Crowding-in or Crowding-out? : The Effects of Public Venture Capital Policies

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Abstract

In this paper, I will scrutinize whether or not public interventions has alleviated the financial gap. This has been a controversial issue among scholars. Many scholars have observed crowding-in effects. In these effects, PUVCs are supposed to encourage other PRVCs to invest in NTBFs and bring about positive effects on the development of the VC market. On the other hand, others have perceived crowding-out effects. In the crowding-out effects, PUVCs are assumed to displace existing PRVCs in the VC market and discourage potential newcomers to invest in NTBFs.

According to prior researches, more researchers have supported the crowding-in effects than crowding-out effects on PUVCs' entry in the market, even though some researchers have found opposite or different results. Researches indicate, for instance, that PUVCs alone are not responsible for the effects. To scrutinize the crowding-in or crowding-out effects, it is deemed that broader scopes are necessary not only for PUVC's investment but also for other factors such as capability and incentive structure for individual private venture capitalists, complementary policies and regulatory reforms and even proactive approach to relevant PUVC programs.

Keywords:

Public venture capital, Financial gap, Crowding-in effects, Crowding-out effects

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I. Introduction

Governments throughout the world, including the U.S., Europe, China, Japan and other countries have established public venture capital (hereafter abbreviated to PUVC) programs, which intend to develop dynamic private venture capital (hereafter abbreviated to PRVC) market and alleviate the financial gap for young and innovative start-ups, new technology based firms (hereafter abbreviated to NTBFs). Governments have numerously attempted to foster the creation of US-style venture capital (hereafter abbreviated to VC) market as a necessary preliminary step to support the generation of high-growth entrepreneurial firms (Colombo, Luukkonen, Mustar and Wright, 2010). In the U.K, the geographical situation of VC has been shaped since the year 2000 by a significant increase in PUVC funds. In particular, investment activity in the Midlands and North of UK is dominated by the public sector (Mason and Pierrakis, 2013). In Japan, the Innovation Network Corporation of Japan, the biggest PUVC since the establishment of Japanese PUVC program in 1963, was launched in 2009. It has a capitalization of 300 billion yen, with the Japanese government injecting 286 billion yen and 26 private corporations providing a further 14 billion yen[1)]. It seems that making capital available to NTBFs represents a key policy issue for governments to promote not only the growth of the NTBFs but also job creation and economic development.

The financial gap for NTBFs has been supposed to be alleviated by PRVCs, which is expected to be a financial intermediator that provides social and economic welfare to help alleviate the problems of adverse selection by intensively scrutinizing firms before providing capital and monitoring them afterwards (Chan, 1983). However, PRVCs often do not get incentives to invest in NTBFs, which have higher risks. They highlight the risk of research and development (hereafter abbreviated to R&D) externalities and agency problems surrounding NTBFs. Moreover, the human resource constraints, insufficient collaterals and lack of management experience of NTBFs appear to be reasons for PRVCs to hesitate in investing (Mason & Harrison, 1995; Lerner, 2002; Hyytinen and Väänänen, 2006). Furthermore, the 2008-2009 global financial crisis has deteriorated the situation of the market failure because PRVCs have become more risk adverse and have focused on later stage investments (OECD, 2015; Block and Sandner, 2009).

In this paper, I will scrutinize whether or not public interventions has alleviated the financial gap. This has been a controversial issue among scholars. Many scholars have

observed crowding-in effects. In these effects, PUVCs are supposed to encourage other PRVCs to invest in NTBFs and bring about positive effects on the development of the VC market (Brander, Du and Hellmann, 2014; Hoo, 2000; Leleux and Surlemont, 2003). On the other hand, others have perceived crowding-out effects. In the crowding-out effects, PUVCs are assumed to displace existing PRVCs in the VC market and discourage potential newcomers to invest in NTBFs (Cumming and MacIntosh, 2006; Cumming and Johan, 2009).

The contents of this paper are as follows: First, I will define PUVC in the context of this. Then, according to the prior researches, I will describe the crowding-in effect and crowding-out effects. Finally, I will conclude with some suggestions for future researches.

