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Digital Policy Hub

Digital Policy Hub – Working Paper

Innovation Policy and Venture Capital: Korea, Sweden and Canada

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Key Points

- This paper brings a comparative lens to the study of innovation policy and venture capital (VC) in the case of two innovation leaders — the Republic of Korea and Sweden — and Canada, a country with a more challenging history on the innovation front.
- In all three cases, government policy has focused on measures that address the respective gaps in access to VC, with significant results in VC performance.
- Korea has taken a highly targeted strategy, centred on start-up and high-technology firms in need of investment and strategic guidance. Sweden as well has pivoted to providing capital at the early stage of firms' development.
- While Canada has focused on providing VC at dedicated points along the innovation spectrum, from early to late stage, more recently that targeting has become much more diffuse. Moreover, there has not been sufficient attention to growing small and medium-sized enterprises (SMEs), with the capacity to globally scale.
- Policy recommendations include the need for a consolidated Venture Capital High-Technology Fund for SMEs that is equipped with clear targets for access to VC, including revenue and employment, asset valuation and research and development (R&D) expenditures.

Introduction

In the ongoing quest by nations for increased growth and productivity — and for innovation — providing access to VC[1] is one of the critical pieces in the policy playbook. It holds out the promise of suturing the gap between invention and market. It beckons firms whose future is locked up in intangible assets with the resources to commercialize — and to scale. But equipping firms with the VC needed, either through public investments or public financing leveraging private capital, is not always so easily rendered. Nor is it evident that success on this front will necessarily reap strong innovation rewards.

This paper sets its sights on these issues, using a comparative lens to examine VC and innovation policy in two recognized innovation leaders — the Republic of Korea (hereafter Korea) and Sweden,[2] and a country with a much less stellar history on that front — Canada (Scharf 2022, 2025). The intent is to examine government initiatives that can provide access to VC as one of the key enabling conditions for innovation — not only in terms of financial resources, but for the networks and managerial expertise VC can bring to the table as well. Specifically, the research question asks: To what extent have public policies in Korea, Sweden and Canada

1 The Organisation for Economic Co-operation and Development (OECD) defines venture capital as "equity capital provided through formal, organised professionally-managed funds to co-finance, with the founder or entrepreneur, an *Early Stage* or *Expansion Stage* venture"; emphasis in original (OECD 2015, 147).

2 See, respectively, OECD (2023) and OECD (2016); see also Scharf (2025).

since 2000 provided for capitalization that can bridge the gap between research and commercialization, and has this included access to both start-up and later-stage VC?

After dealing with theoretical considerations, the paper essentially unfolds on four fronts. It lays out the reckoning by state actors with the extant gap in national VC markets. It explores the design of public policy responding to those needs in each country and its capacity to target effectively, and it analyzes VC performance results. It then assesses the implications of these distinct policy experiences.

Theoretical Framework

The comparative lens to be used draws on two currents of literature focused on public policy choices but in the context of sustainable innovation. The first is that of the "developmental network state" (DNS), as associated with the work of Fred Block and Matthew Keller, and Marian Negoita.[3] The second is that of Mariana Mazzucato.[4] Critical to these readings, particularly for the DNS framework, are four components or pillars: policy durability, "targeted resourcing" (Block 2008, 172) of areas ripe for commercialization; thickening of innovation networks and provision of "patient strategic capital" (Mazzucato and Semieniuk 2017, 44) that spans the various stages of the innovation cycle. As noted, it is the intention to focus on the role of the state in the latter — that is, providing but also incenting capital that can de-risk research and promising technological pathways.

To date, comparative work on Korea, Sweden and Canada using the DNS with respect to VC has not been undertaken. There have been significant contributions on other East Asian nations (Breznitz 2007) as well as on the developmental *bureaucratic* state in the Korean case (Ó Riain 2004), although these have paid particular attention to the role of networks. Notably, the DNS literature is distinct from the developmental state literature associated with Korea in its early years of industrialization (Amsden 1989; Chibber 2014; Evans 1995; Wade 1990; Woo 1991) and, more recently, by Henry Wai-chung Yeung (2016), with his critique of this model for developments of late.

With respect to the conceptualization of VC, it need be recognized that the state of the art is somewhat fraught. While Mazzucato positions her use of patient capital as spanning all stages of the innovation continuum,[5] Robyn Klinger-Vidra (2016) centres the issue of patience around very early-stage or seed capital allocated at the start of a firm's development. As for Keller, and his work on public forms of VC, he eschews the focus on early-stage VC and pivots to "long-term, paradigm-shifting research" ([2011] 2016, 130).

All to say that VC, be it exercised by public authorities or within the market, is in critical need of some standardization around development stages of capital — ones without built-in assumptions regarding effectiveness. In this context, the OECD can provide

3 See Block (2008); Block ([2011] 2016); Block and Keller ([2011] 2016a, [2011] 2016b); Block, Keller and Negoita (2020, 2024); Brandt, Schrank and Whitford (2018); Brandt and Whitford (2017); Fuchs ([2011] 2016); Keller ([2011] 2016); Keller, Block and Negoita (2017; 2022); Schrank ([2011] 2016, 2021); also Ó Riain (2004, [2011] 2016, 2014, 2018); Whitford and Schrank ([2011] 2016).

