

ECONOMIC
IMPACT OF
VENTURE
CAPITAL



BACKGROUND TO THE SURVEY

In 1993, the Business Development Bank of Canada (BDC) recognized that the Canadian venture capital industry was embarking on a new phase of growth. The supply of capital had been squeezed for venture capital groups across North America in the late 1980s, and investment activity had declined as a direct result. However, there were some indications of a “reawakening” by the early 1990s. In an effort to encourage this apparent turnaround, BDC commissioned Macdonald & Associates Limited to conduct an independent survey on the Economic Impact of Venture Capital.

Now, seven years later, with the results of the Seventh Annual Survey of the Economic Impact of Venture Capital, it is obvious that the venture capital industry has indeed continued to mature and grow in Canada and that its activities have a significant impact on economic activity across the country. This evolution has occurred in tandem with some radical changes in the economy. While knowledge-based businesses were not much more than a buzzword seven years ago, they are now a well-recognized and integral part of our economy. It is no longer “exceptional” to see a small team of entrepreneurs grow a software or telecom-related company into a sizable and thriving business within a matter of a few years. And to be successful, these businesses have invariably established a viable market position in the US and abroad. The relatively recent and rapid evolution of the Internet is perhaps the most effective statement on just how the tools and processes of business have changed in recent years.

Venture capital has played a critical role in this evolution. While banks and other capital providers have developed financing products and procedures to better serve this new breed of company, companies whose assets are intellectual in nature (and hence not particularly good security) need equity capital. And, typically, they need some additional support or strategic input along with this capital to help ensure they successfully secure a place in the market. A good venture capitalist plays this role. While the venture capital market represents a very small share of capital markets overall, it is in fact a breeding ground for a wide array of emerging opportunities, at least some of which are likely to become the mainstays of the economy 10 years hence.

Like previous surveys, the Seventh Annual Survey of the Economic Impact of Venture Capital once again demonstrates that venture-backed companies are, overall, high growth companies. The rate at which they grow their employment, sales, R&D expenditures and exports far exceeds that achieved by the economy as a whole. This growth has been evident for the past several years, with the result that Canada is now home to a growing pool of entrepreneurs with experience in creating and growing successful knowledge-based businesses. The talent pool of experienced and successful venture capitalists able to add value to this process has been enhanced along the way. The bottom line: the venture capital industry is playing an increasingly important role in the development of these dynamic growth companies, as evidenced by the results of this year’s survey.

THE RAPID EVOLUTION OF AN INDUSTRY

When the Economic Impact Survey was launched in 1993, the venture capital industry in Canada was managing a total of \$4 billion. In aggregate, the industry financed 286 companies that year, investing a total of \$399 million. Technology-based companies attracted a total of \$184 million, which represented 46% of the industry's disbursements.

A quick profile of the industry's activities in 1998—the basis for the current survey—shows how dramatically the environment has changed. The pool of resources under management has more than doubled to \$10 billion. During 1998, the industry completed 1074 transactions, or an average of almost three deals a day for every day of the year, and invested \$1.7 billion. Almost 70% of the capital invested last year—\$1.2 billion—went to technology companies. This represents more than a six-fold increase over the amount of venture capital flowing into Canadian technology companies in 1993.

Over the past five years, the Canadian venture capital industry has invested almost \$6 billion in entrepreneurial growth firms, much of which has found its way into rapidly growing innovative firms forging new frontiers in information technology, telecommunications and life sciences. The survey results documented in this report demonstrate that the firms being financed by the Canadian venture capital industry are, as a group, growing very rapidly. They are having and will continue to have a significant impact on economic activity and new wealth creation in this country.

THE METHODOLOGY

The Economic Impact Survey is conducted by Macdonald & Associates Limited on an annual basis to collect data on key business indicators for venture-backed firms and to examine these companies' rate of growth for each of these key indicators. The methodology is consistent with that used in prior years in that it focuses only on firms that have secured first-time financing in the past five years. All Canadian companies that secured venture capital financing for the first time between 1994 and 1998 (inclusive) were included in the original sample this year. The goal of the survey is to provide a relative measure of the economic impact of venture-backed firms by measuring the rate at which they are growing against key variables including employment, sales, R&D and exports.

While the survey results document the absolute activity of the responding firms for each of these key variables, they are not intended to reflect the aggregate impact of all venture-backed companies in absolute terms. Mergers, acquisitions and other types of dispositions make it virtually impossible to track the ongoing activities of these firms over the longer term. By limiting the sample to firms attracting a first round of venture capital in the past five years, we enhance our ability to access data. But this approach also means that successful venture-backed companies are removed from the sample as they mature and start to make a truly significant economic contribution in absolute terms. It is also worth noting that, while the venture industry focused primarily on expansion-stage financing five years ago, it now dedicates a good deal of its time and capital to companies in the early stages of their development. As a result, investee companies are younger on average when they are removed from the sample, suggesting that their impact on the economy is likely to be even greater down the road.

