTGF) is perhaps the most successful example. Since 2005 this hybrid model – originally set up together with corporate investors such as BASF, Deutsche Telecom and Siemens – supported more than 600 early-stage firms, combining government funding with corporate co-investors and maintaining an independent investment committee with technical expertise. Its performance has led to four iterations, with an ever-growing proportion of private capital and an increasing number of corporate (and even SME) investors (Moretti, 2024). Italy's CDP Venture Capital has more recently set up a similar scheme with its 300-million Corporate Partners I Fund, which has been active since 2021.

These models provide an appealing balance of policy steer and private leverage. With 30 percent or more capital from private sources, the vehicle is not considered 'public' for European state aid purposes and therefore can conduct investments autonomously without needing a co-investor on a deal-by-deal basis. At the same time, the involvement of private sector actors provides both capital and constraints on political meddling with investment decisions. For start-ups, the hybrid model offers funding plus access to corporate networks, technical expertise and potential strategic partnerships. For private investors, particularly corporate investors new to VC, the model offers a de-risked entry point and exposure to innovation, with potential to spin off independent VC arms later.

On the flip side, the multi-actor nature of this model can introduce operational and governance complexities. If not well-managed, they can derail the effectiveness of the scheme. At its worst, hybrid GVC funds can mirror the limitations of both government and corporate VC funds: complex governance, potential decision paralysis, strategic drift if any partner's priorities shift and a bias in favour of 'strategic' technologies and pet projects without proven markets. Success depends on clear governance rules, operational independence, appropriate financial incentives and balanced stakeholder representation.

4 The Benefits and Risks of Government Venture Capital

Support programs for innovative start-ups – including GVC - have risen substantially over the past three decades (Bai et al., 2021). In GVC programmes, this expansion was accompanied by increasing professionalisation, diversification of instruments and better integration in national innovation strategies. In some cases, GVC investors have acted as ecosystem builders, providing not only finance but also mentorship, visibility and support infrastructure.

In principle, GVC programmes can positively impact the market in multiple ways and therefore justify this type of government intervention. When they are well designed and strategically deployed, GVC programmes can correct market failures in early-stage financing, foster the emergence of high-potential firms and stimulate private sector investment. At the same time, GVC funds face significant operational, political and structural risks that can undermine their effectiveness or even be counterproductive. Table

1 below summarises the characteristics, benefits and risks of the main GVC models. In the following sections we go into each of these factors, review the available large sample and comparative evidence on the impact of GVC and identify the main risks and benefits of each of the three models introduced above.

All in all, each of these three models has pros and cons and can serve slightly different purposes in the ecosystem (more on this in the next section). Governments can choose one or the other depending on where in the VC 'value chain' they plan to play. In this sense, it is important to note that one common characteristic of these European GVC models is that they follow, rather than try to find alternatives to, the classic structure of an American VC fund (see Figures 2 and 3). This is an important feature of the European approach to GVC in that it diverges from other well documented cases. For instance, American Small Business Investment Companies (SBIC) – one of the policies that supported the early-days Silicon Valley – operated by extending loans to management companies, not by investing as an LP (Nicholas, 2019). In East Asia, VC spread through local institutional adaptation rather than pure replication of the US model (Klingler-Vidra, 2018). More recently, China has also developed its own GVC approach with so-called 'government guidance funds.' In this model, the line between LPs and GPs is often more blurred, with central and local governments not just providing capital but often also involved in investment decisions. Such governance enables more direction by political authorities and integration of investment strategies with broader state economic planning (Klingler-Vidra & Pardo, 2025; Li & Ban, 2026). European GVC funds, instead, aim to play alongside the VC industry, following its rules and practices.

This section explores in depth the benefits and risks associated with European GVC models, drawing on comparative experiences and recent evaluation studies.

Table 1: Benefits and disadvantages for governments and start-ups of different models of GVC

Institutional Model	Main Impact Mechanisms	Features	Perspectives	Benefits and Disadvantages
Direct Investment (Solo)	Certification and incubation	Benefits	Government	Allows strategic targeting of sectors/regions; high policy steer; can address gaps private VC won't touch.
			Start-up/VC	Provides access to early-stage capital where private options are limited; can fund capital-intensive or long-horizon sectors.
		Disadvantages	Government	High execution risk if government lacks VC expertise; political interference possible; risk of crowding out private capital.
			Start-up /VC	Potential misalignment if government priorities override commercial logic; slower decision-making; risk of crowding out
Direct Co-Investment	Portfolio diversification and financial leverage	Benefits	Government	Crowds in private capital on *pari passu* terms; keeps market validation; avoids fund-level governance complexity.
			Start-up /VC	Benefits from private VC involvement ensuring commercial validation; faster deployment due to simpler structure; leverage for PVCs
		Disadvantages	Government	Dependent on a presence of active private investors; may fail to reach underserved sectors; geographical concentration risk.
			Start-up /VC	Restricted to sectors already attractive to private investors; misses truly nascent areas without private interest.
Hybrid	Can vary depending on the private partner	Benefits	Government	Leverages both public and private LP capital; embeds private-sector discipline in fund management; attracts corporate LPs.
			Start-up /VC	Access to larger pools of capital and networks by both public and private investors; potentially more sectoral diversity; introduces corporate investors to VC investing, engaging highly technical experts that can provide validation also for PVCs.
		Disadvantages	Government	Complex governance with mixed LPs; potential misalignment of incentives; slower fund setup.
			Start-up /VC	Risk of conflicting priorities between public and private LPs; exposure to broader market volatility; risk of crowding out if investments are made based on corporate investors' strategic considerations rather than financial ones
Indirect/Fund of Funds	Certification	Benefits	Government	Scales impact by investing indirectly via private funds; enforces best-practice fund management; strengthens asset class credibility; operationally very lean.
			Start-up /VC	Start-ups access high-quality VC managers; resources dedicated to strengthening private VC industry, not 'in competition' with it; benefits from certification effect when backed by credible FoFs structures.
		Disadvantages	Government	Limited direct control over investment strategy; dependent on quality of private fund managers; slower deployment and policy transmission; no direct relationship with start-ups; does not develop internal state capacity for innovation investing.
			Start-up /VC	Target choice made by PVCs, therefore may bypass very early-stage firms or particularly challenging sectors/business models.

