

Canada's Venture Capital Landscape: Challenges and Opportunities

June 2017

Message from the Executive Vice President

BDC Capital is pleased to present this report on Canada's venture capital landscape. As Canada's most active venture capital investor, we collect and analyze a wealth of information about the industry, and share it to support discussion and decision-making among stakeholders.

The industry has made substantial progress in recent years. We hope this report will contribute to your understanding of where we stand today and the opportunities and challenges that lie ahead as we continue to build on this momentum.

The VC industry plays an essential role in helping our most innovative companies scale up to compete with the best in the world. When they succeed, they make an irreplaceable contribution to a more prosperous Canada. We believe we have all the tools to create a new generation of international champions.

Together, we can make it happen.

Jérôme Nycz

Executive Vice President, BDC Capital

Table of contents

- 1** Innovation in Canada
- 2** An overview of the Canadian VC sector: Positive momentum
- 6** A sector-by-sector analysis of VC performance
- 10** Higher investment levels, but stagnating exits
- 12** Digging into the root causes of Canada's scaling issue
- 17** Keeping up the momentum

Innovation in Canada

There has been a tremendous amount of interest in Canada's technology sector, particularly in the context of a desire to accelerate innovation in Canada. Indeed, the federal government has presented an ambitious innovation agenda with a strong emphasis on creating tech champions and a dynamic venture capital (VC) industry.

Part of the mandate of BDC Capital, the investment arm of the Business Development Bank of Canada, is to strengthen the innovation ecosystem in Canada. As part of this work, BDC Capital has conducted a number of research projects over the past year aimed at improving its understanding of the VC industry and informing stakeholders on high-level trends.

One of these research projects was last year's *Creating Champions: A Report on Roundtable Discussions on Innovation*, which examines barriers to scaling Canadian tech champions. It includes an analysis of the challenges facing the VC industry in creating tech champions and offers a series of proposed improvements.

The goal of this paper is to provide insights into some of the major trends affecting the venture capital industry. We are grateful to the different partners involved in helping to develop these insights, particularly the Canadian Venture Capital Association (CVCA).

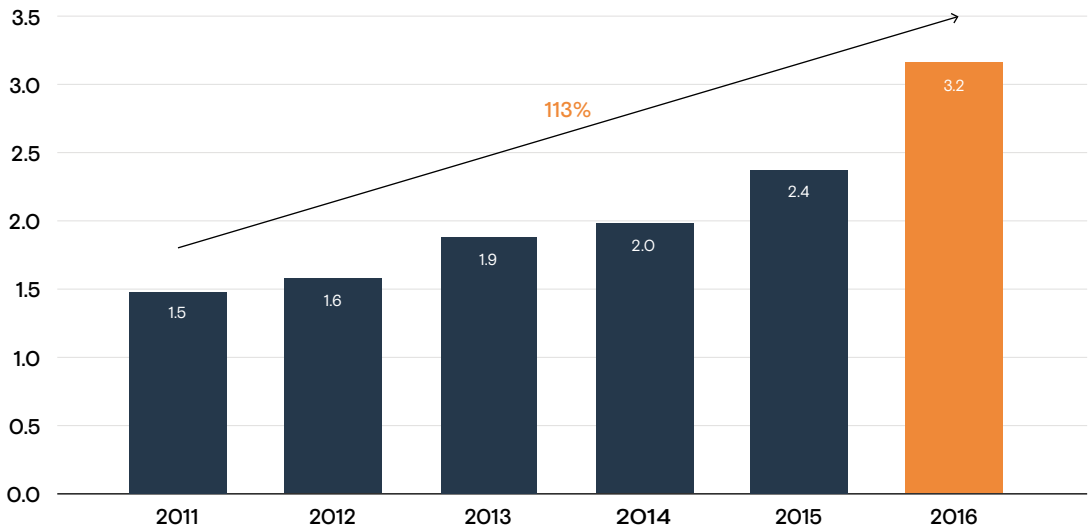
An overview of the Canadian VC sector: Positive momentum

Canadian policymakers and other stakeholders have made strengthening the VC sector a priority, based on an understanding that a strong VC industry is critical to developing a vibrant tech ecosystem. Recent trends indicate solid progress has been made in this effort.

An important metric for the health of the sector is the total amount of venture capital invested in the country. Here, there has been a steady upward trend with a 113% increase in the total amount of venture capital invested in Canada over the last five years. In 2016, \$3.2 billion in VC investments were made in Canada, compared to \$1.5 billion in 2011.¹ This was coupled with a 19% increase in the number of fundraising rounds over the same period, with 530 deals in 2016 compared to 445 in 2011.² One important caveat is that the average round size has not increased as rapidly as has been observed in other countries. Since 2013, average deal size in Canada increased by only 16% versus 77% in the U.S. and 123% in Great Britain.³ We shall return to this point and its implications later in the paper.

Figure 1

Total venture capital invested in Canada annually*
C\$ billions, 2011-2016



* Dataset includes verified completed equity or quasi-equity venture capital deals only (non-equity or project-based government funding, pharmaceutical product development deals, senior debt, VC-backed acquisitions, and angel financing are not included)

