

**LOOK OUT TO THE WORLD****ENTREPRENEURIAL FINANCING:  
PROGRAM REVIEW AND POLICY PERSPECTIVE<sup>1</sup>****Jin Joo Ham<sup>2</sup>**

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***Abstract:***

*Entrepreneurial financing<sup>3</sup>, such as publicly initiated venture capital or grant schemes, serves as an important policy instrument that aims to bridge the financing gap facing young, innovative businesses, a gap that is mainly due to higher risk and growing uncertainty, and to strategically promote the creation of new ventures through the revitalization of their venture capital industries. This study examines public venture capital initiatives in Australia, Canada, and Sweden, and discovered that all three countries actively foster their venture capital industry through the formation of funds or the provision of tax incentives. It is notable that the majority of financing initiatives heavily depend on supply-side measures rather than demand-driven policies that focus on stimulating private investment in technological innovations and discoveries. This paper discusses in-depth the policy impact of public financing initiatives and their subsequent side-effects raised in the process such as overlapping in funding structure across the country, lack of monitoring and evaluation for feedback, fragmentation across the government ministries and agencies, and competition with the private sector, which may cause inefficiency as a result of public intervention. Financial constraints may arise for many reasons, partly resulting from the lack of investment readiness of young entrepreneurs. This signals a policy shift towards the creation of market-driven demand away from the traditional supply-push approach, and is a grand challenge to policymakers in entrepreneurial financing. Attention is leaning towards the efficiency and effectiveness of these public-financing initiatives in terms of their policy roles. It is worth noting that policy should focus on generating synergy so available resources can be channeled into the early, risky stage of new ventures, working as a facilitator to the achievement of an intended policy goal.*

**Keywords:** *Entrepreneurial financing; Public venture capital; Funding gap; Investment readiness; Crowd out.*

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<sup>3</sup> Entrepreneurial financing in this context refers to financing particularly for R&D-intensive, technology-based businesses at early, risky stages of a company's growth.

## 2. Review of public venture capital

### 2.3. The Swedish Case

Venture capital investment as a share of GDP reached 0.08% in 2009 compared to the OECD sample average of 0.03%, ranking third while GERD as a share of GDP amounted to 3.40% in 2010. Public venture capital (PVC) makes a large share of the investments at early stages of company growth in Sweden. Data (*SVCA, 2011*) strikingly show that 73% of the initial capital and 55% of the follow-up capital came from PVC funds for the first half of 2011. Venture capital is only a small part of the Swedish private equity market, where the buyouts in 2010 comprised 74.2% of the invested capital. Of the venture capital invested, the start-up and later stages makes up the main part and only 4.6% of the venture capital is invested in the seed stages (*EVCA, 2012*).

Historically, between 1994 and 2000, venture capital investment grew at a staggering annual rate of 188% in Sweden with the help of public and private venture initiatives. This period is known as the Swedish venture boom. Public funds such as “Atle” and “Bure”<sup>4</sup> triggered venture capital market development and promoted entrepreneurial activities. However, those public funds were structured to encourage the investment of large funding blocs and then arguably stimulated investments in capital-intensive later-stage projects. This was not what public venture funds were originally intended for.

The Swedish government played an important role in the development of the domestic venture capital industry, particularly in the early 1970s and 1980s. The government today provides mainly five large state-owned venture capital funds in a nationwide effort to stimulate innovation and entrepreneurship: Industrifonden, Fouriertransform, Innovationsbron, ALMI Invest, and Inlandsinnovation (*Uhrbom & Krakowski, 2012*). These public funds primarily aim to improve access to finance through the supply of more capital, especially geared towards young innovative entrepreneurs.

Industrifonden, which was created in 1979 by the Swedish government, is Sweden’s largest investor in small growth companies. The fund has important distinctions: (i) its target is SMEs in Sweden with international growth potential; (ii) almost all investments are made together with entrepreneurs and co-investors, acting as an active minority investor; (iii)

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<sup>4</sup> New Swedish venture funds Atle and Bure were established in 1992 to foster new venture firms in their early stages. However, public funds were structured to encourage the investment of large funding blocs and therefore arguably increased investments in capital-intensive later stage projects that could not fulfill their originally intended mission as public funds.

its investment stages are mainly both in the late start-up stage that needs funding for product development and in the expansion stage that needs additional funding to grow; and (iv) all the returns that come from its investments are reinvested in new projects, holding its original capital intact in real terms.

Fouriertransform, which was founded in 2009 by the state, is intended for investing in commercially oriented R&D projects in the automobile cluster, which stresses strategic motivation to strengthen the competitiveness of the automobile industry. The fund is allowed to invest from early to mature stages, and also emphasizes an important future role in supporting restructuring and spin-offs of companies in growth and mature stages. It is characterized by a long-term investment without any fixed time limits, pursuing an annual return of 10-15%.