Source: Authors' elaboration.

4.1 Rationales for GVC and Impact Mechanisms

Based on the literature on innovation and VC, we identify four main mechanisms with which GVC funds can impact an ecosystem and promote innovation: 1) certification; 2) portfolio diversification and financial leverage; 3) incubation; and 4) coordination. These are conceptually distinct, although GVC funds often operate with more than one simultaneously.

Certification will happen when an investment by a government entity sends a signal to the market about the quality of a company (or fund, in the case of indirect investments). The underlying necessary assumption is that the GVC fund has recognised ability in performing a good selection – better than an average market player. The corresponding evidence would be good financial results of GVC funds and a higher likelihood of GVC-invested companies/funds also raising money from private VCs/LPs.

'Portfolio diversification and financial leverage' refers to the value public money can have when co-investing with private entities (VCs or LPs). Assuming private actors (VCs and LPs) have limited financial resources, a co-investment by a public entity magnifies the impact of one dollar of private investment (leverage). Seen from a different perspective, it also increases the opportunity for portfolio diversification. With the same amount of resources, a private actor can invest in more opportunities if GVC funds co-invest in each. This is particularly valuable in the stage-investing model of VC, in which returns are generated by initially spreading the bets and then 'doubling down' on higher-potential investees. The impact of this effect will be mostly at the ecosystem level, with more companies funded and healthier PVC returns.

Incubation can happen when GVC funds that operate independently invest at a stage in which market actors would not invest. In doing so, a GVC fund effectively extends the lifespan of promising companies until the time when PVC funds are ready to invest. This assumes there are stages and/or market segments that are incompatible with the PVC model, or that PVC funds that focus on those areas are not present in the local market. This GVC impact can be further strengthened if the GVC fund offers, in addition to capital, in-kind support and mentoring that make companies VC-ready. The effect will be visible in high follow-on investments by PVCs.

Coordination is a final impact GVC funds can have. It refers to the unique role governments can play in bringing together different actors in an entrepreneurial ecosystem, facilitating matching of supply and demand and promoting best practices. While the coordinating role *per se* does not require equity investing, it typically goes hand-in-hand with it as it is unlikely that an organisation can influence the ecosystem without being operationally involved in it.

In the next section we review the available evidence, with reference to these mechanisms.

4.2 Benefits of GVC

The evidence on the impact of GVC is mixed. While in some contexts some programmes have greatly contributed to the growth of ecosystems, in others they seem to have had a negligible or even detrimental effect.

One of the main ways in which GVC funds can have a positive effect is by 'crowding in' private investment. Empirical evidence shows that firms backed by GVC funds are significantly more likely to secure follow-on funding from PVCs than those that have no VC funding at all (Guerini & Quas, 2016). This can be especially valuable in underserved sectors or regions that PVC funds do not proactively and regularly screen

(Bertoni et al., 2019). In these cases, GVC funds may operate with both certification and incubation mechanisms. On the one hand, investment by a GVC fund may provide reassuring signals for PVC funds. On the other, it could also be that GVC money, and potentially in-kind support, allows companies to mature and become VC-ready. Either way, for this model to work, GVC funds need to be highly skilled at identifying and supporting high-potential companies. A notable example is the German HTGF. This fund was launched with the mission of performing solo investments at the seed stage, an area not covered by private VC funds in early-2000s Germany. The fund has technical evaluation committees and a vast network of technology experts. The team also imposes reporting practices on their portfolio companies and trains management to pitch to PVC funds. With this mix of good selection and mentoring, HTGF investees have later raised more than eight times the capital received from the public fund (Moretti, 2024).

In general, however, evidence suggests that independent GVC investment selection is unlikely to be superior to that of private VC investors. Recent evidence suggests that purely public direct funds tend to underperform more market-integrated models (Alperovych et al., 2020 and more recently Köppl et al., 2025) largely confirming earlier evidence (Alperovych et al., 2015; Bertoni & Tykvová, 2015; Grilli & Murtinu, 2014). Interestingly, though, the best outcomes are associated with firms receiving financing from both PVC and GVC investors (Brander et al., 2015).

These findings support the direct co-investment model that most European GVC funds have adopted. This model offers two benefits. First, always investing with PVC funds and on their same terms lowers the risk of distorting the market and crowding out private investments. Second, it can benefit the ecosystem with portfolio diversification and leverage effects. By lowering PVC funds' capital committed to each deal, it allows them to spread their bets over a larger portfolio. This type of model can be especially helpful in the early days of an ecosystem in which few private operators are active and therefore opportunities for privately syndicated investments are limited. However, the co-investment requirement intrinsically limits the certification effect of GVC funds.