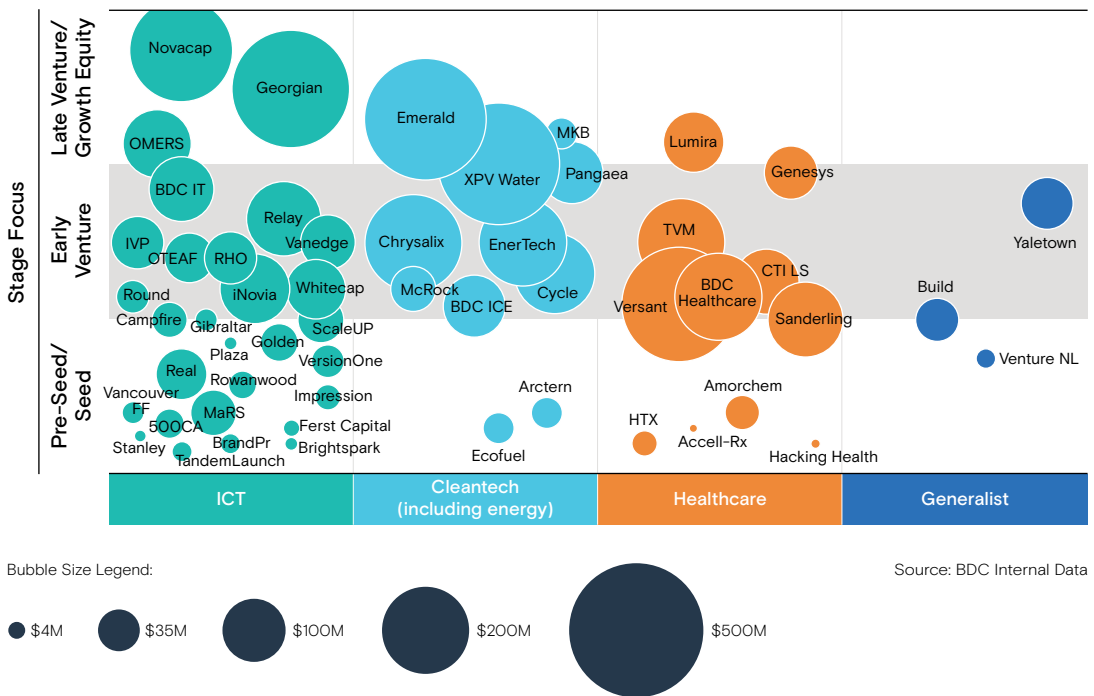
Source: CVCA, Thomson Reuters

1 CVCA
2 CVCA
3 Pitchbook

A recent \$85 million initial public offering of BDC portfolio company Zymeworks, a Vancouver-based biotech company, as well as a \$156 million initial public offering by Real Matters, an Ontario-based network management services platform for the mortgage and insurance industries, were a positive signs that round sizes may be set to increase in Canada. If more Canadian companies follow in Zymeworks's and Real Matters's footsteps and successfully complete IPOs, the ability of other firms to raise large, later stage VC rounds will be significantly enhanced, paving their way to becoming global champions.

In addition to increased overall investment levels, another key indicator of a strengthening VC sector has been an increase in the number of VC general partners (GPs). There were 44 active Canadian GPs in 2016 compared to 25 in 2011, a 76% increase.⁴ The number of new emerging general partners⁵ has increased to 31 from 21 since 2011. We also note a high level of GP survival. Many have existed for more than five years and successfully raised their second or third funds.

Figure 2
Overview of active funds in the Canadian VC sector⁶

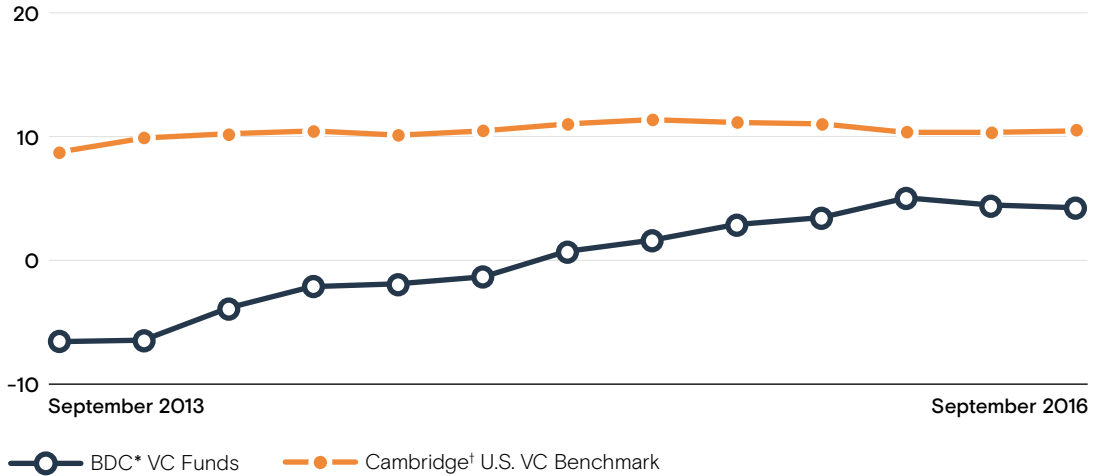


Note: Bubble size represents actual/expected fund size (C\$). Fund size includes full commitment amount—not all capital will be deployed in Canada (some cross-border investing)

4 Sources: BDC VC Portfolio, CVCA, Pitchbook and Preqin. Active GPs defined as those being within their investment periods and based in Canada. Includes VC funds of all strategies and across sectors and >\$10M, but excludes accelerators and company creation studios
 5 "Emerging" GPs defined as those on their first or second funds
 6 Includes most recent active private VC funds of foreign GPs which are Canada focused (2008-2016), as well as accelerators and company creation studios

Higher investment returns have been the other key factor in the improved performance of the Canadian VC sector. Stronger performance attracts new capital into the market. While there is no Canadian benchmark, we use BDC internal data drawn from our investments in Canadian VC funds. We compare the overall performance of these funds to the Cambridge Associates U.S. VC benchmark.

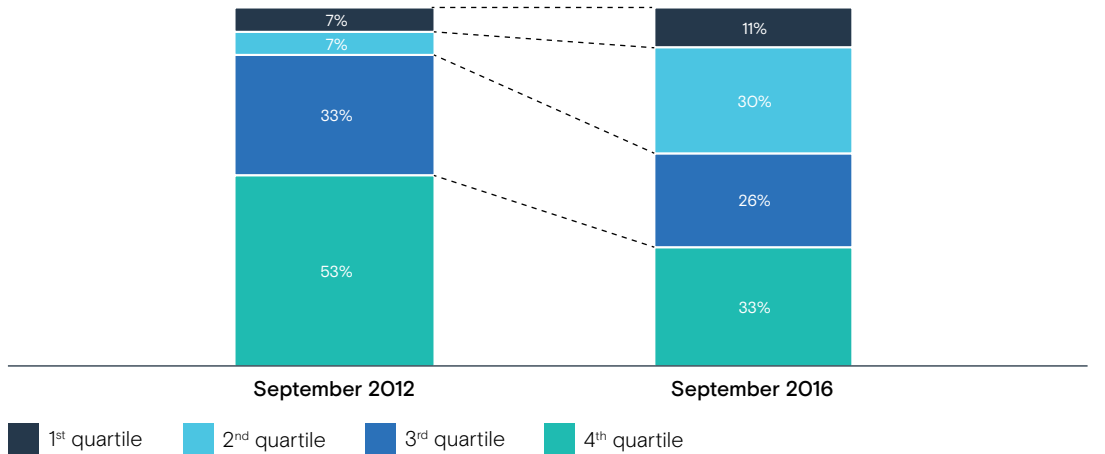
Figure 3
10-year VC return (IRR) trend
 %, Sept. 2013 - Sept. 2016