Ⅱ. Definition and classification of public venture capital

In prior researches, VC has been classified by scholars in accordance with mainly their ownership and governance structures. For instance, Grilli and Murtinu (2014) classify VC largely into two types: public venture capital (PUVC) and private venture capital (PRVC) in their research, which focuses on the effect of PUVC and PRVC on the sales growth of NTBFs. Meanwhile, Colombo, Cumming and Vismara (2016) classify VCs differently: independent venture capital (independent VC) and captive venture capital (captive VC). Independent VC is a limited partnership in which a management company raises capital from limited partners, often institutional investors. Captive VC includes corporate VC, bank-controlled VC, and government VC. In this paper, I use the concise classification of Grilli and Murtinu (2014): PUVC and PRVC because my primary research focus is PUVCs.

In the definition of PUVC, Lerner (2002) outlines that PUVC initiatives are programs that make equity or equity-like investments in SMEs, or encourage other intermediaries to make such investments. In the literature, there are different definitions of PUVC ranging from a narrower focus on VCs, which consist of public financing, to broader classifications that include policies to encourage the investment of PRVCs. With regards to the public financing, it can be classified into three categories: direct public funds consisting of one hundred percent government fund, hybrid private-public funds and funds-of-funds which invest in other investment funds rather than investing directly in firms (Colombo, Cumming and Vismara, 2016). In this paper, I deal with the broader definition including related policies and different types of public financing.

Ⅲ. Crowding-in effects

Have public interventions alleviated the financial gap for NTBFs? More specifically, has PUVCs' entry in the VC market crowded-in or crowded-out other VCs. There has been a controversial issue among scholars. If they generate crowding-in effects on the market, what are the reasons of this phenomenon? Prior researches highlight signaling effects. The selective provision of PUVCs to NTBFs could signal their high potential to PRVCs (Meuleman and Maeseneire, 2012). It also signals their enduring commitments to their portfolio firms (Leleux and Surlemont, 2003). Due to the signaling effects, PUVC investments foster the additional funding for NTBFs (Cumming, 2007; Guerini and Quas, 2015) and also bring about positive effects on the development of the VC market (Brander, Du and Hellmann, 2014; Hoo, 2000; Leleux and Surlemont, 2003).

With regards to the signaling effects, PUVCs increase the likelihood that firms will receive PRVCs. Guerini and Quas (2015) find that PUVC backed firms that have received a first round of PRVC are likely to receive a second round of financing or to be listed or acquired based on their research in Europe. Obtaining an R&D subsidy provides a positive signal on the NTBF's quality and thus, resulting to better access to long-term debt according to Muleman and Mawsenier's 2012 research in Belgium. Cumming (2007) find, in Australia, that the Innovation Investment Funds (hereafter abbreviated to IIFs) funded firms are more likely to have one extra round of staged financing and one extra syndicated partner than other types of funds. Wang, Wang, Ni and He (2013) observe that the investment in high-tech start-ups is not always perceived as an attractive target for PRVCs in China. PRVCs in China are expected to cooperate with the local government for more desirable investment opportunities to increase their returns and match acceptable risks (Wang, Wang, Ni and He, 2013). In terms of PUVCs' investments in university spinoffs, Knockaert, Wright, Clarysse and Lockett (2010) find the signaling effect brought about by PUVCs in academic spinoffs has encouraged PRVCs to do the same in their study in Europe. Coherently, Munari, Pasquini and Toschi (2015) find that European university-oriented seed funds-backed firms attract more follow-through funding and investors. In this regard, the effectiveness of co-financing with PRVCs has been positively stated. Brander, Du and Hellmann (2014) find that firms funded by both PUVC and PRVC obtain most investments among purely PRVC-funded firms and purely PUVC-funded firms.