In Europe, the case for GVC certification has been much clearer in the context of indirect investments. In this case government entities often take the lead in conducting due diligence and negotiating investment agreements (limited partnership agreements, LPAs). Unlike funds investing directly in start-ups, government agencies in Europe are among the most experienced investors in the field. Various evidence suggests that their investment catalyses further commitments by private LPs. Quantitative evidence from the European Investment Fund (EIF) shows that its support can strengthen the fundraising capacity of private VC funds by attracting institutional investors which may otherwise be reluctant to enter this asset class (Kraemer-Eis et al., 2016). Similarly, case studies and survey evidence have shown the importance that PVC funds attach to intervention by indirect GVC funds in their fundraising cycle (Gazaniol, 2025; Moretti, 2024). On the one hand, these institutions effectively negotiate LPAs on behalf of less experienced investors, making it easier for them to invest in the asset class. On the other, their commitment early in the fundraising cycle reduces the risk of funds not reaching minimum viable size and locking in LP capital.

The case of Bpifrance, Europe's most proactive national public bank (Thiemann & Volberding 2021), illustrates the balance among these GVC roles. Although the institution manages several direct funds, they all operate under a co-investment model. This has restricted the extent to which they can promote specific technologies or 'certify' companies. Nevertheless, it has allowed them to remain key partners for private investors while maintaining exposure to more challenging sectors. Unsurprisingly, when controlling for firm characteristics, the performance of its investees is comparable to that of its private VC partners

(Gazaniol, 2025). On the flip side, its indirect investment team has taken a leadership role in anchoring the asset class. It has invested in a majority of France's VC funds, attracting private LPs and promoting GP best practices while representing a decreasing share of total capital raised despite ever-growing public commitments (Gazaniol, 2025).

Bpifrance also offers one of the best examples of a GVC impacting the ecosystem through coordination (Moretti, 2024). The bank acts as a point of reference for the ecosystem by organising networking and best-practice sharing events. Aside from equity and debt financing, it also has a team that simply matches start-ups with relevant investors in the bank's network. Finally, the bank also promotes an entrepreneurship culture at large with continual marketing campaigns. These activities show the extent to which GVC funds can impact private industry through a variety of non-investment channels.

4.3 The Risks and Limitations of GVC

Despite this potential, GVC programmes face several significant risks that can undermine their effectiveness. When the right governance, incentives and competences are not in place, or the tool is used for incompatible policy objectives, GVC funds have a high risk of failure. In Table 2 we show how each of the positive mechanisms outlined above can turn into a perverse one when best practices are not followed.

Table 2: Positive mechanisms and corresponding risks

<table>
<tr><th>Positive GVC mechanisms</th><th>Main Risks</th><th>Negative effects</th></tr>
<tr><td>Certification</td><td rowspan="4">Political interference

Misaligned (or too many) policy objectives

Misaligned financial/performance incentives

Lack of investment and technical competences

Disproportionate fund size</td><td rowspan="2">Negative selection bias and GVC-stigma</td></tr>
<tr><td>Incubation</td></tr>
<tr><td>Portfolio diversification and leverage</td><td>Crowding out and negative financial returns</td></tr>
<tr><td>Coordination</td><td>Monopolistic behaviour and crowding out</td></tr>
</table>

Source: Authors.

Political interference and misalignment of incentives are among the most widespread issues. When governments exert direct control over fund management or use GVC funds to serve short-term political aims, the quality of investment decisions often declines.[6] This problem is compounded when funds are managed by public agencies lacking venture investment expertise or when compensation systems fail to reward strong performance (Jääskeläinen et al., 2006). Although it is typically very difficult to embed proper

[6] For example, relying on evidence from China, Suchard et al. (2021) show that fully government-controlled VC funds introduce inefficiencies while Ge et al. (2024) find GVC funds invest more in policy-backed industries, leading to weaker financial performance, i.e. lower likelihood of achieving investee IPO/M&A. Both papers, however, also highlight advantages of partial government ownership.

carried interest schemes in (para)public agencies, it is still fundamental to ensure teams are motivated and incentivised towards the long-term financial performance of the GVC fund.

Another challenge is the risk of crowding out private investors and distorting markets. While GVC funds are intended to attract private capital, poorly designed programmes can have the opposite effect if they offer overly subsidised terms or seek excessive control over investee companies. This is a critical risk as excessive reliance on, or dominance of, public capital can delay the emergence of a robust self-sustaining private VC market. To be effective, GVC funds must maintain clear separation between public policy objectives and market discipline.

Structural and institutional constraints can further limit the scalability and sustainability of GVC programmes. Many operate with small fund sizes, insufficient follow-on investment capacity and rigid governance rules that reduce flexibility. Conversely, others receive excessively large resources to profitably invest in nascent ecosystems (Lerner, 2009). Short political timeframes can also disrupt programme continuity, leading to premature termination or inconsistent support across funding cycles (Karsai, 2018; Murray & Marriott, 1998). In contrast, the most successful European models have built strong institutional capacity and secured long-term political commitment by consistently delivering positive (although not market-leading) performances.