4 See Mazzucato ([2013] 2015, 2018, 2021, 2023, 2024); Mazzucato and Penna (2015); Mazzucato and Semieniuk 2017; also Dosi et al. (2023). For an extensive discussion of DNS, Mazzucato, and their respective contributions, see Scharf (2022, chapter 1).

5 See footnote 4, in particular Mazzucato and Semieniuk (2017).

direction, as it does use specific categories of VC to capture national investment. “Early stage” refers to VC financing during “pre-seed, seed and start-up stages” associated with the first three to five years of a firm’s life cycle, whereas “late” or “later stage” refers to a “mature” period beyond the five-year cut-off associated with spinoffs, “expansion,… replacement capital and buyout” (OECD 2015, 142, 144). It is those definitions, and VC performance aligned with those categories, that are adopted here and that can bring operational rigour to the questions at hand.

Korea: Unleashing Growth

The success that Korea currently enjoys on the innovation front, “sustain[ing] rapid progress towards the global innovation frontier” (OECD 2023, 12) has been the result of decades of attention to economic development and a focus on rapid industrialization. Indeed, the storied history of the Miracle on the River Han, propelled by a “developmental state,” is now well known. Over the 1960s and 1970s, the Korean state pivoted the direction of investment toward heavy and chemical industries and global exports. Performance targets were set for critical industries and investment flows were enabled, and insulated, from international competition, through a wide array of protectionist mechanisms.

Central, too, was the state’s control over macroeconomic stabilization, and particularly over finance. Firms had ample access to credit in the form of debt (guaranteed by the government) through international markets and especially via the cycling of petrodollars in the late 1970s and 1980s. The upshot was rapid economic development and the growth of highly globally competitive firms — the *chaebol* — in these key sectors. It was also excessive debt. When the Asian financial crisis hit in 1997–1998, high debt-to-equity ratios exacerbated the situation, leading to numerous bankruptcies and state-led efforts to consolidate the number of firms, and ultimately ushering in a wave of market liberalization. The situation was equally acute for small enterprises, with 23,000 going bankrupt in 1998 (Baygan 2003, 14).

Targeting: Start-Ups and High Tech

Against this background, while finance was “the stuff power is made of,” as Jung-en Woo (1991, 202) has so aptly noted, in both mediating the investment flows and shaping the direction of growth, there has only been a focus on VC in the last few decades. As for a pivot to early-stage VC, this as well has only been borne in more recent decades. In 1986, there were measures to help with the financing of a VC industry (Ko and Shin 1999), and by 1989 the Korea Technology Finance Corporation (KOTEC) had been created. Designed to provide “credit guarantees” to start-up technology firms with high potential but only intangible assets, KOTEC could recommend such firms to the banks for critical loans and would back the loans undertaken.[6] KOTEC also developed capacity dedicated to technology appraisal, providing expert evaluation of firm assets before recommendations for guarantees of credit were made.

6 See www.linkedin.com/company/korea-technology-finance-corporation/about/; with respect to the Kibo Technology Fund and the technology appraisal role that fall under the auspices of KOTEC, see OECD (2009, 239–41).

However, these measures were more embryonic. It was only when faced with the brunt of the financial crisis and the major impact on SMEs that the government began to consolidate steps toward creating a viable VC market. Established through legislation in 1997, the Act on Special Measures for the Promotion of Venture Business laid out the terms whereby "structural adjustment" could occur and enterprises could begin as venture businesses.[7] Unlike Anglo-American VC markets, several measures and standards applied. KOTEC could provide VC firms with both preferential credit and special rates of taxation. Priorities were established around investment, with VC firms to focus on start-ups of "new technology-based businesses" — ones where at least five percent of the company's annual sales were expended on R&D.[8] So, too, was a government ministry — the Small and Medium Enterprise Administration — created a year earlier in 1996 to generally support SMEs and, in particular, to provide licensing of SMEs, as well as stewardship of and planning around the VC initiative.[9]

Girding this legislation was the creation in 2005 of the Korea Fund of Funds (KFoF), designed to not only inject substantial sums of capital into the VC market by the government, but also to leverage private capital. Indeed, at the time, the government invested KRW 1 trillion dedicated to early-stage VC (OECD 2009, 241). Over the years, the KFoF, managed by the government's investment arm, Korea Venture Investment Corporation (KVIC), has remained extremely robust and, as of 2024, assets under its management stand at US$8.2 billion. In terms of the exceptional leverage the KFoF provides, currently KVIC has US$36.6 billion in "underlying funds."[10] As of February 2024, the government had also announced a new injection of financing for the "start-up" community: KRW 910 billion, to be channelled to the KFoF (Government of the Republic of Korea 2024). Complementing these initiatives is a partnership fund targeting SME industrial technology commercialization, in "growth engine" sectors, and a tech incubator program that twins promising start-ups with seasoned VC leaders, providing mentoring and access to matching R&D financing.[11] Both programs were created in 2013. In sum, despite the liberalization of markets that occurred after 1997–1998, considerable policy direction has remained in terms of VC. The contours of SME growth have been shaped around firms with potential unicorn status and around high-technology needs.