Innovationsbron, which was established in 2005, aims to promote the commercialization and utilization of the resources that Sweden invests in R&D and knowledge creation. The fund seeks to offer both competence and capital for development and commercialization of knowledge-intensive ideas, which leads to national competitiveness and sustainable growth. It is worth noting that the fund concentrates only on projects at very early development stages, bridging rather than creating profit for the owners. The investments are usually co-invested and characterized by long-standing and risky projects with high growth potential, which are basically R&D-intensive and technology-based innovations. Notably, a regional investment committee engages in a decision-making of investment, which enables regional partners to work closely together.

ALMI Invest was founded in 2009 together with regional investors as a response to the ERDF (European Regional Development Fund<sup>5</sup>). The fund aims to invest in small companies with long-term growth potential at the expansion stage, even if a substantial amount of the investment is provided to start-up companies. Finally, “Inlandsinnovation” was created in 2010 with the aim of increasing the supply of risk-taking financing in the north of Sweden. The fund varies in size and range from early stages to more mature stages. It invests in the projects with longer horizons and commitments where other investors cannot push ahead.

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<sup>5</sup> The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions. It focuses its investments on several key priority areas such as innovation and research, digital agenda, support for SMEs, and low-carbon economy. Its resources allocated to these priorities will depend on the category of a region.

**Table 2.** Key Facts of the Swedish Public Venture Capital Fund

	<b>Indus trifonden</b>	<b>Fourier transform</b>	<b>Innovations bron</b>	<b>ALMI Invest</b>	<b>Inlands innovation</b>
Year of inception	1979	2009	2005	2009	2010
Ownership structure	Foundation	Owned by State	Co-owned: state vs. Industrifonden (83.7% vs 16.3%)	Owned by state via ALMI Foretagspartner	Owned by the State
Capital Stock (M.SEK)	3,800	3,000	300-400	1,000	2,000
Invest size (M.SEK)	5-100	7-103	2.5 with follow-up max 1M€	2-4 with follow-up 10	
Investment phase	Later start-up to expansion	Start-up mature	Seed and start-up	Late start-up early expansion	Start-up expansion
Ownership share	15-50%	Max 49%	10-49%	Max 50%	Max 30%
Private co-investment	Preferable	No	No	Yes, at least 1:1	No
Required return	5 year government bond yield	10-15%	No	Yes, 2% (inflation)	Yes, flexible

*Source: Uhrbom & Krakowski (2012)*

New or existing innovative ventures in Sweden have suffered from the shortage of capital in the early stages particularly since the dot-com bubble burst in 2000. It has been recognized as a significant challenge to both the VC industry and policy perspective. It may be too costly for private venture capital funds to make a small investment in the early stages, taken into account the efforts by private investors such as time, research cost, and management. This causes private investors to shift towards a preference for large investments in later stages where the risk is deemed to be lower. Some experts argue that a significant decrease of the venture market in Sweden and a long time horizon as with life science brings about the funding gap. In addition, investment in early stages tend to be too small to be profitable for private venture funds, which induces investors to shift towards later stages, expecting to reap higher returns from less risky investments. This partly explains why the early-stage funding gap occurs, leading to a vacuum in capital accumulation in the early stages for enterprises in Sweden. Governments can act as a bridge at this critical juncture by filling this gap,

because risk perception and demand for returns that may raise obstacles to the commercialization of business ideas and research inventions are much higher in the private sector than for public funds.

Interestingly, public funds such as Fouriertransform and Inlandsinnovation operate on a commercial basis. This type of fund management could result in spurring private entrepreneurial activities on the one hand, but such a commercial focus may lean towards pursuing lucrative ROI over closing the funding gap in the early stages, as illustrated in Atle and Bure. The provision of such PVCs suggests a strategic motivation from a policy context with a view to fostering specifically targeted industries such as automobiles, or bolstering a regional industrial base. It is very interesting to note that most public funds discussed above tend to invest in all the stages of a company growth rather than focusing on seed and early stages where severe financing gaps chronically occur. Public funds need to be geared and deepened towards the realization of intended policy goals, leading to better access to finance by entrepreneurial businesses.

Regional engagement, as with the Innovationsbron fund, is a desirable policy direction and is expected to make a positive impact on increased investment opportunity and enhanced regional awareness of entrepreneurship through active interactions. The ALMI Invest fund has a regional focus and seeks to co-invest with the private sector, increasing the sharing of expertise and networks associated with innovation and entrepreneurship, and helping prevent the private investors from potential moral hazard and crowding out. The Fouriertransform fund invests in the automobile industry on a long-term basis without any fixed time limits, which is helpful to mitigating financing bottlenecks in later growth stages.