Finally, GVCs often struggle with blurred policy objectives, less stringent selection criteria and insufficient performance evaluation. For instance, a common pitfall for policymakers is the temptation to use GVC funds to spread innovation geographically and foster regional development, while the literature on tech ecosystems frequently finds a high level of geographical concentration in a few hubs (Breznitz, 2007; Lerner, 2009). Counterbalancing this market tendency can be both extremely difficult and often counterproductive as it prevents the network effects that characterise successful ecosystems. More broadly, pursuing multiple aims, such as generating financial returns, promoting strategic technologies and fostering regional development, can create conflicts and reduce accountability. Without clear performance metrics and robust evaluation frameworks it becomes difficult to assess effectiveness or learn from experience. Efforts by the OECD, the EIB Group and some national promotional banks to benchmark and evaluate GVC programmes represent important progress in improving transparency and fostering best-practice sharing (see, e.g., Gazaniol, 2025; Secrétariat Général Pour L'investissement, 2025).

The next section examines these institutional and policy design considerations in greater depth, drawing on practical experience from Europe and beyond.

4.4 Institutional Design and Best Practices

The performance of GVC programmes hinges on their governance and design. Effective GVC funds combine strategic public objectives with private sector discipline, embedding clear governance frameworks, robust selection mechanisms and financial incentives for both fund managers and investee firms. The message emerging from virtually all recent findings on GVC structures suggests that governments should always work together with private partners and find the right mix of direct and indirect activities. Specifically, when state capacity for innovation support and VC investing is low, governments are advised to act as LPs in private funds. Where the government is instead able to attract the right competences, a select use of direct GVC is also viable. This broadly appears to have been the case in Europe, where countries with higher state capacity (e.g. the Nordics) have been more able to use a direct approach,

while in Central and Eastern Europe this approach has been much more challenging (Alperovych et al., 2020; Karsai, 2018).

On balance, governments use various mixes of the models we have identified. In the next subsection, we try to distil key lessons from comparative experience and identify design features that contribute to the success of GVC programmes.

4.4.1 Independence and Professional Fund Management

A recurring finding in the literature is that institutional independence and professional expertise are essential for the success of GVC funds. VC investment decisions typically follow a four-stage process – screening opportunities, structuring deals and post-investment monitoring and advising, and structuring exits – in which experienced fund managers add value with their technological and industry expertise, networks and access to senior talent (Bottazzi et al., 2008; Gompers et al., 2020; Sahlman, 1990). When these decisions are insulated from political interference and left to experienced managers with clear performance incentives GVC funds tend to deliver stronger outcomes (Bertoni & Quas, 2016; Lerner, 2009).

Governance arrangements therefore often involve putting public capital into entities managed by independent investment teams or private GPs. The use of fund-of-funds structures and hybrid co-investment models can further strengthen autonomy and operational discipline. For example, the EIF's approach to selecting fund managers and monitoring them based on commercial criteria has become a benchmark across Europe. Following Berger et al. (2025), governments have three main options for fund management, each implying a different degree of integration with the public sector. First, the fund can be managed internally by an existing public financial institution (e.g. KfW, BBB, CDP). This model risks misalignment. Large bank-like organisations are often dominated by traditional lending activities and may not attract VC professionals or serve innovative start-ups well. For instance, Moretti (2024) documents that Germany's KfW programmes nominally targeted at start-ups were historically mostly used by traditional SMEs. Second, fund management can be delegated externally to a private fund manager (e.g. EQT capital partners managing the European Scale Up Fund), which brings private-sector practices but may reduce public steer. Third, governments can establish dedicated integrated entities specifically geared to VC investing, such as Finland's Tesi, Norway's Investinor and Germany's Coparion. These entities have adopted organisational models that ensure arm's-length management while maintaining strategic oversight by public stakeholders.[7]

4.4.2 Alignment of Incentives and Risk-sharing

Successful GVC fund designs align public and private interests. There are two aspects of this. First, it is important for the staff of the public entity to have an incentive to deliver long-term positive financial performance for the fund. For a variety of reasons (see Lerner, 2009) this might not be the top priority in many public organisations. The right internal incentive structure is therefore fundamental. While fully-fledged carried interest models are particularly difficult to embed in public organisations, alternatives can be found. The German HTGF, for instance, has introduced an alternative and workable scheme that approximates the economics of traditional carried interest to incentivise its teams. Where this is not possible, a culture of rigorous investment practices and revolving doors with private funds can go a long

[7] On the importance of arm's-length governance, see Lerner (2009).

way. More broadly indirect investments tend to reduce these risks as the investments are managed by a professional private VC fund which is accountable to deliver financial returns also to the other LPs.[8]

Second, there should also be an alignment of interests with the private sector (both VC funds and companies). While public intervention should incentivise private activity, it need not become an outright subsidy. In particular, governments should avoid schemes in which the GVC fund assumes most of the risk while private investors alone benefit from potential upsides. *Pari passu* co-investments and hybrid funds ensure that risk and reward are equitably distributed and that fund managers are motivated to seek commercial success. Avoiding preferential treatment for public capital is crucial to maintain credibility and attract private co-investors.

Some models also incorporate asymmetric risk-sharing, whereby public funds take a first-loss position, offer downside protection or receive a lower share of profits. Notably, Israel's Yozma programme left most of the returns to the private partners. More recently, the EIF's ESCALAR programme also offered an asymmetric distribution schedule that favoured private LPs.[9] While this approach can encourage participation in nascent or high-risk markets, it must be carefully calibrated to avoid moral hazard and ensure that private investors share in the investment risk (Bertoni et al., 2019).