For this year's survey, annual data were requested for each of the venture-backed firms from the beginning of the year in which they first secured venture capital to the end of the most recent fiscal year. These data allow growth rates to be measured from the beginning of the year in which venture capital was introduced, which provides a good reflection of the impact that access to venture capital has

had on the growth of these firms. This methodology is consistent with that used in the survey for the past three years. (Prior to 1996, data were collected for a five-year period for all sample companies, regardless of when venture capital was secured.)

Since the survey began, its results have suggested sharply higher growth rates for venture-backed companies than for the economy as a whole, and this year's results are no exception. This Seventh Annual Survey of the Economic Impact of Venture Capital confirms prior evidence of the superior contribution that venture-backed companies collectively are making to the wealth creation process in this country. This year, questionnaires were sent to 85 venture capital firms, requesting information on the 1127 companies that they had financed for the first time between 1994 and 1998. (Canadian venture capitalists actually financed 1614 companies for the first time during this period but have already exited from 487 of these investments.) Of the 1127 companies in the sample, data were collected on 592 companies, representing a 53% response rate.

Throughout the report, the rate of growth posted by the investee companies in terms of employment, R&D and other factors is reported in two ways. The average annual compound growth rate has been calculated for all companies in the sample, as well as for the IT companies and life sciences companies in the sample, for each of the variables. The annual compound growth rates have also been calculated for the companies by "vintage year" with the responding companies grouped by the year in which they were financed for these calculations. These vintage year calculations have also been made for all companies in the sample, and for IT companies and life sciences companies separately. The vintage year calculations are the basis for the charts showing growth rates by year.

As noted, the results documented in this report are intended to indicate the degree of growth achieved by these emerging growth firms after attracting venture capital financing, but they clearly are by no means an absolute assessment of the total aggregate economic impact that venture-backed firms have really had. This is evidenced by the fact that of the 100 fastest-growing companies in Canada in 1998 as identified by Profit magazine, 16 have been venture-backed, although only four are actually included in our data for responding companies this year. The growing anecdotal evidence of the importance and success of the venture investment process further reinforces the survey results. Over the course of a single two-week period this past August, three BC-based venture-backed firms made significant announcements. CREO, which provides digital solutions to automate the prepress phase of commercial printing, announced a US\$56 million initial public offering (IPO). Pivotal Corporation, a leading provider of customer relationship management solutions, announced an IPO of US\$45 million. And HotHaus Technologies, a leading provider of embedded VoIP software, was purchased by Broadcom for US\$280 million. In short, there is little doubt that the venture capital process is contributing to the creation of world-class companies in Canada.

BEHIND THE NUMBERS

Last year, we started to disaggregate the numbers to look more specifically at the growth experience of companies in the information technology (IT) and life sciences sectors, as well as the sample as a whole. This analysis has been repeated and the results are documented in the report. Profiles of selected examples of venture-backed successes—Pivotal Corporation, Genesis Microchip Inc., COGNICASE Inc., Sierra Wireless Inc. and CrossKeys Systems Corporation—are also appended to the report.

VENTURE CAPITAL IS FUEL FOR THE ENTREPRENEURIAL ENGINE

The companies included in this year's survey have demonstrated remarkable growth on all fronts subsequent to securing venture capital financing. Companies in the IT sector have been particularly strong performers.

■ SAMPLE COMPANIES INCREASE EMPLOYMENT BY ALMOST 50% PER YEAR

At the end of 1998, the 592 companies included in the sample this year together employed 52,635 people or an average of 89 people per firm. Despite the increasing focus of the venture capital industry on technology firms and the strong orientation of these firms towards export markets, 86% of these jobs—or almost 45,000—are in Canada. Access to venture capital has presumably helped these firms to ramp up more quickly, since 27,891 positions—or 53% of the aggregate employment base of these firms—were filled after venture capital was secured. There is little doubt that access to capital is a key component in a company's ability to finance a rapid growth strategy.

This is particularly true for technology companies. The survey data have shown each year that technology firms tend to outperform the sample as a whole in terms of employment growth, and this year's survey is no exception. With the venture industry sharply shifting its focus towards technology firms and continuing to invest record amounts of capital (\$1.2 billion in both 1997 and 1998) in these firms, the economic impact of their activity is bound to continue to grow.

The companies in this year's survey sample augmented their employment base by a striking average of 48% per year compounded over a five-year period—highlighting the rapid growth environment in which many of these companies exist. While the rate at which new jobs have been created by these firms varies somewhat by the year in which the companies were financed (see chart on page 5), the performance

has been consistently strong across all vintage years. Economic conditions have generally been strong for the past five years, contributing to an environment that has nurtured the development of emerging growth businesses.

