

Why Venture Capital is Essential to the Canadian Economy

The Impact of Venture Capital on the Canadian Economy



CANADA'S VENTURE CAPITAL & PRIVATE EQUITY ASSOCIATION
ASSOCIATION CANADIENNE DU CAPITAL DE RISQUE ET D'INVESTISSEMENT

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Executive Summary

1. The Canadian venture capital industry has a significant impact on the economy

Between 1996 and 2007, venture capital investors financed 2,175 technology companies in Canada. 1,740 of those were operating in Canada in 2008. In addition, prior to 1996, it financed 15 companies that are still operating and have sales larger than \$ 50 million in 2008.

On average these 1,755 companies have sales of \$ 10.5 million and employment of 47 direct jobs each. They are a mix of small, medium and large companies.

In aggregate, they generate sales of \$ 18.3 billion:

- \$ 15.4 billion in ICT,
- \$ 1.9 billion in Life Sciences,
- \$ 1.0 billion in Other Technologies.

They employ 63,955 people in Canada and 17,760 abroad.

In addition, they generate 83,549 indirect jobs in Canada for a total of 147,504 direct and indirect jobs generated in Canada which represents 1.3% of all private sector employees in Canada. Indirect jobs are jobs generated in other companies through the purchase of goods and services from these companies. They are calculated on the basis of industry-weighted employment multipliers provided by Statistics Canada.¹

The 51,050 direct jobs in Canada in ICT venture capital-backed companies alone represent 8% of the total sector employment and the 5,069 direct jobs in venture capital-backed Biotechnology companies represent 34% of total employment in that sector.

Gross domestic product (GDP) is the measure of total value created in the country during one year. In 2007, the contribution of venture capital-backed companies to the Canadian GDP was \$ 14.5 billion, 0.94% of total GDP: 0.54 % directly through compensation, profits and taxes paid by these companies and 0.40% indirectly through the activity

generated in other companies and sectors in Canada due to the goods and services bought by these companies².

The impact of venture capital-backed companies on the Canadian economy is quite significant: close to 150,000 jobs (1.3% of all private sector employees) and nearly 1% of GDP. The impact on growth is also important, since venture capital-backed companies which responded to the study grow more than 5 times faster than the overall economy. Moreover, their impact on innovation (R&D and patents) and exports is very substantial.

There are additional major benefits beyond these economic measures. (i) Successful venture capital-backed companies generate wealth and talent which are reinvested in the next generation of technology start-ups; (ii) they create serial entrepreneurs; (iii) they allow investments by business angels, and (iv) they provide a source of experienced management talent. Alongside business angels, venture capital funds play a critical role in linking these pools of wealth and talent to new start-up companies.

¹ See Methodology in Appendix B

² GDP indirect impact is calculated on the basis of industry-weighted GDP multipliers provided by Statistics Canada. See Methodology in Appendix B.

2. Governments have a vested interest in the development of the venture capital Industry

Building a successful innovation ecosystem is a long-term endeavour. As demonstrated by many US studies cited in this document, a buoyant venture capital industry is one of the important ingredients of such an ecosystem. But building a large pool of successful technology entrepreneurs, venture capitalists and company managers takes decades. Building a strong and sustainable venture capital industry requires a similarly long time. It took three decades, several business cycles and a strong government support (in the 60s through the SBIC program) before the US venture capital industry enjoyed a strong and self-sustainable expansion starting in the late 70s. This industry expansion has had a huge impact on the US economy in terms of productivity and innovation, economic growth and employment.

Canada wishes to evolve from a resource-based economy to a knowledge-based economy. To this end, it has massively invested in publicly funded R&D and, by means of a series of policy actions such as tax credits and government venture capital funds, both federal and provincial governments have supported the development of the venture capital industry. The benefits of venture capital to the Canadian economy are very sizable and, based on comparison with the US industry, there is opportunity for these benefits to be at least doubled if the industry is able to grow

However, the Canadian venture capital industry is currently experiencing a very difficult transition. As is the case for many other venture capital industries around the world, the industry has not yet been able to deliver strong enough returns to consistently attract institutional Canadian and foreign investors. At the same time, governments have shifted towards indirect support to the industry while allocations to government direct funds and tax credits to investors in retail funds have tended to be reduced. As a consequence, fund raising is shrinking and the investment pace by Canadian funds is contracting. During the past four years, this decline has been partly compensated by an increase in investment by US funds. However this US based funding generally supports later stage companies and

sometimes results in a shift of company activities to the US. Building a strong and innovative technology based economy in Canada requires a strong Canadian based venture capital industry.

3. A call for action

The turmoil in financial markets which started in 2008 will only make the venture capital crisis more severe as, in a general rebalancing of portfolios, many LPs will likely reduce their investment in venture capital funds and concentrate their investment in large funds with long track records. This may be very detrimental to funds in Canada which generally are small and young. At the same time as capital to the funds is being restricted, portfolio companies will require more capital to survive the coming recession. For the whole ecosystem, this is the worst time to run out of cash.

The Canadian federal and provincial governments have invested substantial amounts in supporting R&D, both in academia through direct funding and in industry through tax credits, and there are large benefits available from the commercialization of this research. The venture capital industry is a critical part of the ecosystem that takes research from the laboratory to commercial products and if the venture capital industry is not healthy, the potential benefits will be lost.

A strong and growing venture capital industry is critical – in the short term, to derive benefits from the commercialization of R&D and in the longer term, to obtain the economic benefits to the economy as a whole. Thus it is essential that all parties – governments, investors, venture capital funds and entrepreneurs – work together to build a strong, permanent, Canadian venture capital industry.

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1.0 Introduction

Venture capital is often associated with the positive image of scientific research, innovation, entrepreneurial start-ups, successful technology companies, and overall competitiveness of the economy. Famous success stories that are the pride of the American economy, such as Microsoft, Intel, DEC, Genentech or, more recently, Google and Youtube received venture capital investments in their early days. In Canada, though the venture capital industry is younger than its American counterpart, it has funded companies such as Biochem Pharma, Research in Motion, Macdonald Dettwiler & Associates, Corel, Open Text and Ballard Power Systems.

However, this largely positive perception of the venture capital industry has not gone unchallenged. For example, after the bursting of the technology bubble at the beginning of this decade, venture capital became more associated with exuberance and less with attention to business fundamentals. After stories of technology companies being shut down, some have questioned its real impact on the economy. Moreover, in Canada some observers express concern about the number of venture capital backed companies being acquired by foreign, especially American, companies and have asked: what is really left for the Canadian economy?

This is why in many countries, and notably in the US, academic teams have undertaken studies to measure specific impacts of venture capital on company growth and valuation, as well as on innovation, and venture capital associations have sponsored independent studies on the more general impact of venture capital on the global economy, especially on employment and GDP.

This study measures and explains the economic impact of venture capital on the Canadian economy. As such, it seeks to dispel some of the uncertainties surrounding the perception of the venture capital industry and contribute to the public policy debate about how Canada can enhance its competitiveness in the 21st century.

First, it presents venture capital overall - what it is, how it works and adds value, how it developed in Canada, the benefits it brings to economies in general and why it is critical for the development of a modern, technology-based economy.

Second, based on the results of an extensive survey, it presents measures of the impact of venture capital on employment, revenues, and GDP in Canada, and compares these results with what has been obtained in other countries, especially in the US. Such comparisons facilitate the measurement of what has already been accomplished and what progress could still be made.

Finally, it illustrates the value added by venture capitalists to their investments by presenting several examples of successful Canadian venture capital-backed companies.

The overall objective of the study is to allow industry professionals, governments and the general public to have a better understanding of venture capital and a more comprehensive view of what it brings to the economy.

Contrary to the situation in the US where venture capital is now a relatively mature industry with broadly publicized successes, the Canadian venture capital industry is much younger and, like most other venture capital industries around the world, has not yet reached maturity. It is therefore all the more important to analyze its achievements and understand the benefits which full maturation could bring to the country.

This study is a first step. Extensive work has been carried out in order to build as comprehensive a database as possible on employment and revenues of recent and past venture capital-backed companies¹. It is the intent of the CVCA to build upon this database in future years for the benefit of all stakeholders in the industry.

¹ The methodology of the study is explained in appendix B.

2.0 What is venture capital investment?

In their reference book, “The Venture Capital Cycle”², Josh Lerner and Paul Gompers define venture capital as “Independently managed, dedicated pools of capital that focus on equity or equity-linked investments in privately held, high-growth companies”. Venture capital is thus defined by three elements:

- Its focus: privately held growth companies. In the same text, the authors use similar expressions as “privately held technology-intensive businesses” or “young firms”: venture capital is focused on the difficult task of financing young fast growing technology companies, “technology” meaning Information Technologies, Life Sciences and Other technologies (mainly Cleantech and new materials)³.

Being young, most of these companies are still private, but this is not the only reason why venture capital invests mostly in private companies. Another reason is that most of the time, and for motives we shall explain later, venture capital wants to be an active investor and be able to negotiate conditions attached to its investment. When well designed, these conditions are important to protect its investment as well as align interests between management and investors in order to build the company.

In the same vein, when venture capitalists invest in public companies, they usually make private placements in these companies⁴, which means that they take a significant share of the ownership of the company and negotiate the conditions of their investments.

- Its investment vehicle: equity (common or preferred shares) or equity linked investments such as convertible debt or warrants, as opposed to debt.
- Its management teams: independently managed dedicated specialist teams as opposed to more generalist teams within large financial institutions which would finance different sectors or stages of companies.

Venture capital funds usually do not invest outside of their field (“privately held high growth technology-intensive companies”) and other kinds of funds or investment vehicles (commercial banks, mutual funds, hedge funds, buy-out funds) usually do not invest in venture capital.

This definition raises questions that go to the heart of venture capital industry: why is it necessary to have “independently managed dedicated pools of capital to invest equity or quasi-equity in privately held, high-growth companies”? Why could other more traditional investment vehicles such as commercial or investment banks not finance these types of companies?

There are several reasons for this, which can be traced to the characteristics of investments in technology start-ups, which, in turn, contribute to determine the specific features of venture capital:

- First, a high level of uncertainty: beyond the usual uncertainty factors which surround the building of any company, there are specific uncertainties linked to R&D activities and the development of new technologies, or to the fact that many of these companies address emerging markets (new needs and new products) which are difficult to overcome or even quantify and in which the competition evolves very quickly due to the continuous emergence of new technology solutions, new business models and new companies;
- Second, a high level of information asymmetry between the entrepreneur and the investor: for technology start-ups, the usual financial statements are not adequate tools for the investor to monitor the risk and the progress of the company. In companies where there are virtually no revenues or profits, the investor needs a much closer understanding of what is going on inside the company to judge whether it is on track or not, or whether it needs some kind of re-orientation;

² Paul Gompers and Josh Lerner, “*The Venture Capital Cycle*”, second edition, The MIT Press, 2004, p.17. This paragraph is partly based on this book and especially chapter 7, “An Overview of Venture Capital Investing”.

³ In the whole document, “technology” will refer to these 3 sectors.

⁴ These investments are called “Private Investments in Public Enterprises” (PIPE).

2.0 What is venture capital investment?

- Third, these companies have very limited tangible assets; most of their assets are intangible (R&D results, intellectual property and people) which makes it virtually impossible to secure conventional debt financing.
- Fourth, it usually takes a long time, up to 7 years or more, before these companies can launch an Initial Public Offering (IPO) or are acquired; a limited number of these investments will be great financial successes; others can become complete losses. Therefore venture capital investment is, by its very nature, highly illiquid and risky.

It is to deal with these unique characteristics that specialized teams and investment tools have been developed by venture capital:

- To reduce uncertainty: specialized teams with deep industry expertise and networks are brought in to quickly access specialized information on technologies, markets, competition, and potential buyers and to source seasoned management resources. These skills and networks allow venture capital managers to (i) make better-informed investments and (ii) work more closely with the management to help build the company and prepare an exit.
- To face information asymmetry, venture capitalists rely on:
 - An in-depth due diligence process before investing;
 - A very close monitoring process after investing including active participation on Board meetings, direct relationship with the management on key performance metrics commonly referred to as 'dashboards' and 'milestones';
 - A good alignment of interests between the entrepreneur and investors through customized compensation systems, including stock ownership and options, and contractual clauses such as liquidation preferences;
 - Syndication with other experienced venture capitalists to maximize expertise and access to relevant information.

All of these activities require specific skills, industry knowledge, and networks and are highly time consuming. For this reason, venture capital managers only make a small number of investments (1 to 2 investments per senior manager each year) and manage a limited number of investments at a time (usually up to 6). This active involvement implies relatively higher management fees compared to other types of investments, which have to be compensated by higher returns.

- To deal with intangible assets: equity and equity linked financing.
- To face illiquidity and risk: the dominant venture capital investment vehicle, particularly in the U.S. and Europe, is structured as a limited partnership with negotiated terms that are designed to appeal to long term investors with diversified portfolios i.e. institutional investors such as endowments, public and private pension funds, and insurance companies. This provides the venture capital fund with a long term stable source of capital

This brief review of venture capital investments explains the main characteristics of the industry. The industry did not appear in its present form overnight but took about four decades to develop and reach maturity in the US. From there, with a certain time lag, it has spread to other jurisdictions such as Europe, Israel, Canada and, now, China and India.

3.0 How Venture Capital Funds Work

The activity of a venture capital company can be broken in three different phases.

3.1 Fundraising

First, venture capital managers have to raise a fund.

The dominant model in the industry is that of independent teams which raise funds from institutional investors, mainly pension funds, university endowments and financial institutions. These funds are structured as Limited Partnerships. This is why investors are called Limited Partners or LPs and the team which manages the fund acts as General Partner or GP. GPs are usually asked to invest a significant portion of their own net wealth in the fund. Along with the carried interest (section 3.3), this is an important way to ensure a good alignment of interest between LPs and GPs.

There are several reasons why the limited partnership became the dominant venture capital structure in the US and, increasingly, in the rest of the world: (i) many of the LPs are tax exempt institutions, such as pension funds and the limited partnership structure allows gains to be passed from the fund to the investors without taxation; (ii) it is well suited to investors such as endowments or pension funds with long-term investment horizons; (iii) it can be restricted to a limited number of experienced investors and therefore has not required registration with securities authorities; (iv) the distribution system allows for the distribution of a carried interest to the managers which is a powerful tool to align interests between investors and fund managers to ensure they work towards the same objectives ; and (v) it has a limited lifespan which implies that the fund managers have to raise a new fund every three to five years based on their track record. This is the basis for a very efficient mechanism for selecting managers: successful managers are able to raise new funds, unsuccessful managers exit the market.

The term of the partnership is usually 10 years with an extension option of 2 years. The investment period, during which new investments are made, is usually 3 to 5 years. The team is authorized to raise a new fund once the investment period is closed.

The role of LPs is limited to choosing the funds in which they invest and providing capital. They do not intervene in the

management of the fund. The main management parameters of the fund (management fees, carried interest, investment strategy and restrictions) are defined in the limited partnership agreement. Unless there is a clear breach of this agreement, LPs generally cannot remove the GP. However, they can choose not to invest in the next fund raised by the GP. This is why it is important for GPs to keep a close relationship with their LPs and to deliver results.

Beside private independent funds structured as limited partnerships, there are other types of funds: captive or evergreen funds such as corporate funds, institutional funds (linked to financial institutions), government funds or retail funds (see below), which present different models for capital calls or for a management team's compensation.