All in all, the cleanest and most common practice seems to be for public capital to be invested on *pari passu* terms with private capital, which keeps things simple while ensuring alignment of incentives.

4.4.3 Fund Size, Lifecycle and Follow-on Capacity

Fund size and investment horizon significantly influence the ability of GVCs to support firm growth. Very small funds may lack the capacity to make meaningful follow-on investments, to distribute risk across a large-enough portfolio or to attract top-tier staff and co-investors. Several European GVC initiatives in the early 2000s constitute a cautionary tale for governments tempted, for political reasons, to diffuse GVC activities to subnational regional funds (Lerner & Tufano, 2011). These were unlikely to have the depth of capital, available investment opportunities and the right talent to perform well in the medium term.

The ability to perform follow-on investments is crucial in sectors in which innovation timelines are long and capital requirements evolve with firm maturity. The lack of follow-on capital was a significant issue for some French programmes that preceded Bpifrance. The HTGF, instead, has historically been able to invest a multiple of its initial seed investment in follow-on rounds (Moretti, 2024). Conversely, excessively large funds can be problematic if they become unwieldy or disconnected from early-stage needs. Most importantly, they can flood the market, pricing out smaller private VC funds (Lerner, 2009).

Best practice suggests a focus on modular structures that allow scaling up over time on the basis of positive performance and underlying market development. Continuity in funding across political cycles is also key (Murray, 2007).

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[8] Examples of such programmes include Israeli Yozma (Avnimelech & Teubal, 2006), the Innovation Investment Funds programme in Australia (Cumming, 2007), the New Zealand Venture Investment Fund programme (Lerner et al., 2005) and most recently the Enterprise Capital Funds programme in the United Kingdom.

[9] See details on the distribution waterfall of the ESCALAR programme at https://www.eif.org/InvestEU/escalar-call-for-expression-of-interest/escalar-information-document.pdf

4.4.4 Transparent Selection and Evaluation Frameworks

GVC programmes must establish clear and merit-based criteria for selecting both fund managers and investee firms. Competitive selection processes, due diligence requirements, and performance benchmarks help ensure accountability and minimise political capture. It is equally important to establish monitoring and evaluation systems. An absence of systematic data collection and performance benchmarking is a major weakness of many GVC programmes. Initiatives such as the European Data Cooperative, the OECD's Financing SMEs and Entrepreneurs Scoreboard and the OECD Start-ups Database offer promising platforms for enhancing transparency and facilitating cross-country comparisons (Berger et al., 2026; OECD, 2025).

Compared to other innovation and SME-support policies, however, the nature of the venture capital process poses serious constraints on standardisation and transparency in both selection and evaluation. VC fund investment choices are often based on intangible elements, above all the characteristics of the company's management team. Moreover, the investment process is neither linear nor standard but rather iterative and ad hoc, which makes evaluations based on experiments or counterfactual groups very challenging. In practice, GVC funds should maximise transparency without committing to an overly standardised and bureaucratic process. A good practice is to be very transparent about the general characteristics of target companies and preferred stage and sectors of investment and include minimum requirements. From a monitoring and evaluation point of view, GVC funds should collect and record information about all companies evaluated, not just the invested ones, so as to facilitate comparative and (approximate) counterfactual analyses. Crucially, programmes should have a very clearly stated policy and financial objective upfront, so that at least an objective outcome evaluation can be carried out. Finally, GVC funds should be closed-end funds with a liquidation schedule (the norm for private VC funds). This embeds a natural sunset close in the instrument, allowing for evaluation and recalibration if necessary.

4.4.5 Internationalisation and Cross-border Collaboration

In the context of fragmented European capital markets, given the mostly national nature of GVC funds, one of the risks is that their growing activity will continue fuelling 27 national innovation and VC industries rather than one integrated European one. This concern is grounded in the fact that, for political reasons, almost all GVC programmes have more or less strict national-level LIRs. Direct GVC funds can typically only invest in companies based in the financing country. Indirect GVC funds usually request to invest locally a multiple of the capital they invest in a private fund (at least 1x). While each of these requirements may in themselves be reasonable, in aggregate they cumulate to a puzzle of constraints for start-ups and private funds which disincentivise the creation of one integrated European innovation industry. Since international expansion and cross-border investment are both critical for the health and sustainability of the ecosystem, reducing these frictions should be a policy priority.

Cross-border collaboration exists and EU-level instruments such as the EIF and EIC Fund aim to pool resources, diversify risk and scale up investment platforms beyond national boundaries. These initiatives can overcome the limitations of small domestic markets and attract global investors and talent. The key going forward, however, is to better integrate these supranational initiatives with a coordination of national-level GVCs. One step in this direction, for instance, is the launch of the EIF's European Tech Champions

Initiative (ETCI, now in its second edition), which aims to pull resources from the biggest member states to fund large pan-European growth funds to support scale-ups across the continent.[10]