* We are an LP in VC funds representing ~70% of the venture capital investing actively in Canada. The 10 year IRR includes 50 Canadian VC funds and excludes foreign funds, PE funds, accelerators, company creation studios, funds of funds, VCAP, internal funds (IT, ICE, Healthcare)
 † Cambridge US VC Benchmark tracks the performance of US Venture Capital; published quarterly last on September 30, 2016

Source: Cambridge Associates, Prequin, BDC Internal Data

Figure 4
Fund Quartiles*—relative performance of Canadian GPs
 % Canadian GPs by performance quartile (TVPI-based) vs Cambridge benchmark



* Quartile assessment includes all funds accessible to BDC through its portfolio and VCAP: 15 funds in Sept 2012 and 27 funds in 2016. Cambridge benchmark includes fund vintages up to 2014 only as the last two years are considered too recent to have meaningful performance

Source: Cambridge Associates, Prequin, BDC Internal Data

We saw a positive trend in the 10-year internal rate of return (IRR) between 2013 and 2016. During this period, Canadian fund performance closed the gap with respect to U.S. funds, generating a plus 4% IRR in 2016 compared to minus 7% in 2013.⁷ In addition, when we compared the quartile performance of Canadian funds versus U.S. funds, we found that more than 40% of Canadian funds would have ranked in the top two U.S. quartiles in 2016, compared to just 14% in 2012. This is a very positive trend, pointing to a more vibrant VC sector. However, it is important to exercise caution when looking at the most recent IRR numbers due to the high proportion of these returns that remain unrealized. Using BDC's own portfolio of funds as a proxy, only 38% of the total value reported is attributable to realized investments, with the rest being mark-to-market.⁸ In other words, investors have realized some gains, but the bulk are yet to come.

In addition, the above analysis is predicated on the view that venture capital acts as a single asset class, representative of overall ecosystem trends. However, VC is actually the sum of several different sectors, with fundamentals that are unique to each. Therefore, BDC analyzes the industry by looking at our three major sectors—information and communications technology (ICT), healthcare and cleantech—independently. This deeper level of analysis allows for a better understanding of where challenges and opportunities lie for VC.

⁷ BDC indirect VC portfolio net performance, as of September 30, 2016

⁸ BDC indirect VC portfolio, as of September 30, 2016

A sector-by-sector analysis of VC performance

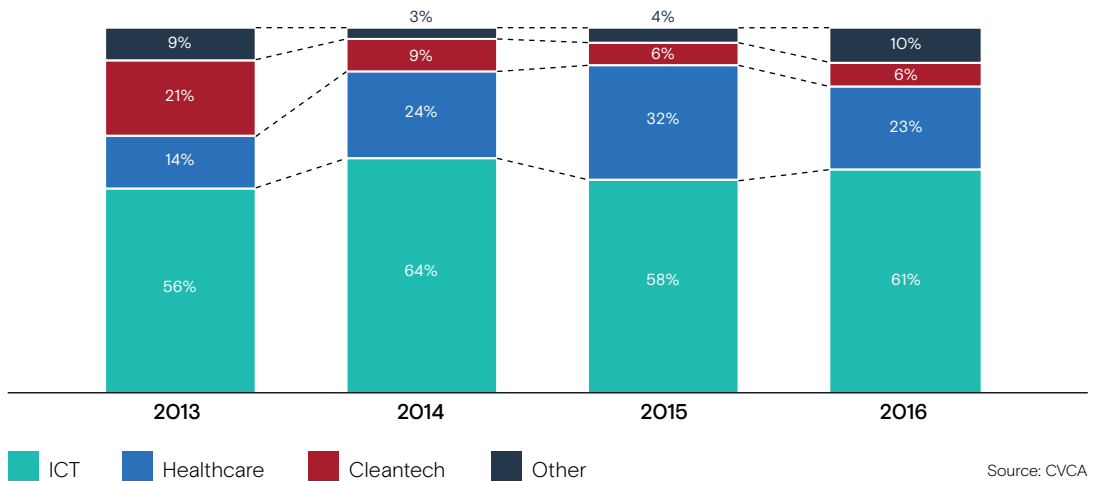
In considering VC performance sector-by-sector, the first point to note is that an increasing number of companies exist at the intersection of major sectors (e.g., a medical imaging company is in both healthcare and IT). This trend can be mainly attributed to the growing importance of IT—the ability to generate, interpret and derive insights from data is becoming a core competency of new businesses in all sectors of the economy.

Additionally, IT-focused business models tend to be capital light and scalable, which makes them very attractive to VC investors. The importance of this type of business has been confirmed in recent years, with sectors such as artificial intelligence (AI), the Internet of things and fintech drawing a lot of attention despite being practically non-existent five years ago. An example of this trend is the high level of interest in AI in the healthcare sector. Here, products range from pure IT (e.g., IBM's Watson technology) to IT-enabled (e.g., Imagia, medical imaging). For the purposes of our analysis, businesses with a clear sector focus will be classified as belonging to that specific sector rather than IT.

Looking at VC investment activity by sector, we observe a pronounced shift in how capital has been allocated over the last four years. Over this period, cleantech saw its share of total VC investment decline to only about 6% last year from 21% in 2013,⁹ while ICT and healthcare both saw increasing investment levels during the period.