#### ***2.4. A summary of three countries' cases***

These three cases demonstrate a general perception that their current venture industry faces a critical situation, forcing them to conduct an in-depth review or other measures on their VC industry. Their reviews on the venture capital industry follows a series of innovative policy initiatives that aim to boost the venture capital industry through multiple actions such as new fund formation, the granting of tax incentives, and easing restrictions. The observation above commonly shows active intervention in the venture capital industry since the early 1970s, when the venture market was in general at the initial stage. As a consequence, it is true that governments have played a pivotal role in fostering the venture capital industry. The key challenges can be summarized as follows (Table 3): lack of critical mass in fund size in Australia, a subscale of funds and the inefficiency of tax incentives and the decline of VC investment despite the infusion of

significant PVCs in Canada, and the dysfunction of too many PVC funds in Sweden as a whole.

**Table 3.** Features of Public Venture Capital by Selected Countries

	<b>Australia</b>	<b>Canada</b>	<b>Sweden</b>
VC investment as a % of GDP (2009)*	0.06	0.03	0.08
Perception on VC industry	Significant underdeveloped	VC investment continuously declined	Rising funding gap in financing chains
Rationale for public intervention	Gov't Review, 2005	BDC Review, 2010	Strategically motivated
Main distinction	Seed and early stage funding, co-investment	Over-investment in early stages, generous tax benefits	Too many public VC funds
Investment stimulus	Tax incentives for returns or capital gains (back-end)	Tax incentives for investment (front-end)	Co-investment, regional, sectorial focus
Challenges ahead	Lack of critical mass in fund size	Potential crowding out, sub-scale of GPs, role of PVCs	Inefficiency of many public VC funds

Source: compiled, based on national resources.

\*OECD(2012)

### 3. Discussion

This study demonstrates that the three countries have made clear interventions in the market through public initiatives as part of an effort to revitalize their ailing venture capital industries. The socioeconomic impact of such public initiatives is recognized as the most important consideration in their design, implementation, and evaluation. Several critical issues in terms of policy impact can be discussed here despite constraints in relevant data and information.

#### *Crowd in or crowd out*

Government intervention is justifiable only when a market, i.e. the venture capital industry, does not work out. In other words, public intervention is rationalized where market failure exists. The countries observed above provide a number of PVC funds as well as tax incentives (except for Sweden) through a variety of financing approaches, which targets to fill the funding gaps particularly at their early stages. The public financing schemes in those countries were mainly shaped by the perceptions based on their reviews that

their VC industry is under-developed or under-invested, or insufficient capital in strategic fields. Evidence shows that PVCs may, if poorly managed, crowd out potential private investment rather than complement financial constraints (*Cumming & MacIntosh, 2006; Engel & Heger, 2005; Leleux & Surlmont, 2003; Wallsten, 2000*). Research on the Canadian case (*Brander et al., 2008*) contends that PVCs perform poorly, possibly due to a treatment effect rather than a selection effect, compared to their private equivalents. This study exhibits, conspicuously, that PVCs account for over 50% of the total VCs in Canada and that there are too many PVC funds in Sweden, insinuating overall inefficiency in PVC management. The impact of PVCs is still debatable (*Brader, Du, & Hellmann, 2010*). Importantly, public engagement should be minimized, serving as a catalyzer to get the market going rather than leading the VC industry. In that context, there is significant concern that too many PVCs may substitute for or crowd out private investment in Canada. A fundamental challenge is how to create a synergy effect (*Callegati, Grandi, & Napier, 2005*) through the implementation of policy intervention while preventing potential crowding out.

### ***Financing gap or strategic intervention***

Public intervention surrounding technological innovations usually targets either closing the financing gap at an early stage or bolstering sector-specific industries from a strategic perspective. An Australian review points out that their VC industry is significantly underdeveloped and well below critical mass, suggesting that policy should focus on the supply of investment capital through the creation and expansion of public funds and the improvement of the VC ecosystem as well as on building a virtuous cycle of the venture industry as a whole. An increase in VC investment from both the public and private sectors could be a possible option as part of a short-term strategy, such as the current IIF extension and the aggressive tax incentives like ESVCLP. In addition, building favorable framework conditions would be encouraging alternatives, such as institution building or supporting entrepreneurial culture and education from a long-term perspective, leading to a viable VC industry.