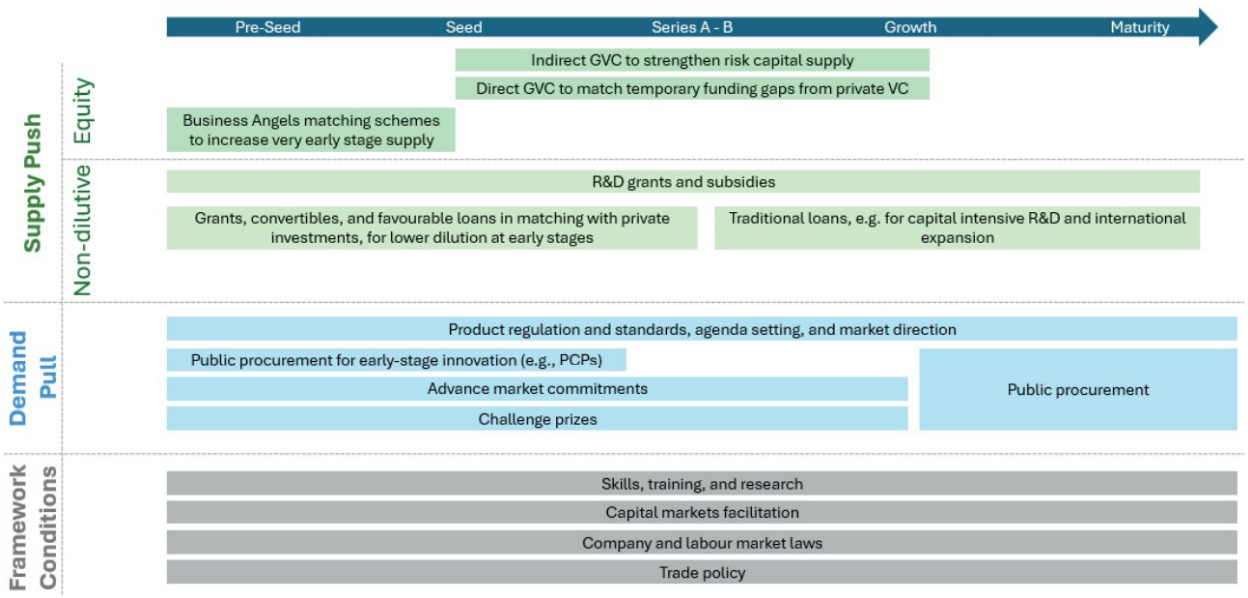
At the national level, we highlight two important best practices. On the direct GVC side, make the qualifying criteria for 'local company' as wide as possible (e.g. the founders' nationality and any operational presence in a country should also count). On the indirect side, do not impose more than 1x LIR. Instead, promote an operational presence of the fund in the country, which would help develop pan-European funds with distributed teams.

4.4.6 Integration with a Broader Innovation Strategy

Finally, the most successful GVC programmes are not standalone instruments but components of an integrated innovation and industrial strategy (Figure 4). GVC funds cannot be considered panaceas for innovation and doing so only increases the likelihood of dissatisfaction with the results. Instead, they should be aligned with other policy tools such as non-dilutive funding, public procurement, technology transfer initiatives and regulatory measures. We argue that these other policy tools are necessary complements to GVC funds. This is because the VC model is best suited for investing in *products* that have a clear *market opportunity* (Arora et al. 2022, Dalla Fontana and Nanda 2023, Lerner & Nanda, 2020). When one or both of these are not yet present the investment timeline is challenging for VC.

We therefore identify other instruments that can help, on the one hand, bring ideas to the product stage and, on the other, provide confidence in market opportunities.

Figure 4: Policy instruments for innovation industrial policy



Source: Authors' elaboration.

[10] For details on ETCI, see https://www.eif.org/etci/about-etci/index.htm.

Figure 4 provides an overview of all the main integrated industrial policy tools for innovation in a company's lifecycle. 'Supply push policies' – both equity, of which GVC is a part, and non-dilutive – intervene in the financing of companies, thereby favouring their capitalisation and investments. 'Demand pull' policies, instead, facilitate the creation of a market for the products/services offered by companies. They 'pull' the market in that they create an economic incentive for entrepreneurs (and investors) to develop (and fund) the solution. Finally, framework conditions provide the right regulatory and institutional environment for innovation to thrive.

The integration of GVC in this broader framework is important for two reasons. First, because if it is missing, GVC fund investments are less likely to be successful and the efficacy of the programme will likely suffer. Second, because in the absence of other complementary policies policymakers will be tempted to load the GVC fund with too broad policy objectives and expectations. This is a critical risk for these programmes as the VC fund business model (and thus GVC fund) has limitations with regard to, for instance, the type of companies and timeframes in which it can invest.

Starting with the supply side, non-dilutive instruments are especially important to reduce technology risk before firms become suitable for VC investment. Grants, tax incentives, loan guarantees and angel-investor support can help finance early R&D, support prototyping and validation, and help firms mature before approaching institutional investors (Berger & Gottschalk, 2025; Santoleri et al., 2024). This is particularly relevant for university spinouts and firms emerging from public research organisations, which often face a 'valley of death' between proof of concept and investability. For instance, evidence from the US SBIR programme shows that early-stage public R&D grants can substantially increase subsequent VC funding, patenting and revenue growth by reducing uncertainty and information asymmetries (Howell, 2017). A similar logic underpins DARPA and ARPA-E's milestone-based funding for high-risk, high-reward defence and energy projects (Goldstein et al., 2020). In Europe, organisations like Business Finland, Bpifrance and the Horizon Europe-EIC Accelerator embody this broader approach to innovation support with instruments dedicated to the various stages of a firm's lifecycle.