The economic recovery evidenced in 1994—which has, for the most part, been sustained over the past five years—undoubtedly has contributed to the ability of these companies to grow their employment ranks at such a remarkable rate. The firms financed in 1996 posted the lowest growth rate and even they have grown their employee rosters by 33% per year since then. The companies financed in 1994 increased their employment base by 49% per year (compounded over the five-year period) and the firms financed last year posted an average increase in employment of 73% over the prior year.

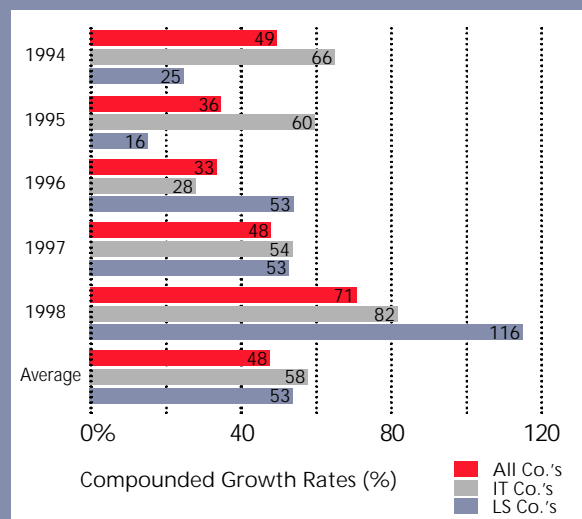
There is little doubt that the shift in focus towards technology has been key in driving these growth rates. With the ever-widening applications of information technology, coupled with the staggering rate of development of Internet technologies, successful venture-backed firms in the IT sector are growing at remarkable rates. The 216 sample companies in the IT sector (computer-related, communications, electronics and industrial automation firms) represented 36% of the survey sample, and together they created more than 12,000 new jobs over the period—reflecting an average of growth in employment of 58% per year compounded since they were financed. These jobs can be assumed to be, for the most part, highly skilled and well paid.

With the whirlwind of activity surrounding the IT sector in general, and the Internet in particular, over the past 18 months, the companies in these sectors financed in 1998 increased their employment pool by an average of 82% over the one-year period. Most of the employment growth occurring within companies financed most recently has been in Canada, while the companies financed in earlier years are more likely to be building the international component of their team and creating additional jobs outside the country.

Somewhat surprisingly, biotech and other life sciences firms have also been strong performers in terms of job growth, although they have been building from a much smaller base. The 92 survey companies in this sector (16% of the sample) employed an average of 35 people each at the end of 1998, having increased their employment by an average of 53% per year (compounded) since attracting venture capital. Clearly, many of these firms have been funded to start to build a commercial base around what was previously a scientific research operation. However they are, for the most part, still very small and typically still in the development phase. It is important to remember, therefore, that the growth rates of these life sciences firms are generally being measured against a very small absolute base.

Taken together, technology companies continued to grow more rapidly than their traditional counterparts, increasing their employment base by 55% per year on average from the time they secured their venture capital financing, compared with the 48% average annual compound growth rate posted by the sample as a whole. Since technology firms tend to hire a higher ratio of highly skilled and highly paid people, the economic benefits inherent in their growth are that much greater.

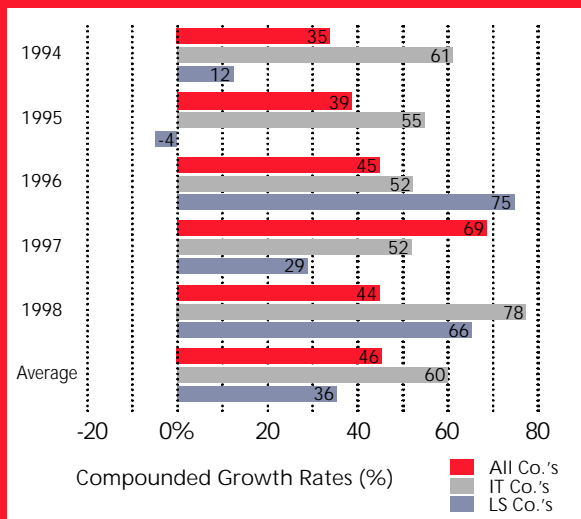
Venture-backed Companies Creating Jobs Quickly Compounded Job Growth Rates by Year Invested



SALES

In 1998, the aggregate sales of the companies in the sample were \$6.65 billion or an average of \$11.2 million each, although the range within the sample was broad. The growing willingness of venture investors to finance early-stage companies is underscored by the fact that 89 of the companies, or 15% of the sample, were still in the development stage last year and had no sales yet. The largest company in the sample had sales of \$292 million in 1998. Overall, the sample firms increased their sales by an average of 46% per year after securing venture capital, with an upward trend evident over the period. Companies financed in 1994 have posted a solid annual growth in sales of 35% per year over the period and the 170 sample companies financed in 1997 increased their sales by an average of 69% in each of the two years subsequent to attracting capital. This was a direct result of aggressive strategies to grow through acquisition adopted by two of the investee companies in that vintage year group.