3.2 Investing and creating value: the blueprint

Once the fund is raised, the GP invests it in a portfolio of companies. The key success factors at this phase are:

- The quality of the deal flow to which the team has access. GPs not only react to business plans they receive, they actively look for investment opportunities from various sources: universities and research centers, large companies' spin offs, serial entrepreneurs, etc. Sometimes they will create companies themselves to meet a perceived market or technology opportunity.
- The thoroughness of the due diligence process, which looks at the management team, the business model, the market potential, the technology, the intellectual property, the ability of the firm to add value to the investment, the required capital to build a successful exit and the potential return. Given the level of risk incurred, the investment opportunity has to have the potential to be a real break through and a big winner.
- The ability to structure a deal which aligns interests among the syndicate of investors and between investors and the management team of the portfolio company.
- The ability to work closely with the management of companies in which they invest

3.0 How Venture Capital Funds Work

Venture capital funds only make a small number of investments every year and are very selective in their investments. For 100 business plans received, 10 are looked at in detail and 1 or 2 actually get funded. However, the fact that an opportunity does not meet one fund's investment criteria at a certain time does not mean that it will not fit another fund's strategy.

Venture capital funds usually invest in syndicates along with other investors, which allows them to diversify their risk and, by choosing the other members of the syndicate, to access more expertise and networks. They also invest in rounds, or stages, which means that when they invest in a new company, they reserve capital for follow-on financing.

Not all investments in the portfolio will succeed. Successful GPs are those who set appropriate milestones to be reached by the company, walk away quickly from non-performing investments and concentrate their capital and time in winners in order to build large exits. Portfolio returns are usually determined by these winners.

To build these exits, venture capitalists work closely with the management of portfolio companies; they are active on the board of directors and through key relationships, help recruit other value-added board members. When the company is still in its early stage, they work with management on the business model, provide hands-on operational support and may intervene to complete or change the management team in order to meet the new challenges that arise as the company grows. They draw on their network to actively connect portfolio companies to strategic customers.

Leveraging their network within the venture capital community, they help build subsequent rounds of financing with other value added investors.

Finally, they help build the investment exit, working with investment bankers to prepare for an IPO or positioning the company for a trade sale to a strategic buyer.

To achieve all this, they rely on very experienced partners with broad and deep industry and operational knowledge and far reaching strategic networks. These partners concentrate on a small number of investments and devote a lot of effort to build the company.

This is the blueprint of venture capital best practices and summarizes how venture capital managers may add value to their investments. In practice, not all funds or all investments include all these features and the nature of venture capital investment varies with the growth stage of the company, its particular environment and the strength and weaknesses of its management team and as well as those of fund managers themselves.

3.3 Exiting and distributing returns

Once an investment has been sold or when it has become public and its stock has become freely marketable after a period of escrow, proceeds are distributed. LPs receive their capital and profits are divided 80% to the LPs and 20% to the GP. This part of the gains received by the GP is called "carried interest". It is meant to align interests between GPs and LPs and is usually set at 20% although very successful managers may be able to raise funds with higher carried interest. Many funds include a "hurdle rate", which is a minimum threshold rate of return, below which 100% of the profits go to the LPs. This model is designed to align interests of fund managers and fund investors, and compensate managers only for realized investment performance. Other models exist (see section 5.1), but the one described here accounts for most venture capital organizations world wide.

4.0 Venture Capital - An Industry Which Started In The US⁵

Though the term venture capital had already been used just before World War Two and some wealthy family offices had already developed venture capital-like ways of investing, formal venture capital started in the US after the war, around MIT and Harvard, with American Research and Development (ARD), an organization founded in 1946 to back firms with strong growth prospects, based on technologies, many of which had been developed to support the war effort. During the same period, other more informal groups were formed in the San Francisco Bay area to similarly invest in young technology start-ups.

Since its beginning, the American venture capital industry has gone through several cycles: expanding in the 50s and 60s, the late 70s, the 90s and since 2003. It went through difficult times in the early seventies, the late eighties and at the beginning of this century with the burst of the tech bubble. Through all these cycles, several dates represent important milestones in the development of the industry:

- The formation of the first venture capital limited partnership in 1958 (Draper, Gaither and Anderson). Subsequently, Limited Partnership became the dominant structure for venture capital funds, since it proved to be the best model for raising money from institutional investors, which became the main sources of capital for venture capital funds, and for aligning interests between investors and fund managers.
- The SBIC (Small Business Investment Corporation) program launched in 1958, which matched investments by private investors in venture capital funds with public money. This program helped a first generation of venture capital managers to professionalize their venture capital practices, build their track records and develop linkages with possible investors for their subsequent funds.
- The establishment of the NASDAQ in 1971, which had less strict listing requirements than the NYSE and provided an exit for firms with strong growth but which were often lacking the financial track record required by other exchanges. Intel was one of the first firms listed on the NASDAQ in 1971.

- The modification introduced in 1978 in the interpretation of the “prudent man” rule set for public pension funds by the Employee Retirement Investment Security Act (ERISA, 1974). Prior to this, investing in risky assets such as venture capital could be deemed “imprudent” and even lead to criminal charges. The 1978 interpretation introduced a portfolio perspective within which some investment in risky assets could be made to increase return without additional overall portfolio risk. This interpretation opened the door to investment by pension funds in venture capital funds and contributed largely to the massive increase of investment in this asset class in the late 70s and early 80s.

These specific events played an important role in the development of venture capital in the United States. However, the main long term drivers behind the surge in capital investments have been the excellent returns generated by some funds. These are driven by the increase in R&D and the successive technology breakthroughs which have characterized the last half century among which have been mini computers (late 50s), integrated circuits (1958), personal computers (mid 70s), the creation of the worldwide web (early 90s), the emergence of the biotech industry in the 70s, and the genomic revolution in the 90s. Econometric studies show that among the 50 US states, there is a strong correlation between R&D spending and venture capital investment⁶, and longitudinal studies show a co-evolution pattern between the flow of start-ups nourished by technology innovation and the development of the venture capital industry⁷. The US industry has in this regard invented the model and shown the way. Other jurisdictions such as Europe, Canada, Israel and now India and China are following a similar path.

Graph 1 illustrates the expansion of the US venture capital industry through various cycles and specific events that accelerated its development. It concentrates on IT events. Similar graphs could be drawn for the Life Sciences sector and more recently, the Cleantech sector.

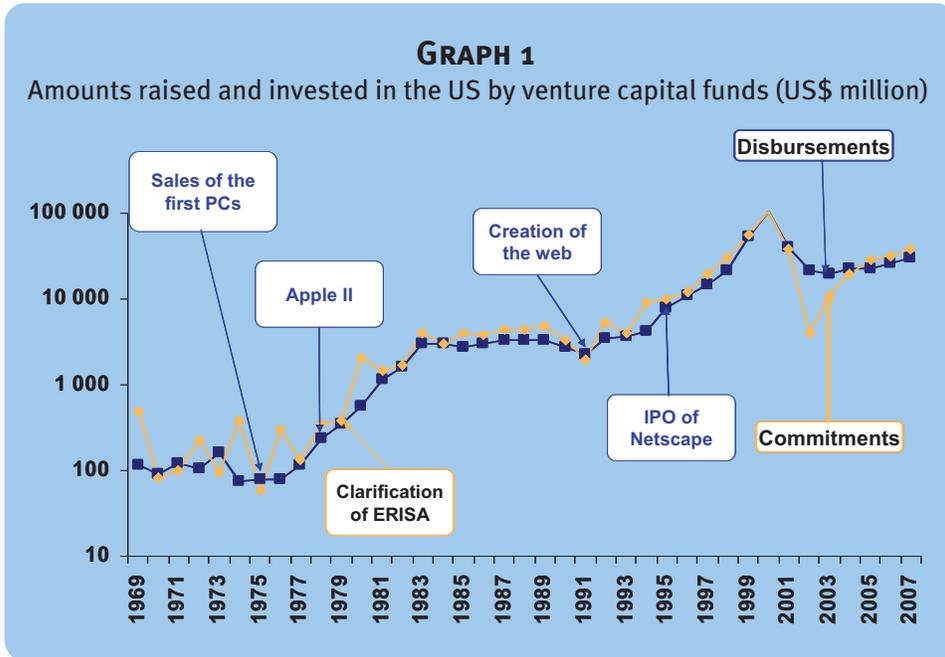
⁵ This section draws heavily on Gil Avnimelech, Martin Kenney, Morris Teubal, “*Building Venture Capital Industries: Understanding the US and Israeli Experiences*”, Berkeley Round Table on the International Economy, 2004

⁶ Paul Gompers and Josh Lerner, “*The Venture Capital Cycle*”, Chapter 3: “*What Drives Venture Capital Fund Raising?*”

⁷ Source: Gil Avnimelech, Martin Kenney, Morris Teubal, op cit.

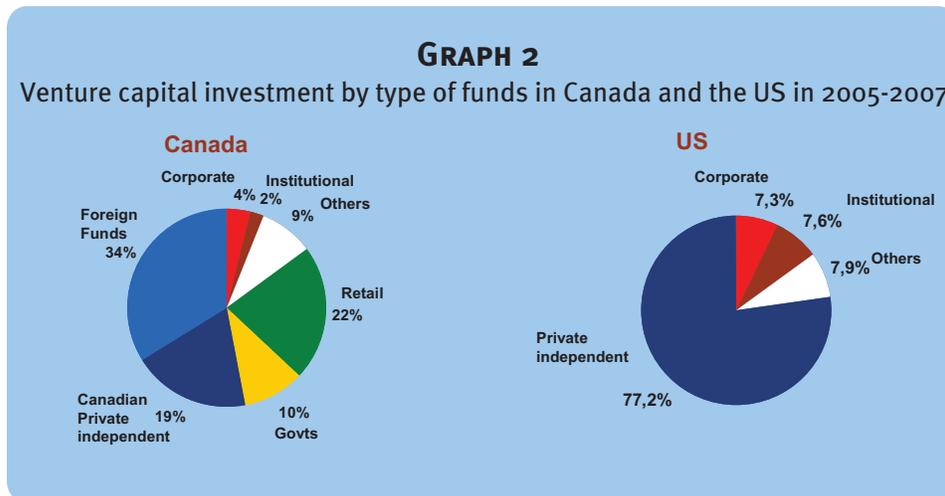
4.0 Venture Capital - An Industry Which Started In The Us

Graph 1: Amounts raised and invested in the US by venture capital funds (US\$ million)



Source of the data: Thomson Reuters

Graph 2: Venture Capital investment by type of funds in Canada and the US in 2005-2007



Source of the data: Thomson Reuters

5.0 The Canadian Venture Capital Industry

5.1 A different history which explains some characteristics of the Canadian industry

The Canadian venture capital industry has a different history and a different structure from the US venture capital industry.

Private equity investment teams were set up in the late 70s and early 80s by financial institutions: banks (TD, Royal Bank, Desjardins), insurance companies (Manulife), asset managers (Beutel Goodman, Middlefield), pension funds (Caisse de dépôt et placement du Québec) and by some large corporations that developed corporate funds (Maclaren Power/Noranda, Molson). Most of the investments made by these teams were development capital in traditional sectors although a few technology investments were made. Contrary to the US, very few private independent technology funds were started in Canada before 1990.

In 1983, the Fonds de solidarité des travailleurs du Québec (FSTQ) was created. It was the first Labour Sponsored Venture Capital Corporation (LSVCC). LSVCCs and PVCCs (Provincial Venture Capital Corporations) raise their capital from individuals – this is why they are also called “retail funds” – who receive tax credits as incentives to invest. They were created to allow workers access to investment in venture capital and to fund businesses that would add jobs to the economy. Most of their investments in the 80s were development capital in traditional sectors.

Some government funds were created in the 80s as well, such as Vencap in Alberta (1983), Discovery Capital Corporation in British Columbia (1986), Innovation Ontario (1986) or the venture capital division of the Business Development Bank of Canada (BDC) at the federal level. In general, they had only limited technology exposure before the 90s. Only a handful of pioneer private independent venture capital funds started during this period: Helix investments (Toronto, 1968), Ventures West (Vancouver, 1972), Innocan Investments (Montreal, 1973), Novacap (Montreal, 1981), in which the proportion of technology investment was larger

Things changed in the 90s with the growing interest given, at a political and societal level, to innovation and what was then called “the new economy”:

- Institutional and corporate funds turned more to technology and specific “technology” funds were created;
- Supported by government tax credit policies, existing retail funds expanded at a rapid pace and a new generation of funds was created in several provinces with a greater focus on technology. This type of fund has become a major part of the Canadian venture capital industry;
- Governments created new funds and focused on technology investments and;
- Finally, a wave of private independent funds was started, mainly after 1995, to invest mostly in technology. However, they remained relatively small compared to their institutional, corporate, retail and government counterparts.

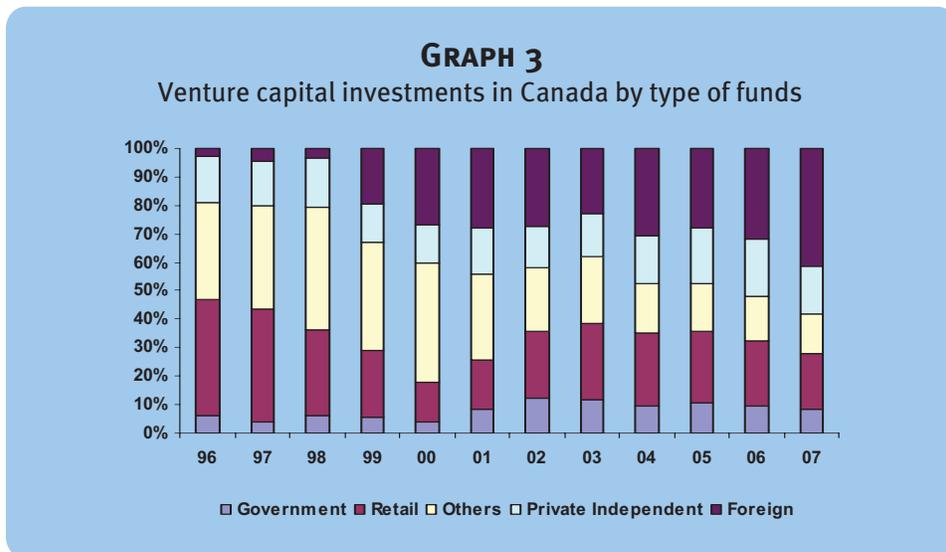
As a result of this history, the Canadian venture capital industry is very different from the US industry as illustrated in graph 2, which shows the amount of venture capital money invested in Canada and the US by type of funds.

The situation has evolved with time: in 1996, private independent funds represented only 19% of the total (16% for Canadian funds and 3% for foreign funds) while retail funds represented 41%, corporate, institutional and other funds 34% and government funds 6%. That same year, in the US, private independent funds represented 73%, institutional funds (linked to financial institutions) 13% and corporate funds 7% (graph 3).

In 2005-2007, corporate, institutional and other funds represent only 15% of the total, retail funds 22% and government funds 10%. But Canadian private independent funds still represent only 19% of the total, the difference being made by foreign funds (34%). In the US, Private Independent funds represent 77% of the total (graph 2).