Demand-side policies address the other side of the VC constraint: the need for credible market opportunities. Public procurement, including pre-commercial and innovation-oriented procurement, can provide first customers, validation and scale-up opportunities for innovative firms (Chiappinelli et al., 2025). The US Department of Defense procurement had a pivotal role in shaping the American innovation ecosystem, with public demand supporting technological development and market formation (Mazzucato, 2013). Inducement prizes and advanced market commitments can serve a similar bridging function by rewarding solutions or pre-specifying future demand in areas where markets are not yet sufficiently developed (Brunt et al., 2012; Ho & Taylor, 2021). However, demand policies only work when firms perceive them to be stable and credible, especially in sectors in which investment depends on confidence that public demand and regulatory support will persist (Criscuolo & Menon, 2015; van den Heuvel & Popp, 2023).

GVC funds also depend on wider ecosystem conditions. Capital provision must be complemented with talent development and attraction, entrepreneurial training, technology-transfer capacity and network formation. Ecosystem building initiatives, such as Enterprise Ireland and Dutch TechLeap, and the 360-degree support for entrepreneurship provided by Bpifrance show how public agencies can expand the pool of investable ventures by providing more than just finance.

These considerations also hint at the role GVC funds can play in 'mission-oriented' innovation strategies (Mazzucato, 2018). We argue that, while a GVC fund can be one tool in the arsenal of a 'mission,' instead it cannot be the only instrument. Missions in areas such as climate neutrality, digital sovereignty and health resilience require coherent combinations of funding, regulation, standards, procurement, infrastructure and patient capital. VC is often poorly suited to technologies with long development timelines, uncertain exits and large spillovers (Lerner & Nanda, 2020; Janeway, 2012, Janeway et al., 2021). Rather than imposing narrow mission mandates on GVC funds that might be misaligned with the VC business model, policymakers should create the market and regulatory conditions that make mission-related sectors commercially investable. GVC funds can then help promote investment in such sectors. Indeed, the post-pandemic rise of green-tech VC and recent interest in defence tech reflect perceived market opportunities generated by broader policy shifts rather than the introduction of new dedicated GVC funds (Berger et al., 2025). Without credible demand and policy coherence, mission-focused GVC funds risk becoming overburdened and underperforming. Effective policy integration therefore requires institutional capacity and coordination. A dedicated innovation agency such as RVO (Netherlands), Vinnova (Sweden), Bpifrance and the Israel Innovation Authority can help by overseeing and coordinating implementation among policy tools.

5 Discussion and Conclusion

The growing use of government venture capital (GVC) in Europe reflects both an ambition to strengthen innovation capacity and persistent gaps in the European risk capital market. As this paper has argued, GVC can be a powerful instrument to support high-potential firms. However, its success depends critically on realistic policy objectives, institutional design, and complementarity with other tools. These insights are important for future research and to inform ongoing policy initiatives, especially in Europe.

This paper has offered a categorisation of European GVC models that speaks to both the existing entrepreneurial finance literature and policy-oriented work on the subject. Importantly, it has provided a theoretical framework to understand how governments can exercise different degrees of policy steer and financial/operational leverage with each of these models. In addition to useful policy insight, this framework offers a cross-disciplinary link between the GVC literature and political economic work on state models, development banking and the European "investor state" (Griffith-Jones & Naqvi, 2021; Lepont & Thiemann, 2024).

On the basis of this framework, the paper has also summarised and organised the existing evidence on how GVC works and when it works best. It has examined the role of GVC in addressing financing gaps for innovative firms, emphasising how design features – such as governance, scale and alignment with private co-investors – and integration within a broader policy mix can influence outcomes. Evidence points to both positive effects for well-designed programmes and significant risks or disadvantages when design and governance are weak. A short list has been drawn up of best practices that are useful both to advise policy and to inform expectations and working hypotheses for future academic work on the subject of GVC funds and government intervention in innovation more broadly.

Effective GVC programmes share several design principles. Evidence shows that they are more effective when governed by independent entities with strong professional investment expertise, free from political interference and guided by best-in-class fund management practices to ensure market legitimacy and

positive performance. In Europe, national promotional institutions (NPIs) are typically the most appropriate institutions to host these programs – although they still require separate dedicated teams. Public capital should be deployed in ways that align incentives, ideally on *pari passu* terms with private co-investors or with well-calibrated asymmetric models, so that both fund managers and private partners retain a strong financial stake in success and failure. Adequate scale is essential. GVC funds must have the resources to make follow-on investments and support firms in multiple growth stages, with modular structures and long-term commitments that avoid the pitfalls of short-term political cycles.

Importantly, these programmes are most effective when embedded in a coordinated innovation policy mix, working alongside grants, public procurement, technology transfer platforms and talent initiatives with strategic coherence across ministries and agencies to reduce fragmentation. Transparency and performance evaluation are equally critical. Regular impact assessments, robust data collection and benchmarking against international peers, for example in a shared European evaluation framework, can enhance accountability and facilitate learning.

What does this mean for Europe's current challenges and ongoing policy initiatives? A growing number of policies are now emerging to address Europe's so-called 'scale-up gap.' The categories and framework provided in this paper help interpret and contextualise these initiatives. European policymakers are introducing innovations both on the 'supply push' and on the 'demand pull.'