Figure 5

Canada VC Investment activity by sector 2013-2016, %



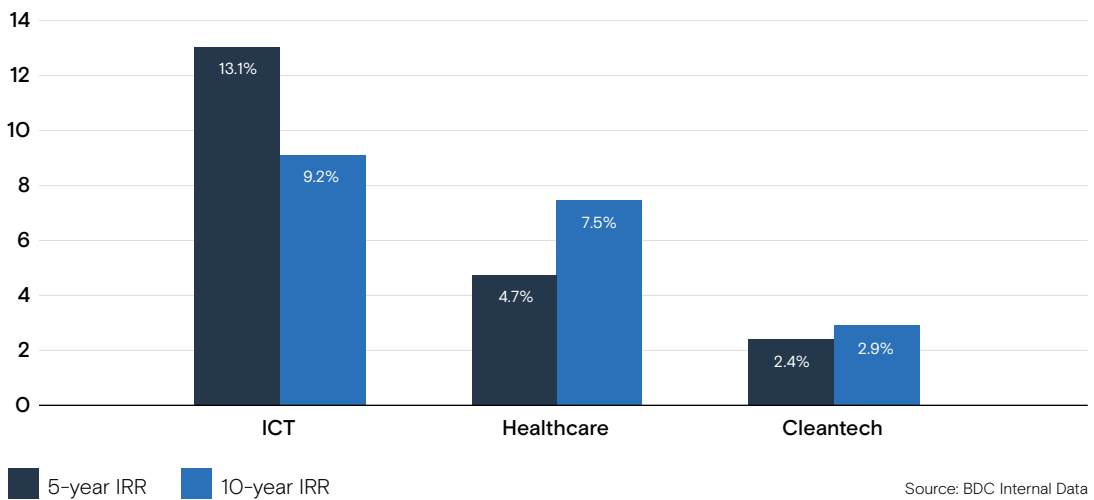
Cleantech

The lower investment in cleantech observed in Canada in recent years is consistent with a trend observed in the U.S. of capital slowly exiting the sector. Poor investment returns appear to be the reason for the pullback. A recent MIT working paper noted that from 2006 to 2011, VC funds in the U.S. lost over half of the \$25 billion they had invested in cleantech start-ups,¹⁰ leading investors to reduce their capital allocation to the sector in the following years.

Looking at IRR performance by sector confirms that the re-allocation of capital from cleantech to ICT and healthcare has been driven by the better performance in the latter two sectors, with the gap widening in the last five years. The low returns in cleantech can be partially explained by a decline in interest in the sector in the context of plummeting energy prices, as well as lack of established corporate acquirers for many of these businesses. However, it's interesting to note returns remain positive for the Canadian cleantech sector as a whole, pointing to greater opportunities than in the U.S.

Figure 6

Gross IRR by Sector in Canada (%)¹¹



At the same time, lower returns achieved by VCs on their cleantech investments have had the positive effect of leading to a refinement of investor thinking about the sector. Increasingly, funds have moved away from more capital-intensive businesses in such areas as hardware and materials to invest in capital-light models, such as software-enabled devices (i.e., the industrial internet of things). This new, stronger VC investment thesis, combined with the federal government's desire to see Canada become a global leader in cleantech, may lead to a reversal in the sector's fortunes.

¹⁰ "The Wrong Model for Clean Energy Innovation", MIT Energy Initiative, July 2016

¹¹ BDC indirect VC portfolio gross performance. The calculation includes Canadian investments from Canadian private VC funds, foreign funds with a GP presence in Canada and Canadian Fund-of-Funds

Healthcare

In the healthcare sector, a strategy shift toward concentrating much more on product-focused companies (i.e., biotech firms that develop a single family of molecules) was initiated nearly 10 years ago by leading Canadian GPs as a response to their own capital constraints.¹² This strategy enabled them to manage risk exposure and capital deployment while maintaining the ability to generate returns, however, this led to a generation of companies with a single path to liquidity (acquisition) and limited growth options.

However, biotech businesses tend to be very capital intensive, and therefore Canadian companies and investors have had to rely on foreign investors to fund large portions of rounds to keep companies moving along the development path. For example, Clementia and Zymeworks alone have raised over \$200 million in the last 18 months,¹³ which is over half the size of all but one of Canada's VC healthcare funds (the exception being Quark Venture).¹⁴ As highlighted earlier in this paper, the public markets could be an excellent source of growth capital for many of these companies. If Zymeworks is successful following its IPO, stock market investors are likely to be more receptive to this type of company. As a result, firms could reduce their reliance on foreign private investors and have a better chance of remaining independent.

The good news is Canadian companies, universities, and research centers are producing strong research results. This performance, combined with rapidly improving investment returns and strong foreign investor interest, may attract more specialized GPs to the sector. With only 11 VC funds specializing in healthcare in Canada currently,¹⁵ there appears to be many more attractive investment opportunities than investors to fund them. An example which underlines this fact is that one of the largest VC funds in healthcare in Canada is Versant Ventures, which is actually a U.S. GP. They have been deploying large amounts of capital across Canada in early biotech, notably through their co-funding of a \$225 million series A round in BlueRock Therapeutics, a Toronto-based regenerative medicine company.

¹² Internal BDC research

¹³ Company press releases

¹⁴ Assuming Quark Ventures successfully closes on their full proposed US\$500 million fund

¹⁵ Excluding company creation studios, but including Canadian funds operated by US GPs

ICT

Over the last several years, the ICT sector has been a core driver of the strengthening Canadian VC ecosystem. The sector has seen several successful exits, including a few notable IPOs, such as those by Shopify and Kinaxis. These positive results have provided tangible proof that Canadian companies can grow and become global leaders.

One of the major themes currently driving investment activity in the sector appears to be the next wave of big data. This evolution involves the acquisition of new types of data, such as that generated by Internet of things (IoT) applications, and finding new ways of producing insights from it through AI. Consistent with this thesis, IoT businesses saw a 154% increase in funding in 2016 compared to the previous year for investments totaling \$306 million (16% of total ICT investments).¹⁶

AI started attracting a lot of attention in 2016 when the federal government announced \$213 million in funding to three Canadian universities for AI and big data research with the goal of turning Canada into a leading hub in the sector.¹⁷ The excitement grew when Microsoft and Google announced they were setting up AI research centres in Montreal, after acquiring top talent and contributing funding to other Canadian AI initiatives such as the Montreal Institute for Learning Algorithms (MILA) and The Vector Institute in Toronto. These recent successes are the fruit of expertise built up over a decade of investment in fundamental research by Canadian public institutions such as the Canadian Institute for Advanced Research. Most recently, the federal government announced an additional \$125 million Pan-Canadian Artificial Intelligence Strategy to support research and talent development, further confirming Canada's position as a global leader in AI. However, AI has yet to produce large, profitable businesses in Canada. Most of the capital and excitement to date has been directed towards research. The ability of AI to create attractive returns for investors over the next several years will depend, in large measure, on the VC industry's ability to help entrepreneurs shape innovative business models for tomorrow's economy.