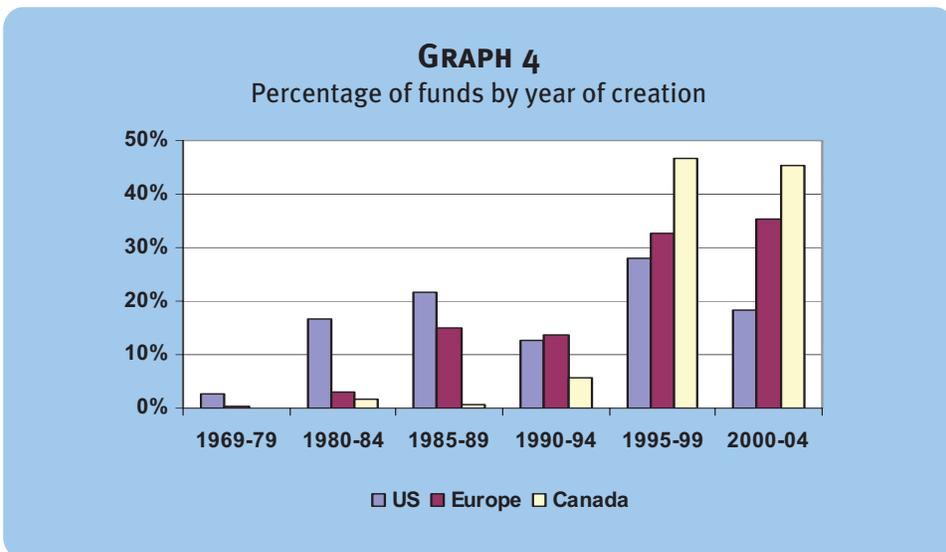
5.0 The Canadian Venture Capital Industry

Graph 3: Venture capital investments in Canada by type of funds



Source of the data: Thomson Reuters

Graph 4: Percentage of funds by year of creation



Source of the data: Thomson Reuters

5.0 The Canadian Venture Capital Industry

5.2. The Canadian venture capital industry is still young

The Canadian venture capital industry is very young compared to that of the US and Europe as is illustrated by graph 4 which shows the percentage of funds started by 5 year period, in the US, Europe and Canada between 1969 and 2005: 42% of US funds started before 1990 versus 18 % in Europe and 3% in Canada. At the other end, 92% of Canadian funds started after 1994 versus 68% in Europe and 46% in the US. This concentration of funds in the late 90's and early 2000's explains in part why the Canadian industry has been particularly hit by the burst of the technology bubble in 2000.

5.3. It is relatively smaller than the US industry and the gap is widening

Finally, the Canadian industry is smaller than the US industry and the gap has been widening recently: in the 2003-2008 period, relative to the size of the economy, the investment pace in Canada has been 60% of what it was in the US, 42% for investment by Canadian funds only and the gap is widening rapidly. Between 2003 and the first 3 quarters of 2008 (graph 5):

- Venture capital investment in the US has increased by 17%, from 0.18% to 0.21% of GDP
- Venture capital investment in Canada has decreased by 35%, from 0.13% to 0.085% of GDP
- And investment by Canadian funds in Canada has decreased from 0.10% to 0.060% of GDP, a 40% drop.

From 2003 to 2007, the decline in investment by Canadian funds had been hidden by the increase in investment by US funds in Canada. This trend has sharply reversed in 2008. The next section will relate this decline in investment by Canadian funds to trends in fund raising. Several sections in this report underline the benefits of investment by US funds: the best US funds do not only bring capital but also expertise, networks and the ability to finance larger rounds and prepare for exits at a higher valuation. However, they cannot be seen as a substitute for Canadian investors as

(i) they might withdraw when conditions are less favorable and (ii) usually, they will not show up before round B and will rely on local investors for seed and start-up financings.

A weaker venture capital industry in Canada means lower benefits to the general economy. Moreover, the steady decline in venture capital investment by Canadian funds over the past 5 years, when in the same time it is growing in the US, is a danger sign for the venture capital industry and for the Canadian economy.

5.4. Fund raising is shrinking and induces a decline in investment by Canadian funds

As mentioned earlier, governments have been very active in the 90's and early 2000's in supporting the development of the Canadian venture capital industry through tax credits to retail funds or direct investment through government funds. Recently, governments have shifted towards indirect support to the industry: tax credits to individuals investing in retail funds have been cut in some provinces and, in most jurisdictions, allocations to government direct funds have been reduced or suppressed. In the meantime, governments have increased their allocation to invest indirectly in venture capital funds.

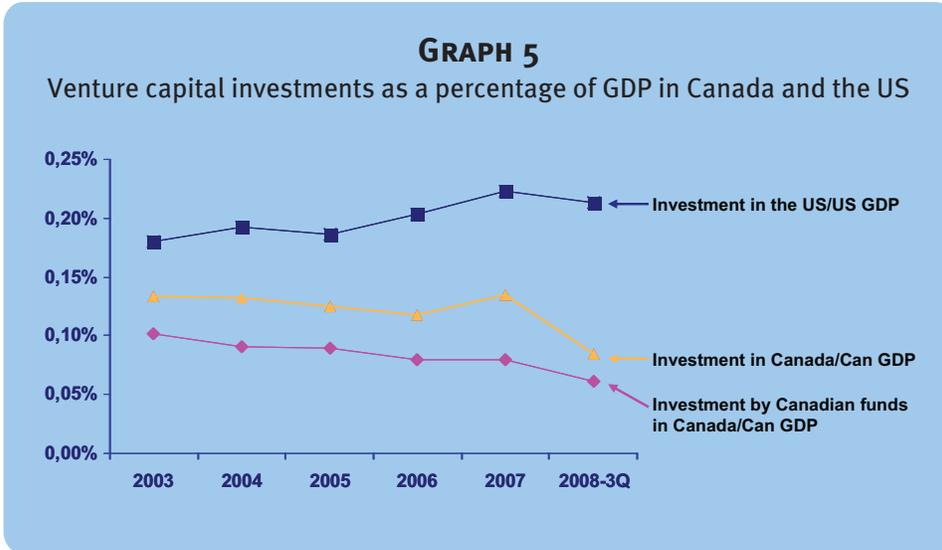
However, the decrease in fund raising by retail and government funds has not been compensated by the increase in fund raising by private independent funds between 2003 and 2006 and recently (2007-2008) fund raising by private independent funds has also decreased. Fund raising by other types of funds (institutional, corporate, others) is small and decreasing. As a result, total fund raising by Canadian funds has sharply decreased since 2005 (graph 6) and first indications show that this has accelerated in 2008.

As already highlighted in graph 5, this decline in fund raising translates into a decline in investment by Canadian funds compared to the size of the economy and the pace of this contraction is accelerating. Graph 7a details the level of investment in Canada by type of funds as a percentage of GDP (levels in dollars are provided in graph 7b). Between 2003 and the first 3 quarters of 2008:

- Government and retail funds have been divided by 2, from 0.051% of GDP to 0.026%

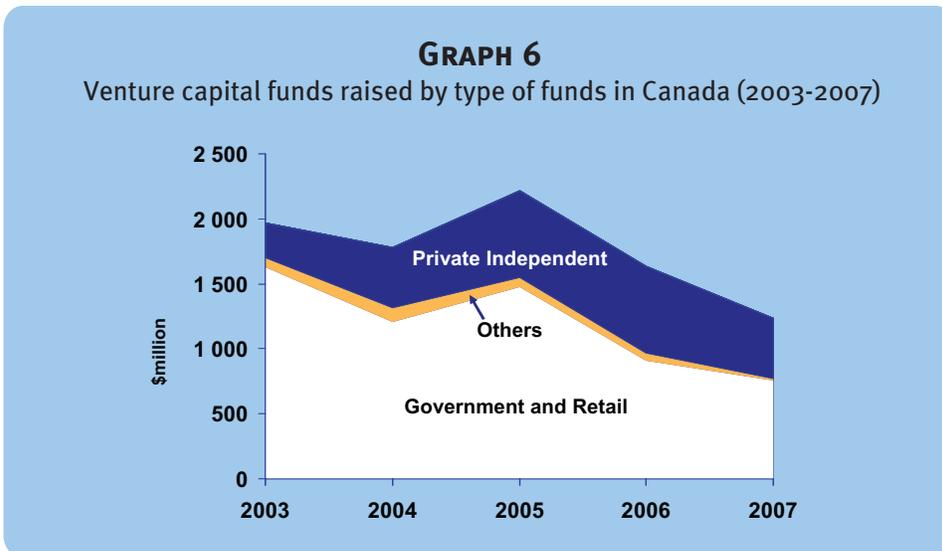
5.0 The Canadian Venture Capital Industry

Graph 5: Venture capital investments as a percentage of GDP in Canada and the US



Source of the data: Thomson Reuters, Statistics Canada and US Bureau of Economic Analysis

Graph 6: Venture capital funds raised by type of funds in Canada (2003-2007)



Source of the data: Thomson Reuters

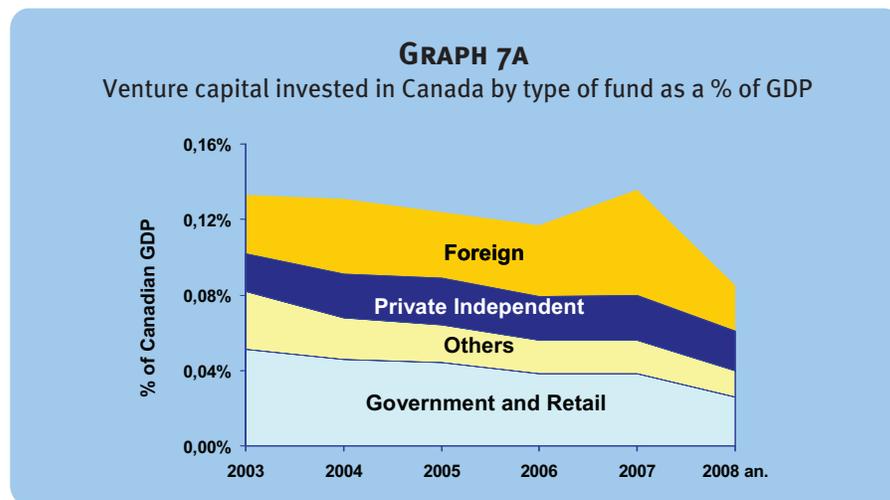
5.0 The Canadian Venture Capital Industry

- “Others” as well, from 0.031% of GDP to 0.014%
- Canadian private independent funds have progressed from 0.020% in 2003 to 0.024% in 2007, before falling back to 0.021% in 2008. Their progress has been far too timid to compensate for the decline in other types of funds
- Finally, foreign funds have nearly doubled between 2003 and 2007, from 0.031% of GDP to 0.056%, offsetting most

of the decrease of Canadian funds, before falling back to 0.024% in 2008

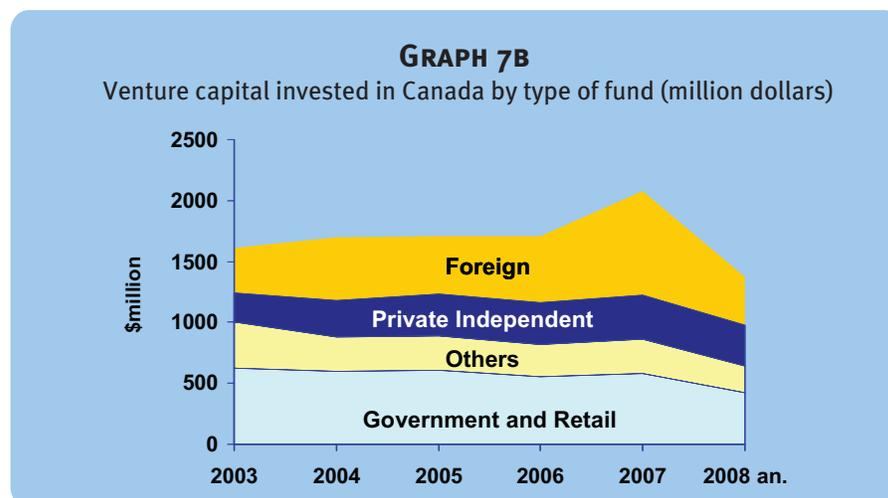
The information available indicates that the fall in fund raising by Canadian funds has accelerated in 2008. This should translate into further contractions in investment by Canadian funds. As already mentioned, investment by foreign funds is more complementary to investment by Canadian funds than a substitute. A decline in fund raising by Canadian funds is a serious threat to venture capital investment into Canadian technology companies.

Graph 7a: Venture capital invested in Canada by type of fund as a % of GDP



Source of the data: Thomson Reuters

Graph 7b: Venture capital invested in Canada by type of fund (million dollars)



Source of the data: Thomson Reuters. The first 3 quarters of 2008 have been annualized

6.0 The Economic Impact Of Venture Capital - US Results

Venture capital is important for the overall economy because it is about innovation – turning ideas and basic science into products and services which form the basis for new businesses which create economic activity and jobs.

In technical terms the impact of venture capital on the economy is summarized by the following assessments:

1. Venture capital stimulates innovation and innovation is key to growth.
2. Venture capital enables fast growing companies to emerge out of research centers, laboratories or entrepreneurial creativity. These “spin offs” have the potential to make up a very significant part of the overall economy.

These assessments are supported by numerous studies in the US where the maturity of the venture capital industry and the extent of the data have enabled more in-depth academic work. The following paragraphs summarize these studies.

Economic growth is the result of increases in inputs (capital and labour) and increases in productivity, which is itself closely linked to technological innovation. Long term studies have shown that in industrialized economies only a small part of growth can be attributed to the increase in inputs, indicating that technical innovation is a major driver of growth⁸ and more recently, detailed studies have documented the impact of information technologies on the productivity surge of the US economy since the mid nineties⁹.

Venture capital stimulates innovation for the following reasons:

- Young technology firms are very important for developing new ideas and technologies as large established firms are usually much slower to identify new opportunities and develop new technologies outside their established product lines. Young firms are faster in developing new

ideas and technologies which can come directly from universities and public centers for research; from existing companies which do not see these technologies as part of their core business (spinouts) or directly from entrepreneurs.

- Venture capital has developed special characteristics to deal with the specific risks of investing in start-up companies who are commercializing new technologies and thus provides a way for those companies to be funded.

The conclusions of various studies presented below illustrate this positive impact of venture capital on innovation, value creation, economic growth and employment.

6.1. Venture capital-backed companies have a strong impact on innovation and patenting

A dollar invested in venture capital is three times more effective in creating patents than a dollar invested in corporate R&D. Though venture capital represented less than 3% of corporate R&D from 1983 to 1992, it accounted for 8% of industrial patenting during the same time. Compared to non-venture-backed companies, patents filed by venture capital-backed companies are 1.5 times more often cited and 4 times more the object of litigation which, indirectly, shows that they are more valuable¹⁰.

6.2. Venture capital-backed IPO's outperform other IPO's

Venture capital backed companies tend to be more global, faster to reach an IPO and their returns performance post IPO is much higher than non-venture capital backed companies¹¹.

⁸ A review of these studies is presented in Josh Lerner, “*Alberta Venture Capital Review*”, February, 2007, p.9-10. This paragraph is based in part on this study.

⁹ Source: McKinsey Global Institute, “*US Productivity Growth 1995-2000, Understanding the contribution of Information Technologies relative to other factors*”, October 2001

¹⁰ Source : Paul Gompers and Josh Lerner, “*The Venture Capital Cycle*”, Chapter 12: “Does Venture Capital Spur Innovation?”.

¹¹ Sources : Gil Avnimelech, Martin Kenney, Morris Teubal, op cit., p.12 for a review of the literature on these issues and Josh Lerner, “*Alberta Venture Capital Review*”, February, 2007 for time to IPO and post IPO performance.