The VC industry in Canada exhibits overinvestment at early stages and a subscale of GPs, naturally leading to a lack of follow-on capital in later stages. Given the situation, existing VC funds are not in a position to invest adequately at later growth stages largely due to the small size of funds. This skewed investment trend entails a substantial financing gap at later stages, where new businesses require increasingly more capital towards producing marketable products. It is important for PVCs to fill the funding gap in the early stages while private VCs focus on meeting increased financing needs

at later, less risky growth stages. This strategy appears to be a reasonable choice for Canada.

The Swedish case is of a very different nature in that PVCs are very strategic and target-driven. Sweden also provides a number of strategically motivated PVCs across sectors and regions, focusing on mitigating financing gaps for innovative start-ups and further strengthening national competitiveness through fostering the VC industry. There might be overlap between funds that may offset the positive impact of public stimulus packages. The funding structure where the funds are fewer, and hence larger, can be seen as optimal, suggesting a certain level of structuring in the management of existing PVCs towards increasing policy effect. It is notable that the role of PVCs in entrepreneurial financing is considered to be tremendously important, taking into account the large share of PVCs in the Swedish VC industry.

### ***Supply-push or demand-pull***

The matter of which policy instrument to employ in practice depends on the relevant experts and policymakers' review of market conditions and industrial structure. The three countries examined mostly take on traditional supply-side policy measures in order to address the revitalization of their VC industry, i.e. an increased supply of PVC funds, a provision of tax credit, and co-investment by both public and private partners. Demand-side policy, which attempts to stimulate market needs and in turn reinforce framework conditions on a long-term basis can be conducive to enhancing investment readiness (*Mason & Harrison, 2001*) by innovators, implying that fledgling entrepreneurs are ready to invest in their projects, enough to meet the investment requirements set by external investors through strict due diligence.

Experts argue that funding gaps in early stages may partly arise from the low quality of project proposals by young entrepreneurs. This refers to the existence of significant mismatch in the quality of business initiatives. The rate of project selection by venture capitalists tends to be very low (*Lerner, 2009*), suggesting that the quality of business proposals is an overarching concern in the selection process on the investors' side. This is telling evidence on how demand-driven policy can work out in the real business community. A clearer identification on why financing gaps come up in entrepreneurial finance would be a good prescription to addressing the nature of the problem. It is important to note, therefore, that the quality of a project prepared by entrepreneurs relates closely to the funding decision made by private investors. In the end, investment attractiveness and quality of deal flow are considered to be the essential factors that bridge the financing gap between the firms and investors.

### ***Tax incentives or grants***

Taxation can be harnessed as an important tool to leverage private investment, which accompanies high risk at early-stage funding. Tax-free status for both locals and foreign investors in Australia is worth attention in a context of availability of global resources. However, the impact of the current back-end tax scheme could be limited due to no tax exemption for the capital losses incurred, despite the aggressive tax initiative. This type of tax incentive also turns out to take a relatively longer time for reaping visible policy impact compared to front-end tax incentives. It merits considering a policy shift towards front-end tax exemption, which could bring more tangible impact in the short run.

In sharp contrast, Canada introduced a front-end tax scheme, more visible in its policy impact than back-end tax incentives due to tax exemption on an investment irrespective of its returns or capital gains. The choice of granting tax incentives either front-end or back-end depends on the policy goal to be attained. It is observed that Canada operates a generous tax scheme, such as the LSVCC that pays back 30% of the amount invested. Some doubt is cast on the effect of such a tax system, considering how the VC industry still suffers from small fund size and shortage of VC funds in general. The concern is how closely the tax incentive structure contributes to filling the funding gap and further galvanizing the VC industry. Moreover, the Canadian case shows that PVCs appear to be too fragmentary for increasing efficiency across the complex governance structures between local, national, federal, and even global levels. The tax system can comprehensively be examined across a nation in terms of efficiency. It is worth noticing that the recent VC Action Plan<sup>6</sup> considers phasing out the long-standing LSVCC by the year 2017 instead of the government's precipitous deployment of \$400 million in new venture capital over the next seven to ten years.

Sweden notably prefers the formation of PVC funds rather than the provision of tax attractions to tackle the issues faced by the VC industry. Policy impact makes a difference hinging on the policy options between the direct infusion of public funds and indirect investments through taxing mechanisms. It is generally considered that tax policies affect indiscriminately across sectors, largely attributable to the inherent nature of

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<sup>6</sup> The Plan released in 2013 is a comprehensive strategy for deploying \$400 million in new capital over the next seven to ten years. It contains the following key actions: (i) allot \$250 million to establish new, large private sector-led national funds of funds, (ii) inject up to \$100 million to recapitalize existing large private sector-led funds of funds, (iii) use an aggregate investment of up to \$50 million in three to five existing high-performing venture capital funds, and (iv) create additional resources to continue developing a robust venture capital system and a strong entrepreneurial culture.

its non-exclusivity. In this respect, impact through direct investments such as grant schemes and subsidies can be more powerful in addressing the targeted policy issues than that of indirect tax incentives. In Sweden's context, tax incentives can, to some degree, be a possible option for rectifying the negative impact of direct investment such as potential crowding out on the one hand and simultaneously attracting business investment into the VC industry on the other.