¹⁶ CB Insights, PwC, CVCA

¹⁷ Canada First Research Excellence Fund announcement on September 6, 2016

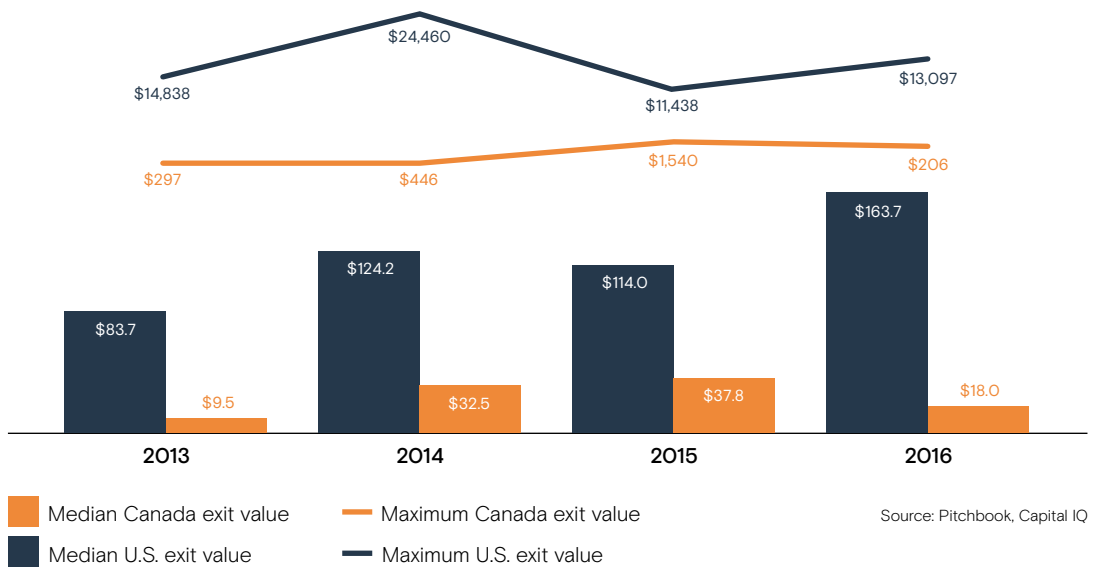
Higher investment levels, but stagnating exits

Despite the generally positive trends for VC in Canada, our research has also highlighted a persistent challenge: A difficult exit landscape. The main issue with exits in Canada is that VC investors earn substantially less than those in other countries when they exit businesses.

Comparing the median exit size in 2016, Canadian exits were nearly an order of magnitude smaller than those in the U.S. (\$18 million versus \$164 million).¹⁸ Based on the traditional venture capital model where one or two large exits in a portfolio drive an entire fund's return, Canada's ability to obtain exits of over \$500 million is a critical component in bringing fund performance more in line with that of U.S. peers.

Figure 7

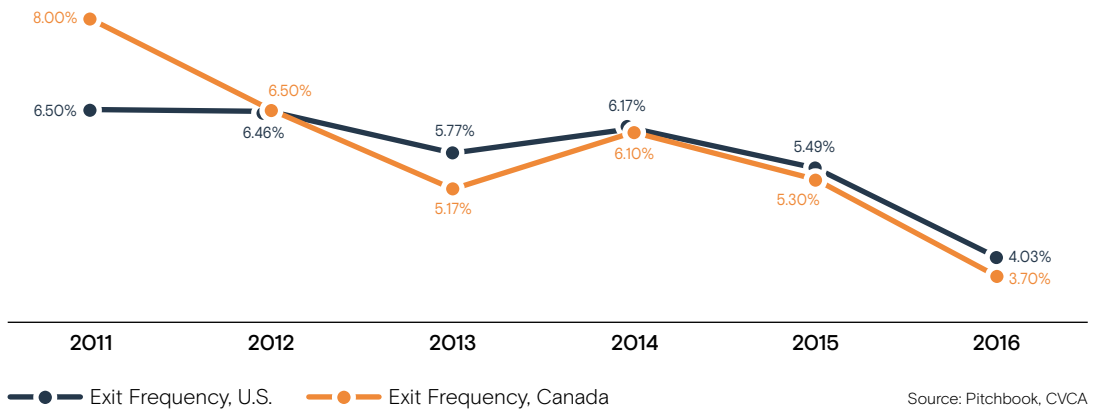
Median VC exit value
Canada vs U.S.
C\$, millions, 2013-2016



Looking deeper into the numbers, the smaller median exit size does not appear to be offset by a higher rate of successful exits. In fact, Canada has a slightly lower exit frequency than the U.S. (exit frequency being defined as total companies exited in a given year divided by the total number of companies having received funding.) This confirms that Canada's smaller exit sizes truly are the result of an underlying problem of scaling up companies and not the result of a different risk/return profile favored by investors.

Figure 8

Exit frequency of Canadian and U.S. VC-backed companies (2011-2016)¹⁹

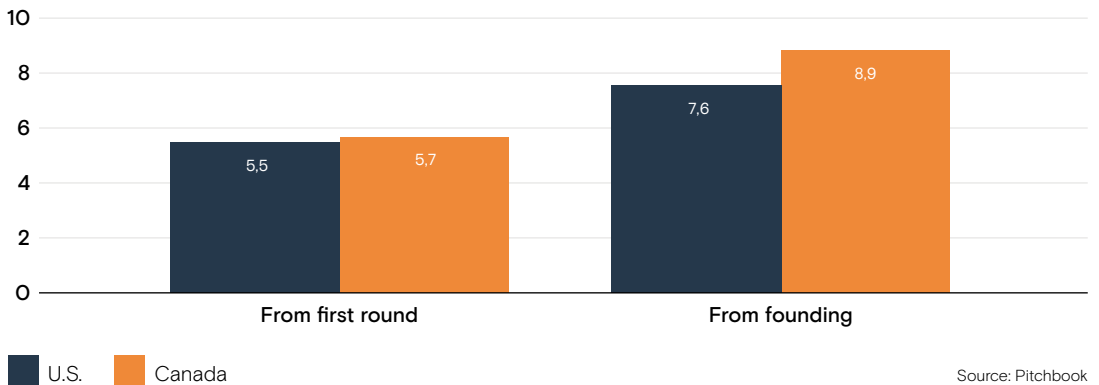


Similarly, the smaller exit size does not appear to be driven by shorter times to exit. By analyzing the average time between a firm's first round of VC funding and its exit, it becomes apparent there is no consistent statistical difference between the experience in Canada and the U.S.

However, expanding the analysis to look at the time between a firm's founding and its exit reveals an interesting additional piece of information. It would appear that companies in Canada bootstrap longer than their U.S. peers. Our analysis indicates that it takes Canadian companies an average of one to two years longer to receive funding after their founding than their U.S. counterparts. This is consistent with what we have seen anecdotally in the market—Canadian VCs demand to see more progress from a company before extending a first financing than their U.S. colleagues.