7 *Act on Special Measures for the Promotion of Venture Business 2023*, Act No. 19504 (Republic of Korea) [*Act on Special Measures*], art 1, available online at: <www.mss.go.kr/site/eng/contents/view.do?menuCd=2020300000000020191106 18&siteCd=eng>. On the 1997 version, see Ko and Shin (1999) and Baygan (2003).

8 On these aspects, see the *Enforcement Decree of the Special Act on the Promotion of Venture Businesses, 2024*, *Presidential Decree no. 34468 (Republic of Korea)*, art 2-3(2)(1) and 2-3(5)(2), respectively; online at: <https://elaw.klri.re.kr/eng_service/lawView.do?hseq=67556&lang=ENG>. The R&D component in the 2024 version also stipulates R&D expenses of at least KRW 50 million (art 2-3(5)1).

9 Baygan (2003); OECD (2010, 78); see also *Act on Special Measures*, *supra* note 6 at art 3-4.

10 As of April 2025; see www.kvic.or.kr/en/.

11 On the Fund of Funds for Industrial Technology Commercialization, see www.kvic.or.kr/en/business/business4_1. On the Accelerator Investment-Driven Tech Incubator Program for Startups (known in short as TIPS), see OECD (2023, 226); see also www.jointips.or.kr/about_en.php.

VC Performance

While the OECD does not have a breakdown for Korea by business development stage, in terms of total VC, the impacts of these efforts are clearly visible in Figure 1. Investment has been very robust, moving from 0.068 to 0.150 percent of GDP by 2023, an overall increase of 121 percent over the base year of 2007. If the peak year of 2021 is used as a cut-off, as all countries experienced a VC cliff by 2022, that increase amplifies to 278 percent. Korea also ranks fourth among the top five countries over the time series for total VC.[12] As for early-stage capital, while the data by stage of VC is not available, notably there is a thriving start-up ecosystem, particularly in artificial intelligence (AI) and biotechnology (McFaul 2023; OECD 2023). Indeed, the Korean government's Fifth Science and Technology Master Plan indicates that start-ups "centred on technology" have grown from 20,000 in 2017 to 24,000 by 2021.[13]

Sweden: Propelling "Entrepreneurship"

While Sweden had enjoyed much success on the innovation front in the early 2000s, especially in relation to its European counterparts, by 2008, there was growing recognition of the need to "strengthen"[14] the country's competitive position internationally and to focus on commercialization. In this context, the issue of VC — at least regarding the gap in early-stage capital — equally appeared on the government's agenda in 2008.[15] Concerned with propelling "entrepreneurship," a substantive injection of funds was directed to a "bridging" fund, Innovationsbron AB, designed to provide seed funding for start-ups.

With VC indicators continuing to show decline, however, the issue was soon rejoined, in an extensive study by Roger Svensson at the Institute for Business Research in 2011. Surveying the VC landscape as well as a variety of other forms of government support to business, Svensson concluded there was significant underinvestment in seed and early-stage capital — particularly for high-potential firms. Rather, the funds available sought the returns and less risk-adverse nature of mature companies at later states of expansion. The large "AP6" or Sixth Swedish National Pension Fund, as well as Sweden's VC fund, Industrifonden, and manufacturing-investment fund, Fouriertransform, all operated in this space. It was left to much smaller state actors, in particular, Innovationsbron, to function on a kind of incubator basis, seeding companies at early stages of risk and capital. This led to a critical shortage of capital in these areas and the ancillary effect of the state "crowding out" (Svensson 2011, s. 4.3.6) VC in the later stages. Similar types of concerns were later registered by the Swedish National Audit Office (Riksrevisionen 2014) a few years later.

Targeting: Early Stage

More critically, however, by 2015, the National Innovation Council (NIC) had been established. Dedicated to a larger and more holistic innovation agenda beyond just

12 See notes in Figures 1, 2 and 3 for top five countries and their ranking. Rankings for figures are the author's calculations based on OECD data and are based on the full time series.

13 See Government of the Republic of Korea (2022, Strategy 2, Task 2-3).

14 *Regeringens proposition 2008/09:50. Ett lyft för forskning och innovation* [Government proposal. A Boost for Research and Innovation], SFS 20 October 2008 at s 4.5, online at: <www.regeringen.se/contentassets/05cb6c62a34e4b37a114611a3ebcbd5b/ett-lyft-for-forskning-och-innovation-prop.-20080950>.

