

The Rich Get Richer

Are Canadian VCs inadvertently limiting their returns?



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The Rich Get Richer

"We believe that Canadian VCs are inadvertently limiting their own returns. They are making strategic decisions to finance companies later, less frequently, and with less money than companies in the US."

Venture capital (VC) is a critical piece of a healthy innovation system. Investments timed correctly can propel a fledgling company to new heights. But venture capital is inherently risky, and making the right investments in the right company involves carefully considering a number of factors, including growth potential, technology type, and deal sizes.

Canadian VC deal sizes continue to lag those in other countries. Canadian venture capitalists invested \$3.2 billion in 530 deals for an average deal size of \$4.9 million US in 2016. Meanwhile, American VCs invested \$69.1 billion in 8,136 deals for an average deal size of \$8.5 million.

Canadian VCs have made a strategic decision to invest smaller amounts of capital into more companies. They could just as easily chosen to invest an average of \$12.3 million in 260 companies. This begs the question; does the smaller deal size result in smaller returns?

While deal sizes remain smaller in Canada, our rates of return have always been significantly lower than those in the US. The 10-year internal rate of return (IRR) for Canadian VCs now averages 4% and in fact this return has only been positive for the last two years.

But is there an "ideal" deal size? Is it possible to correlate the amount of investment a firm receives with its growth rate? By investing in smaller deals, are Canadian VCs inadvertently throttling the growth of Canadian companies, limiting their potential returns, and creating an ecosystem where it is difficult to get late-stage financing that is sufficient to create world-class companies?

Was the decision they made to invest in smaller deals correct, or is it possible that by choosing to invest this way, Canadian VCs are inadvertently limiting their own returns?

To shed light on the subject, we looked at the investments of over 350 public technology companies, 90 Unicorns, and 147 other US companies that obtained VC financing in July 2017 and compared that to 131 Canadian companies backed by venture capital. We looked specifically at capital funding per employee and growth rates as measured by revenue for public companies and by employee growth for private companies. The data showed us that:

1. Unicorns have the highest funding on a per employee basis
2. California based companies have the next highest rate of funding per employee
3. US based companies outside California fall next in the rankings.
4. Canadian companies ranked fourth.
5. Public companies have the lowest funding per employee and the lowest average growth rates.

The amount of funding provided by the VC industry in Canada is substantially below that provided in the US on a per-capita basis. But does this matter? The results of our research suggest two closely related trends:

1. The more funding a company has, the faster it grows.
2. The faster a company grows, the more funding it can get.

This is why **the rich get richer** in the VC world. California-based companies that get higher levels of per-employee funding grow faster than companies in the rest of the US. As a result, these companies tend to grow quickly and turn into Unicorns, creating a dynamic where California boasts a disproportionate share of total VC funding. Since the funding-growth-funding formula is deeply embedded and well understood in the Silicon Valley culture, they are significantly more successful.

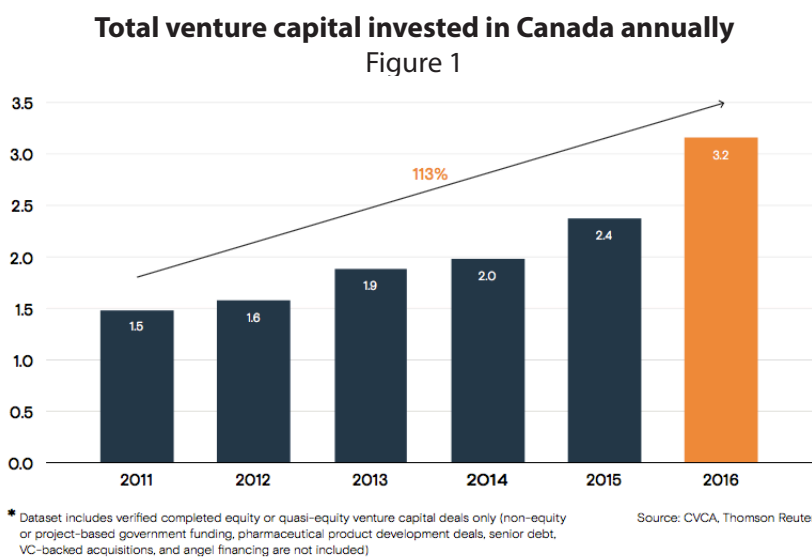
With funding levels well below that of their US-based competitors and other jurisdictions, Canadian companies tend to get left behind. Consequently, our companies do not grow as fast, do not attract later-stage capital, and are typically sold before they can be turned into world-class companies.

