

Government Venture Capital Funds

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Synonyms

Public venture capital, government-owned venture capital, government-sponsored venture capital, hybrid venture capital, co-investment funds

Introduction

Government venture capital (GVC) is a key public policy tool designed to support high-potential start-ups and innovation, and is a fundamental element of the venture capital (VC) ecosystem. GVC aims to increase the supply of VC to capital-constrained innovative start-ups, which, if properly funded, could disproportionately contribute to employment, innovation, and growth (Colombo et al., 2016).

In the next section we define, and provide examples of, the different forms of GVC. We then discuss the objectives, structure, and investment process of GVC. This is followed by a review of the academic literature on the micro-level effects of GVC, the crowding-in and crowding-out impact on private VC, and the (scarce) evidence regarding the contribution of GVC to economic development. Finally, we conclude and highlight avenues for future research.

Definition

GVC is an investment vehicle set up with the help of a government or government-related entity with the objective of conducting VC investments. The key difference between GVC and traditional government ownership (e.g., government-owned companies) is that the GVC investment model and procedures are, to a large extent, inspired by traditional VC.

In its most direct form, GVC is a government-owned captive fund that mainly (if not exclusively) uses public resources and that is managed by (or on behalf of) government-affiliated agencies. Direct governmental VC programs address market failures at the start-up level: they operate in a similar way to private VC funds, in that they are responsible for the selection, financing, and management of their portfolio companies.

Concerns about the risk of GVC crowding out private investors (Baygan, 2004) have led to a gradual shift from government-owned to government-supported GVC, in which governments act as one of the limited partners (LPs) of private VC funds. These funds are often referred to as hybrid funds, co-investment funds (Murray, 2021), or governmental limited-partnership programs (Alperovych et al., 2018). Government-supported GVCs address market failures indirectly, by influencing the behavior of private investors. In these funds, governmental agencies are not directly responsible for start-up selection, financing, or management. Asymmetric profit distribution and compensation may be needed to direct private investors to capital-constrained companies and regions (Jääskeläinen et al., 2007).

GVC can be found in some form in most countries. The Small Business Investment Companies (SBIC) program was the seminal GVC experiment, established in the US as early as 1958. The program has

generally been quite successful (Lerner, 1999) and has been used as a model by several other countries, including Australia's Industry Investment Fund (IIF) and the UK's Enterprise Capital Fund (ECF) scheme (Murray, 2021). GVC funds operate on a national or regional scale in most countries in Europe and an EU-wide government-supported GVC program has been established by the European Commission (EC) through the European Investment Fund (EIF). More recently, the EC has created a government-owned EU-wide GVC: the European Innovation Council Fund, which is managed by an external fund manager according to a set of investment guidelines.

GVC – in its different forms – represents a substantial portion of the VC industry. According to some calculations (Brander et al., 2015), over a quarter of all companies financed by VC worldwide have received GVC money. In Europe, government-owned VC represent 12.5% of VC investments over the period 1997-2015, and an additional 29.7% of investments were made by government-supported VC (Alperovych et al., 2018). The EIF alone has provided between 5% and 10% of all VC investments in Europe between 2007 and 2014 (Kraemer-Eis et al., 2016).

Objectives, structure, and investment process

Although GVC is broadly inspired by private VC, its objectives, structure, and investment process may be substantially different, and the proper design of these features is a key topic for academics and policymakers (Colombo et al., 2016). While private VC investors generally pursue a mix of profit-seeking financial and strategic objectives (Hellmann, 2002), GVC is generally created with the more or less explicit objective of solving a market failure, such as filling the equity gap for start-ups, promoting the development of a specific industry or region, or making sure the venture capital industry reaches a critical mass.

For example, Business Finland – a hybrid VC – has the following stated aim: “[...] to strengthen and diversify the provision of funding for early-stage companies in Finland.” In the UK, the Enterprise Capital Funds program “combines private and public money to make equity investments into high growth businesses [...] to increase the supply of equity to UK growth companies and to lower the barriers to entry for fund managers looking to operate in the VC market.” The European Innovation Council Fund “targets potential market-creating innovation presenting a too high level of risk for traditional public and private investors, whether based on breakthrough technologies originating from research (deep-tech) or disruptive thinking, but also on impactful incremental and social innovation.”