6.0 The Economic Impact Of Venture Capital - US Results

6.3. Venture capital-backed companies have a strong impact on the US economy: employment, sales, market value

According to a study by Josh Lerner¹², “by the end of 2004, venture-backed firms that had gone (and remained) public made up over 14 percent of the total number of public firms in existence in the United States at that time. And of the total market value of public firms (\$21 trillion), venture-backed companies came in at \$2 trillion—9 percent. Venture-funded firms also made up over 4 percent (\$0.6 trillion) of total sales (\$13.9 trillion) of all U.S. public firms at the time and employed 3.5 percent of the total public-company workforce—most of these jobs high-salary, skilled positions in the technology sector.” In specific industries, the impact has been even higher: “For example, companies in the computer software and hardware industry that received venture backing during their gestation as private firms represented more than 75 percent of the software industry’s value”¹³.

Another study¹⁴ that encompasses all venture-backed companies estimated that in 2006 “the total revenue of venture capital financed companies comprised 17.6% (\$2.3 trillion) of the nation’s gross domestic product (GDP) and 9.1% (10.4 million) of U.S. private sector employment”. Moreover, employment in venture capital-backed companies grew by 3.6% a year between 2003 and 2006 when total employment grew by only 1.4%¹⁵.

¹² Josh Lerner, “*Alberta Venture Capital Review*”, February, 2007, p.16.

¹³ Ibid. p.17

¹⁴ Global Insight, “*Venture Impact – The Economic Importance of Venture Capital Backed Companies*”, Fourth Edition,

¹⁵ Global Insight, “*Venture Impact – The Economic Importance of Venture Capital Backed Companies*”, Fourth Edition, p.5

7.0 The Impact Of Venture Capital On The Canadian Economy

This section describes quantitative measures of the impact of venture capital on the Canadian economy: specifically, the contribution to the Canadian economy of companies which during their development received venture capital investments¹⁶. We refer to these companies as “venture capital-backed companies”. For reasons outlined in the methodological appendix, the analysis is focused on venture capital investments in technology sectors: Life Sciences, Information and Communication Technologies (ICT) and Other Technologies (Cleantech, including new energy, and new materials).

The results can be summarized as follows:

- A large share of Canada’s largest public and private technology companies has been venture capital-backed.
- Venture capital-backed technology companies generate close to 150,000 jobs in Canada (1.3% of all private sector employees) and 1% of Canadian GDP.
- Venture capital-backed companies have growth rates (employment and sales) which are significantly higher than the average of their sector.
- Venture capital-backed companies are highly R&D and innovation intensive.
- Venture capital-backed companies are highly export oriented and geared to compete in the global economy.

7.1. Venture capital backed many of Canadian largest public and private technology companies

One of the most significant and visible impacts of venture capital is the number of large technology companies which, in their beginning or at some point in their growth continuum, were financed by venture capital. Obviously not all their achievements can be attributed to venture capital.

However, as was the case for Q9, Axcan, Taleo, Creo and A.L.I. (see case studies in section 8 of this report), venture capital was often critical for these companies: “the right money at the right time”. It played a key role in their creation and contributed significantly to their growth.

As shown in graphs 8 and 9:

- 50% of ICT companies in the Top 1000 Canadian Publicly Traded Companies¹⁷ received venture capital investment when they were emerging private companies. These venture capital backed companies represent 32% of total sales and 83% of total market capitalization within this category.
- For Life Sciences, these numbers are respectively 54%, 26% and 38%.
- Among ICT companies that are part of the Top 350 Canadian private companies¹⁸, venture capital backed 13% of them, representing 5% of total sales.
- For Life Sciences, these numbers are respectively 33% and 15%.

Graph 10 lists the top 10 ICT and Life Sciences venture capital-backed companies by revenues in 2007.

To this list, one can add many other large venture capital-backed companies which have been acquired (graph 11). Many of them continue to operate and grow in Canada post acquisition as will be illustrated in the case studies of A.L.I. and Creo. Also, they have generated very significant snowball effects including angel investors, new managers, and new start-ups.

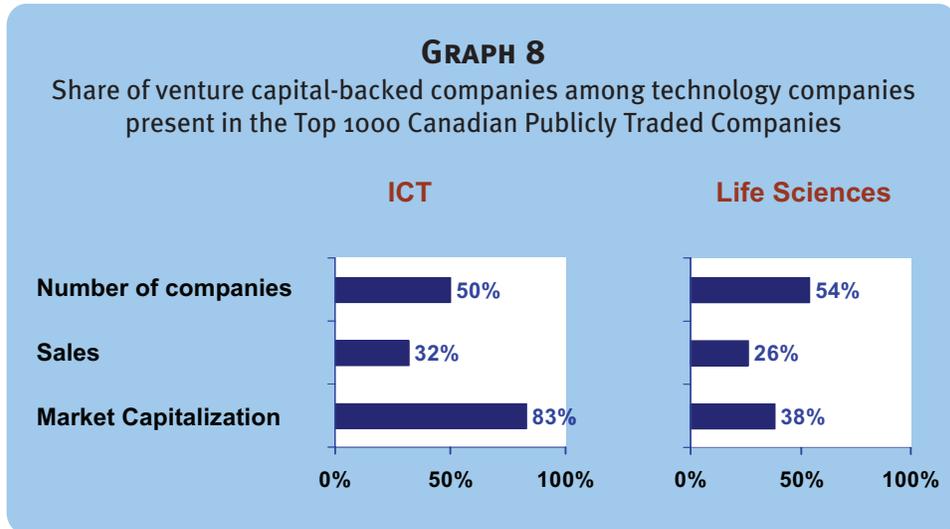
¹⁶ The methodology of the study is explained in appendix B. Detailed results are presented in the statistical report: “*The Economic Impact of Canadian Technology Venture Capital-Backed Companies*”, E&B Data, November 2008. Earlier surveys on the economic impact of venture capital in Canada were realized in the 1990’s by Macdonald & Associates Limited on behalf of the Business Development Bank of Canada (BDC). They showed a very positive impact on companies responding to the survey. The present study goes further by extrapolating survey results on the overall population of Venture Capital-backed firms.

¹⁷ Source: Globe and Mail, “Report on Business”, list of the Top 1000 Publicly Traded Companies, 2007.

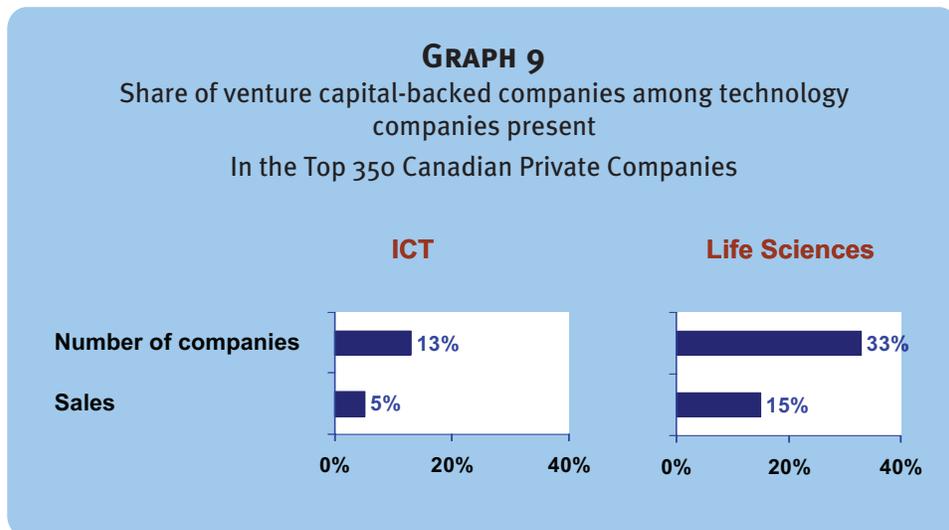
¹⁸ Source: Globe and Mail, “Report on Business”, list of the Top 350 Private Companies, 2007.

7.0 The Impact Of Venture Capital On The Canadian Economy

Graph 8: Share of venture capital-backed companies among technology companies present in the Top 1000 Canadian Publicly Traded Companies



Graph 9: Share of venture capital-backed companies among technology companies present in the Top 350 Canadian Private Companies



7.0 The Impact Of Venture Capital On The Canadian Economy

Graph 10: Top venture capital-backed companies by sector and revenue²⁰ (2007)

GRAPH 10
Top venture capital-backed companies by sector and revenue¹⁹ (2007)

ICT		Life Sciences	
Top Venture Capital-Backed ICT Companies	Revenues ('000\$)	Top Venture Capital-Backed Life Sciences Companies	Revenues ('000\$)
Research In Motion	6,088,756	Axcan Pharma	360,314
MacDonald Dettwiler & Ass.	1,204,239	Angiotech Pharmaceuticals	298,087
Cognos	1,004,167	Aspreva Pharmaceuticals	225,608
Softchoice	779,026	Atrium Innovations	175,843
Open Text	597,406	Paladin Labs	64,773
Sierra Wireless	444,698	Adaltis	64,196
Mitel Networks	387,000	AEterna Zentaris	43,944
xwave Solutions	319,700	Labopharm	21,259
Teranet Income Fund	263,532	Methylgene	18,605
Constellation Software	243,531	Cardiome Pharma	9,382

Graph 11: Large venture capital-backed companies which have been acquired

GRAPH 11
Large venture capital-backed companies which have been acquired

Algorithmics
A.L.I.
Biochem Pharma
Brainhunter
Creo
Geac Computer
Hummingbird
Minacs Worldwide
Sierra Systems
Videotron

¹⁹ Revenues of Life Sciences companies include partnership revenues

7.0 The Impact Of Venture Capital On The Canadian Economy

7.2. Venture capital-backed technology companies generate close to 150,000 jobs in Canada (1.3% of all private sector employees) and 1% of Canadian GDP

Between 1996 and 2007, venture capital investors financed 2,175 technology companies in Canada. 1,740 of those were operating in Canada in 2008. In addition, prior to 1996, venture capital investors financed 15 companies that are still operating and have sales larger than \$ 50 million in 2008.

On average, these 1,755 companies have sales of \$ 10.5 million and employment of 47 direct jobs each. They are a mix of small, medium and large companies.

In aggregate, they generate sales of \$ 18.3 billion

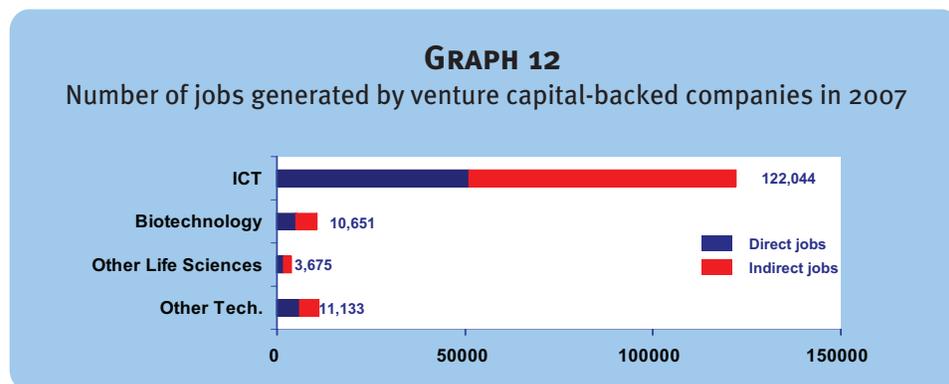
- \$ 15.4 billion in ICT,
- \$ 1.9 billion in Life Sciences,
- \$ 1.0 billion in Other Technologies.

In total, they employ 63,955 people in Canada and 17,760 abroad. In addition, they generate 83,549 indirect jobs in Canada for a total of 147,504 direct and indirect jobs generated in Canada which represents 1.3% of all private sector employees in Canada. Indirect jobs are jobs generated in other companies through the purchase of goods and services from these companies. They are calculated on the base of industry-weighted employment multipliers provided by Statistics Canada²⁰.

The 51,050 direct jobs in Canada in ICT venture capital-backed companies represent 8% of the total sector employment and the 5,069 direct jobs in venture capital-backed Biotechnology companies represent 34% of total employment in that sector (graph 12).

Gross domestic product (GDP) is the measure of total value created in the country during one year. In 2007, the contribution of venture capital-backed companies to the Canadian GDP was \$ 14.5 billion, 0.94% of total GDP: 0.54 % directly through compensation, profits and taxes paid by these companies and 0.40% indirectly through the activity generated in other companies and sectors in Canada due to the goods and services bought by these companies²¹.

Graph 12: Number of jobs generated by venture capital-backed companies in 2007



²⁰ See Methodology in Appendix B

²¹ GDP indirect impact is calculated on the basis of industry-weighted GDP multipliers provided by Statistics Canada. See Methodology in Appendix B.

7.0 The Impact Of Venture Capital On The Canadian Economy

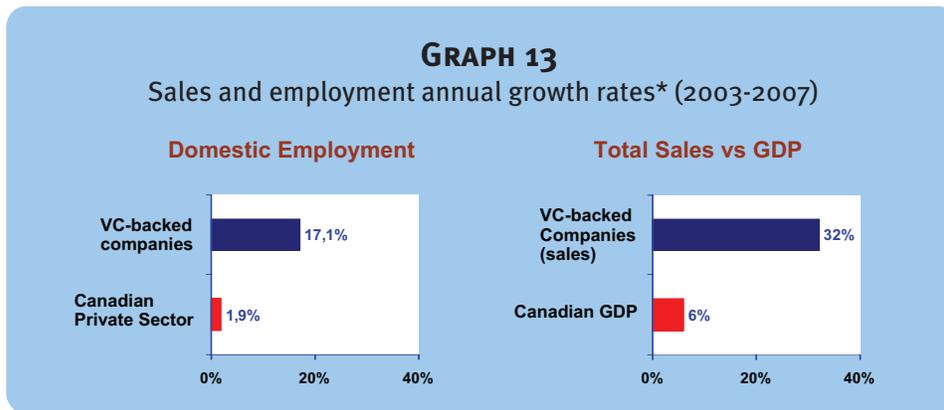
7.3. Venture capital-backed companies have growth rates (employment and sales) which are significantly higher than the average of their sector

Between 2003 and 2007, venture capital-backed companies which responded to the survey achieved compounded annual growth rates of 17.1% for employment and 32% for total sales which compares with 1.9% for total private sector employment in Canada and 6 % for Canadian GDP. The

growth rates among venture capital companies were 5 times faster for sales and 9 times for employment (Graph 13).

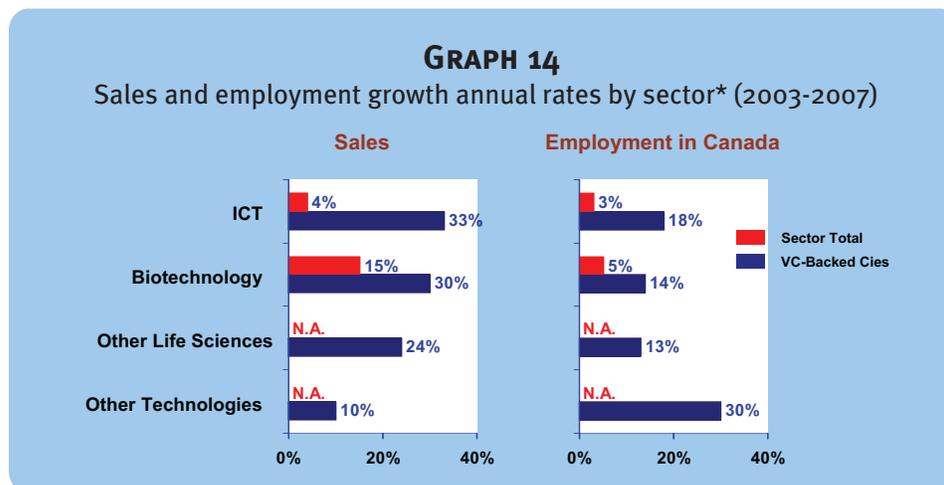
In every sector, growth rates in sales and employment in venture capital backed companies significantly outpace those of all companies in their technology sector as illustrated by graph 14.