Unless Canadian VCs start funding companies at levels on par with those seen in the US and particularly in California, we will continue to experience lower growth rates, the earlier sale of companies, and lower VC returns.

We believe that Canadian VCs are inadvertently limiting their own returns. They are making strategic decisions to finance companies later, less frequently, and with less money than companies in the US, thus potentially generating low returns that may be largely driven by their own practices.

Introduction

According to the Canadian Venture Capital Association (CVCA), Canadian technology companies received \$3.2 billion in investments across 530 deals in 2016. This makes the average deal size \$6.1 million (US\$4.9 million), up 44% since last year (average \$4.2 million CDN). The US saw \$69.1 billion invested in 8,136 deals with an average deal size of \$8.5 million. Thus on a per-deal basis, the Americans are investing 74% more. The following chart, extracted from the CVCA report (*Canada's Venture Capital Landscape*, June 2017) shows the history of VC funding in Canada.



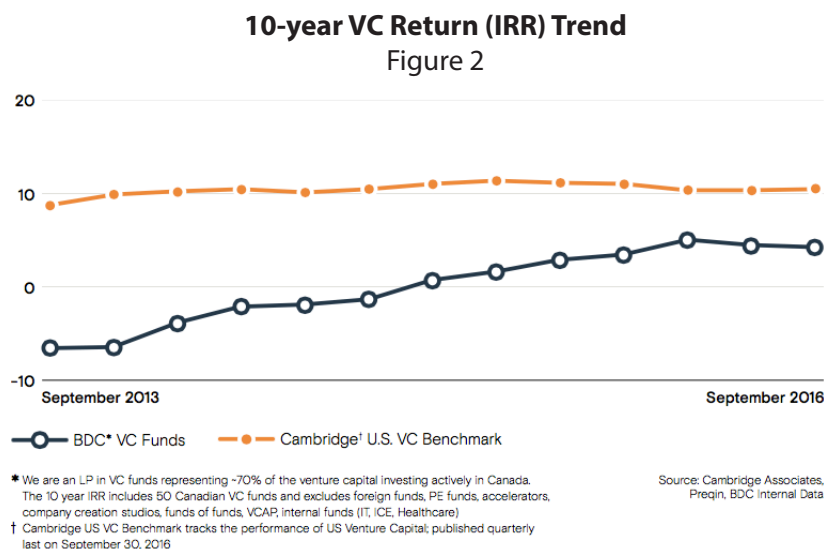
Let us understand something about these statistics. Venture capitalists (VCs) made a strategic decision to invest in this particular fashion. They could have also invested an average of \$3 million in 1,066 companies, or \$12.3 million in 260 companies. In making strategic choices about how to allocate their funding, VCs are working on the presumption that they are maximizing their return given their risk preferences.

But what about returns?

Returns are the primary benchmark by which investment performance is measured. However, throughout the history of the VC industry in Canada, returns were negative, until very recently. There are still almost no VC firms in business today that existed 20 years ago. Although the US has a number of firms with lengthy histories of success, there are virtually none in Canada.

BDC Venture Capital produced a report in June 2017 that showed the returns in the VC industry in Canada turning positive: the ten-year internal rate of return (IRR) for Canadian VCs now averages 4% (Figure 2). (Note that this return rate is only for deals in which BDC participated, although this comprises 70% of VC activity in Canada.)

This amount is well below the typical rate of return for US VCs, which hovers at near 10%. Given that you can get dividend yields on Class A companies in the 4% range, why would an institutional investor choose the Canadian VC industry as an asset class? The following chart, (*Canada's Venture Capital Landscape*, June 2017) shows the 10-year internal rate of return for funds in Canada and the US.