IT Companies Ramping Up Sales Compounded Sales Growth Rates by Year Invested



The IT companies across all vintage years have achieved at least 50% annual growth in their sales. The life sciences firms in the sample have been somewhat more volatile. Those financed in 1994 and 1995 have seen annual growth rates in their sales of 12% and -4% respectively. The companies financed in 1996 have posted annual sales increases of 75%, a record almost matched by the 66% growth rate produced by the life sciences firms financed in 1998.

Over the five-year period, all firms in the sample collectively generated \$13.7 billion in sales subsequent to securing venture financing—an impressive performance from a group of companies in which 15% are not yet contributing to this total.

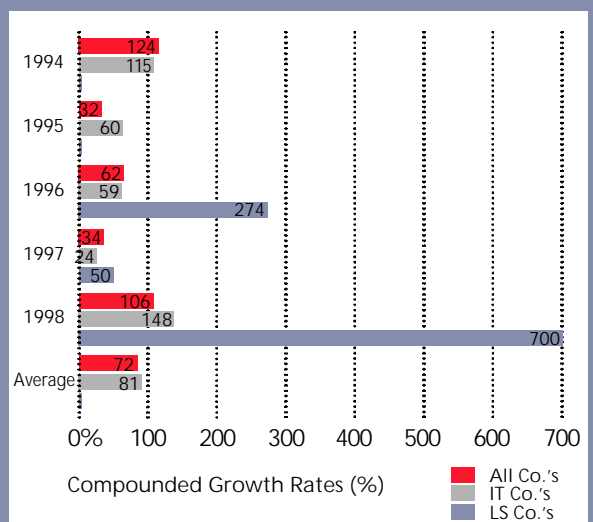
EXPORTS

Five years ago, it was a noteworthy observation that Canadian technology companies would have a stronger export orientation than other young growing businesses. Today, it is an accepted fact that these firms will be aggressively pursuing market share in the US and in international markets right out of the chute. The survey results continue to show this trend, since sample companies overall increased their exports each year by an average of 72% after securing venture capital. The IT companies drive these numbers to a large extent, with the

IT firms in the sample showing annual growth in exports of 81% per year since raising venture capital. Many of the venture-backed life sciences firms are not yet generating significant sales and are therefore not focused on export markets. There are only a handful of life sciences firms financed in 1994 and 1995, none of which reported export sales. The life sciences firms in the sample that were financed in 1998 had only nominal exports at the beginning of that year, explaining the very high growth rate these firms demonstrated. Growth rates are also less meaningful in this sector because they are measured from a relatively small absolute base.

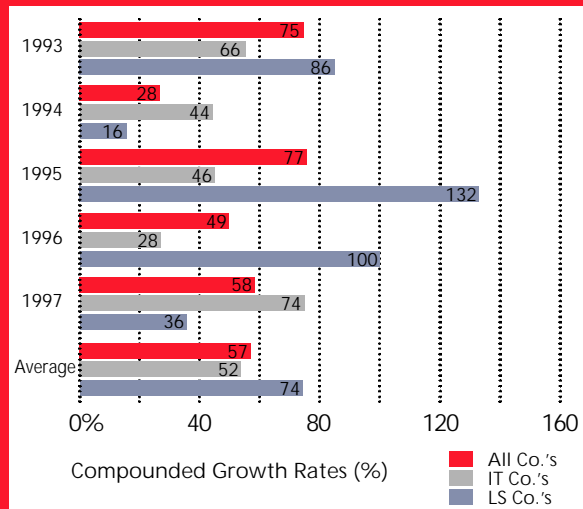
In short, venture-backed firms are highly focused on export markets and are meeting their global competitors head-on in their efforts to secure market share. Total export sales for the 592 firms in the sample in 1998 were \$1.58 billion and these firms collectively generated \$3.46 billion in export sales between the time they secured venture capital financing and the end of 1998.

Technology Companies Focus on Export Markets Compounded Export Growth Rates by Year Invested



Technology Companies Drive R&D Expenditures

Compounded R&D Growth Rates by Year Invested



R&D

The upward trend in R&D spending by venture-backed companies documented in prior years was evident again in the most recent survey, with R&D expenditures rising by an average of 57% each year after the venture capital financing took place. The sample companies invested \$787 million in R&D activities between the time they brought in venture financing and the end of 1998, \$369 million of which was committed to R&D last year.

Technology information firms (IT and life sciences companies) continue to drive the trend in R&D spending, accounting for 93% of all R&D spending over the study period. Of the top 100 corporate R&D spenders in 1998, as identified by Re\$earch Money, 19 were venture-backed companies. Collectively, these 19 companies spent \$567 million on R&D in 1998.