### ***Direct or indirect investment***

The way of financing new venture firms significantly impacts the performance of VC funds management. Commonly, the public sector retains no professional expertise and business skill that enables it to yield lucrative ROI compared to the private sector. It is well recognized that nascent entrepreneurs need not only capital but also appropriate professional coaching in their early stages.

That explains favorably why most PVCs today are managed by fund specialist groups in the form of fund-of-funds rather than through direct investment in a project by public actors. The fund-of-funds approach appears to be a helpful way that manages PVCs effectively, leaving overall fund management to the professional experts. The way of operating PVCs is diverse in three countries. Australia manages PVC funds mainly through co-investment between public and private partners. Canada manages PVC funds through either public equity funds or fund-of-funds, while Sweden operates them diversely through public equity funds, or fund-of-funds or co-investment (*OECD, 2013*). Empirical evidence demonstrates that the performance of VCs relates closely to the capacity of seasoned fund managers, as clearly illustrated by the Yozma<sup>7</sup> fund in Israel. In addition, it is note-worthy that access to global resources, networks, and favorable incentive structures in proportion to management performance can serve as important determinants in the success of fund management. All in all, it is very important to manage VC funds in a professional way through the participation of global experts in the management of PVCs from the initial stage, in a direction that promotes the mobilization of overseas capital and the interaction of competent fund managers across borders (*Lerner, 2009*), which will increase the rate of success.

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<sup>7</sup> The Yozma fund was created in 1992 by an Israeli government initiative aiming to promote venture investments in Israel. The Fund engaged by ten groups started with the initial capital of \$100 million owned by the public sector. A decade after the Fund's inception, the ten Yozma groups expanded tremendously to manage Israeli funds totaling \$2.9 billion. The Fund continued to grow, enough to manage approximately \$10 billion through its sixty groups. The Fund was privatized in 1997. The key to its success was mainly due to the attraction of overseas venture capitalists with investment expertise and a global network.

#### **4. Policy implication**

The three cases provide valuable insight into the process of design, implementation, evaluation and policy impact of publicly initiated risk finance programs from both micro- and macro perspective. Certain policy implications can be drawn out based on the policy discussions thus far.

From a macro policy point of view, policy focus should be on both short- and long-term approaches based on exhaustive review, which aims to build healthy framework conditions for the growth of the venture capital industry. Creating an attractive environment for entrepreneurial investment is best for dealing with early-stage financing needs faced by innovative businesses. Favorable conditions for revitalizing the venture capital industry can be formed through continued policy support such as new initiatives and institution building. It can also be built through a long-term policy scheme such as education programs or fostering entrepreneurial culture geared towards the creation of an innovative ecosystem (*Kelly, 2011; Godin, 2006*). It is important to recognize that the three cases must cautiously balance different policy alternatives in order to tackle critical financing challenges. It is clear that a balanced policy mix will substantially help achieve policy goals through increased efficiency. Attention must be paid to the essence of the issues identified, not to disturb the market but to address its core problems, as well illustrated above.

There are a number of specific implications to be drawn from a micro policy perspective. In the case of Australia, government intervention proved to be right and appropriate in terms of the supply of public venture capital funds through the IIF program and tax incentive schemes such as VCLPs and ESVCLPs. Notably, IIF has been successful in attracting private sector investment according to a review in 2008. However, tax schemes designed as “back-end” tax incentives provided tax benefits only when investor yielded returns as a consequence of investment. Taken into account how “significantly underdeveloped” the Australian venture capital industry was at that time, such policy measures in hindsight needed to be more radical and forward-looking rather than introducing “front-end” tax incentives which focus on investment irrespective of ROI. This will likely increase the supply of venture capital funds from the private sector, which in turn bridges the financing gap in the seed and early stages. In addition, co-financing through a matching fund by investors is likely to prevent private partners’ moral hazard (*Rigby & Ramlogan, 2012*) and precipitate entrepreneurial activities, thus helping reach critical mass in fund size.