One must question then the strategic decisions that caused VCs to invest \$3.2 billion in 530 deals. This is well below the types of investments made in other major jurisdictions that yield faster-growing tech businesses and greater returns on investment. Is the predisposition for making smaller bets amongst Canadian VC firms limiting their own rates of return?

Our report *Failure to Scale* (February 2017) looked more closely on the other side of this equation, concluding that Canadian firms do not receive late-stage capital because they grow too slowly and are thus not financially attractive to VCs. The data suggest that this slow growth was due to the fundraising patterns of Canadian firms, which tend to raise money later, less often, and in smaller amounts.

Our most recent report, *Government Venture Capital* (August 2017) looked at two critical public sector investment agencies, the Business Development Bank of Canada's venture capital arm (BDC) and MaRS' Investment Accelerator Fund (IAF). Both were established at a time when Canadian venture and seed capital were in short supply.

Our report showed clearly that the BDC's strategy of investing in companies with larger seed round syndicates means they are able to outpace the growth of companies invested in by MaRS IAF. The IAF ends up in smaller seed stage syndicates as their government-imposed investing limitations make them a smaller player and thus not the best fit for larger rounds.

This report is a follow-up study on the link between the amount of investment a firm receives and its growth rate. More critically, we also wanted to understand whether by investing in smaller deals, Canadian VCs were throttling the growth of companies, limiting their own potential returns, and creating an ecosystem where it is difficult to get late-stage financings that is sufficient to create world-class companies. In short, are Canadian VCs inadvertently limiting their own returns?

Capital Requirements

To determine the link between funding and growth, we needed a measure that would let us compare firms of different sizes and at different stages of development. “Capital per employee” was the measure selected for two reasons. First, fundamentally, there is a correlation between firm revenue and the assets required to support that revenue, and thus to the capital required to support the revenue. Second, measuring capital on a per-employee basis also allows a company at any stage of development to do a check on their growth plans. Although there is a high degree of variability in capital per employee between companies, it serves as a good indicator, particularly where no other exist.

Public Companies

Our first task was using data from public companies to determine a baseline capital-per-employee measure for a variety of industries. For public companies, we defined “capital” as total assets less current liabilities. In this way, we included debt as well as equity in the definition of capital, and the results were not affected by large amounts of retained deficit that might have accumulated during rapid growth. We focused on US-based public companies to ensure that results were not skewed by low-wage regimes such as India or China and also removed statistical outliers with a large accumulation of cash in a company that did not appear to be related to the needs of the business. Table 1 summarizes our results by industry.

Public Companies

Table 1

Industry	Companies	Revenue Growth	Capital per Employee
Computer Hardware	20	-3%	\$320,000
Computer Software	237	8%	406,000
Medical Equipment	23	6%	491,000
Pharmaceuticals	41	7%	1,439,000
Biotechnology	46	7%	1,285,000

Average revenue growth rates of 6-8% show that these public companies have moderate growth, and are most likely not fueling capital requirements. For the purposes of this study, the amount of capital required per employee is the baseline capital required for a moderate growth company. A company that is trying to grow rapidly and is accumulating losses to do this such as VC backed companies will require more capital than this—not less.

Unicorns

The next step in our data analysis was to determine the capital requirements on a per-employee basis for the most successful private technology companies. Unicorns are private companies with valuations at or above \$1 billion. Our theory was that since these are private companies with the highest valuations, these are the ones whose growth Canadian businesses need to emulate if we wish to build globally competitive companies. Table 2 shows a summary of US-based companies included in our analysis. This chart and others that follow combine Medical Equipment, Pharma, and Biotech into Healthcare as the number in each sector is too small to warrant separate classification.

Unicorns

Table 2

Industry	Companies	Capital per Employee
Computer Hardware	6	\$1,267,000
Computer Software	76	762,000
Healthcare	8	1,760,000

The difference in capital requirements based on sector-specific baselines (as shown in Table 1) is not for the accumulation of assets but to pay for the losses that are incurred in fueling rapid growth. In all cases, more capital is required for a rapidly growing company than for a moderate growth one.

United States

To look at the funding of US VC-backed companies in general, we took as our sample all companies that had received more than \$5 million of VC backing in July 2017 (Table 3).