Graph 13: Sales and employment annual growth rates* (2003-2007)



*Survey based – Excludes the 15 large pre-1996 companies

Graph 14: Sales and employment growth annual rates by sector* (2003-2007)



*Survey based – Excludes the 15 large pre-1996 companies

7.0 The Impact Of Venture Capital On The Canadian Economy

7.4. Venture capital-backed companies are highly R&D and innovation intensive

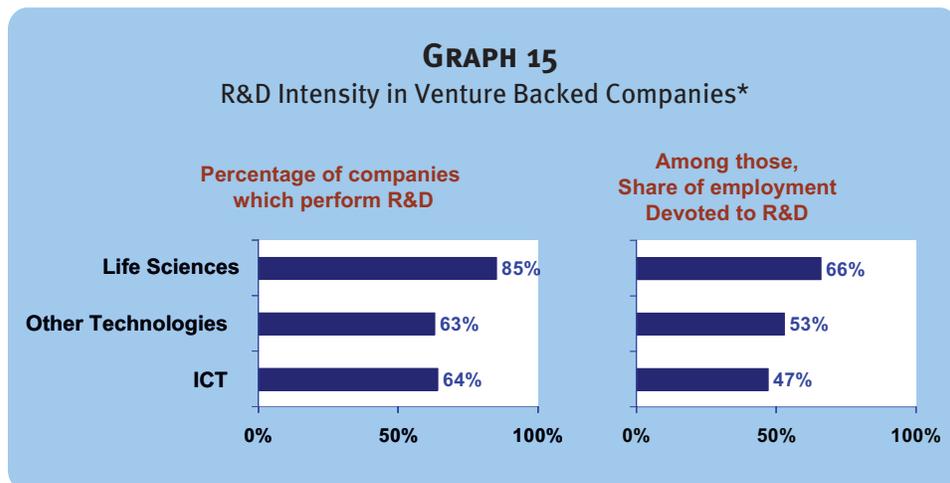
Venture capital-backed companies are highly innovative and R&D intensive enterprises. Ways to measure this intensity are (i) the existence of R&D activities within the firm and (ii) the share of total employment devoted to R&D.

70% of all venture capital-backed companies perform R&D activity: 64% in ICT, 85% in Life Sciences and 63% in Other Technologies.

For those venture capital-backed companies which perform some R&D, the share of total employment devoted to R&D is 54%: 47% in ICT, 66% in Life Sciences and 53% in Other Technologies.

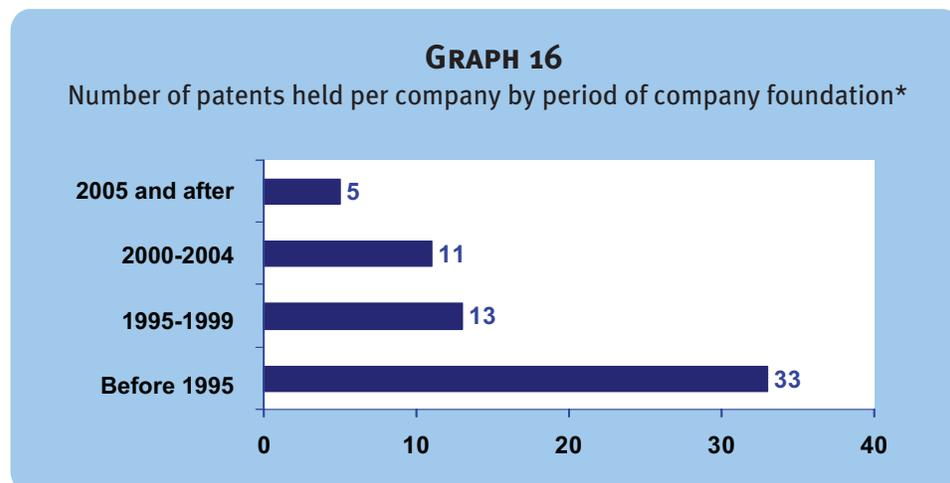
The importance of innovation and intellectual property for venture capital backed companies is also illustrated by their propensity to register patents. On average, Canadian venture capital-backed companies hold 10 patents. This number increases with the age of the company (graph 16).

Graph 15: R&D Intensity in Venture Backed Companies*



*Survey based – Excludes the 15 large pre-1996 companies

Graph 16: Number of patents held per company by period of company foundation*



*Survey based – Excludes the 15 large pre-1996 companies

7.0 The Impact Of Venture Capital On The Canadian Economy

7.5. Venture capital backed companies are highly export oriented

Venture capital-backed companies are highly export oriented as venture capital investors generally pursue companies which target global, fast growing market opportunities.

Venture capital-backed companies export 70% of their sales, 4 times the export ratio (17%) of the total Canadian private sector. Export sales account for 62% of total sales in ICT, 79% in Life Sciences, and 51% in Other Technologies. Canadian venture capital-backed companies have 21% of their employees abroad and 9% of them have headquarters outside Canada.

7.6. Summary – A comparison between Canada and the US

It is difficult to make rigorous inter country comparisons of the economic impact of venture capital for the following reasons: sector definitions differ, methodologies of the studies differ and periods under review differ. Nevertheless, it is enlightening to compare the US and Canadian data.

The US venture capital industry started 60 years ago and expanded tremendously since the late 70's. Its yearly investment pace is approximately 0.2% of GDP (0.22% in 2007) and is growing. It includes technology sectors, and other sectors such as retailing and consumer products and services. Venture capital-backed companies in the US include large and mature technology firms such as Microsoft, Intel, Genentech, and also firms in other sectors such as Starbucks and Home Depot. Overall, venture capital-backed companies in the US account in 2006 for 17.6% of US GDP, 9.1% of US employment and 8.6% of US sales²².

The Canadian venture capital industry started less than 30 years ago and expanded only in the 90's. Venture capital investment in Canada represents approximately 0.13% of GDP (two thirds of the US) and is not growing. Investment by

Canadian funds in Canada represents less than 0.1% of GDP and is declining (0.8% of GDP in 2007). Venture capital backed firms in technology sectors accounted, in 2007, for 0.94% of Canadian GDP and 1.3% of private sector employment. The number of large firms in Canada which were venture capital-backed is still limited.

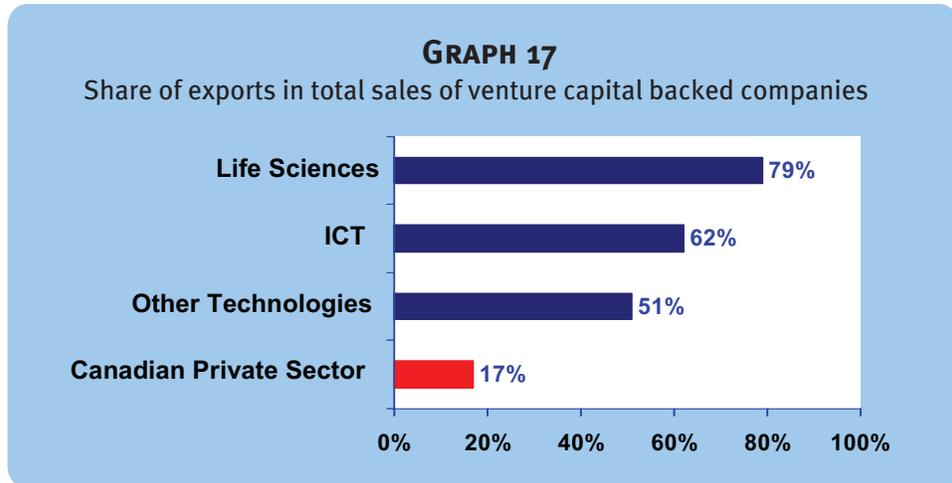
This comparison illustrates what venture capital could bring to the Canadian economy 10, 20 or 30 years from now if it could grow at a similar pace to the US, but also the potential loss for Canada if its venture capital industry remains half the size of the US industry or even shrinks when the US industry keeps growing.

Growth rates are very healthy in Canadian venture capital-backed companies (graph 18). The higher growth rate in Canada is likely due to the fact that US venture capital-backed companies are on average larger, older and more mature. It nevertheless underlines the very positive achievement of Canadian venture capital in choosing and supporting its investments.

²² Global Insight, "Venture Impact – The Economic Importance of Venture Capital Backed Companies", Fourth Edition

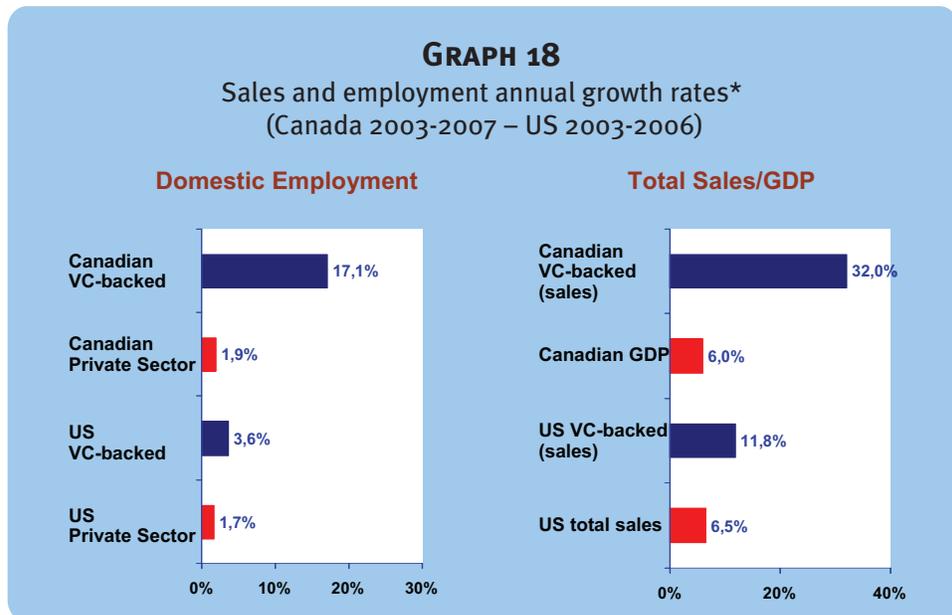
7.0 The Impact Of Venture Capital On The Canadian Economy

Graph 17: Share of exports in total sales of venture capital backed companies



*Survey based – Excludes the 15 large pre-1996 companies

**Graph 18: Sales and employment annual growth rates*
(Canada 2003-2007 – US 2003-2006)**



*Canada - Survey based – Excludes the 15 large pre-1996 companies
US - Source: Global Insight Study – Data is not entirely comparable. See details in the text

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

Venture capital has a strong positive impact on employment, growth, innovation and exports. As illustrated in the US, this impact is cumulative and can grow very rapidly. One of the reasons for this is that successful emerging companies not only create jobs, they generate skills and wealth which can be reinvested in new generations of start-up companies. We call this the “snowball effect.” Venture capitalists play an important role in that virtuous circle.

The Canadian venture capital industry has not yet reached the same level of maturity as the US industry. In Canada, GPs are younger, and funds and teams are smaller and less experienced. Although Canada is well known for the quality of its research and technology base, it has no technology hub that is comparable in magnitude to Silicon Valley and Boston. Moreover, Canada does not have a large base of technology industries and it is more difficult for venture capital funds and their portfolio companies to develop the same level of specialized expertise in this environment. For all these reasons, Canadian technology entrepreneurs and venture capital managers often have to team up with leading US venture capital funds in order to build strong companies and large exits.

Nevertheless, as described in the previous section and illustrated by the following success stories, Canadian venture capital funds have been involved in the building of very significant companies. They played key roles in:

- Teaming up with serial entrepreneurs.
- Taking the risk to finance new start-ups at a time when nobody else would fund them.
- Working with entrepreneurs to refine their business strategy and strengthen their management team.
- Building strong relationships with entrepreneurs and backing them boldly to finance the company’s expansion strategy.
- Working closely with top flight US venture capital funds to build a presence in the US and prepare successful exits.

An important question is often raised about the collaboration between Canadian and US venture capital funds and the fact that most successful exits are made in the US market by a listing on the NASDAQ or a trade sale to an American

company. Does this lead to a channelling of activity to the US, effectively exporting what had been built in Canada?

There is no doubt that there are examples of venture capital-backed Canadian companies which, after being bought by an American company, have virtually closed their Canadian operations or companies which have moved south of the border at the behest of American investors.

However, there are also many significant examples of companies which have kept growing or even accelerated their growth in Canada after being bought (see the Creo and A.L.I case studies) or which have developed in parallel in Canada and the US after having moved their headquarters in the US in order to have better access to the American market and prepare an IPO on NASDAQ (see Taleo case study).

In aggregate, as reported in the previous section, venture capital has a significant and positive effect on domestic job creation and economic growth. Moreover, building large companies with a significant presence in Canada is not the whole story. When a company is acquired or makes a successful IPO on NASDAQ, this creates a large amount of wealth for the Canadian founders who very often reinvest part of it in new start-ups by becoming angel investors. They reinvest not only their money; they also invest their time and skills to help the next generation of entrepreneurs.

A second benefit from a successful technology company is the growth of the managerial talent pool to which a new generation of companies will have access. The following cases illustrate the number of new start-ups which have utilized the talent pools generated by the successes of Taleo, Creo and A.L.I.

Finally, some of these successful entrepreneurs become serial entrepreneurs, starting success after success. One of the roles of venture capital is to identify these potential serial entrepreneurs early and invest in them, as is illustrated by the case of Q9 Networks.

In summary: venture capital not only helps to build large successful technology companies, it also creates a pool of successful entrepreneurs, business angels and management talent. Through their ability to build close relationships with these, venture capital funds play an important role in linking these entrepreneurs with new business ventures and building the next generation of technology successes.

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.1. Q9 Networks: attracting and backing serial entrepreneurs

As pointed out by Gompers and Lerner in their research²³, one of the main skills of successful venture capitalists is to be able “to identify and invest in first time entrepreneurs who are more likely to become serial entrepreneurs”. The Q9 story is a good illustration of this alchemy between successful entrepreneurs and venture capitalists leading to economic and financial successes.

Osama Arafat and Stuart Lombard are company builders. In June 1994, they co-founded InfoRamp and built it into the largest Toronto Internet Service Provider before selling it to iSTAR Internet in September 1995. iSTAR Internet was backed by Jefferson Partners, a venture capital fund in which John Albright was a partner. Osama Arafat, Stuart Lombard and John Albright met on this occasion.

In 1996, John Albright left Jefferson Partners to found JLA Ventures, a venture capital fund. Albright, Arafat and Lombard decided to team up to find new investment opportunities in which they could work together. They selected Isolation Systems, a manufacturer of Virtual Private Networks solutions. JLA Ventures, Arafat and Lombard invested in the company. Arafat and Lombard became co-CEOs. In March 1998, after 18 months under their leadership, Isolation Systems was sold to Shiva Corporation for \$37 million in cash. Subsequently, Arafat and Lombard became Partners at JLA Ventures in September of 1998.