Venture Backing Fuels Entrepreneurial Growth 1994-1998*

	Average Annual Growth Rate**
27,891 Jobs Created	48%
\$13.7 Billion in Sales	46%
\$3.46 Billion in Export Sales	72%
\$787 Million Invested in R&D	57%
\$129 Million Paid in Taxes	36%

* Cumulative results subsequent to investment of venture capital
** Average annual growth rate

TAXES

Many of the sample companies are still relatively young and actively reinvesting in their businesses, which limits their profitability in the short term and hence the taxes they pay. Nevertheless, the collective taxes paid by the sample companies on average over the five-year period increased by 36% per year. Clearly these companies are still growing aggressively and presumably reinvesting much of their available cash. But many of them are, nevertheless, already contributing to the tax base and this contribution can be expected to be much more significant down the road as the companies mature.

Technology Firms Outperform Average Annual Growth Rates 1994-1998

	All Survey Companies	Technology Companies	IT Companies	Life Sciences Companies
Jobs	48%	55%	58%	53%
Sales	46%	57%	60%	36%
Exports	72%	85%	81%	**
R&D Expenditures*	57%	57%	52%	74%
Taxes Paid	36%	28%	14%	**

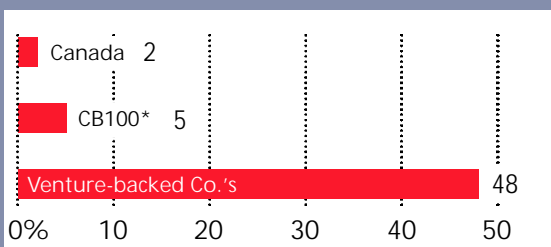
* Technology companies account for 93% of all R&D expenditures and therefore drive almost all of the growth.

** Life sciences companies typically are still in the development stage and hence have limited sales and very limited exports, and are not yet profitable so they pay no taxes.

VENTURE-BACKED FIRMS CONTINUE TO OUTSTRIP THE ECONOMY

It is abundantly clear that venture capitalists are, for the most part, financing firms that have significant growth potential. The survey results indicate that when it comes to jobs, venture-backed companies have increased their ranks of employees at a very rapid rate, far outstripping the growth rates achieved by the economy as a whole or by large companies. While employment growth has been getting stronger in Canada, total employment increased by an average of 2% per year for the period from 1994 through the end of 1998. Canada's largest 100 companies (by sales) have been enjoying solid growth over the past five years, and increased their employment ranks by an average of 5% per year over this period as a result. But the venture-backed companies in the sample increased their employment base by an average of 48% each year (subsequent to attracting venture financing), while the technology-based venture-backed firms increased the number of people they employed by 55% per year on average. There can be little doubt that the venture capital industry is financing companies that have a significant contribution to make to economic growth and new wealth creation in this country.

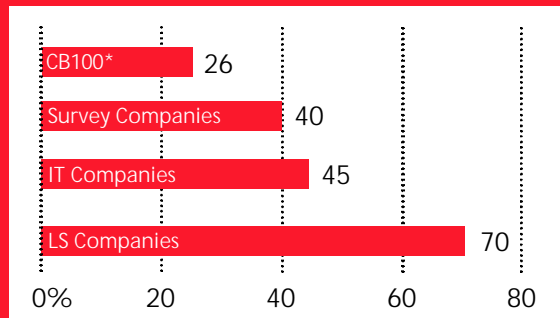
Venture-backed Companies Outstrip Most Others in Job Creation (1994-1998)



* CB100 is the top 100 companies (by sales) from Canadian Business' Corporate 500.
Sources: Statistics Canada, Canadian Business

Venture-backed Companies Rely on Equity

Average Equity-Assets 1998



* Top 100 companies by sales ranked by Canadian Business (excluding financial institutions)

HIGHER SHARE OF EQUITY USED FOR ASSETS

As a growing share of our economy becomes "knowledge-based," the availability of equity capital becomes increasingly important. It is much more difficult for traditional sources of capital to take security against intellectual assets than against conventional assets, such as buildings and equipment. If young, growth-oriented companies cannot access the capital they need to finance their growth, their potential will not be realized. The venture capital industry has positioned itself as a key source of capital for these companies.

The importance of equity capital is reflected in the equity-to-asset ratio for these firms. The companies in the sample this year had an average equity-to-asset ratio of 40%, compared with 26% of equity on average that the CB100 companies had to commit to support their asset base. For technology companies, the need for equity is even more dramatic, with IT companies committing 45% of their equity to support their asset base and life sciences companies 70%. Larger, more established firms can rely more heavily on retained earnings and debt, while young growth companies must often be prepared to risk the equity they have built to date to stay on their rapid growth curve.