15 *Ibid*, s 8.3–8.3.1.

research, the NIC was composed of high-profile members from various sectors of Sweden's economy and society. Moreover, it was chaired by the prime minister himself.[16] The NIC quickly took on this issue of early-stage capital as necessary to Sweden's larger ecosystem, mandating a full investigation of the issue. Not surprisingly, the study came back with the assessment that, while Sweden generally was in a robust position with respect to VC and financing, there was a strong need for instruments that could deal with companies with longer "development" cycles (Rydstad 2015, s. 3.4.2). As it was, these companies were being snapped up by foreign companies, eroding the "growth, innovation and employment" (ibid.) dynamic within Sweden itself. To address these concerns, as well as the "crowding out" phenomenon by state investments in the latter part of the development cycle, the inquiry recommended that a new state VC fund be established. To co-invest with private capital, the fund would especially target the early-stage part of the cycle, focusing on companies not yet mature but with high growth potential.

Remarkably, in terms of timelines, by 2016 — and strongly advocated for by the NIC — the government had taken action introducing legislation dedicated to setting up a new state agency, which was to become Saminvest AB.[17] Designed to invest "indirectly" in companies through private VC funds, it would focus on "companies in the early stages,"[18] where access to investment was challenging and where the deleterious effects of rigidities in the current financial markets were evident. The bill noted what can be interpreted as patient capital in this context — that is, capital required where there were "often long lead times to financial viability."[19] Quickly established on the heels of the legislation in 2016, the new entity was endowed with SEK 5 billion to conduct its mission, with monies to be invested into private VC funds. As of its 2023 annual report (Saminvest 2023, 3), the agency had invested (indirectly) SEK 4.8 billion in 541 companies and had been successful in leveraging significant private funds to fulfill needs in this early-stage sector. Half of the capital was oriented to tech-based firms (ibid., 5).

With respect to the policy process and instruments chosen in this endeavour, three aspects of the Swedish experience in particular stand out. First, it is the speed by which initiatives moved rapidly to an expert inquiry and recommendations, legislation and then set-up of the new agency. Second is the high-profile nature of the NIC — with its chairship by the prime minister and innovation mission — in raising this agenda, advocating the need for change and moving it forward to resolution. Third, what is distinguished is how targeted the effort was — focusing in on the early-stage requirements in light of the Swedish capital markets writ large, and duly creating an entity that, in cooperation with private VC funds, would address the challenge ahead.

VC Performance

As to the actual impacts that these policy changes may have had, what does appear in OECD VC data are trend lines showing growth in early-stage capital. As shown in Figure 2, VC investments in start-up and other early-stage enterprises as a percentage of GDP moved from 0.021 percent in 2015, when initiatives for new financing started to get under

16 The prime minister at the time was Stefan Löfven. On this history, see the excellent discussion and analysis in Edquist (2019); also Borrás and Edquist (2019).

17 *Regeringens proposition 2015/16:110 Staten och kapitalet — struktur för finansiering av innovation och hållbar tillväxt* [The state and capital – structure for financing innovation and sustainable growth], SFS 10 March 2016, online at: <www.regeringen.se/contentassets/0642af10d26b41a09e2af0e83d98b1e4/staten-och-kapitalet--struktur-for-finansiering-av-innovation-och-hallbar-tillvaxt-prop-2015_16_110.pdf>.

18 *Ibid* at s 5.

19 *Ibid* at s 4.

way, to 0.033 percent by 2023. If the cut-off is moved to the peak of 2021, the growth over 2015 is very substantive, at 219 percent. Clearly, caution must be exercised in interpreting this in any kind of direct causal manner, given the limited time period over which the changes occur. Still, significant impacts are registered, following the legislation and new policy thrust. It need also be recognized that the years from 2009 to 2015 had seen some significant deteriorating conditions on this indicator.

As for overall rankings, in terms of early-stage and later-stage VC, Sweden is fifth among the top five countries on both these measures, although for later-stage VC there are some notable decelerations at times. With respect to total capital, the combined effects of later-stage financing and the policy push that came later in the time series may be exerting a drag. Certainly, the increase between the base year of 2007 and the peak year of 2021 is much less than for Canada or Korea, standing at 60 percent and one-fifth of Canadian percentage growth over this period.

Canada: Wrestling with Size

Canada has been contending with challenges around innovation and competitiveness since at least 2000, with the question of adequate VC being an integral part of those policy dilemmas. Interestingly, as with Sweden, the most salient report on this issue came out in 2011, as "a call to action" from an expert panel chaired by Tom Jenkins (the "Jenkins report"; Independent Panel on Federal Support to Research and Development 2011). The Science, Technology and Innovation Council (STIC) mandated to proffer advice to the government had been generally raising the availability of VC as a concern (STIC 2009, 2011, 2013), but it was the Jenkins report that particularly zeroed in on the issue in unequivocal terms. Canada was suffering from a dearth of "risk" capital, with "gaps" all "along the funding chain."[20] It was particularly a problem for angel and early-stage capital, and especially acute at the expansionary stages as companies were trying to scale. Concerns were equally articulated around the premature exit of companies and the need to keep Canadian intellectual property within the Canadian domain.