US Companies

Table 3

Industry	Companies	Capital per Employee
Computer Hardware	10	\$1,039,000
Computer Software	109	747,000
Medical Equipment	14	1,911,000
Pharmaceuticals	8	4,545,000
Biotechnology	6	5,617,000

These amounts are as expected, higher than amounts required by public companies with capital requirements in the pharmaceutical and biotechnology industry significantly higher than the funding levels required in computer hardware and software. The fact that the amounts are higher particularly than the funding required by Unicorns is not surprising. These companies all received funding in July and may have not had time to use the funding to increase their employee base and thereby incur losses. Thus, their observed capital per employee at that point in time will be substantially higher than it will be in one year when they should have increased their employee base substantially.

Since California—and in particular Silicon Valley—is arguably the most successful creator of technology companies and, in fact, is responsible for almost half of the VC-backed companies in the US, we thought it would be interesting to segregate out their results in the computer software realm from those of the rest of the country (Table 4).

California Companies

Table 4

Location	Companies	Capital per Employee
California	50	\$831,000
Rest of USA	59	676,000

Canada

To this point in our analysis, the numbers appear to line up as expected. Low-growth public companies have substantially less capital per employee than high-growth Unicorns. Recently financed companies have capital on hand because they have not yet had the opportunity to incur losses and add to their employee base. But what about Canada?

While conducting work on our previous report on public sector VC in Canada (*Government Venture Capital*, August 2017), we noticed that the levels of capital acquired by IAF-supported companies were well below BDC-backed companies. (Please note that this was for all companies that recorded investments, including those with less than \$5 million in total funding.) When these amounts are compared to the funding received by public companies and Unicorns in the US, the difference is striking. These companies barely get enough funds to support their baseline capital requirements, let alone enough to fuel rapid growth. Table 5 shows the breakdown of these statistics.

Canadian Companies

Table 5

Industry	BDC Venture Capital		MaRS IAF	
	Companies	Capital per Employee	Companies	Capital per Employee
Computer Hardware	9	\$587,000	0	\$0
Computer Software	30	301,000	54	190,000
Healthcare	7	1,156,000	6	536,000

Canadian Companies versus Unicorns

To make a direct comparison with Unicorns, we looked at the data for all companies with more than \$5 million of total funding received after 2007 and before 2015. The data conclusively shows that except in healthcare, Canadian companies receive dramatically less funding than Unicorns.

Canadian companies versus Unicorns

Table 6

Industry	Companies (Canada)	Canadian Companies Capital per Employee	Unicorns Capital per Employee
Computer Hardware	14	\$535,000	\$1,267,000
Computer Software	96	421,000	762,000
Healthcare	21	2,448,000	1,760,000

To add to this analysis, we broke down the funding levels for the software industry for which there were enough companies to warrant such an analysis. This shows that, on average, the top funded Canadian software companies (first quartile in Table 7) receive substantially less funding per employee than Unicorns (Table 6).

Canadian software companies

Table 7

Quartile	Total Funding (\$ Millions)	Capital per Employee
First	\$22 - \$230	\$490,000
Second	\$11 - \$22	591,000
Third	\$8 - \$11	301,000
Fourth	\$5 - \$8	317,000

Canada versus US

To run a direct comparison between Canadian and US statistics for July 2017, we had to look at funding for the three months ending in July to get a sufficiently large sample size of Canadian businesses in our analysis. As a result, there may have been some hiring by these companies that would reduce their funding per employee (although the review of LinkedIn data as an estimate for employment did not indicate a pattern of large hiring). All companies have received more than \$5 million of financing between May and July 2017. Table 8 shows the results of funding in the Canadian market. The US data is from Table 3.

Canadian versus US funding

Table 8

Industry	Companies (Canada)	Canada Capital per Employee	US Capital per Employee
Computer Hardware	1	\$1,133,000	\$1,039,000
Computer Software	15	406,000	747,000
Healthcare	9	2,579,000	5,458,000

The data set on computer hardware companies in Canada is too limited to make a comparison. However, it is clear from the software and healthcare industries that recent financing on a per-capita basis is significantly less in Canada than in the US.

