



# How does governmental versus private venture capital backing affect a firm's efficiency? Evidence from Belgium



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## ARTICLE INFO

### Article history:

Received 13 March 2014

Received in revised form 18 November 2014

Accepted 19 November 2014

Available online 6 December 2014

Field Editor: G. Cassar

### Keywords:

Venture capital

Efficiency

Data envelopment analysis

Fund type

Public investor

## ABSTRACT

We investigate the implications of venture capital (VC) investor type (government or private) on the operating efficiency of a sample of 515 Belgian portfolio firms up to 3 years after the investment. We find that the government VC-backed firms display significant reductions in productivity. No significant differences in efficiency are found in firms backed by private VC compared with their non-VC-backed peers. Finally, significant reductions in efficiency exist in targets of government VC compared to their non-VC-backed peers.

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## 1. Executive summary

Venture capital (VC) is recognized by academics and practitioners as an important driver of the success of entrepreneurial ventures. Several firm-level studies have demonstrated that companies backed by VC firms grow faster, have better financial and operating performance, are more innovative, and are more likely to go public compared with their non-VC-backed peers (Gompers and Lerner, 2004). Some recent research (Chemmanur et al., 2011; Croce et al., 2013) also documented that VC backing enhances a firm's productivity. This superior operating performance is generally attributable to better screening and coaching activities by VC investors. Interestingly, these analyses ignore whether the heterogeneity of VC investors influences the productivity (efficiency) of the recipient firms.

Many governments have attempted to achieve the mentioned benefits of VC financing by initiating their own programs, often through independent government-sponsored VC (GVC) investment funds. A recent and increasing strand of literature suggests that GVC-backed firms are inferior to those backed by private VC (PVC) funds in terms of growth in sales and/or in headcount, and in terms of initial public offering (IPO) performance (Cumming et al., forthcoming; Grilli and Murtinu, 2014). These output-oriented

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studies do not address the source of these inferior achievements and there is a lack of academic understanding of the implications of GVC funding on the link between inputs and outputs, namely efficiency.

In this paper we tackle this issue by investigating explicitly the relationship between VC sponsor type and the efficiency of the recipient firms. Our intended contribution is twofold. Firstly, this study strengthens the distinction between purely financial support and the value added by GVC and PVC investors. This result is important as the efficiency itself is one of the fundamental drivers of a firm's growth, job creation, and performance (Bottazzi et al., 2008a; Jovanovic, 1982). Secondly, our measures of each firm's efficiency span from the year before the first investment to 3 years post-investment. We are able to observe the evolution of productivity in firms funded by distinct VC sponsors and thus the contribution of this typology to the dynamic improvements in efficiency.

The empirical part of the paper uses a sample set of 515 Belgian VC-backed firms observed from 1998 to 2007. We use a matching procedure before the first financing round to identify a control sample of comparable non-VC-backed firm from the entire population of Belgian firms. Two reasons exist for using Belgium as a testing ground. Firstly, several important Belgian GVC players account for approximately half of the country's VC investments over the period under study. Some of these funds have existed in the industry for more than 30 years and all are still “technically” influenced by the policy makers. Secondly, being particularly open, the Belgian economy is representative of major European economic trends.

Our analyses show no significant differences between the future targets of PVC and GVC funds before a first investment round. Once these firms obtain funding, PVC-backed firms demonstrate statistically significantly superior productivity in all three post-transaction years compared with their GVC-backed peers. The difference is also significant in the overall (global) efficiency level. This result is more in line with Croce et al. (2013), rather than Chemmanur et al. (2011). We also find that funding by a set of specific GVC funds destroys target productivity compared with PVC- and even non-VC-backed firms. Finally, we find no significant differences in productivity levels and changes in PVC-backed firms compared with their non-VC-backed peers. All results are robust to changes in the time frame, estimation methods, and endogeneity concerns.

This study therefore sheds new light on existing evidence of the impact of VC financing on efficiency. Our results are also potentially useful for Belgian policy makers. Although we cannot conclude whether their funds are incrementally harmful to the national economy, we believe that serious failures exist in the design of the GVC program studied, which may require a reexamination of their structures.

## 2. Introduction

Despite the seemingly modest volumes of VC investments compared with the rest of capital flows, the consequences of such financing are quite substantial (Lerner, 1999, 2002b, 2009). In terms of innovation, Kortum and Lerner (2000) show that VC-backed firms are characterized by significantly higher patenting rates compared with their non-VC-backed peers. Davila et al. (2003) find that a positive relationship between the growth of start-ups, as measured by labor growth, and VC funding. At the macroeconomic level, Samila and Sorenson (2011) document a highly positive impact of VC supply on business creation, employment, and aggregate income in the USA. In terms of performance, VC-backed firms display better chances of IPO and survival rates after an IPO (Hochberg et al., 2007; Puri and Zarutskie, 2012). The operating performance of VC-backed firms also seems to be superior to that of comparable non-VC-backed companies (Alperovych and Hübner, 2013). These arguments outline the added value of VC financing.

Many governments sharing this conviction about the benefits of VC activity have introduced programs to foster VC financing. These initiatives may take three general forms: regulatory framework (“law”), indirect framework, and direct investment schemes (Cumming, 2007; Cumming and Li, 2013; Keuschnigg and Bo Nielsen, 2001). The “law” mainly relates to taxation and institutional frameworks in which venture capitalists and entrepreneurial firms operate. Indirect frameworks include programs that favor technology transfers from universities to business, creation and support of business incubators, and structuring industrial sectors in clusters. Finally, the “direct investment schemes” focus mainly on the supply side of the market. These schemes may be classified into three types: (i) the guarantee system, in which the government commits to covering, totally or partially, potential losses of private VC funds, (ii) the fund-of-funds system, where the government co-invests with private VC funds, and (iii) the direct investments in small and medium enterprises (SMEs) by GVC investment funds. In this paper, we focus on this third vector of public influence in the VC world.<sup>1</sup>

Various studies have investigated country-specific settings of different forms of government-sponsored VC, such as in the USA (Cumming and Li, 2013; Lerner, 1999), Canada (Cumming and Macintosh, 2003, 2006, 2007), UK and Germany (Bascha and Walz, 2006; Cumming, 2003; Heger et al., 2005; Sunley et al., 2005), Australia (Cumming, 2007; Cumming and Johan, 2009, forthcoming; Lerner and Watson, 2008), Finland (Maula et al., 2007), and on a pan-European basis (Da Rin et al., 2006; Leleux and Surlemont, 2003). International evidence on the effects of GVC on investment patterns and exit performance is documented by Cumming et al. (forthcoming) and Brander et al. (forthcoming).

None of this literature investigates the transformation process of inputs into outputs (i.e. the firm's operating efficiency). Rather, they focus on GVC-funded firms' output levels such as growth in sales revenues and/or labor, patents, returns, or exit patterns. However, efficiency is a substantial determinant of firm performance (Bottazzi et al., 2008a), and there is recent evidence that it is impacted positively by VC backing (Chemmanur et al., 2011; Croce et al., 2013). One may thus wonder where the source of this impact comes from. Our paper contributes to answer this question. Using Belgium, we investigate whether the impact of investor type can be

<sup>1</sup> See Lerner (1999), Keuschnigg and Bo Nielsen (2001), and Lerner (2009) for an extensive discussion on the theoretical rationale for public intervention in the VC industry.

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