Based on this analysis, the Jenkins report made two key recommendations. The government needed to invest at the "start-up" stage, primarily through the Business Development Bank of Canada (BDC), which was oriented to supporting SMEs (recommendation 5.1). But special attention and investments needed to focus on "larger-scale, later-stage" VC (recommendation 5.2) to address the outstanding gap with the US VC market, enhance deal size, reduce the flow of exits and strengthen the innovation ecosystem more generally. Decision making was not to be driven by government directives; rather, there was to be investment in private sector funds, which were viewed as responsive to market needs and allocations.[21]

To be sure, these recommendations came against a backdrop where previous initiatives had been taken by government. As early as 2004, the government of the day had taken steps to deal with the early-stage capital needs for SMEs (Department of Finance Canada 2004, 142–43). Nevertheless, neither the full innovation continuum nor the acute needs of late-stage capital were the subject of particular attention.

20 See Independent Panel on Federal Support to Research and Development (2011), chapter 7, especially page 7-12.

21 For the two cited recommendations, see ibid., chapter 7, page 7-17.

Targeting: Tackling the Innovation Continuum

Following the Jenkins report recommendations, there was a decidedly strong pivot, first to larger-scale, and then to late-stage, capital needs. The 2013 federal budget (Department of Finance Canada 2013, 205), under the auspices of the Venture Capital Action Plan (VCAP), saw major investments in "funds of funds" to be created for capital needs — and to be decidedly market driven. Additional financing was also provided to the BDC for early-stage and high-potential firms. By the 2017 federal budget, in conjunction with the new government's Innovation and Skills Plan, another major tranche of funding was to target "late-stage" growth (Department of Finance Canada 2017, 83).

Despite such initiatives, more recent efforts do not appear to have maintained the late-stage focus. The injection of CDN$450 million through the 2021 federal budget, for life sciences as well as under-represented groups, has been substantial and it has been focused on growth (Department of Finance Canada 2021, 139). However, espeically given targets for creating "anchor firms" in the life sciences sector by leveraging "late stage capital" (Canada's Economic Strategy Tables 2018, 5), it is surprising the orientation of the funds was not more expansionary. In fact, a 2022 VCAP report finds that the "primary stage focus of Canadian fund-of-fund commitments" was 56 percent committed to seed and early VC; for "high-performing" VCAP funds, this rose to 80 percent.[22] Nor have these initiatives been more directed to identifying and assessing scale-up capacity. Those concerns noted, the sums dedicated to the VC issue have nevertheless been substantial. From 2000 through to 2024, CDN$2.7 billion was allocated by the federal government to risk capital needs.[23]

VC Performance

Certainly, over the period in question, Canada's international standing on this parameter has risen since concerns were first articulated by STIC. As indicated in Figures 1 and 2, Canada over the time period between 2007 and 2023 stood third in line behind Israel and the United States in terms of total VC, and in start-up and other early-stage investments as a percentage share of GDP. Similarly, as indicated in Figure 3, the country stood third after Israel and the United States on later-stage investments, albeit the gaps between its investments and theirs were exceedingly large.

With respect to the early-stage indicator, the increase was substantive, moving from 0.040 percent of GDP in 2007 to 0.110 percent in 2023 — a 174 percent increase over the base year of 2007. If the increase is calculated between 2013 (when significant policy initiatives got under way) and the peak of 2021, the increase is even more robust, coming in at 430 percent. The late-stage, expansionary stage so necessary to innovation, however, has been a much harder nut to crack. As Figure 3 shows, these have been more muted, and undulating — registering some significant decelerations and ultimately coming in at only an 11 percent increase over the 2007 base year. With respect to the United States, the gap is particularly pronounced, with the United States having 3.3 times the Canadian performance on this indicator — even for Canada's peak performance year in 2021. Even with early-stage, it need be cautioned that gains have not been sustained, with 2022 and 2023 witnessing sudden and explicit downturns. Nevertheless, the overall performance of Canada in terms of total capital has been very robust, by 2021 registering an increase of 307 percent over the base year of 2007.

22 See Table 5 and Table 9, respectively, at https://ised-isde.canada.ca/site/sme-research-statistics/en/venture-capital-action-plan/venture-capital-action-plan-performance-metrics-report-december-31-2022.

23 Author's calculations; see Scharf (2022, chapter 7, annex A-7, table 1) for 2000–2020.

Venture Capital: An Assessment

Four dimensions stand out in evaluating these three national experiences — and indeed in the telling of these narratives. Interestingly, with respect to the implications for the theoretical framework employed, it is the countries with the most successful innovation records — Korea and Sweden — that have targeted efforts on early stages of VC investment in firms' development. In the Korean case, in particular, but also with respect to Sweden, there has a been a definitive pivot to high-technology enterprises. It is, in fact, Canada, with the least effective innovation record, that has wrestled with public initiatives situated along the innovation spectrum. This would seemingly suggest that, first, it is effective targeting of VC, rather than a broad sweep across the innovation spectrum per se, that may set enabling conditions for innovation. It also suggests, as discussed below, that there can be other critical factors in the national innovation system that are impacting pathways to innovation.