The crowding-in effects by PUVCs is supposed to lead to the development of the VC market. In Israel, the thriving high-tech clusters are the result of government-led policies in creating the VC market with the impacts of Yozma program (Wonglimpiyarat, 2016). These policies did not crowd-out but crowd-in private investments (Wonglimpiyarat, 2016). In Scotland, Hoo (2000) observes that the establishment of the Scottish Development Finance (SDF) was experimental, but it worked and was accepted by PRVCs. Thus, new PRVC market was formed (Hoo, 2000). In Spain, del-Palacio, Zhang and Sole (2012) state that public intervention positively contributed to fostering PRVC market. In Canada, Brander, Du and Hellmann (2014) find that VC industries with more PUVC funding have more VC funded enterprises and more VC funding per enterprise. They suggest that PUVC finance largely augments rather than displaces PRVC finance (Brander, Du and Hellmann, 2014).

Meanwhile, scholars argue that signaling effect brought about by PUVCs is partially effective to motivate PRVCs to invest in the VC market, however it does not fully resolve the financial gap. For instance, Jääskeläinen, Maula and Murray (2007) indicate that relatively modest market failures can be resolved by PUVC investment. In Latvia, Avots, Strenga and Paalzow (2013) observe that PUVC policies have been partially successful since the first program was launched in 2005. They find that these policies have served as the catalyst for development of the Latvian VC market. However, the financial gap for pre-seed and early-stage funding still remains (Avots, Strenga and Paalzow, 2013). In South Korea, Lim and Kim (2015) find a partial positive effect of VC on the equity gap in NTBFs in their study from 1995 to 2000. PUVCs induced VCs to invest more in NTBFs in the period. However, PUVC did not considerably contribute to filling the equity gap for NTBFs (Lim and Kim, 2015)

On the other hand, scholars could not find any strong evidence of crowding-in effects brought about by the PUVC's signaling effect on the VC market. Vanacker, Heughebaert and Manigart (2014) find that firms backed by PUVCs as lead investors are less likely to raise additional equity financing compared with firms backed by PRVCs. They add that firms backed by PUVCs raise smaller amounts of debt financing compared with firms backed by PRVCs based on their research in European. Colombo, Grilli, and Verga (2007) state that the financial gap in the VCs market in Italy is not alleviated by the existing technology policy measures towards high-tech start-ups.

Ⅳ. Crowding-out effects

Some scholars support opposite effects. They observe that public interventions in the market displace private investment, leading to crowding-out effects (Cumming and MacIntosh, 2006; Cumming and Johan, 2009). PUVCs tend to be less accountable for generating high returns (Munari and Toschi, 2015). They also have relatively huge advantage because of its high volume funding and low pressure on return of investment (Lerner, 2002). Because of these traits of PUVCs, scholars indicate that PUVCs have reduced PRVCs' chances to invest in NTBFs. This weaken the functions of PRVCs to find, evaluate, monitor and support prominent NTBFs (Armour and Cumming 2006, Cumming and MacIntosh, 2006).

Some prior researches state that newly established PUVCs tend to discourage not only existing PRVCs but also former PUVCs. In Canada, the tax advantages conferred on the Labor-Sponsored Venture Capital Corporations (hereafter abbreviated to LSVCCs) have displaced other types of VC funds (Cumming and MacIntosh, 2006). In Australia, the Pre-Seed Funds (hereafter abbreviated to PSFs) program diminished the incentives for a previously existing PUVCs program, formally known as the IIFs, seed stage investment funds (Cumming and Johan, 2009). It implies that competing government initiatives appeared to be crowding-out one another (Cumming and Johan, 2009).

Moreover, some prior researches observe that the existence of PUVC leads to reduction of the volume of the VC market in the end. Munari and Toschi (2015) mention that these PUVCs, especially those with a specific regional focus, might be less effective forms of intervention because of the distortions their tight geographic constraints have introduced. They discover that the VC market in the UK has undergone a significant decrease in PRVC investments due to the increase of PUVCs. Studies have demonstrated that PUVC programs more often hinder than help the development of the VC market (Armour and Cumming, 2006; Cumming and MacIntosh, 2006).