In order to feed its investment activities, JLA Ventures was looking for new opportunities, under-funded industries or great ideas which have not yet been capitalized on. In 1999-2000, it identified co-location managed services as one of those areas which had not yet been properly served and funded. In January 2000, backed by the JLA Ventures team, Arafat wrote a business plan to meet these needs and started looking for existing companies which matched this plan. He met Paul Sharpe who was the founder of Myna Communications, a small firm

which provided dial up services. They decided to use Myna Communications to implement the business plan designed by Arafat and changed the name of the company to Q9 Networks.

In April 2000, they raised a \$26.5 million seed round from JLA Ventures and Vengrowth Private Equity Partners in order to build a first data center in Toronto. This round was the largest-ever seed round financing in the Canadian technology sector. In January 2001, Arafat returned to his role of company builder and became CEO of the company while Paul Sharpe was President and COO.

In April 2001, they raised a new round of \$88.5 million from their existing investors and from a series of new investors including TD Capital, OMERS and Scotia Private Equity, in order to build a new data center in Calgary and to expand the Toronto facilities. This investment also allowed Q9 Networks to acquire the Canadian assets of Exodus Communications in 2002. This included the largest Canadian data center.

In April 2004, Q9 Networks had 65 employees and \$24 million in sales. It went public on the TSX and raised \$32.4 million at a price of \$8.50 per share. Four years later, in October 2008, it was acquired by ABRY Partners, a Boston private equity fund specialized in Media and Communications at a price of \$17.05 per share for \$361 million, a value which factors in an aggressive growth path in the coming years despite the difficult environment.

Within 8 years, backed by their initial investors, Arafat and Sharpe have turned an idea into a leading Canadian provider of outsourced data centre infrastructure for organizations with mission-critical IT operations, which now has 170 employees and \$70 million in annual sales. Its managed services, including: bandwidth, dedicated servers, firewalls, load balancing, virtual private networking (VPN) and back-up/restore, enable the rapid provisioning and scalability of client infrastructure.

²³ Paul Gompers, Anna Kovner, Josh Lerner, and David Scharstein, “Skill vs. Luck in entrepreneurship and Venture Capital: Evidence from Serial Entrepreneurs”, July 2006.

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.1. Q9 Networks: attracting and backing serial entrepreneurs (continued)

In this endeavour, venture capital has played a key role in many respects: attracting successful entrepreneurs, creating the environment to nurture a new opportunity, taking the risk to finance it from the very beginning, then supporting the business by sharing business experience,

providing guidance on the board, working with management on the growth strategy, to prepare the next big round and to open doors of prospective customers.

There is good reason to think that this creative relationship will not end with Q9 Networks but lead to new successes.

8.2. Axcan Pharma: vision, strategy, communication, trust and audacity

Interfalk started in 1982 as a joint venture between Léon Gosselin and the German firm Dr Falk Pharma to obtain approval for and distribute gastroenterology products developed by Falk Pharma in Canada and the US.

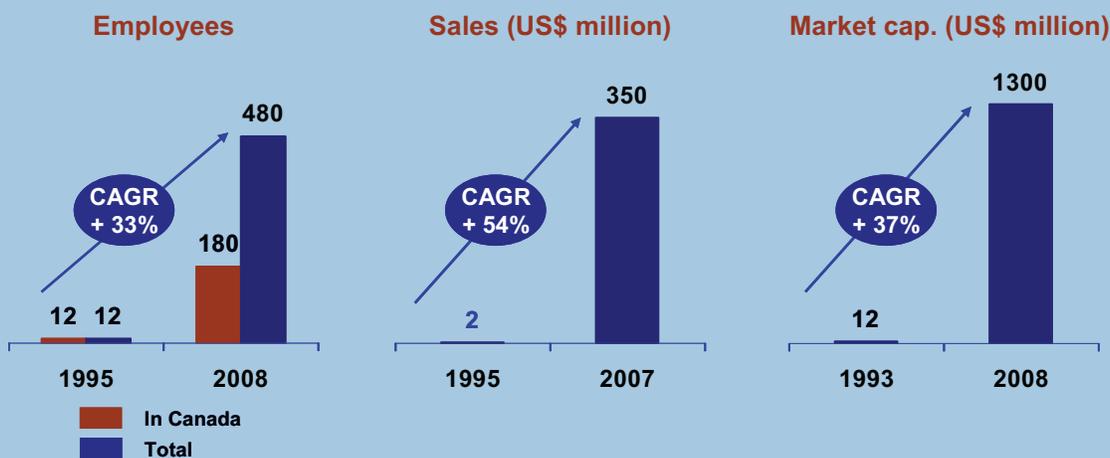
In 1992, Axcan Holdings Ltd (held by Léon Gosselin) purchased the interest held by Dr Falk. The company became 100% Canadian and changed its name to Axcan Pharma in 1993.

In 1993, the venture capital arm of La Caisse de dépôt et placement du Québec, subsequently known as Sofinov, invested \$5 million in the company which helped it start an ambitious acquisition and internal product development strategy which, by steps, led Axcan Pharma

to become a leading specialty pharma company in the field of gastroenterology.

Valued at CAD\$15 million (US\$11.6 million) pre-money at the time of the investment, Axcan Pharma made an IPO on the TSX in 1995 at a share price of CAD\$6, and listed on the NASDAQ in 2000 at a share price of US\$6 (CAD\$8.90). It made several private placements on the TSX and the NASDAQ to finance acquisitions and was eventually acquired in 2008 by the buyout fund TPG for US\$1.3 billion at a share price of US\$23.35. The value of the company multiplied 100-fold in 15 years.

In 1995, the company had 12 employees, all based in Quebec and revenues of CAD\$ 2 million. In 2008, it has 480 employees, 180 in Canada, of which more than 60 employees work in Scientific Affairs. Revenues in 2007 were US\$ 349 million.



8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.2. Axcan Pharma: vision, strategy, communication, trust and audacity (continued)

The Axcan Pharma story is a good illustration of how a venture capital fund can work with a successful and visionary entrepreneur and add value. Léon Gosselin led Axcan Pharma nearly all the way through this expansion. He was CEO until 2005 and remained Chairman of the Board. He had the vision and the skills to implement it. CDPQ/Sofinov worked closely with him to transform a small family company into a professionally managed firm, setting specific recruitment milestones from the very beginning. It named two directors who, together with the

whole board, worked closely with the CEO to define and monitor the acquisition strategy, focus it on gastroenterology and sell other non core activities, and provided financial backing.

In 1999, at a turning point, when Axcan had to shift to higher gear or look to be acquired, Sofinov was able to structure and finance a US\$100 million deal which allowed Axcan Pharma to acquire Scandipharm in the US and to become the first Canadian-based pharmaceutical company with its own US sales force. Without this bold move, based on constant communication, reciprocal trust and a well-articulated strategy, Axcan would not have become the well-recognized international specialty pharma company it is now.

8.3. Taleo – The local impact of a global success

Taleo (formerly Recruitsoft) is presently the global leader of talent management software solutions. The company's products enable organizations to establish, automate and manage worldwide staffing and talent management processes. These solutions help companies attract and retain talent, match workers' skill to business needs, reduce the time and costs associated with these functions, and ease the burden of regulatory compliance.

As at June 30, 2008, Taleo had trailing 12 months revenues of US\$144 million, 850 employees, offices in California and Quebec City, field sales professionals in the United States, Canada, Europe, Australia and Singapore, and a customer base of over 1800 companies, including 38 of the Fortune 100 and 118 of the Fortune 500.

Taleo is a good example of how venture capital can work with founders and business angels to build a world-class company. The company started in 1999 in Quebec City when the two founders, Martin Ouellet and Louis Têtu, wrote a business plan around launching a company specialized in staffing process automation using software as a service model. The idea attracted the interest of Robert Talbot, managing partner of Propulsion Ventures,

a venture capital fund which was part of Telesystem, founded by Charles Sirois, a successful IT entrepreneur. Telesystem had already financed Louis Têtu's previous venture in the early 90s, Berclain Group, which in 1996 was sold to Baan, an ERP Software Provider. In 1999 Propulsion Ventures structured a first round of financing of \$2 million which allowed it to finalize a first version of the software and worked with Louis Têtu, who became the CEO, to initialize the go to market strategy.

In 2000, Recruitsoft raised an additional \$15 million B Round with Omnicom in New York, followed by a \$ 37 million round with Bain Capital Ventures of Boston in 2001.

For disruptive technology companies, market and competition are not local but global and to be successful these companies have to position themselves quickly in global markets. Shortly after the second round, Recruitsoft invested aggressively in a sales and marketing organization with an office in San Francisco in order to position the company in the US market.

Following the third round, Bain Capital played a very active role with management in building the US presence and the executive team, attracting notably previous executives from Peoplesoft (which had just been bought by Oracle), and preparing an IPO.

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.3. Taleo – The local impact of a global success (continued)

On October 5th, 2005, Taleo went public on NASDAQ, raising US\$ 94 million at a market capitalization of US\$306 million. Since that date, as of August 4, 2008, its stock increased by 71% vs. 12% for NASDAQ and 6% for the S&P 500. Its current valuation as of August 2008 is approximately US\$700 million.

The Taleo case illustrates the benefits first tier US venture capital funds can bring to Canadian companies, building large rounds which, given their small size, most Canadian funds would not be able to fund, helping companies to position themselves in the US market and preparing an exit on the NASDAQ.

It illustrates as well the value added by Canadian funds like Propulsion that played a key role in helping start the company, in discussing the financing strategy and in structuring the following rounds with first tier US funds.

Does this way to attract US venture capital funds result in Canadian companies heading south of the border? Not in the case of Taleo: in August of 2008, out of the 861 employees, 293 were based in Quebec City where most of its' R&D activities are located. This team keeps growing along with the company and their regular interaction with Silicon Valley helps keep it at the forefront of the industry and technology. This creates a net know-how import mechanism that can benefit other companies and start-ups locally. The rest of the employees are mainly sales and marketing people who are located near the individual markets, in the US and internationally.

In the case of Taleo the headquarters are in California and the executive team is composed of several Americans. However, given the small number of seasoned CEOs or sales and marketing executives in Canada in the late 90s, it is doubtful that Taleo could have had this level of success if it had stayed in Quebec City with a local executive team. Positioning the company in California and recruiting experienced managers, who came from Peoplesoft, Oracle and other leading organizations, has been key to Taleo's success.

However this is changing as successes like Taleo are progressively enlarging the pool of talent and angel money available in Canada for new start-ups:

- Louis Têtu has come back to Canada, and is now executive Chairman of Coveo Solutions, an Enterprise Search software vendor based in Quebec City. Propulsion Ventures is an investor in Coveo Solutions. Têtu has brought to Coveo two other executives from Taleo, the former CFO and the Executive VP sales. He has personally invested \$2 million in the company and is also an active angel investor in other Canadian companies.
- Some members of Taleo's original management team remained with Taleo and at present hold executive positions in the Californian head offices. They may eventually return to Canada with experience that could benefit a new generation of technology companies or venture capital funds as managers or business angels.

Through their ability to build close relationship with serial entrepreneurs, venture capital funds play an important role in linking these entrepreneurs with new business ventures.

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.4. Creo –The snowball effect of venture financing and company success

Venture capital investment into Creo – initially from Canada’s BDC (1988) and later from numerous US-based venture capital co-investors – played a key role in accelerating the growth of what became a leading Canadian technology financial success. Twenty years later, the ripples are still being felt - at least half a dozen next-generation technology companies are benefiting from the talent and capital sparked by this success. All of them have in turn been backed by venture capital investors, both angels and venture capital funds. The snowball keeps rolling.

When it was bought by Kodak in 2005 for US \$1 billion, the largest all cash exit of a British Columbia technology company to date, Creo Inc. was a premier supplier of prepress and workflow systems used by commercial printers around the world. Its extensive product portfolio is now part of the Graphic Solutions & Services (GS&S) operating unit within Kodak's Graphic Communications Group (GCG).

The Vancouver-area company was started in 1984 by Ken Spencer and Dan Gelbart, two former managers at Macdonald Dettwiler & Associates (MDA), another venture capital backed company which continues to this day as a global technology leader based in British Columbia. Ken Spencer was CEO of Creo until he retired in 1995 and Dan Gelbart remained CTO until the company became part of Kodak in 2005. In 1991, the founders recruited Amos Michelson to their senior management team. Michelson, who had been the CEO of Opal in Silicon Valley, became CEO of Creo when Spencer retired.

When BDC first invested in Creo in 1988, the company had less than 20 employees. BDC investment managers became the first two external board members of the company. Supported by its board and its investor, the management team started a very strong internal growth path. It was able to attract a series of international venture capital investors (Star Ventures, Adams Street Partners, Technology Crossover Ventures, Harbourvest Partners, and Goldman Sachs) to finance its development and growth through the 1990s. Creo went public with an

IPO co-listed on the TSX and NASDAQ in July 1999. From 1991 to 1999, Creo’s sales grew from \$3 million to \$200 million. Employment grew from 50 to 1000; 70% located in Greater-Vancouver and the remainder based in the US, Europe, Israel, the Far East and Australia.

By the time Creo was acquired by Kodak, the firm had 4 000 employees globally, including 1400 in Vancouver, and US \$650 million in sales. Since taking over, Kodak has continued to grow and build the former Creo business operation as a significant division based in British Columbia.

Thousands of jobs were created, one billion dollars in shareholder wealth was created, and a major global corporation now counts Vancouver as part of the core of its future product direction. But the story does not stop there. The wealth and skills built around Creo’s success have been leveraged extensively in the creation and financing of numerous next-generation technology companies in British Columbia.

Following the sale of Creo to Kodak, Amos Michelson has helped start and finance **Kardium**, a technology pioneer developing new medical devices to address cardiovascular diseases. He is Chairman and has attracted senior management and advisors to the start-up from his senior team at Creo. The company presently has 15 employees.

Michelson is Chairman and the start-up investor in **Etalim**, a Cleantech company dedicated to finding ways of efficiently generating and using energy. All of Etalim employees come from Creo.

Along with the Founders of ALI Technologies, another highly-successful venture backed BC company which was acquired by McKesson for over half a billion dollars, Michelson has invested in and been active in the start-up phase of **Cogent Health Solutions**, a disease management software company based in Vancouver. Cogent has received venture capital backing from Vancouver-based Yaletown Venture Partners and several of the region’s most respected angel investors.

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.4. Creo –The snowball effect of venture financing and company success (continued)

Michelson is Chairman and an investor in **Scrapboy Digital Media**, a social networking firm founded in 2006. Scrapboy's senior team now includes former members of Michelson's team at Creo.

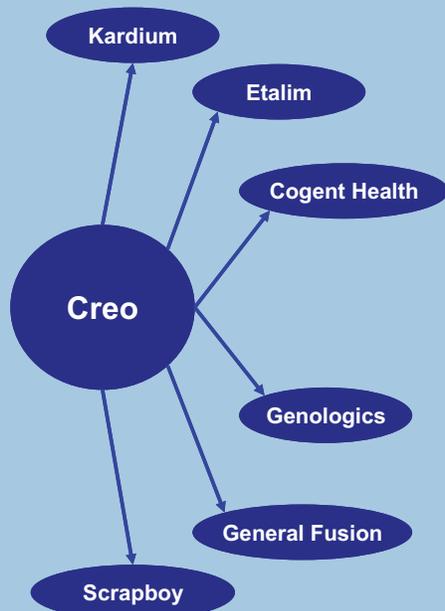
Along with Canadian venture capital funds Yaletown Venture Partners and Growthworks, Seattle-based OVP Venture Partners, and a Canadian who was the past second-in-command at Cisco, Michelson has invested in and had been active on the board of Victoria-based **GenoLogics**. Emerging from the University of Victoria less than five years ago, this software firm now has 70 employees in Canada, the US, and Europe and an impressive customer list the world's leading

pharmaceutical companies and Life Sciences research institutions. GenoLogics' senior management team includes executives from two earlier venture-backed Vancouver companies, Creo and Pivotal. Founders of other successful British Columbia technology, health sciences, and venture capital companies such as MDS, ALL Technologies, and Ventures West were early angel investors who helped seed GenoLogics as a start-up.