■ CAPITAL REQUIREMENTS CONTINUE TO ESCALATE

As the pressure to get their product to market more quickly increases, so too does the amount of capital required by technology companies to stay ahead of the competition. The 450 companies in the sample this year that are still private have completed an average of 1.74 rounds of venture financing to date and secured an average total of \$5.4 million thus far. Many of these firms will need at least one and probably several additional rounds of financing before contemplating an IPO or a strategic sale and they will rely on their venture capital backers to help them arrange this financing.

It is the companies that eventually go public that typically have the biggest appetite for capital. Those venture-backed firms in the sample that completed an IPO after receiving venture financing consumed an average of \$15.3 million through three rounds of financing prior to doing their public offering. These companies have completed an additional 2.16 issues on average since going public, raising an additional \$23.6 million each on average.

Private equity requirements continue to vary across industry sectors. The life sciences companies that have gone public consumed an average of \$21.5 million each prior to their IPO while the venture-backed computer-related firms burned through an average of \$13.3 million each.

Capital Requirements

Private Companies

Public Companies*

Sector	Average number of rounds to date	Average dollars invested to date (\$ in millions)	Average number of public rounds	Average dollars invested by public market (\$ in millions)
Biotechnology	1.74	6.7	1.83	26.1
Medical and Health	1.93	6.8	1.80	27.0
Communications	1.86	5.6	3.00	11.0
Computers	1.61	6.5	1.57	20.0
Electronics	1.83	6.0	1.60	18.1
Energy and Environment	1.19	3.6	3.26	19.4
Industrial Automation	1.83	6.5	-	-
Consumer	1.61	6.9	1.50	47.3
Manufacturing	1.62	4.0	1.00	0.3
Miscellaneous	1.54	3.5	2.69	27.5
Average	1.74	5.4	2.16	23.6

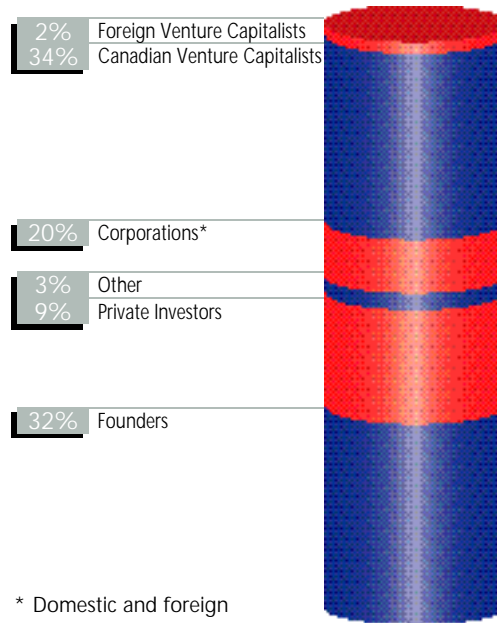
* For illustration purposes only; there are not enough companies to be of statistical significance.

SOURCES OF EQUITY

As the equity needs of emerging growth companies have risen, Canadian venture capitalists have stepped up to the challenge and continue to provide a significant share of this capital. Venture capital investors have provided, on average, 36% of the total equity of the private companies in the sample, allowing them to play a meaningful role without assuming control. The founders themselves had a substantial stake—32% of the equity capital—directly aligning their interests with those of their investors.

Corporate investors are now playing a significant role in this market, providing 20% of the equity of the private companies, while private investors accounted for another 9% of the total. The final 3% of equity has come from employees, governments and universities.

Venture Capitalists Are Important Sources of Equity
Source of Equity for Private Companies