Second, what clearly emerges from these respective experiences are the distinct policy differences among the three countries' approaches to innovation issues. In the Canadian case, we do not see a council or agency advocating for change equivalent in weight and impact to the NIC chaired by the Swedish prime minister. Reports undertaken by Canadian advisory bodies to the government were critical, and their recommendations were duly embraced by policy makers of the day. However, the speed at which Sweden undertook changes, and the legitimacy given to this exercise by the NIC itself, do stand institutionally, and legislatively, apart. So is the Korean case distinct from the Canadian one. Grounded in overarching legislation, injected with very large sums of capital, and targeting high-technology SMEs, the Korean experience differs markedly from the Canadian one.

Of third import is the impact that these policy volleys (so to speak) have had on actual VC performance. Notably, in the Canadian context, this is not a case where the country has significantly underperformed. True, the innovation continuum still has VC gaps, and the late-stage dimension continues to be problematic, with those problems exacerbated by the effects of the pandemic. But in contrast with other areas in which Canada has struggled on innovation — policy durability, targeted resourcing, effective networking (Scharf 2022, 2024, 2025) — we do see evidence of progress, and change, which suggests that policy initiatives have had bearing on VC performance. Indeed, in the case of total VC investments as a percentage of GDP, there is, in large part, a moderate and escalating rise from 2013 onward following Budgets 2012 and 2013, at least until the precipice hit by all countries in 2022. And growth is especially pronounced for start-up and early-stage investments, following the policy thrust of 2013 — despite the pivot in 2013 to larger-scale capital.

Nor, from a comparative perspective, are the effects of a policy push diminished in the case of Sweden and Korea. As seen, deteriorating performance on early-stage VC in Sweden is significantly turned around following 2015 and (except for a small dip) lasts until the general peak for most countries of 2021. The absence of a stage breakdown for Korean data provides more limitations in terms of analysis. Nevertheless, what is particularly distinguishable is the very robust growth over the time series, as well as greater resiliency to deteriorating trends following the drop-offs in 2021.

Finally, this evidence — and the challenges Canada continues to have with innovation, despite the gains in VC — cautions against seeing VC as a "silver bullet" for resolving these difficulties. Indeed, as noted, this comparative work raises questions about the DNS framework itself. It may be that "patient" capital is not as critical a pillar for innovation outcomes as the framework itself suggests or, at least, it may be that it must operate in conjunction with other enabling factors. The Canadian case speaks to a truncated innovation ecosystem but in a more viable VC context. The Swedish experience highlights general

innovation robustness and a more tempered performance on VC. The Korean experience shows substantive innovation progress and, only since 2015, rapidly accelerating progress on VC. All these factors suggest a dynamic interplay in national innovation ecosystems that may pivot on several factors: policy consistency and targeting of areas ripe for development, vibrant innovation ecosystems, *and* VC.

Policy Implications

Apparent, however, even when "patient capital" is merely viewed on its own — and not in conjunction with other enabling conditions — is that Canada is showing sluggish performance in the post-pandemic years. Moreover, recent policy endeavours have been more diffuse. They lack the targeted approach that the Koreans have taken of focusing on high-technology SMEs that have the real potential to scale. Similarly, the policy volley in the Swedish case has been very directed at a specific stage, with largely demonstrable results. As with AI, where Canada is losing its competitive edge (Scharf 2025), and digitalization, where Canada has not kept up (Scharf 2024), policy efforts need to be focused.

First, if government efforts are serious about scaling SMEs to global competitors, the late-stage gap needs to be addressed. Without expansionary capital, firms are hindered from scaling. Second, informed criteria need to be set around how to accomplish this objective. Partnerships alone will not meet that goal: rather, serious consideration needs to be given to the determinants around grooming globally competitive firms. What are the thresholds for access not only to VC but also to experienced mentors, strategic business planning and specialized market knowledge? What are the criteria for SMEs to be brought into incubator programs? Most critically, to what extent should there be targeting of high-technology firms seeking access to VC with real growth potential and robust levels of R&D? These issues need to be addressed. Thought also needs to be given to mandating an existing agency (and not the creation of a new one) that has a clear mission around these goals and the institutional space to proceed with this agenda.

Conclusion

This research has highlighted the complexity of policy initiatives around VC and the intricate interwoven relationship with innovation — one that is by no means directly linear. Most critically, however, it highlights that, for Canada, the VC issue needs to be evaluated in terms of the overall problems Canada is facing with innovation. Singular policy efforts focused on just one domain — as important as VC is — are not sufficient. Venture capital policy, and investments, need to be integrated with clear and consistent priority-setting, rigorous analysis of vulnerabilities and weaknesses, and plans for targeting the types of industries where VC will bring scaling and growth. Without that road map and due diligence, policy efforts will continue to cycle, sometimes hitting the mark for a while and then not. Policy pieces floating out there on their own will not effectively combat the challenges in Canada's innovation ecosystem. Windows of opportunity can be narrowed quickly (as we have seen with recent VC performance).

Canada has an important and valuable start in terms of VC. If innovation is to weather the competitiveness and challenges of the current international environment, that capacity needs to be effectively leveraged and integrated with a tightly focused innovation strategy. Both the Republic of Korea and Sweden offer valuable policy directions from which Canada may draw.