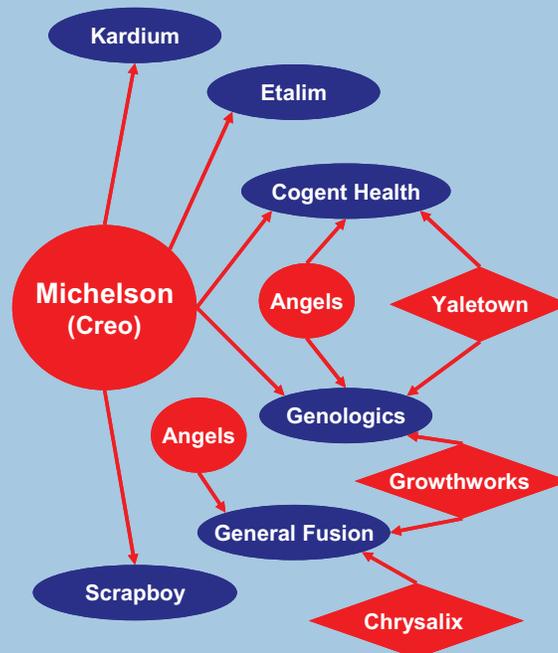
Finally, **General Fusion** is a start-up firm working on new developments in fusion technology. General Fusion's CEO and CTO were part of Creo's management and technical team. General Fusion is backed by a number of technology industry angel investors and has also received seed investment from two Vancouver-based venture capital funds, Chysalix and Growthworks.

Creo: The Snowball Effect

Management and Board members



Financing



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8.5. ALI Technologies: venture capital, angels and the snowball effect

Founded in 1986, and backed over a series of financings that included both angels and venture capital, Vancouver-based **ALI Technologies** grew over a period of 16 years to become a leader in healthcare software. ALI was acquired in 2002 by McKesson for \$530 million, making it one of the largest all-cash buy-outs of a Canadian software company. At that time, it had 220 employees in Vancouver, more than half in R&D, annual sales of \$56million, and an annual growth rate exceeding 100%.

It is often suggested that Canadian technology companies when bought by US companies are moved to the US. The ALI experience is strong evidence to the contrary: McKesson has continued to invest in the growth of this business, building it into a market share leader with more than 800 employees in the Vancouver area. Without early venture capital and angel backing, this business would not exist today nor would the numerous spin-off effects of its success.

Another common perception is that venture backed technology companies are overnight successes. ALI's story is probably closer to the typical truth – one of many years of adjusting to evolving market dynamics backed by patient, risk-tolerant private capital.

Initially financed by Vancouver angel investor Milton Wong, and later by other technology industry insiders such as Paul Lee, a senior executive at **Electronic Arts**, ALI Technologies was developing infrared imaging devices for breast cancer detection. More than five years into its business, the window of opportunity for ALI's initial products evaporated as new techniques diminished the risks associated with X-ray technology use for breast cancer testing. These were, for ALI Technologies, difficult times. Strategic decisions had to be made and capital would be required to buy time to re-focus.

Financed by insiders and angels, benefiting from the British Columbia venture capital Program, a provincial tax credit for individuals investing in private BC-based technology companies, ALI reinvented its business in a technology it had developed for electronic image management and archiving.

In 1993, it recruited Greg Peet as CEO and attracted an initial round of venture capital financing from Vancouver-based Discovery Capital, a boutique venture capital fund backed by individual investors leveraging BC's attractive venture capital tax incentives. This financing, at a critical time, allowed the company to develop its growth strategy and paved the way to pursue public equity in the mid and late 1990s on the Vancouver and Toronto stock exchanges respectively. As Greg Peet, now one of BC's most successful angel investors recalls, "it was the right money at the right time".

Between 1993 and 1997, ALI grew from a modest 11 employees, to more than 50 employees. By 1997, ALI was emerging as a recognized healthcare software leader with 70% of the ultrasound image archive market. Leveraging this position, ALI went after the radiology image market and went on to become one of the three market-share leaders in North America by the time it was acquired by McKesson for more than half a billion dollars in cash.

Similar to other British Columbia technology successes, the story does not stop there. The wealth and skills emerging from ALI's success have benefited numerous technology start-ups, the evolution of the venture capital industry in the region, and are contributing to the company creation and financing eco-system of entrepreneurs, angels, and venture capital investors in British Columbia.

ALI co-founders, Len Grenier (CTO) and Peter Van Bodegom (CFO), went on to invest as angels in **Cogent Health Solutions**, a developer of disease management software, and **GenoLogics Life Sciences Software**, a research and biomedical informatics spin-off of the University of Victoria. Both companies have subsequently attracted venture capital financing.

Not content to play investor alone, Grenier subsequently took over as Cogent's CEO, attracting his ALI co-founder Van Bodegom to the team as CFO along with five other senior managers with ALI pedigrees. Former ALI CEO, Greg Peet, and Amos Michelson, former CEO of Creo – another venture capital-backed success story, are angel investors and board members of Cogent. The company has raised several million dollars in angel and venture capital backing to date.

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

8.5. ALI Technologies: venture capital, angels and snowball effect (continued)

Grenier, Van Bodegom, and Peet have invested alongside other technology industry insiders, and institutional investors from Canada and the US, in Vancouver-based **Yaletown Venture Partners**. Yaletown has invested in twelve companies since 2003. Angels have invested alongside Yaletown and its venture capital syndicate partners in all of these companies.

Peet and Paul Lee were investors in Vancouver-based digital media developer, **Blast Radius**, a rapidly growing and successful company acquired by NYSE-listed WPP Inc. in 2007. Blast Radius was backed by angel investors from BC's technology industry. Peet is an investor and Chairman of **Contigo Systems**, a company which develops and manages a location-based services platform for asset-tracking, fleet management and personal safety applications. Contigo has attracted venture capital from **Advantage Technology Fund** and angel financing.

Peet has been on the Board of **Optimal Geomatics**, a geomatics software developer focused on electric power and gas utilities, and **TIR Systems**, a Solid State Lighting (SSL) technology company acquired by Philips Electronics in 2007. Both companies were backed by venture capital investment: Optimal Geomatics by **Pender Fund** and TIR Systems by **Discovery Capital**.

Venture capital, “the right money at the right time”, played a pivotal role in enabling ALI to become a great economic and investment success. In turn, this success has materially contributed to building networks of management teams, angel investors and venture capital funds which collectively contribute to the formation, financing, and growth of the next generation of technology start-ups in British Columbia. And the snowball keeps rolling...

8.6. Biochem Pharma : a nursery of talents and a source of funds for the biotechnology industry in Quebec

Biochem Pharma was founded in 1986 by Dr. Francesco Bellini and Dr. Gervais Dionne, two researchers in the biochemistry department of the Armand Frappier Institute (IAF) of the Université du Québec, based in Laval (Québec), and by Dr Bernard Belleau, the inventor of an anti HIV molecule, the 3TC (or lamivudine), which was first introduced at the fifth International Conference on AIDS in Montreal in 1989.

The initial financing of the company came from an IPO, part of a QSSP (Quebec Stock Savings Plan), in December 1986. The company raised \$ 13.5 million for a total market capitalization of \$ 25 million. The Armand Frappier Institute retained 45% of the equity. However, the interests of the company and those of its main shareholder were diverging, which was hampering the development of the company and threatening its long term viability.

In 1989, the Armand Frappier Institute searched for partners to support its failing vaccine division. This division was notably manufacturing influenza vaccines for Quebec with other vaccines in development. To avoid it to be dismantled Fonds de solidarité des travailleurs du Québec (FSTQ) got involved. Among other potential buyers, it contacted Biochem Pharma. Francesco Bellini and the FSTQ managers, among whom was Denis Dionne, the head of Private Equity Investments, saw an opportunity to strengthen the company and build a solid entity in therapeutic development and vaccine development and manufacturing based in Quebec.

At the end of 1989, the IAF holding in Biochem Pharma was sold to the FSTQ and the Caisse de dépôt et placement du Québec giving Biochem the benefit of solid shareholders with specialized private equity teams and present for the long term. The venture capital division of la Caisse de depot subsequently became a subsidiary called Sofinov/CDP Capital Technology Ventures and Denis Dionne became its president.

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A few months later, Biochem Pharma bought the IAF vaccine division. If Biochem had not been there, it is probable that this division would have been acquired by Pasteur Mérieux Connaught and the production of vaccines would have been centralized in Toronto.

In 1990, Biochem partnered with Glaxo on the development of the 3TC. The presence of strong shareholders around the table reinforced Biochem Pharma's negotiating position through the development process of the product and it contributed to maintain Biochem's independence vis-à-vis big pharmaceutical companies.

Subsequently, the company developed in three main areas:

- Therapeutic products, mainly virology, cancer, pain control and cardiovascular diseases;
- Vaccines: after buying IAF operations in 1990, which became Biochem Vaccines, Biochem bought 50 % of North American Vaccines, a company in which Sofinov also invested later on. Then in 1995-96, Biochem built a manufacturing facility in Quebec City and, in 1998, a vaccine development center in Boston to access a larger pool of talent;
- Diagnostic tools: Biochem had inherited from IAF a peptide which could be used to detect the HIV and had developed expertise in the domain of diagnostics. Subsequently, Biochem acquired 70 % of two Italian diagnostic companies (IFCI) in 1991 and, in 1994, the diagnostic operations of Serono, a Swiss company with numerous facilities around the world. All these activities were regrouped in a subsidiary named Biochem Immunosystems.

In 1996, Biochem management wondered how it should position itself facing the genomic revolution which could profoundly affect how research would be conducted in its space. It came to the conclusion that the best way to monitor the genomic sector would be through a venture capital fund linked to the company. Consequently, it partnered with several institutional investors, among which Sofinov, to create Genechem, a venture capital

management team based in Montreal, initially specialized in genomics, which is presently managing its third fund.

All these developments were financed through PIPEs and a public offering in 1996. Subsequently, Biochem became profitable and self sufficient, due to cash-flows generated by 3TC royalties.

By 1999, Biochem Pharma had 800 employees, including approximately 400 in the diagnostics subsidiary. In 2000, it sold its participation in North American Vaccine to Baxter and the diagnostics subsidiary to its management.

In 2001, Biochem Pharma was acquired by Shire Pharmaceuticals for \$ 5.5 billion. The company had then 476 employees.

From 1987 to 2000, revenues grew from \$ 326,000 to \$ 325 million and the company invested \$ 370 million in research and development. In 2001, Biochem had, directly or with partners, 5 products in the market and 20 R&D projects in therapeutics and vaccines.

All these developments, mainly based in Quebec, could not have happened, without the long term support of individual and institutional private equity investors, who knew the sector and understood the potential of the company. Their presence (i) allowed the successful transition from university to an independent company, (ii) facilitated the anchoring of vaccine manufacturing in Quebec and (iii) gave the company a "safety net" against large pharmaceutical players which gave management more freedom to develop the company.

But the story does not stop there. Biochem's success created a pool of wealth and talent in Quebec which have been reinvested in many new technology start-ups. Following the acquisition by Shire Pharmaceuticals, Biochem employees who did not remain with Shire have remained in the biotech industry as employees, management, directors, investors and company founders.

Shortly after he left Biochem Pharma, **Francesco Bellini** founded **Picchio Pharma**, a joint venture with Power Technology Investment Corporation, with the objective

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to become a leading Canadian biopharmaceutical company dedicated to acquiring, developing and commercializing new therapeutic products and technologies. Picchio Pharma invested in the following companies:

- **Virochem Pharma**, a company founded in 2004 to acquire the virology division of Biochem which Shire Pharmaceuticals wanted to sell. This new venture was backed by a \$ 36.5 million financing in April 2004 by a consortium composed of Picchio Pharma, FSTQ, CDP Capital Technology Venture, BDC, Shire and Gervais Dionne and François Legault, two former Biochem managers. Gervais Dionne became CEO/CSO and François Legault President and COO. More than 40 members of the former Biochem research teams on HIV and hepatitis C virus followed the move. Francesco Bellini is Chairman of the Board and the company has presently 60 employees in the Montreal region.
- **Adaltis**, the new name for Biochem Immunosystems, the former diagnostics subsidiary of Biochem Pharma. The company made an IPO on TSX in December of 2004 with a market capitalization of \$ 280 million. Francesco Bellini has been Chairman of the Board and François Legault a director of the company.
- **Neurochem**, a company founded in 1993, specializes in the development of therapeutic drugs and diagnostic tools for central nervous system and amyloid-related diseases associated with aging. Neurochem had been financed by BDC, FSTQ and CDP Capital/Sofinov. After the investment of Picchio Pharma in 2002, Francesco Bellini became Chairman of the Board and CEO of the company. Its market capitalization reached a peak of \$ 600 million in 2007. However, after the failure of its lead product, Alzhemed, in phase III, the company reinvented itself. Besides the development of pharmaceutical products, it created a division for neutraceutical products derived from its therapeutic research and took the name of Bellus Health. The company has presently approximately one hundred employees in the Montreal region.
- **Innodia**, a company specialized in the development of novel drugs for the treatment of obesity, type 2 diabetes and associated diseases, which started with a financing

from Picchio Pharma, Genechem, BDC and Neurochem from which Innodia had acquired some technologies. Claude Vezeau, the former head of Biochem's vaccine division was the CEO of Innodia. The company was recently sold to Bellus Health.

- **Prognomix**, a company founded in 2005 to develop new diagnostics tools for type II diabetes. Prognomix was financed by Picchio Pharma, CQVB and BDC. Francesco Bellini is Chairman of the Board.
- **Ecopia**, a company founded in 1998, specialized in the development of genomic technologies that permit the rapid discovery of microbial genes, genetic information and small molecules that have potential application in drug discovery and development. It merged in 2007 with Caprion Pharmaceuticals to form **Thallion Pharma**. Gervais Dionne and François Legault were directors of Ecopia since 2002 and are presently on the Board of Thallion. Picchio Pharma participated in the financing which was part of this merger. Thallion Pharma has presently 37 employees in the Montreal region.

Gervais Dionne was Executive Vice-President and CSO at Biochem Pharma. After remaining for some time with Shire Pharmaceuticals, he became investor, CEO and CSO of Virochem Pharma. He is also on the board of directors of Virochem, Thallion Pharma and he was on Targenta Therapeutics', a company specialized in the development of new antibiotics, founded in 2007 and which received in 2007 a \$ 70 million financing from a series of first tier American venture capital funds.

François Legault was Executive Vice-President Corporate Development and Investments at Biochem Pharma and presided in 1997 to establish Genechem Venture Capital. After the sale of Biochem Pharma, he became Venture Advisor at CDP Capital Technologies Venture/Sofinov and subsequently investor, President and COO and director of Virochem Pharma and director of Bellus Health, Adaltis, Ecopia/Thallion and Targanta.