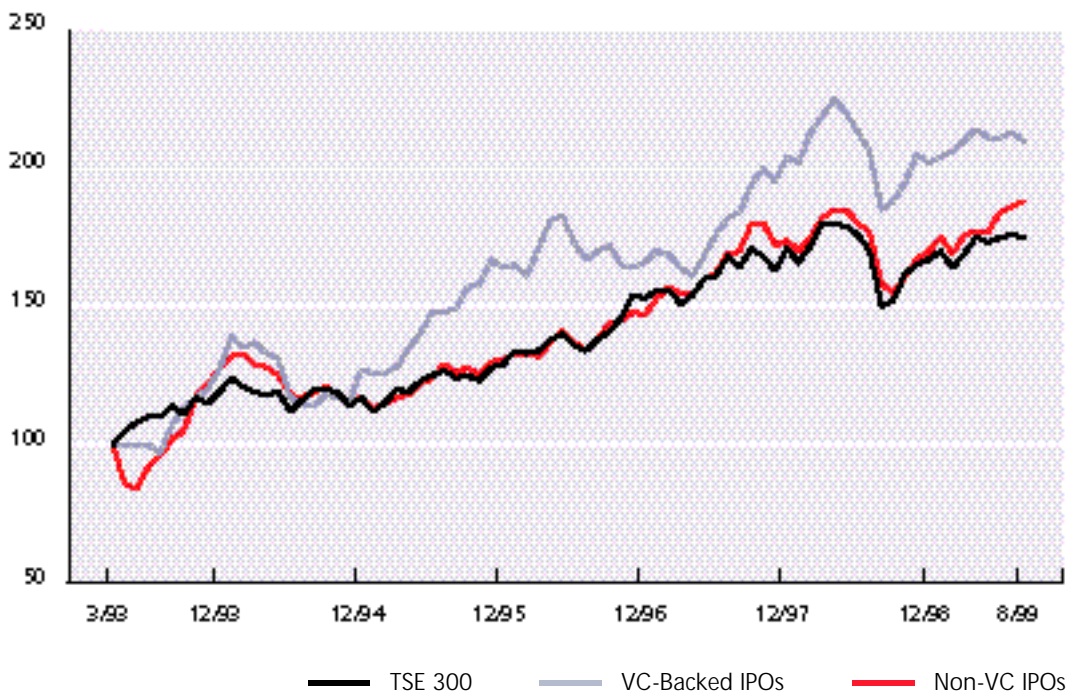
IMPACT CONTINUES AFTER THE IPO

Those venture-backed firms that complete a successful IPO typically provide a return to their investors based on their price at the time of their IPO and shortly thereafter (after escrow provisions have been met). But venture-backed firms continue to

outperform their non-venture-backed counterparts after the IPO, suggesting that they continue to have a significant impact in terms of economic activity and wealth creation long after they are being tracked by this survey.

Venture-backed Companies Outperform Non-venture-backed Companies after IPOs

March 1993 - August 1999 (TSE)

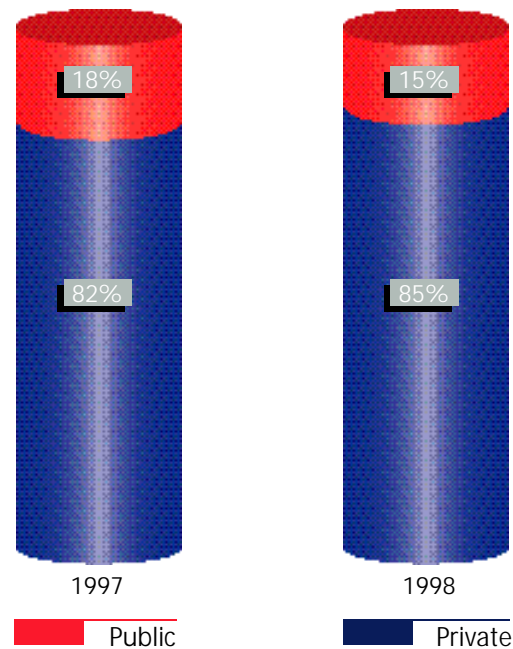


PROFILE OF SAMPLE COMPANIES

■ MOSTLY PRIVATE

Although some companies that have gone public are still candidates for venture capital, most of the companies that choose this financing option are still private. At the end of 1998, 503 of the companies in the sample (85%) were privately held. This is consistent with the public/private split evident in prior surveys.

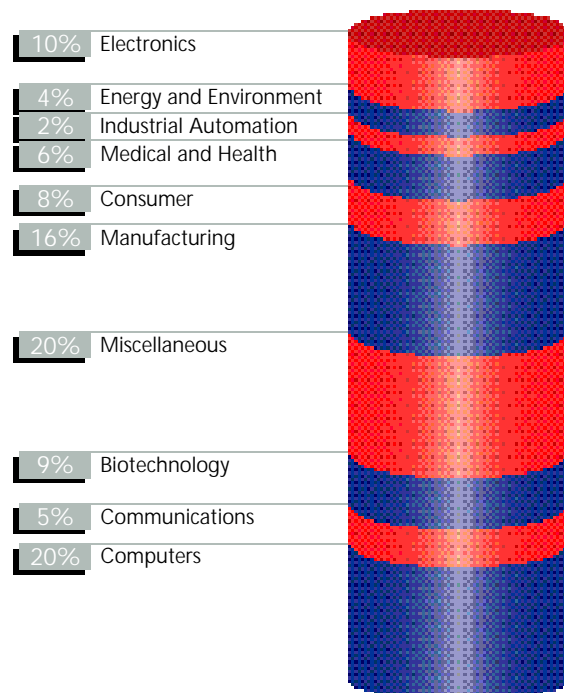
Distribution of Investee Companies
Private vs. Public



■ TECHNOLOGY FOCUS CONTINUES

Over the past several years, members of the Canadian venture capital industry have invested much more actively in technology companies, directing a significant amount of capital each year to these firms. As previously noted, 62% of the financings completed in 1998, and 70% of the capital invested, involved technology-based companies. The representation of technology companies in the survey sample is slightly lower than the representation among all venture-backed companies. Of the 592 companies whose data have been used for this report, 56% are technology-based firms, suggesting the results may in fact understate the growth actually being generated by venture-backed firms. The trend towards increased specialization continues as investors focus on specific sectors in which they have particular expertise.