Recommendations

- **The Government of Canada should consider a substantive rethink of VC needs and government allocations to the Venture Capital Action Plan.**
- **There needs to be a consolidated Venture Capital High-Technology Fund for SMEs that is equipped with clear targets.** These should include thresholds for what constitutes an eligible SME, regarding key aspects such as:
  - revenue and employment;
  - asset valuation; and
  - value of R&D expenditures.
- **The Government of Canada should undertake consultations around a potential mechanism for "credit guarantees."** These could be allocated, in a restricted manner, to very high-potential firms with intangible assets that are seeking to access VC.
- **Institutional capacity needs to be developed for a community of expert evaluators** who can assess the intangible assets and potential of SMEs seeking access to the Venture Capital High-Technology Fund.
- **Finally, the Government of Canada needs to do a wholesale evaluation of the VC situation in Canada**, including the gaps in stages and, most importantly, where VC priorities stand in relation to broader innovation priorities. This evaluation needs to be undertaken with key representatives of industry, government, academe and civil society organizations.

Author's Note

Translations in the text are generated by DeepL and edited by the author.

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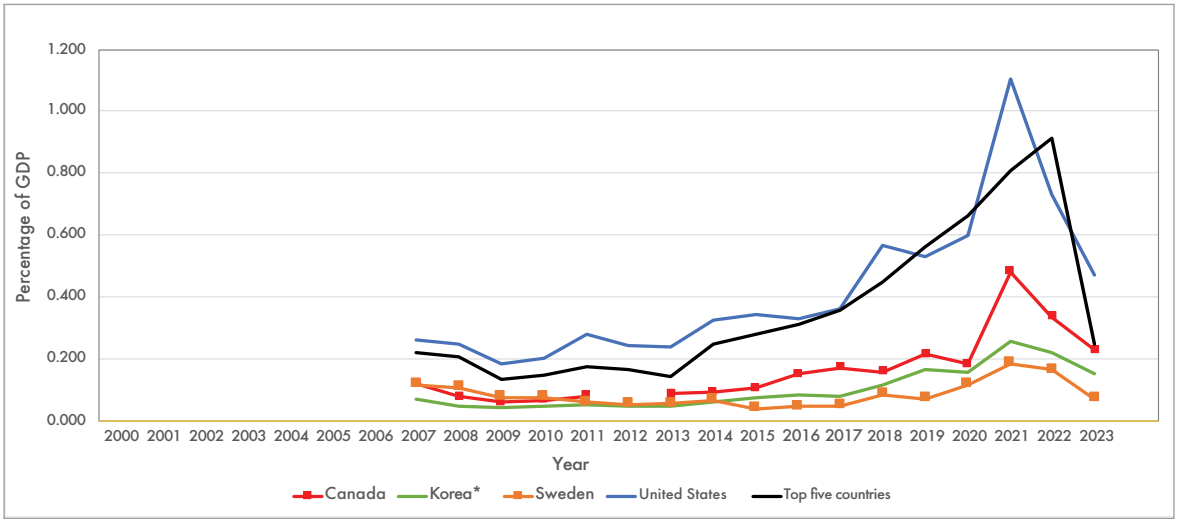
Figure 1: Venture Capital Investment – Total (Market Statistics)