In Canada’s case, public engagement in the venture capital industry was done mainly through both fund formation and tax incentive scheme

provision. The overall policy mechanism in the venture capital industry appears to be misaligned and fragmentary across the country as seen from the overlapping and subsequent inefficiency of public initiatives. Policy focus should be on structural transformation that induces private investment, thus replacing public venture capital to an appropriate degree. Besides, the complexity of funding schemes and tax incentives makes the programs less effective and skewed in terms of benefits, which ultimately reduces overall policy impact. This inefficiency is illustrated by the fact that public venture capital reaches roughly 50% of total venture capital in Canada. There are research reports that argue over crowding out and the inferior effectiveness of public venture capital compared to private venture capital in terms of value creation, competition and innovation. Too generous tax incentives such as LSVCCs need evaluating in-depth their impact on the venture capital industry over the past three decades toward well-suited alignment. The subscale of general partners (GPs) needs to be addressed in a direction that individual funds can enhance their viability at both national and supranational levels through a structural change of the existing subscale funds.

In Sweden's case, a number of public venture capital funds have invested in a strategic manner at all stages of technological innovations. Only a relatively small portion of public venture capital, approximately 16%, targets the seed stage of finance (*Svensson, 2011*). It means that the majority of public equity finance goes to late growth stage, which is probably less risky but highly rewarding. It is worth noting that the later stage is likely to be financed by many other existing financial institutions without resorting to public finance. This may conflict with private interest, thereby crowding out private investment as a result of public finance. In the same context, a focus of public finance on commercial objectives in Sweden could face difficulties in mitigating the financial constraints faced by early-stage innovative firms. Clearly, commercial orientation falls under the influence of private-sector concerns that drive risky investments for a profitable cause. In this regard, a balanced policy consideration in public finance (or the right choice of policy instruments) is an important factor in policy impact, these measures involving direct financing or indirect financing such as tax schemes, financing or non-financing, or supply- or demand-side policy instruments. It is highly probable that too many public funds in Sweden pose a heavy dependence of entrepreneurial businesses on public finance, leading to side effects such as crowding out and weakened viability of the venture capital industry. In the end, structuring public funds comes as a pressing concern for increased efficiency, letting market forces run smoothly.

## 5. Conclusion

Public intervention in either boosting the VC industry or closing the funding gap is regarded as a necessary and important initiative in a modern complex market system largely due to its pump-priming role that sends positive signals to a market. However, publicly initiated measures do not always work out as initially intended, and as a consequence raise certain side effects such as crowding out and market distortion. The pressing challenge faced by the three countries is the lack of efficiency in many ongoing PVCs and the diverse tax incentives. The fundamental question falls on how to let public initiatives work out in the marketplace towards the achievement of an original policy objective. Experts argue that public funds should not be tied to specific areas or industries so that capital is free to finance the best projects, which allows them to increase efficiency and effectiveness. The underpinning message is that public policy initiatives need to be complementary rather than conflicting with the private sector, which creates increased synergy in the market. In the meantime, PVC initiatives should be aligned cautiously through incessant monitoring and evaluation over the full cycle of a project or program in a direction that helps complement potential market failure particularly at early-stage financing, thereby enhancing resilience and response to external environmental challenges and changes. The bottom line is that a balanced policy orientation through either supply-push or demand-pull approaches would be a viable policy option in order to tackle the issues involved./.

## REFERENCES

1. Audretsch, D. B. Leyden, D. P., & Link, A. N. (2012). Universities as research partners in publicly-supported entrepreneurial firms. *Economics of Innovation and New Technology*, 21(5-6), 529-545.
2. AusIndustry (2012). *Venture capital in Australia*. Retrieved from <http://www.ausindustry.gov.au/programs/venture-capital/iif/Pages/IIFVentureCapitalInAustralia.aspx>
3. Australian Government (2011). *Innovation investment fund (IIF) programme progress report*. Retrieved from <http://www.innovation.gov.au/industry/VentureCapital/Documents/InnovationInvestmentFundProgramProgressReport.pdf>
4. Australian Venture Capital Association Ltd. (2005). *Australian venture capital industry review: Improving the VCLP to Attract Global Capital (AVCAL)*. Retrieved from <http://www.avcal.com.au/documents/item/256>
5. Brander, J. A. Egan, E. J., & Hellmann, T. F. (2008). *Government sponsored versus private venture capital: Canadian evidence* (NBER Working Paper No. 14029). Retrieved from [http://www.nber.org/papers/w14029.pdf?new\\_window=1](http://www.nber.org/papers/w14029.pdf?new_window=1) Brander, J.