Figure 9

Average time to exit of Canadian vs U.S. VC-backed companies in years, average of firms exited 2011-2016²⁰



¹⁹ Pitchbook
²⁰ CVCA, Pitchbook

Digging into the root causes of Canada's scaling issue

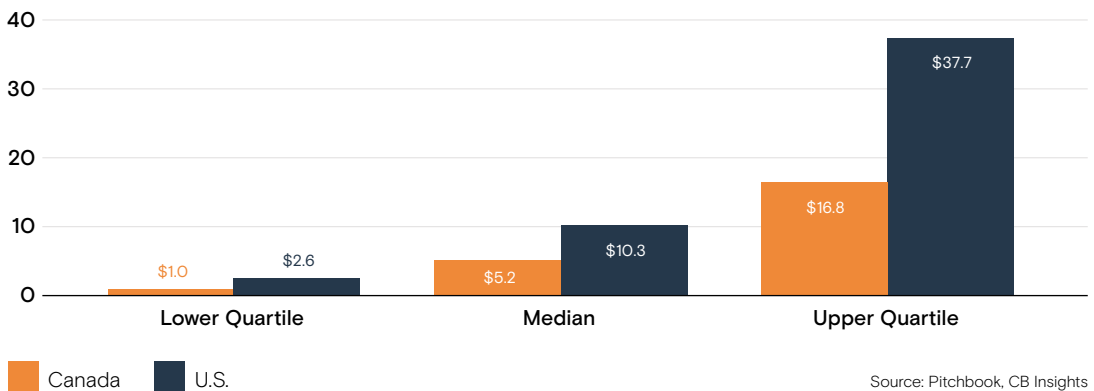
Given that VC investment conditions are improving in Canada but that scaling issues are persistent, it is necessary to perform a more thorough analysis of the potential root causes of stubbornly small Canadian exits. It's important to note that many of these issues are systemic in nature and therefore cannot be resolved by the actions of any single ecosystem participant.

The first item to clarify is that the vast majority of businesses in Canada can expect their exit route to be via an acquisition rather than an IPO. Over the last five years, IPOs accounted for about 5% of total successful exits, and there were two years (2012, 2016), where there were no IPO exits at all.²¹ By contrast, about 8% of U.S. companies chose the IPO route in the same period. This difference can be traced to the fact Canadian companies tend to be smaller, which makes them ill-suited to the public market.

We believe one of the primary causes of the smaller size of exits in Canada is the smaller average size of VC funds. The average Canadian fund size is \$111 million in contrast to \$172 million south of the border.²² Smaller funds write smaller cheques, forcing their portfolio companies to operate in a capital constrained environment. In fact, Canadian companies only raise half as much capital on average over their lifetimes as their U.S. peers.²³

Figure 10

Lifetime capital for exited VC-backed companies in Canada vs U.S.
US\$, million, Jan. 2013-Oct. 2016

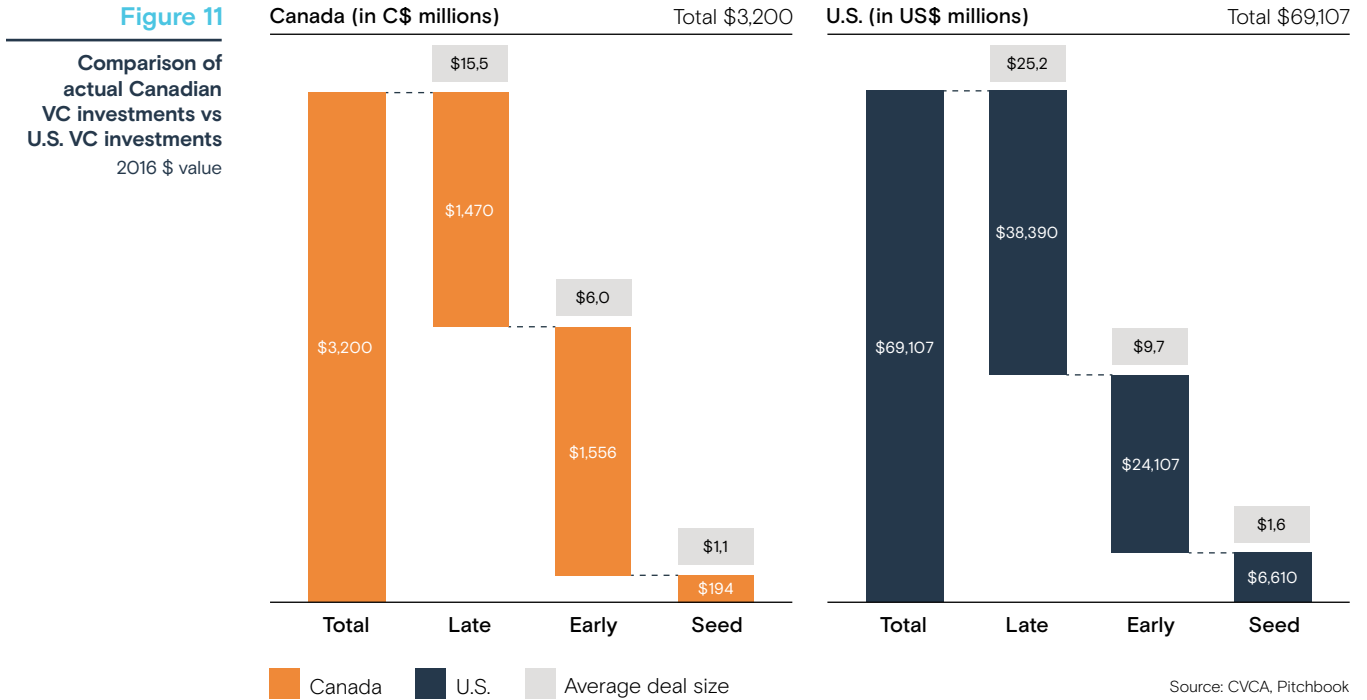


21 Pitchbook, CVCA

22 CVCA, Pitchbook, Preqin, BDC FOF Portfolio

23 Pitchbook, CB Insights

The fact Canadian VC funds are smaller than international peers has led them to invest less capital in later stage companies. For example, in Israel and Britain, 60% and 41% respectively of total VC investments are allocated to later stages, while in Canada the figure is 46%. The U.S. falls in the middle of the range with nearly 56% of U.S. VC money going to companies in the expansion or later stages.²⁴