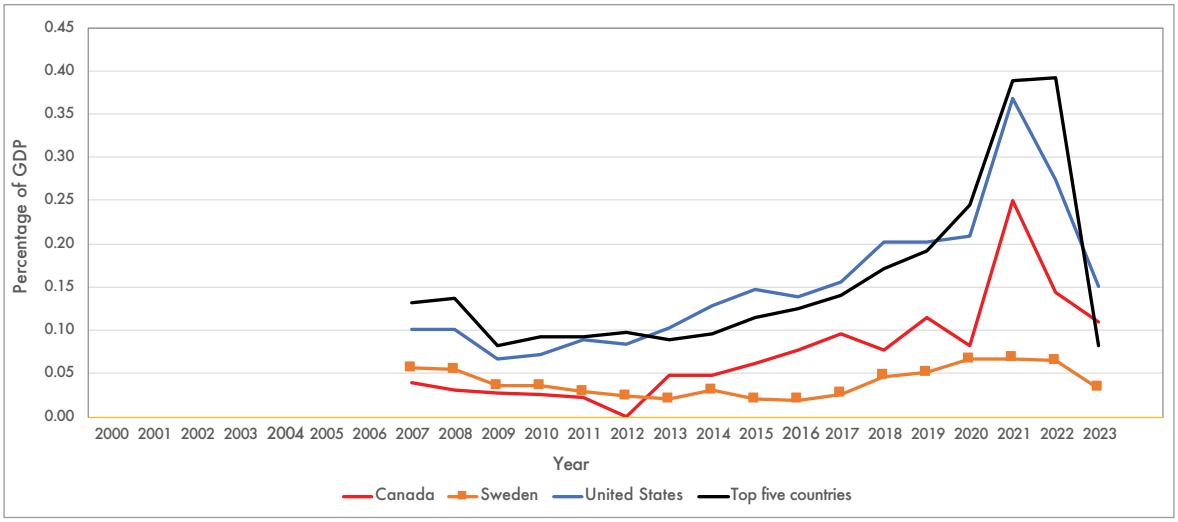
Dataset: Venture Capital Investments



Data source: OECD, https://data-explorer.oecd.org/vis?tm=venture%20capital%20investments&pg=0&hc[Topic]=&snb=13&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_VC%40DF_VC_INV&df[ag]=OECD.SDD.TPS&df[vs]=1.0&dq=.._T.PT_B1GQ.A&pd=2007%2C&to[TIME_PERIOD]=false&vw=tb.
Notes: *The Republic of Korea. Top five countries: Israel, United States, Canada, Korea, Estonia. Canada is missing data for 2012. Entries only begin in 2007. Data on VC breakdowns by stage is not available for Korea, New Zealand, the Russian Federation and South Africa. Data accessed on October 25, 2024 at 3:41 p.m. EST.

Figure 2: Venture Capital Investment – Start-up and Other Early Stage (Market Statistics)

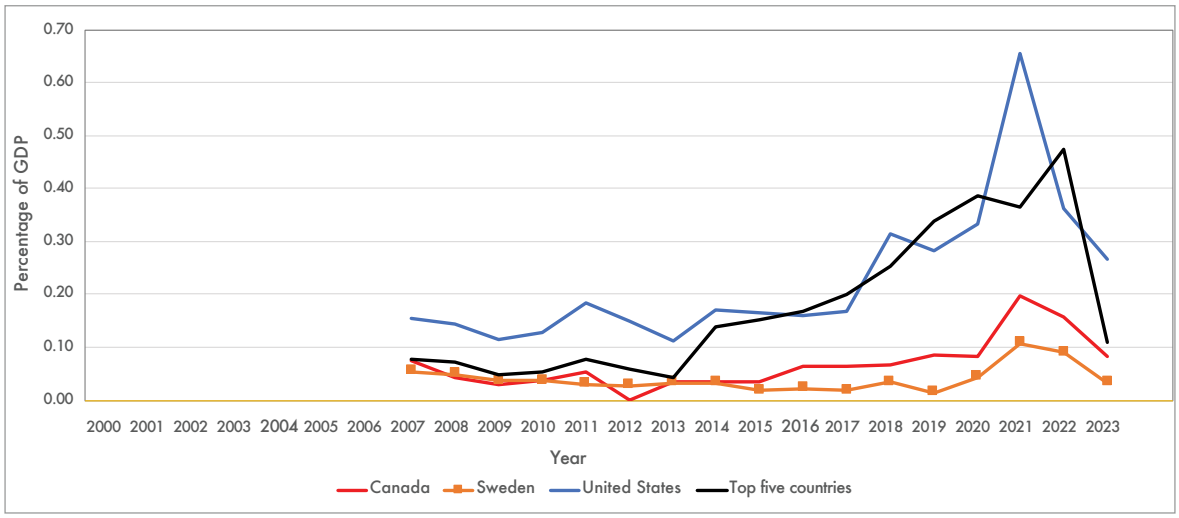
Dataset: Venture Capital Investments



Data source: OECD, https://data-explorer.oecd.org/vis?tm=venture%20capital%20investments&pg=0&hc[Topic]=&snb=13&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_VC%40DF_VC_INV&df[ag]=OECD.SDD.TPS&df[vs]=1.0&dq=..START%2B_T.PT_B1GQ.A&pd=2007%2C&to[TIME_PERIOD]=false&vw=tb.
Notes: Top five countries: Israel, United States, Canada, Estonia, Sweden. Canada is missing data for 2012. Entries only begin in 2007. Data on VC breakdowns by stage is not available for the Republic of Korea, New Zealand, the Russian Federation and South Africa. Data accessed on October 25, 2024 at 3:41 p.m. EST.

Figure 3: Venture Capital Investment – Later Stage (Market Statistics)

Dataset: Venture Capital Investments



Data source: OECD, https://data-explorer.oecd.org/vis?tm=venture%20capital%20investments&pg=0&hc[Topic]=&snb=13&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_VC%40DF_VC_INV&df[ag]=OECD.SDD.TPS&df[vs]=1.0&dq=..LATER%2B_T.PT_B1GQ.A&pd=2007%2C&to[TIME_PERIOD]=false&vw=tb.
Notes: Top five countries: Israel, United States, Canada, Estonia, Sweden. Canada is missing data for 2012. Entries only begin in 2007. Data on VC breakdowns by stage is not available for the Republic of Korea, New Zealand, the Russian Federation and South Africa. Data accessed on October 25, 2024 at 3:41 p.m. EST.

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Acronyms and Abbreviations

AI	artificial intelligence
BDC	Business Development Bank of Canada
DNS	developmental network state
KFoF	Korea Fund of Funds
KOTEC	Korea Technology Finance Corporation
KVIC	Korea Venture Investment Corporation
NIC	National Innovation Council
OECD	Organisation for Economic Co-operation and Development
R&D	research and development
SMEs	small and medium-sized enterprises
STIC	Science, Technology and Innovation Council
VC	venture capital
VCAP	Venture Capital Action Plan

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