Technology Focus Prominent
Distribution of Investee Companies
by Sector

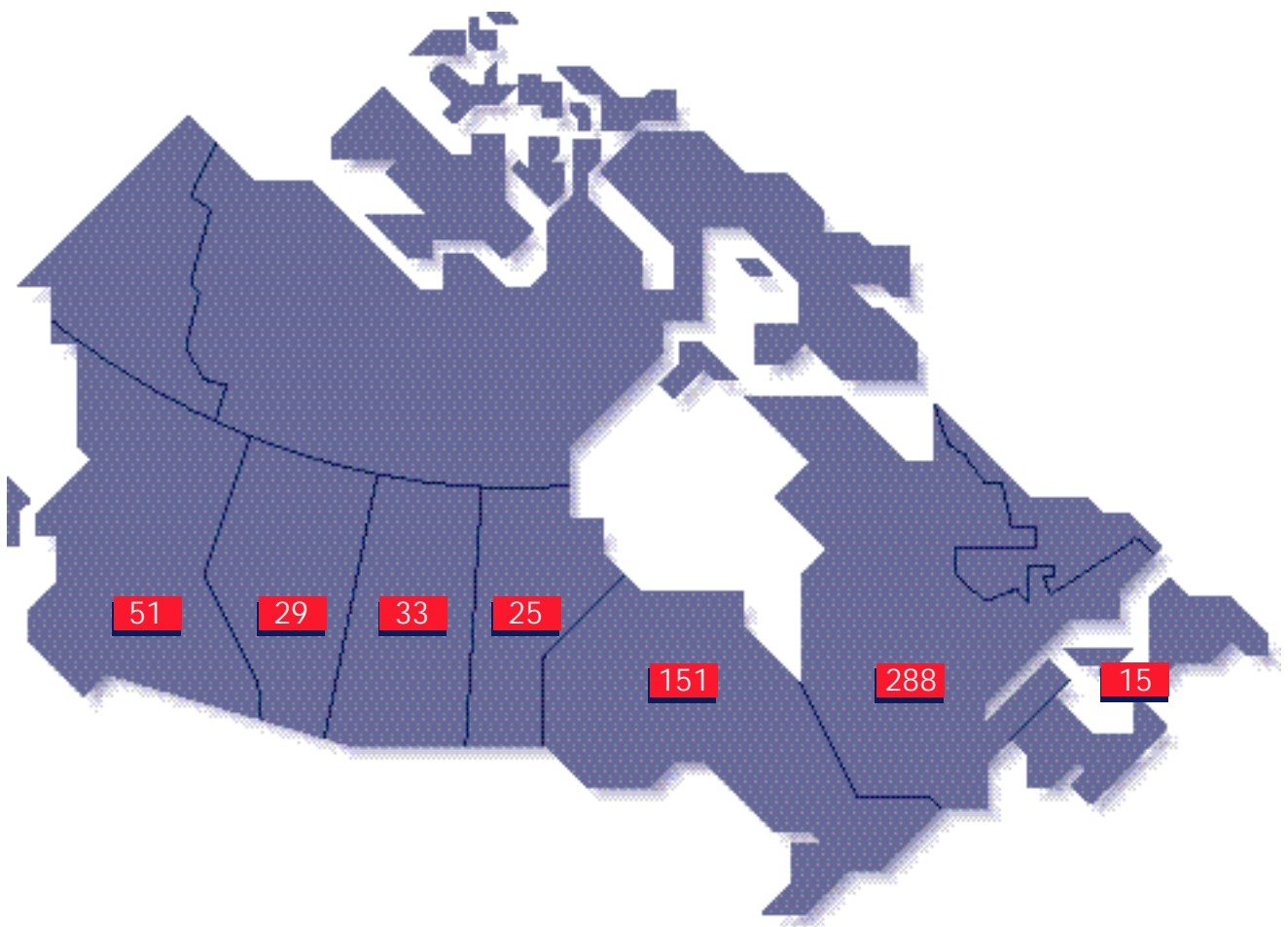


■ **SAMPLE COVERS THE COUNTRY**

The 592 companies in the sample continue to be dispersed geographically as venture investment activity continues to increase in most parts of the country.

Of the 592 companies in the survey, 51 were based in BC (9%), 29 in Alberta (5%), 33 in Saskatchewan (6%), 25 in Manitoba (4%) and 15 in Atlantic Canada (3%). The 151 Ontario-based firms in the sample accounted for 26%, while Quebec-based firms (288) accounted for 49% of the sample.

Distribution of Investee Companies by Province - 1998



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For more information, please contact BDC's Venture Capital Division at
(514) 283-1896.

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The logo for Canada, featuring the word 'Canada' in a bold, black, serif font. A small red maple leaf is positioned above the letter 'a'.