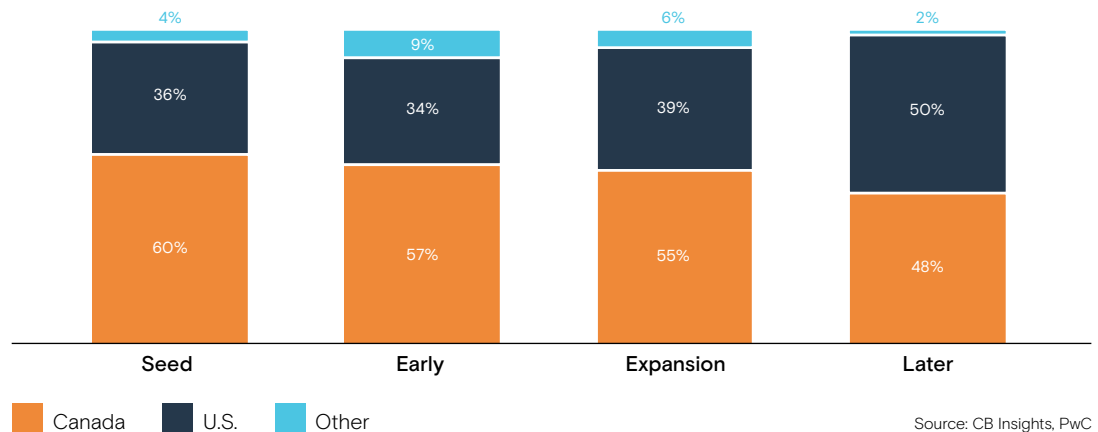
Part of the ecosystem's solution to insufficient levels of late-stage growth capital in Canada has been to attract high levels of foreign investment in later stages. In Canada, foreign investors contribute approximately 40% of total venture capital, with a skew towards the late stage where their representation increases to approximately 50%²⁵.

While attracting foreign investment is a good thing on a macro-economic level, it can become problematic if many of Canada's most promising high-tech businesses end up being acquired by foreign companies and cease to have substantial activity in the country. That being said, there are numerous examples which show that acquisitions by foreign companies can lead to accelerated growth in Canada. Q1 Labs, for example, was purchased by IBM in 2012 and has since doubled its staff at its headquarters in Fredericton.

²⁴ CVCA, NVCA, Pitchbook, IVC, Geektime
²⁵ Thomson Reuters, CB Insights, PwC

Figure 12

Location of VC investors in Canada by investment stage
 % of dollars invested by country of origin, 2016



Another potential explanation for smaller exit sizes in Canada is the low degree of corporate involvement across most sectors of the economy (financial institutions are a notable exception, as they are increasingly involved with start-ups). The low level of corporate support makes it more difficult for start-ups to succeed. It limits their access to funding; takes away major local customers; and reduces the number of potential acquisition partners. In fact, large corporations have accounted for less than 10% of VC funding in the country over the last five years.²⁶ Comparing established Canadian corporations to their U.S. peers shows that even on a size-adjusted basis, the largest Canadian corporations contribute approximately 10 times less resources to financing and purchasing VC-backed companies than their peers south of the border.²⁷

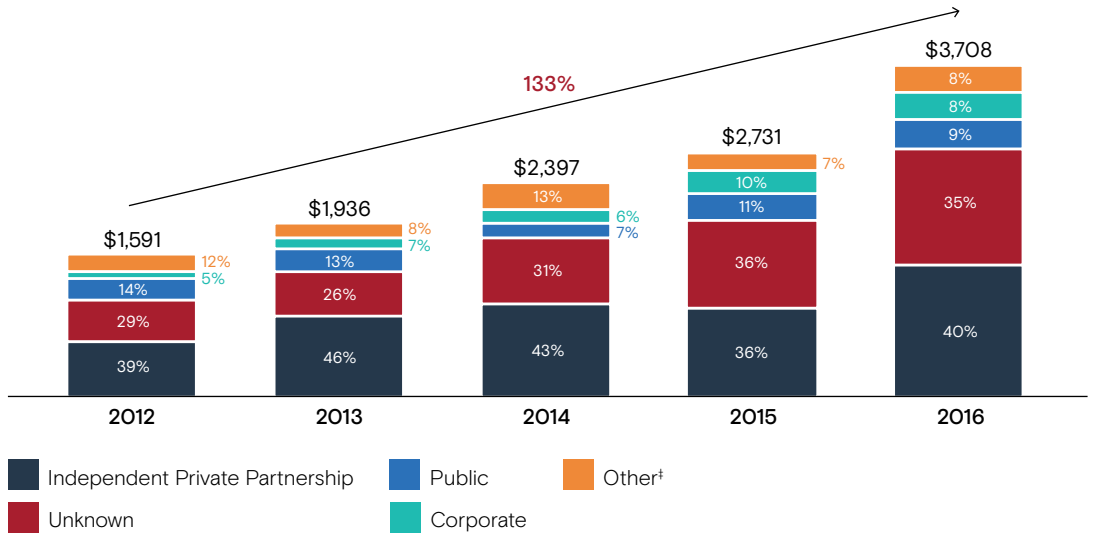
However, we need to take into account a number of recent initiatives that Canadian corporations have recently undertaken and which are not adequately reflected by only looking at the numbers.

- Many Canadian corporations have been heavily involved with Communitech since its launch, greatly enhancing the opportunities for interactions between themselves and promising startups.
- ScaleUP Ventures received funding and ongoing support on their leadership council from dozens of established corporations.
- The Canadian Corporate Innovation Summit showed high levels of interest and engagement from leading Canadian players.
- High levels of implication and interest in AI investment from both domestic corporations and the Canadian divisions of foreign multinationals.
- Business Council of Canada (BCC) taking action to get corporate Canada more involved in innovation.