- A., Du, Q., & Hellmann, T. F. (2010). *The effects of government-sponsored venture capital: International evidence*. Retrieved from <http://strategy.sauder.ubc.ca/hellmann/pdfs/BranderDuHellmannJuly2012.pdf>
6. Business Development Bank of Canada (2010). *Venture capital industry review (BDC)*. Retrieved from [https://www.bdc.ca/EN/Documents/other/VC\\_Industry\\_Review\\_EN.pdf](https://www.bdc.ca/EN/Documents/other/VC_Industry_Review_EN.pdf)
  7. Callegati, E., Grandi, S., & Napier, G. (2005). *Business incubation and venture capital. An international survey on synergies and challenges*. (Joint IPI/IKED Working Paper, January) Retrieved from <http://www.insme.org/files/2203>
  8. Cumings, D. J., & MacIntosh, J. G. (2006). *Crowding out private equity: Canadian evidence*. *Journal of Business Venturing*, 21(5), 569-609.
  9. Durufle, G. (2010). *Government involvement in the venture capital industry international comparisons*. Toronto, ON: Canadian Venture Capital and Private Equity Association (CVCA). Retrieved from [https://www.cvca.ca/files/downloads/Government\\_Involvement\\_in\\_the\\_VC\\_Industry\\_Intl\\_Comparisons\\_May\\_2010.pdf](https://www.cvca.ca/files/downloads/Government_Involvement_in_the_VC_Industry_Intl_Comparisons_May_2010.pdf)
  10. Engel, D., & Heger, D. (2005). *Differences in public venture capital companies activities: Micro-econometric evidence for Germany*. Retrieved from [ftp://zinc.zew.de/pub/zewdocs/veranstaltungen/inno\\_patenting\\_conf/EngelHeger.pdf](ftp://zinc.zew.de/pub/zewdocs/veranstaltungen/inno_patenting_conf/EngelHeger.pdf)
  11. European Central Bank (2011). *SMEs' access for finance in the Euro area - September 2010 to February 2011 (EC)*. Retrieved from <https://www.ecb.europa.eu/pub/pdf/other/accesstofinancesmallmediumsizedenterprises201104en.pdf?07d1dfb3352b46af93d38aee843821cd>, and [http://ec.europa.eu/enterprise/policies/finance/data/enterprise-finance-index/european-surveys/ecb-surveys/index\\_en.htm](http://ec.europa.eu/enterprise/policies/finance/data/enterprise-finance-index/european-surveys/ecb-surveys/index_en.htm)
  12. European Private Equity and Venture Capital Association (2012). *2012 Pan-European private equity and venture capital activity: Activity data on fundraising, investments and divestments (EVCA)*. Retrieved from [http://www.evca.eu/media/12067/2012\\_Pan-European\\_PEVC\\_Activity.pdf](http://www.evca.eu/media/12067/2012_Pan-European_PEVC_Activity.pdf)
  13. Godin, K. (2006). *Public policy and entrepreneurship: Venture capitalism in British Columbia (Master's thesis, Simon Fraser University)*. Retrieved from [http://s3.amazonaws.com/zanran\\_storage/www.sfu.ca/ContentPages/82593789.pdf](http://s3.amazonaws.com/zanran_storage/www.sfu.ca/ContentPages/82593789.pdf)
  - Griliches, Z. (1992). *The search for R&D spillover (Working Paper No. 3768)*. Cambridge, MA: The national Bureau of economic research. Retrieved from <http://www.nber.org/chapters/c8349.pdf>
  14. Hood, N. (2000). *Public venture capital and economic development: The Scottish experience, venture capital: An International Journal of Entrepreneurial Finance*, 2(4), 313-341. <http://dx.doi.org/10.1080/13691060050177013>
  15. House of Commons Science and Technology Committee (2013). *Bridging the valley of death: Improving the commercialisation of research (Eighth Report of Session 2012-13, HC 348)*. The United Kingdom: The House of Commons. Retrieved from <http://www.publications.parliament.uk/pa/cm201213/cmselect/cmsctech/348/348.pdf>
  16. Hurwitz, S. A. (2013). *Addressing Canada's commercialization crisis and shortage of venture capital: Will the federal government's solution work?* Retrieved from [http://timreview.ca/sites/default/files/article\\_PDF/Hurwitz\\_TIMReview\\_September2013.pdf](http://timreview.ca/sites/default/files/article_PDF/Hurwitz_TIMReview_September2013.pdf)