Conclusions

For some time now, the average size of a Canadian VC deal was thought to be substantially less than the average size of a US VC deal. Unfortunately, this can be a meaningless number if the average size of the US company being financed is substantially larger than the average size of the Canadian equivalent. However, by looking at capital per employee as an equalizer, we can remove statistical problems that such an analysis can bring.

The data laid out in this report clearly show that the amount of funding that is provided by the VC industry in Canada is substantially below that provided in the US on a per-capita basis. In fact, the capital usage in terms of capital per employee amongst VC-backed companies can be ranked from highest to lowest as follows:

1. Unicorns
2. California-based companies
3. US-based companies outside California
4. Canadian companies
5. Public companies.

To drive revenue, companies need employees and unless they are profitable, they need external capital to hire employees.

Are Canadians just more efficient users of capital, or is the strategic decision by Canadian VCs to restrict capital availability on a per-company basis ruining our potential growth?

One can argue that the lower dollar makes it less expensive to start a company in Canada. Certainly, recent salary comparisons for programmers would indicate that it is cheaper to hire programmers in Toronto and Vancouver than in most American centers. In addition, tax incentives provided through Canada's Scientific Research and Experimental Development (SR&ED) credits tend to reduce this cost even further. However, it could also be argued that marketing and sales should be more expensive for Canadian companies as we have to export to reach a sufficiently large market to fuel our growth.

But, as we know from numerous Impact Centre briefs on the topic in the past, Canadians actually do not spend nearly as much on marketing and sales as Americans, either in gross dollars or in employee composition. Since marketing and sales people are typically more expensive in terms of both salaried and non-salaried support expenditures, this will reduce the average per-employee cost in Canada.

The combination of these factors is likely reducing funding per employee in Canada relative to the US. However, if Canadians had greater funding per employee, perhaps they could afford to spend on other critical growth functions, including marketing and sales.

The Link to Growth

The ideal measure of growth involves revenue. However, since we do not have access to data on the revenue earned by the private companies that form the backbone of this study, we decided to use employment as a proxy measure. Employment is a good proxy as it grows in a step-wise function ahead of revenue. In successful companies that are growing rapidly it is a leading indicator of growth. It works as a measure as long as revenue growth keeps pace with employee growth. If revenue growth lags employee growth, a firm may see restrictions in funding and if funding is not available and the company is losing money they will need to lay off employees, thus returning the ratio of employees to revenue to a stable state.

To measure growth in employees we relied on LinkedIn, which reports employment size and growth over the last two years for all companies with over 30 employees. We restricted our analysis to companies that had more than 10 employees two years prior to the funding event to which we were comparing employment size.

Our objective was to answer two questions:

1. Does the growth rate increase as a result of increased funding?
2. Does a higher growth rate increase the amount of funding businesses receive?

In order to answer these two questions, we relied on data in the software sector. Unfortunately, there were not enough companies in our sample of computer hardware or healthcare companies to review these statistics. Our selection of companies was restricted to those financed in July 2017 in the US, which had received greater than \$5 million of funding in that month. (We hope, in the future, to be able to carry out this research and collect data monthly.)

The Impact of Increased Funding

To measure the impact of funding on growth rates, we divided the amount of funding a company had received prior to this most recent round of funding by the number of employees a company had two years prior to the funding event. (Greater accuracy would be obtained by obtaining the number of employees at the time of the last funding but these data would need to be collected in a longitudinal study because they are not available retroactively.)

The 59 companies we reviewed show a clear link between the amount of funding received per employee and their subsequent growth rate. In fact, there is a correlation of .55 between these two factors.

Comparison of funding with growth rates

Table 9

Quartile	Average Number of Employees	Average Funding (\$ Millions)	Average Capital per Employee	Average 2 Year Growth Rate
First	50	\$42	\$1,636,000	195%
Second	63	26	602,000	106%
Third	71	28	336,000	59%
Fourth	90	20	171,000	62%

It could be argued that it is easier to grow when a company is small rather than when it is large—and that this should account for the different growth rates. However, we are dealing in a small range here, and a 40% difference in employee size should not result in triple the growth rate.

Based on this data, we conclude that the more funding you get, the faster you can grow. In fact, the data and the numbers here correspond closely to our findings when looking at Unicorns and the amount of funding they get per employee.