In line with their specific objectives, GVC funds have distinct investment patterns. Compared to private VC, they tend to specialize in the youngest companies in the seed stage, located nearby and in industries such as biotechnology, in which the time to market is long and substantial resources are required for new product development (Bertoni et al., 2015).

Little is known about the GVC investment process, although it generally follows the same steps as private VC (screening, due diligence, hands-on management of the portfolio companies, and exit). An analysis of the selection process of GVC funds in the US found that GVC funding is proportional to founders' educational attainment and number of patents, which is consistent with evidence on private VC (Uzuegbunam et al., 2017). A field experiment on a Swedish GVC organization highlighted that investment decisions predominantly follow a cognitive approach (based on the manager's personal perception of the proposals) rather than a normative or regulative approach (Johansson et al., 2021a), but that they suffer from gender bias (Johansson et al., 2021b; Malmström et al., 2017).

The design of a GVC program also involves defining the geographic and sectoral scope of the investments, and determining a co-investment policy (Alperovych et al., 2020). Few GVC funds invest internationally (the above-mentioned EIF is one such example), with most funds investing nationally or regionally. Regionally-focused GVC programs often aim to develop venture capital outside the traditional financial hubs (Mason and Harrison, 2003). In terms of co-investment policy, some GVC investors are constrained to co-invest with private VC.

Growth, innovation, and exit of portfolio companies

A significant academic effort has been made to assess the extent to which GVC is successful in replicating the beneficial effect of private VC on its portfolio companies. Empirical evidence on the direct impact of GVC on the performance of its portfolio companies points to an at best negligible effect in terms of growth and innovation outcome (Bertoni and Tykvová, 2015; Brander et al., 2015; Cumming et al., 2017; Grilli and Murtinu, 2014; Zhang, 2018).

An important difference emerges between stand-alone GVC investments and syndicates that also include private VC. Stand-alone GVC is less effective than stand-alone private VC in boosting the sales and employment growth of portfolio companies, and mixed syndicates only boost growth when led by a private VC (Cumming et al., 2017; Grilli and Murtinu, 2014). Similar results are obtained when looking at innovation output (Bertoni and Tykvová, 2015) and successful exits, such as IPOs and M&As (Brander et al., 2015; Cumming et al., 2017; Kovner and Lerner, 2015): companies funded by both GVC and private VC achieve better results than those funded by either private VC alone or GVC alone.

The design of GVC plays a key role in determining the extent to which it can boost the performance of portfolio companies. Development-oriented and technology-oriented GVC investors differ in terms of the type of innovation output they improve in portfolio companies, with the latter being more conducive to inventions and the former to innovation (Bertoni and Tykvová, 2015). Industry specialization and performance-sensitive compensation also seem to be desirable features of GVC (Lim and Kim, 2015). The choices of a GVC program's location, co-location, syndication, and industry focus substantially influence the extent to which it is able to attract private VC investors and, ultimately, spur growth and innovation in its portfolio companies (Alperovych et al., 2020). The effectiveness of GVC depends not only on its design, but is also fundamentally influenced by external factors, such as regional characteristics (Munari and Toschi, 2015), and internal factors such as the quality of its management team (Cumming and Macintosh, 2002).

Crowding in and crowding out

Another stream of the academic literature has looked at the extent to which GVC attracts (crowding in) or repels (crowding out) private VC investments. The argument for crowding in is that GVC might legitimize VC investing, improve the risk-return profile for private VC investors, and reduce screening costs by pre-screening start-ups. Crowding-out could be the result of GVC out-competing private VC. The evidence is mixed, in part because of the difficulty of measuring crowding in and out, and in part because of the different, and changing, design choices and framework conditions that characterize GVC programs around the world (Cumming and Johan, 2019). Early evidence from Europe did not find compelling evidence of crowding in (Leleux and Surlemont, 2003) and some studies even find results consistent with crowding out (Armour and Cumming, 2006). More recent evidence suggests that, on average, GVC crowds in private investment (Cumming, 2014). These results are also consistent with

micro-level evidence that companies receiving GVC are more likely to receive private VC (Guerini and Quas, 2016) and to raise a larger amount of VC funding (Brander et al., 2015).