From a supply-push point of view, two new instruments, namely the Scaleup Europe Fund and the European Tech Champion Initiative 2.0 (ETCI 2-0) will be layered on top of the existing EIC Fund. Figure 5 plots these new instruments in the framework presented at the beginning of the paper, and highlights their probable strengths and limitations.

The Scaleup Europe Fund and ETCI 2.0 are both ambitious initiatives. Scaleup Europe is a direct investment fund with an initial target of around five billion euros to support late-stage financing for Europe's deep tech companies. Its governance, however, puts it in the hybrid bucket and almost close to an indirect investment fund for two reasons. First, public entities (the Commission and the EIB) are only minority LPs in the fund, with the rest of the capital expected to come from private institutional investors, some of which have already pre-committed.[11] Second, the fund will be managed by a private GP – EQT – which will be responsible for selecting the investments. On the one hand, therefore, the project aligns with the best practice of ensuring professional management and a firm separation between LPs and GPs. It is also innovative in that the Commission has engaged upfront some important private institutional investors. On the other hand, while the fund remains a highly political project, in practice the public sector will have only minimal influence on investment decisions due to the governance structure, and therefore it sits in the middle of the policy steer spectrum. Those who might have looked at this as the advent of a European 'entrepreneurial state' might be disappointed.

ETCI 2.0 is the evolution of an existing programme devoted to anchoring private scale-up funds aiming for a total fund size of over one billion euros. Notably, like its predecessor ETCI 1.0, it aggregates resources from some of the largest member states, thus partly addressing the fragmentation issues that characterise European GVCs. Its target size is 15 billion euros. Managed by the EIF, it follows the traditional fund-of-funds model of intervention of this institution. However, it includes two important innovations. First, unlike

[11] See https://ec.europa.eu/commission/presscorner/detail/en/ip_25_2529 for a list of pre-committed LPs.

ETCI 1.0, it aims to also raise capital from private institutional investors (not just public ones). Second, it will also include a 'lighter touch' option, whereby more experienced private investors can also invest directly in VC funds already screened by the EIF instead of going through the fund of funds. As a result, as shown in Figure 5 this model will maximise financial and operational leverage. With relatively few public resources and staff ETCI 2.0 aims to trigger multi-billion-euro investments by private institutions.

Figure 5: New EU supply-push policy instruments



Source: Authors' elaboration.

Finally, on the demand-pull side Europe is starting to envision a more strategic role for public procurement. With the recent (March 2026) Industrial Acceleration Act, for instance, the EU Commission has embraced the concept of "leading markets" – i.e. the idea that coordinated regulation and procurement may be necessary to create anchor demand for certain innovative technologies. It has also for the first time explicitly introduced requirements in public procurement to tilt the playing field towards local producers. To be sure, we do not know how much of this will be retained in the final legislation. It should be noted, however, that this use of demand-pull policies is currently reflecting a more defensive posture and almost a protectionist approach rather than constituting a genuine innovation policy. However, the policy innovation remains noteworthy and might be a first step in a more strategic use of procurement for innovation.

In summary, GVC funds can be useful policy tools in Europe. They can also be used to advance mission-oriented goals, targeting systemic transformations in areas such as clean energy, digital resilience and health innovation by aligning capital flows with clear missions and complementary policies. But developing a truly European risk capital market will require stronger cross-border collaboration and harmonisation of relevant regulations, with pan-European platforms such as the EIF and the EIC Fund continuing to expand and innovate. Finally, governments must invest in institutional capacity – building skills, structures and systems to manage complex innovation finance portfolios - by upskilling public sector professionals, enhancing data infrastructure and fostering a culture of evidence-based policymaking.

Empirical work on these issues has steadily grown, supported by efforts to build new cross-country datasets and systematically document design features of different programmes. However, further work is needed to evaluate the long-term causal impact of GVC and to understand how specific design choices affect

performance and interaction with other elements of industrial and innovation policy. We hope this paper can serve as a resource and help increase the sophistication of future rigorous and policy-relevant academic research in this area.

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Appendix

Table A1: Examples of GVC programmes in Europe and beyond

Country	Direct Investment (Solo)	Co-Investment	Hybrid	Indirect / Fund of Funds
EU		EIC Fund EIF EAF		EIF funds of funds.
Finland		Tesi direct investments		Tesi indirect investments
France	.	Bpifrance direct investments (e.g., Digital Ventures, Large ventures)		Bpifrance Fund of Funds
Germany	-	Coparion	HTGF – High-Tech Gründerfonds	KfW Capital Fund Investments (ERP fund investments and Future Fund-Growth Facility) ERP-EIF Facility
Italy	CDP Venture Capital Accelerators and Technology Transfer funds	CDP Venture Capital (Evolution Fund, Italy Venture I and II)	CDP Venture Capital Corporate Partners I fund	CDP Venture Capital Fund of Funds
Denmark	Danish Growth Fund			Danish Growth Capital
Netherlands		Invest-NL, Dutch Future Fund		
Norway		Investinor		
Spain	CDTI	Fond-ICO Next Tech		Fond-ICO Global – fund-of-funds model ICF Fund Investments
Sweden	Industrifonden Almi Invest			Saminvest Fund
United Kingdom		Angel CoFund		British Business Bank's Enterprise Capital Funds
United States	In-Q-Tel		SBIC – Small Business Investment Company	
Canada	BDC Direct investments			BDC Indirect investments
Israel				Yozma Program
Australia & New Zealand				Australia Innovation Investment Fund, New Zealand Venture Investment Fund



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