Jacques Lapointe, who was President and COO of Biochem Pharma, became President and CEO of Conjuchem, a publicly traded biotechnology company dedicated to the discovery of novel therapeutics with an initial focus on diabetes.

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Robert Dugré, who was Vice-President Business Development at Biochem Vaccines, became CEO of **Angiochem**, a biotechnology company dedicated to creating and developing novel therapies to treat brain diseases.

Daniel Héту, who was Vice-President Corporate Development at Biochem Pharma, became Partner with **Lumira Capital** a Life Science venture capital fund based in Toronto, Montreal, Boston and Mountain View (California).

In addition, many of the Biochem managers became angel investors and financed numerous biotechnology companies. Many of these investments have not been

made public.

More than ten biotech companies and a venture capital fund in the Montreal region benefited from investments and managerial expertise directly derived from Biochem Pharma's success. FSTQ and Caisse de dépôt/Sofinov which, as initial investors and then strategic investors, had financed the growing Biochem, have also been associated to many of this new generation companies which benefited of its success.

Biochem Pharma will primarily be remembered for the discovery of 3TC, the corner stone of the tri-therapy treatment of HIV and AIDS and its commercialization in more than 80 countries. From an industrial point of view, Biochem Pharma will have been a nursery of talents for

8.7. Positron Fibre Systems: partnering with first, second and third generation company start-ups

Positron Fibre Systems (PFS) is a good example of a partnership between an entrepreneur and venture capital funds to start a new company, whose success subsequently led to a chain of several technology start-ups.

In 1992 after spending 12 years at Nortel, **Claude Champagne** became VP Engineering at Positron, a family company founded and managed by Reg Weiser. Positron manufactured support equipment for 9-1-1 services and was looking for new ideas to diversify its production and accelerate its growth.

Having identified broadband communication for business clients as a high growth opportunity, Claude Champagne built a business plan to develop high speed transmission and reception optic fibre multiplexers. In 1993, he started a research project (Interactive Information Technology) in partnership with M3i, ATS Aerospace, Innovatech du Grand Montréal and CRIM (Centre de recherche informatique de Montréal) which also benefited from federal and provincial subsidies and internal financing. It

was followed by a second research project (Infoway) in partnership with Eicon Technology. These projects allowed Claude Champagne to develop a new OC3 switch, delivered in 1995, which was immediately met with a very positive reception from large clients and OEM (Original Equipment Manufacturer).

The decision was then taken to spin off the company. Don Gibbs, former CFO at Mitel was recruited as CEO. In 1995 Innovatech, Quorum Growth Fund and Whitecastle Investment, three venture capital funds helped structure an agreement with Positron which was satisfactory to all parties and invested \$ 15 million. In 1996, they helped structure a \$ 10 million mezzanine financing with Eagle Partner and, in 1997, prepare an initial public offering (IPO) on NASDAQ and the Toronto and Montreal stock exchanges for an amount of \$ 82 million, at a \$ 200 million pre-money value. One year later, the company was acquired by RELTEC for \$ 300 million in cash.

PFS's success is mainly due to the vision of its management team who positioned the company not only as an optic fibre transmission equipment provider but also as a developer of telecommunication networks management systems, transitioning from a commodity product to a high value added product. Between 1995 and

8.0 Success Stories: The Snowball Effect Of The Canadian Venture Capital Industry

1997, PFS signed agreements with large OEMs such as RELTEC, ADC Telecom, Siemens, Lucent and Digital Microwave. Revenues grew from 0 to \$ 40 million and the number of employees to 100, at the IPO, and 150 when it was acquired by RELTEC.

In 1999, Marconi bought the PFS division from RELTEC and invested \$ 100 million in R&D to develop a new platform. This new division of Marconi had 380 employees before the tech bubble burst. Subsequently, its activities were taken over again by Positron.

In this venture, beside the financings they made from the very beginning, venture capital funds played a key role in (i) structuring the spin off process, (ii) broadening the investors' syndicate, (iii) working with investment bankers to prepare the IPO and finally (iv) preparing the trade sale at a moment when the initial management team was reaching its limits to manage a company which had become public.

But the story does not stop there. As in many other success stories, PFS's success created a large pool of wealth and expertise which was reinvested in many other technology start-ups.

Reg Weiser, Positron's CEO, reinvested part of the profits he realized with PFS's sale in Positron's two main product lines: support systems for 9-1-1 services which subsequently became **Positron Public Safety Systems (PPSS)** and contract manufacturing lines for optic fibre electronic products which became **Positron Technologies**.

When it was acquired by IPC (NY) in March of 2007, PPSS had more than 300 employees worldwide. PPSS was then sold again in November of 2008 to West Corporation for \$ 167 million. At that time, the division had 360 employees, including 240 in Canada.

When it was sold to Triton Technologies in December of 2007, Positron Technologies had 260 employees and \$ 60 million in revenues.

Reg Weiser became an angel investor and a member of the Board in three new start-up companies, **Nomino Technologies**, **Opendesk**, and **Cescom** which were also

financed by Innovatech du Grand Montréal and T2C2, two venture capital funds with which he developed relationships through Positron Fibre Systems.

Claude Champagne remained at RELTEC and then Marconi to manage the optic multiplexers division. Claude Vachet, a partner at Innovatech, attracted him to run one of his investments, **LxDATA**, as a director (2002), Chairman of the Board (2005) and, finally, CEO (2008). Claude Champagne brought his experience and his vision and repositioned it from an optic sensors manufacturer to a provider of leading edge solutions for the exploration and exploitation of tar sands. The company has now 40 employees, including 32 in Quebec. Claude Champagne is also an angel investor in **Ambercore**, a provider of solutions to collect, integrate and analyse spatial data, beside Quorum Growth Fund which had been an initial investor in PFS.

When Positron Fiber Systems was bought by RELTEC, **Sami Yazdi**, **Giovanni Forte** and **Patrick Ostiguy**, who were respectively Product Vice-President, Director and Manager at PFS left the company and invested their own money to start **Avantas Networks** a new company which develops optic/data network tests and measurement systems for telecom companies. Avantas was financed by Ventures West, Skypoint Capital and T2C2. Sami Yazdi became CEO and Giovanni Forte CTO. It was also subsequently financed by Innovatech and BDC. Within less than two years, the company managed to launch its first portable test and measurement commercial units able to operate with the same equipment both on optical and Data Ethernet networks. It had 60 employees and a \$ 25 M financing from JDSU when it was bought by Exfo for \$ 93 M in 2001. It went on growing as the test and protocol division of Exfo and now has about a hundred employees.

Subsequently, in 2005, **Giovanni Forte** became co-founder and CEO of **Trellia Networks**, another Montreal based company which provides mobile policy management and enforcement (MPME) solutions. Trellia is financed by Skypoint and FSTQ and has about presently 30 employees.

After Avantas Networks, **Patrick Ostiguy** became founder and CEO of **Accedian Network**, a Montreal based company which provides packet performance assurance solutions to large telecom carriers. The company received an \$ 11 million financing from Skypoint, FSTQ and Rho Canada.

Companies are created and developed by entrepreneurs. Venture capital funds play an important, and often primary role in backing these entrepreneurs to start the company, support its growth and prepare an exit and, finally, in attracting or backing them again in second or third generation start-up companies.

9.1. The Canadian venture capital industry has a significant impact on the economy

The Canadian venture capital industry is still young, much younger than its US counterpart. Relative to the size of the economy, it is also smaller by half. Therefore, the stock of venture capital-backed companies in Canada is much smaller than in the US.

The impact of venture capital-backed companies on the Canadian economy is however quite significant: 150,000 jobs (1.3% of all private sector employees) and nearly 1% of GDP. The impact on growth is also important, since venture capital-backed companies which responded to the survey grow more than 5 times faster than the overall economy. Moreover, their impact on innovation (R&D and patents) and exports is very substantial.

There are additional major benefits beyond these economic measures. (i) Successful venture capital-backed companies generate wealth and talent which are reinvested in the next generation of technology start-ups; (ii) they create serial entrepreneurs; (iii) they allow investments by business angels, and (iv) they provide a source of experienced management talent. Alongside business angels, venture capital funds play a critical role in linking these pools of wealth and talent to new start-up companies.

9.2. Governments have a vested interest in the development of the venture capital Industry

Building a successful innovation ecosystem is a long-term endeavour. As demonstrated by many US studies cited in this document, a buoyant venture capital industry is one of the important ingredients of such an ecosystem. But building a large pool of successful technology entrepreneurs, venture capitalists and company managers takes decades. Building a strong and sustainable venture capital industry requires a similarly long time. It took three decades, several business cycles and a strong government support (in the '60s through the SBIC program) before the US venture capital industry enjoyed a strong and self-sustainable expansion starting in the late '70s. This industry expansion has had a huge impact on the US economy in terms of productivity and innovation, economic growth and employment.

Canada wishes to evolve from a resource-based economy to a knowledge-based economy. To this end, it has massively invested in publicly funded R&D and, by means of a series of policy actions such as tax credits and government venture capital funds, both federal and provincial governments have supported the development of the venture capital industry. The benefits of venture capital to the Canadian economy are very sizable and, based on comparison with the U.S. industry, there is opportunity for these benefits to at least be doubled if the industry is able to grow.

However, the Canadian venture capital industry is currently experiencing a very difficult transition. Direct support by governments has diminished at a time when, as is the case for many other venture capital industries around the world, the industry has not yet been able to deliver strong enough returns to consistently attract institutional Canadian and foreign investors. As a consequence, fund raising is shrinking and the investment pace by Canadian funds is contracting. During the past four years, this decline has been partly compensated by an increase in investment by US funds. However this US-based funding generally supports later stage companies and sometimes results in a shift of the company activities to the US. Building a strong and innovative technology based economy in Canada requires a strong Canadian based venture capital industry.

9.0 Conclusion

9.3. A call for action

The turmoil in financial markets which started in 2008 will make the venture capital crisis more severe as, in a general rebalancing of portfolios, many LPs will likely reduce their investment in VC funds and concentrate their investments in large funds with long track records. This will be very detrimental to funds in Canada which generally are small and young. At the same time as capital to the funds is being restricted, portfolio companies will require more capital to survive the coming recession. For the whole ecosystem, this is the worst time to run out of cash.

The Canadian federal and provincial governments have invested substantial amounts in supporting R&D, both in academia through direct funding and in industry through tax credits, and there are large benefits available from the commercialization of this research. The venture capital industry is a critical part of the ecosystem that takes research from the laboratory to commercial products and if the venture capital industry is not healthy, those potential benefits will be lost. A strong and growing venture capital industry is critical – in the short term to derive benefits from the commercialization of R&D and in the longer term to obtain the economic benefits to the economy as a whole. Thus it is critical that all parties – governments, investors, venture capital funds and entrepreneurs – work together to build a strong, permanent, Canadian venture capital industry.

Glossary of Venture Capital Terms²⁴

LP

Limited Partners – are partners in the fund whose only role is to provide capital. They have a limited liability i.e. they are only liable to the extent of their committed investment and they have no management authority

GP

General Partners - have management control on all investment activities of the fund, share the profits of the fund investments in predefined proportions, and have joint responsibility for the operations and liability of the partnership.

Management Fee

A fee charged by GPs for managing a fund. The management fee is intended to finance set-up costs and everyday operations and compensate the fund managers for their time and expertise. The fee is usually around 2% of committed capital a year, often declining after the end of the investment period.

Investment period

Period during which new investments can be made. Usually does not exceed 5 years.

Hurdle Rate

The minimum threshold rate of return that GPs are required to return to investors before GPs can participate in fund profit.

Carried Interest or 'carry'

A share of any profits that the general partners of private equity funds receive as compensation, once the hurdle rate has been reached, typically 20%.

²⁴ Most of these terms are common to Venture Capital and Buyout. See CVCA, "*Why buyout investments are good for Canada*", p.9

Appendix B: Methodology

This study is the most comprehensive study of venture capital's economic impact done to date in Canada. While comparable to previous studies on the subject in the sense that it is based on a survey of venture capital-backed firms, it goes further by attempting to complete existing venture capital investments databases which were initially set up in the mid 1990's, by (1) including companies which received venture capital funding prior to that period, and (2) extrapolating survey results on the overall population of venture capital-backed firms. Both processes were made possible by the existence of the VC Reporter database, compiled since 1996 by Thomson Reuters and its predecessor firm (Macdonald & Associates).

1. Data collection

In order to capture the history and stock of Canada's venture capital-backed firms, the study is based on two complementary data sets, corresponding to distinct data collection processes. Given the fact exhaustive compilations of venture capital investments started only in 1996, these processes had to adapt to the period of each company's first venture capital financing:

- Pre-1996. A thorough identification process of large Canadian technology firms (defined by sales level of \$50M upwards) which received venture capital prior to 1996 was conducted, using major published Canadian corporate listings and one-by-one review with veteran Canadian venture capital experts. This identification process was extensive but does not pretend to be exhaustive.
- 1996 onward. A survey of companies funded during the 1996-2007 period was carried out, using a questionnaire sent to over 790 firms corresponding to the six largest Canadian portfolios (BDC, Desjardins, FSTQ, Growthworks, Vengrowth, and Ventures West) with a 34% response rate. Inactive companies were identified from the initial population of all venture capital-backed firms, using web-crawling techniques, complemented with human based judgment. This process allowed more accurate growth rate estimations as well as calculations of survival rates.

2. Extrapolation

Survey results were extrapolated using the VC Reporter exhaustive database on venture capital invested in Canada since 1996.

- An initial extrapolation was done from survey respondents to the 643 active companies in the Top Funds' portfolios. Non-response bias identification techniques were used to refine the extrapolation process. A random test was thus conducted among a 10% sample with an 84% rate of response. The profile of non-respondents (e.g. average sales and employment) as revealed by the non-response testing, was then applied to the other non-respondents. Such a technique improves overall validity of results.
- A subsequent extrapolation was done from the Top Funds' portfolios to the total universe of 1,740 active companies, based on capital invested (as per Thomson's VC-Reporter) also accounting for mortality rates as measured by E&B DATA.

These results were then added to the observations on the large companies which received venture capital prior to 1996 and which are still active.

Size averages (sales and employment) were calculated on a sector basis for active companies within Top Funds' portfolios. These averages were then applied based on capital invested to the aggregated remaining venture capital funds in Canada. The sum for Top Funds venture capital investments and that of remaining funds is therefore the total for Canada since 1996. For some variables such as those related to innovation and foreign activities (e.g. employment related to R&D and international presence, exports), survey results were not extrapolated and thus represent only the situation for survey respondents.

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(consulted on July, 2008)

The Statistics Canada report covers the latest statistics on the Canadian Biotechnology sector. Since Life Science official statistics are not stabilized, contrary to biotech statistics, biotech-related benchmarks were used. In the survey data set, companies represent 84% of venture capital invested in Life Science. Extraction for Biotechnology Sector Employment (2005 and before).

Statistics Canada. Industry Accounts Division. System of National Accounts. "National Input-Output multipliers ", 2004

Series of Input-Output multipliers and ratios allow the estimation of indirect and total impacts of increases in industrial output or increases in an industry's labour force. These are the GDP, labour income, employment and gross output multipliers and ratios. Capital income multipliers and ratios can be calculated by subtracting the labour income figures from the GDP figures.

Statistics Canada. "Gross Domestic Product (GDP) at basic prices, by NAICS", Table 379-0027, 2007. [Online] (2008).
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This statistical table from Statistics Canada displays the Gross Domestic Product for the province of British Columbia, Ontario, Quebec and Rest of Canada

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Notes