The effect of GVC on private investments also depends on its design. Inefficient, tax-subsidized GVC funds set up in Canada can outbid private VC thanks to their lower cost of capital, and end up crowding out private investment (Cumming and Macintosh, 2006). Evidence from Australia reveals that even efficient GVC could have unintended consequences, competing with other forms of government intervention (Cumming and Johan, 2009). Again, syndication seems to matter: crowding in occurs in countries where GVC syndicates more often with private investors, whereas the opposite happens when stand-alone GVC investment dominates (Soleimani Dahaj and Cozzarin, 2019). At a micro-level, syndication choices, industry specialization, and geographic focus influence the extent to which GVC attracts private investment (Alperovych et al., 2020).

GVC may contribute to the VC industry not only by stimulating private investments but also by inducing private investors to target different companies (i.e., to invest in companies they would neglect in the absence of GVC). Arguably, GVC could foster VC investments in emerging sectors by complementing, when possible, the skills of private VC in the screening of proposals (Lerner, 1999). Similarly, GVC might attract private VC investments in remote peripheral areas where the funding gap is more evident. Studies in the US and Europe found that greater levels of GVC investment are correlated with a larger proportion of private VC investment in companies that are younger and located in less-developed regions (Bertoni et al., 2019; Kovner and Lerner, 2015).

Conversely, a recent field experiment (Colonnelli et al., 2022) suggests that, in China, private VC investors (especially the best performing ones) on average dislike co-investing with GVC, mostly because of the risk of political interference in decision-making.

GVC and economic development

Few studies have assessed the impact of GVC funds on employment creation, the innovation rate, and economic growth in the countries or regions in which they operate. A study of 25 European countries from 1997-2015 finds that GVC has no significant effect in terms of the general availability of equity, the general conditions of the economy, or the availability of public finance, and that it has only a weak positive relationship with investors' willingness to invest in SMEs (Alperovych et al., 2018). A study of 755 government programs (some of which are GVC initiatives) finds a positive correlation with patenting activity at the country level (Bai et al., 2021). A study on the Community Development Venture Capital (CDVC) program in the US finds no relationship between CDVC investment and the number of jobs created, and a negative relationship with wages and per capita income, which likely reflects the fact that CDVCs are targeted toward regions that are experiencing economic decline (Kovner and Lerner, 2015).

Conclusions

GVC is a fundamental policy instrument targeting innovative start-ups. A substantial body of academic literature, which we have briefly summarized above, has tried to understand whether, and under which conditions, this taxpayer-funded instrument can be most effective. However, our understanding of what drives GVC effectiveness is far from complete.

Existing studies often link the underperformance of direct GVC initiatives to their political nature, which exposes them to political pressures, rent-seeking behavior, and bureaucratic inefficiency (Leleux and

Surlemont, 2003). However, direct evidence of such dynamics is still lacking (research by Colonnelli et al., 2022 is an interesting exception). Future studies should more formally compare GVC investment practices (e.g., investment criteria and processes, post-investment coaching of portfolio companies, and exit decisions) with those of private VC.

Another important area of research focuses on comparing different GVC design choices and how they influence the investment behavior and effectiveness of GVC. Current studies consider a limited number of design features (e.g., syndication choices, industrial and geographical focus), often in isolation from one another, hence failing to describe the configurations that work better depending on external contextual factors.

Furthermore, although we know that GVC and private VC often interact in syndicated deals and co-investments, deeper analysis of these relationships is important to reveal how to correctly incentivize private involvement, avoiding both crowding-out effects and “piggybacking” by private investors exploiting governmental budgets.

Lastly, a promising avenue for future research involves taking a more holistic view of GVC, considering it as an integral part of the entrepreneurial ecosystem and policy mix (Flanagan et al., 2011). The effects of GVC are likely to spill over beyond individual portfolios and influence other companies operating in the same industry or geographical region. GVC can also benefit from synergies with (or displace) other policy instruments targeting innovative start-up financing.

In summary, much remains to be explored and understood to ensure that start-up founders, investors, and policymakers have all the necessary elements to best design and benefit from GVC in the future.

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