The Impact of Increased Growth Rates

To measure the impact of growth rates on funding, we divided the amount of funding a company had received in this most recent round of funding by the current number of employees. We were able to look at 66 companies and while there is less statistical significance due to employee number reductions in the bottom quartile, Table 10 exhibits a clear trend: the greater a company's two-year growth rate, the more funding it attracts.

Comparison of growth rates with funding

Table 10

Quartile	Average Number of Employees	Average Funding (\$ Millions)	Average 2 Year Growth Rate	Average Capital per Employee
First	139	\$42	245%	\$415,000
Second	68	18	117%	328,000
Third	159	41	50%	272,000
Fourth	68	17	0%	378,000

Conclusions

Based on these results, we have found two trends:

1. The more funding a company has, the faster it can grow.
2. The faster a company grows, the more funding it can get.

For this reason, the rich tend to get richer in the VC world. California-based companies that get higher levels of per-employee funding grow faster than companies in the rest of the US. As a result, these companies tend to grow quickly and turn into Unicorns, creating a dynamic where California boasts a disproportionate share of total VC funding. Since the funding-growth-funding formula is deeply embedded and well understood in the Silicon Valley culture, they are significantly more successful.

Without a basic understanding of these practices, Canadian companies tend to get left behind. They simply do not grow as fast, do not attract later-stage capital, and are typically sold well before they can be turned into world-class companies.

Correlation or Causation

It could be argued that given two companies with equivalently strong products and market fit in similar-sized markets, and if you gave one more financial support, it could hire more employees. These employees in turn could generate more revenue and the company would experience a faster growth rate. Of course, that works very well in theory but perhaps not quite as well in practice.

Our belief is that we are seeing a pattern of causation and not correlation in this study. We have tried to isolate variables such as industry and location as far as possible with a small population size. In each different segmentation of the data, we are seeing the results that would be logical to expect given the basis of segmentation. We think it is entirely logical that if the capital a company receives is efficiently spent, greater funding will lead to improved results and that those improved results will lead to greater funding.

Where does that leave Canada?

Unless Canadian VCs start funding companies at levels on par with those seen in the US and particularly in California, we will continue to experience lower growth rates, the earlier sale of companies, and lower VC returns.

We believe that Canadian VCs are inadvertently limiting their own returns. They are making strategic decisions to finance companies later, less frequently, and with less money than companies in the US, thus experiencing lower returns on investments that may be largely driven by their own practices.

Methodology

This study looked at the fundraising patterns of technology companies in Canada and the United States. Public company data were obtained from Google Finance and private company data were obtained from CB Insights and LinkedIn. All numbers were collected in July and August of 2017. All amounts are in US dollars.

This study was not intended to be academically rigorous, nor was it intended to be all-encompassing about the topic. It was designed only to add to the conversation on innovation and highlight areas worthy of future research by looking at data available from publicly available sources. We plan to complete further research on this subject in the future.

About the Impact Centre

Science to Society

We generate impact through industry projects and partnerships, entrepreneurial companies, training and research.

We bridge the gap between the university and industry to accelerate the development of new or improved products and services based on physical technologies. We work with graduate students and researchers to help them commercialize their discoveries. We provide undergraduate education and training for students at all levels to ease their transition into future careers.

The Impact Centre conducts research on all aspects of innovation, from ideation and commercialization to government policy and broader themes such as the connection between science and international development. We study how companies of all sizes navigate the complex path between a discovery and its market and how their collective innovations add up to create a larger socioeconomic impact.

Our objective is to understand how we can improve our ability to create world-class technology companies, how governments, companies, and academia can identify and adopt best practices in technology commercialization.

Impact Briefs

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Contributors

Charles Plant
Author
Senior Fellow
cplant@imc.utoronto.ca
416-458-4850
@cplant

Emina Veletanlic
Editor
Manager, Strategic Initiatives
eveletanlic@imc.utoronto.ca
416-978-1457

Contributors:
James Li
Scott McAuley



UNIVERSITY OF
TORONTO

Impact Centre
Suite 411 - 112 College Street
Toronto, Ontario
Canada M5G 1L6

Tel: 416-978-3875
info@imc.utoronto.ca
www.impactcentre.ca