In contrast, other scholars argue that PUVCs just provide capital in the market to fill the financial gap so that they do not seem to cause not only crowding-out but also other negative effects in the market. Bertoni, Colombo and Quas (2015) find that PUVCs have not been able to attract PRVCs to the NTBFs because the different investment patterns of PRVCs and PUVCs have proven to be stable over time. Buzzacchi, Scellato and Ughetto

(2013) indicate that PUVCs tend to postpone the exit of their portfolio firms if they might be able to contribute social returns along with investment returns so that the problem of potential crowding-out effect will likely be mitigated. Cumming (2014) indicates that PUVCs have not crowded-out PRVCs, because VC industries in many countries exhibit shortage of capital, with negative effects on NTBFs.

Meanwhile, scholars claim that there is no statistical correlation between the PUVC's entries in the market and crowding-in or crowding-out effects. Da Rin, Nicodano, and Sembenelli (2006) indicate that no evidence of the effectiveness of PUVCs to increase the NTBFs investments by channeling more PUVCs into the VC market. Leleux and Surlemont (2003) state that their analyses do not support the view that PUVCs are acting to seed the market or crowding-out private funds.

V. Other factors

With regards to the crowding-in or crowding-out effects, scholars indicate that PUVCs alone are not responsible for the effects. They have focused not only on the investment tendency of PRVCs (Murray, 1998; Lim and Kim, 2015) but also on the institutional environment (Florida and Kenney, 1988; Lerner and Watson, 2008) and the different types of PUVC initiatives (Callagher, Smith and Ruscoe, 2015).

Lim and Kim (2015) indicate that the tendency of PRVCs to invest more in NTBFs depends more on the capability and incentive structure for individual private venture capitalists rather than on public subsidies in South Korea. Murray (1998) observes that the European Seed Capital Fund Scheme preferred advanced technology investment. However, due to regional boundary constraint, it was actually PRVCs that took over the role of investing in advanced technology (Murray, 1998). Lerner and Watson (2008) indicate that the Australian government has acted to stimulate the country's VC sector not only by the PUVC programs but also by the complementary policies and regulatory reforms such as tax incentives. They imply that the complementary policies and regulatory reforms are also necessary to alleviate the market failure (Lerner and Watson, 2008). Lerner and Tåg (2013) mention that the main reasons for the delay of the VC market in Sweden compared with the US were likely due to the late deregulation of the financial markets, not VC-friendly tax system and complicated stock options. In Canada, the public stock market, the TSX Venture Exchange (TSXV) is four times the estimated rate for traditional VCs regarding the

successful IPOs rate of the portfolio firms (Carpentier, L'her and Suret, 2010; Carpentier and Suret, 2010). This illustrates a financial resource other than traditional VC can provide positive effects on NTBFs (Carpentier, L'her and Suret, 2010; Carpentier and Suret, 2010). Callagher, Smith and Ruscoe (2015) focus on the effectiveness of timed approach regarding PUVC policies. The timed approach is a dynamic policy approach which targets different areas of market development at different stages of VC. They imply that the provision of capital, institutional changes, and financial incentives will cause a positive market reaction, regardless of the market's environment (Callagher, Smith and Ruscoe, 2015).

VI. Directions for further research

According to prior researches, more researchers have supported the crowding-in effects than crowding-out effects on PUVCs' entry in the market, even though some researchers have found opposite or different results. Researches indicate, for instance, that PUVCs alone are not responsible for the effects (Leleux and Surlemont, 2003; Venkataraman, 2004; Keuschnig and Nielsen, 2001). To scrutinize the crowding-in or crowding-out effects, it is deemed that broader scopes are necessary not only for PUVC's investment but also for other factors such as capability and incentive structure for individual private venture capitalists (Lim and Kim,2015), complementary policies and regulatory reforms (Lerner and Watson, 2008) and even proactive approach to relevant PUVC programs (Callagher, Smith and Ruscoe, 2015).

Note

1) See website of Innovation Network Corporation of Japan (http://www.incj.co.jp/)

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