17. International Finance Corporation (2011). *Public private equity partnerships: Accelerating the growth of climate related private equity investment (IFC)*. Retrieved from <http://www.ifc.org/wps/wcm/connect/1df6f700499a4d62b9e9fba-8c6a8312a/Public%2BPrivate%2BEquity%2BPartnerships.pdf?MOD=AJPERES>
18. International Organisation for Knowledge Economy and Enterprise Development (2007). *The role of venture capital, global trends and issues from a Nordic perspective (IKED)*. Retrieved from <http://www.iked.org/pdf/THE%20ROLE%20OF%20VENTURE%20CAPITAL,GLOBAL%20TRENDS%20AND%20ISSUES.pdf>
19. Kelly, R. (2011). *The performance and prospects of European venture capital. European Investment Fund (EIF)*. (Working Paper 2011/09). Retrieved from [http://www.eif.org/news\\_centre/publications/eif\\_wp\\_2011\\_009\\_EU\\_Venture.pdf](http://www.eif.org/news_centre/publications/eif_wp_2011_009_EU_Venture.pdf)
20. Leleux, B., & Surlemont, B. (2001). *Public versus private venture capital: Seeding or crowding out? A pan-European analysis*. *Journal of Business Venturing*, 18(2003), 81-104.
21. Lerner, J. (2002). *When bureaucrats meets entrepreneurs: The design of effective "public venture programmes"*. *The Economic Journal*, 112, 73-84.
22. Lerner, J. (2009). *Boulevard of broken dreams, why public efforts to boost entrepreneurship and venture capital have failed and what to do about it?* New Jersey: Princeton University Press.
23. Lerner, J., & Watson, B. (2007). *The public venture capital challenge: The Australian case*. *Venture Capital*, 10(1), 1-20.
24. Mason, C. M., & Harrison, R. T. (2001). *Investment readiness: A critique of government proposals to increase the demand for venture capital*. *Regional Studies*, 35(7), 663-668. DOI: 10.1080/00343400120075939
25. OECD (2013). *OECD review of innovation policy: Sweden 2012*. Paris: OECD Publishing. <http://dx.doi.org/10.1787/sti/9789264184893-en>
26. OECD (2012). *OECD science, technology and industry outlook 2012*. Paris: OECD Publishing. [http://dx.doi.org/10.1787/sti\\_outlook-2012-en](http://dx.doi.org/10.1787/sti_outlook-2012-en)
27. Rigby, J., & Ramlogan, R. (2012). *Access to finance: Impacts of publicly supported venture capital and loan Guarantees* (NESTA working paper No. 13/02). Retrieved from [http://www.nesta.org.uk/sites/default/files/access\\_to\\_finance\\_impacts\\_of\\_publicly\\_supported\\_venture\\_capital\\_and\\_loan\\_guarantees.pdf](http://www.nesta.org.uk/sites/default/files/access_to_finance_impacts_of_publicly_supported_venture_capital_and_loan_guarantees.pdf)
28. Schuelke-Leech, B. (2012). *Innovation finance: A synthesis of public funding and private financing of innovation*. Retrieved from [http://glennschool.osu.edu/faculty/schuelke-leech/BASchuelke-Leech\\_2012\\_Innovation\\_Finance\\_shifting\\_roles\\_revision\\_May\\_7\\_2012.pdf](http://glennschool.osu.edu/faculty/schuelke-leech/BASchuelke-Leech_2012_Innovation_Finance_shifting_roles_revision_May_7_2012.pdf)
29. Svensson, L. (2011). *Practical monetary policy: Examples from Sweden and the United States*. The Brookings Institution, 42(1), 289-352.
30. The Economist (2010, August 5). *The global revival of industrial policy, picking winners, saving losers, industrial policy is back in fashion. Have Governments learned from past Failures?* (Bachelor's thesis, Stockholm School of Economics). Retrieved from <http://www.economist.com/node/16741043>
31. The Swedish Private Equity and Venture Capital (2011). *Riskkapitalaktiviteten i*

- Sverige helåret 2011.n (SVCA)* Retrieved on April 26, 2012 from <http://svca.se/PageFiles/1756/Riskkapitalaktiviteten%20hel%C3%A5ret%202011.pdf>
32. Uhrbom, M., & Krakowski, S. (2012). *Public venture capital for Swedish innovation: Theory and practice*. (Bachelor's thesis, Stockholm School of Economics). Retrieved from <http://arc.hhs.se/download.aspx?MediumId=1594>
  33. United Nations (2009). *Policy options and instruments for financing innovation: A practical guide to early-stage financing*. Retrieved from <http://www.unece.org/fileadmin/DAM/ceci/publications/fid2.pdf>
  34. United Nations (2007). *Financing innovative development: Comparative review of the experiences of UNECE countries in early-stage financing*. Retrieved from <http://www.unece.org/fileadmin/DAM/ceci/publications/fid.pdf>
  35. Wallsten, S. J. (2000). *The effects of government-industry R&D programs on private R&D: the case of the Small Business Innovation Research Program*. *Rand Journal of Economics*, 31(1), 82-100.