²⁶ Thomson Reuters
²⁷ BDC, Pitchbook, Fortune, Globe and Mail

Figure 13

Breakdown of VC investors in Canada by investor type*
 C\$ millions, 2012-2016



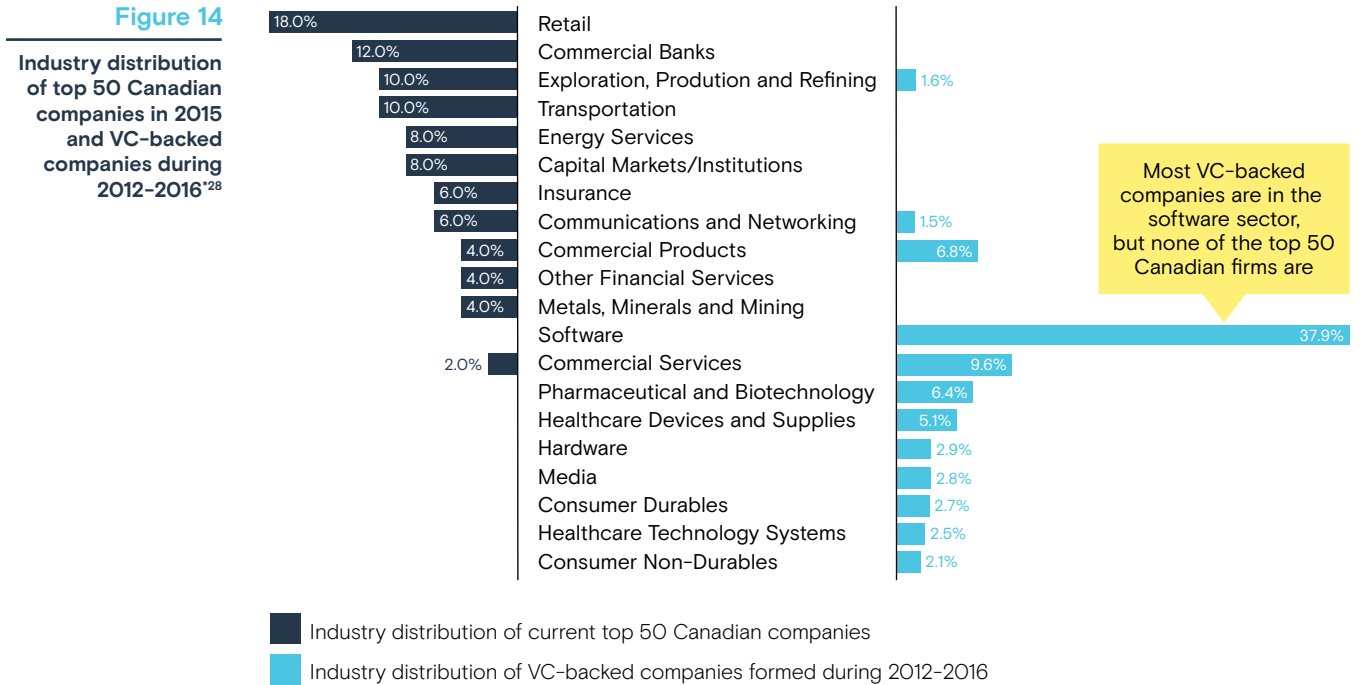
* Unknown investors are typically undisclosed co-investors in larger deals
 † Overall invested amounts may differ from other figures reported in this report due to accounting differences between Thomson Reuters and the CVCA
 ‡ Includes retail funds, money managers, etc.

Source: Thomson Reuters

BDC's Canadian Corporate Innovation Summit

As part of BDC's market development role, we organized in April 2017 our first Corporate Innovation Summit with the ambitious goal of bringing established corporations closer to start-ups and highlighting the importance of innovation. The summit brought together almost 300 people from 114 companies and featured keynote addresses from Elyse Allan, President and CEO of GE Canada, Tom Jenkins, Chairman of OpenText, and his Excellency The Right Honorable David Johnston, Governor General of Canada.

Canadian corporations do, however, have a reasonable explanation for their relatively low investment levels in VC-backed companies. A large majority of established Canadian corporations operate in different sectors than VC-backed start-ups. In addition, Canada's economy is heavily skewed towards resource industries, which have traditionally been late adopters of technology. This explains why large Canadian corporations are rarely acquirers of start-ups. Increasing sector alignment between corporations and start-ups will likely require not only re-focusing by VC funds, but also the growth of several VC-backed firms into well-established corporations, that will in turn become acquirers, a process that will take several years.



* "Top 50" companies as measured by the highest last reported annual revenue

Source : Pitchbook, Globe & Mail, company websites

Keeping up the momentum

Based on insights gleaned from our research into the barriers to scaling up Canadian tech companies and the analysis performed for the current report, the two following trends were highlighted as being the most likely drivers of increasing VC performance in the coming years.

- **Closing financing gaps**—There is a general recognition that the Canadian venture capital ecosystem has improved in recent years. However, there is also agreement that three improvements are needed in VC financing to further strengthen the ecosystem:
 - Increase the number of large, top performing VC funds in Canada that can provide late-stage VC (Series B and onward). This would allow the Canadian industry to compete with foreign capital and create more global tech champions by growing firms to a larger size and improving their odds of becoming successful IPO candidates.
 - Strengthen the skills of current VC general partners.
 - Support efforts to provide early liquidity to founders to help them scale their companies.
- **Corporations in Canada need to play a stronger role—but in the right way**—Large corporations need to be more engaged in supporting the ecosystem. Canada's corporate leaders should be encouraged to develop specific proposals and programs to encourage greater corporate engagement with early-stage firms, whether through partnerships with existing programs (e.g., Communitech) or through greater direct collaboration with start-ups.

As part of BDC's role in developing the Canadian ecosystem, we have recently launched a series of initiatives to address these priorities. Some of the most notable ones are:

- A new \$50-million fund is designed to support women-led tech businesses.
- GP Academy, an initiative in partnership with the Kauffman Fellows, is aimed at developing GPs so their skills are on par with the best in the world.
- A growth equity team acts as a bridge between the VC and the private equity worlds and has the ability to make larger investments while retaining minority ownership stakes in later-stage, maturing, high-growth businesses.
- A long-term Corporate Innovation Program, wherein BDC will act as a "concierge service" to connect corporates with the various options for engagement in the innovation ecosystem. The Canadian Corporate Innovation Summit represented the kickoff of this broader initiative.
- Publication of whitepapers. BDC is using its unique insights as Canada's largest VC investor to make more market intelligence available to ecosystem participants.
- A global connectivity initiative, where BDC will connect firms from around the world, notably in China, with partnership opportunities in Canada, ranging from start-ups to established corporations to research centres.

Canada's VC ecosystem has made tremendous progress in recent years. We hope the information in this report will contribute to a better understanding of the current state of the industry, and help provide clarity for all ecosystem participants. We believe Canada has all the tools to create international champions and build a more innovative, prosperous country for the benefit of all.