

A tribute to Canadian inventors

Philip McGinnis, a Canadian reporter, replaced the dispute-causing red flag with his spring-levered barrier invention to start horse races in the 1900's.



ECONOMIC IMPACT OF VENTURE CAPITAL



Business Development Bank of Canada
Banque de développement du Canada

BACKGROUND TO THE SURVEY

This is the eighth consecutive year in which the Annual Survey of the Economic Impact of Venture Capital has been conducted by Macdonald & Associates Limited on behalf of the Business Development Bank of Canada (BDC). The environment in which the survey was launched has changed dramatically in the intervening years. When the survey was launched in 1993, the supply of capital was constrained, few venture capitalists had experience investing in technology companies and experienced entrepreneurial management talent was hard to come by. Today the venture capital industry is investing at record setting rates, a solid base of venture capitalists with the requisite experience in technology investing is in place, and the pool of entrepreneurial management talent is growing quickly with the emergence of more and more successful technology companies.

Technology-based companies are now mainstream in our economy, the Internet has become an integral part of everyday life and the human genome is being mapped. All little more than fantasies in 1993. With these developments has come a proliferation of leading edge technology companies, many of which are pushing out the frontiers of these technologies. The long term economic impact comes from the commercialization of these technologies and venture capital plays a critical role in this process. Typically, technology companies have little in the way of tangible assets and need lots of capital to fund their R&D, build their team and implement an aggressive sales and marketing strategy. So the partnership with venture capitalists who bring money and an array of experience, networks and capital to the table is a natural. And the economic impact of this partnership is powerful. When it works, the net result is the creation of successful world-class companies, which employ hundreds if not thousands of people, and generate significant new economic wealth.

The eighth Annual Survey of the Economic Impact of Venture Capital provides another chapter of evidence 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. In short, the venture capital industry continues to play a very important role in the growth and development of dynamic growth companies that have become a cornerstone to our economic growth.

THE INDUSTRY'S GROWTH CONTINUES TO ACCELERATE

The rapid growth of the Canadian venture capital industry noted since the inception of this report accelerated further in 1999—the basis for the current survey. When the Economic Impact Survey was launched in 1993, the industry was managing a total of \$4 billion. By the end of 1999, the industry's aggregate resources had tripled to just over \$12 billion. But perhaps more important has been the growth in the amount of capital being invested in our emerging growth companies. The industry financed 286 companies in the inaugural year of the survey, investing a total of \$399 million, only 46% of which, or \$184 million, went to technology companies. In 1999, the Canadian venture industry financed close to 1000 companies and invested \$2.7 billion in them—almost 7 times more than 8 years earlier. Almost 80% of this capital—\$2.2 billion—found its way into

technology companies, representing a twelvefold increase since the survey was launched in 1993. The rate of acceleration of this activity is striking. Technology investments reached a record high in 1998, when the venture industry invested \$1.2 billion in technology-based companies; one year later these disbursements had jumped by 83% to \$2.2 billion. In short, the venture capital industry has now assumed a notable position in the capital markets for emerging growth companies in this country and has a key role to play in their growth and evolution.

Data for the first half of this year suggests this rapid upward spiral is continuing. The venture capital industry disbursed \$2.3 billion in the first six months of this year, 80% of which (\$1.8 billion) again was directed towards technology companies. If this rate is sustained through the rest of the year, the amount of capital flowing into technology companies can be expected to easily surpass \$3.6 billion, which would represent another annual increase of well over 60%.

The focus of investment has increasingly been on companies pushing out the frontiers of information technology (IT). Companies operating in the key IT spaces—Internet, networking, communications, software, and semiconductors—are now attracting more than 60% of the capital being invested by the venture industry. Life sciences companies have lost some ground in the process, attracting only about 15% of the capital.

Over the past five years, the Canadian venture industry has invested more than \$8 billion in entrepreneurial growth firms, an increasing share of which has been invested in rapidly growing innovative technology-based firms. 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 their 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 1995 and 1999 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, our ability to access data is enhanced. 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 the venture industry has shifted its focus considerably over the past five years and now dedicates a good deal more of its time and capital to companies still 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 was requested for each of the venture-backed firms in the sample from the beginning of the year in which they first secured venture capital to the end of the most recent fiscal year. This data allows 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 four years. (Prior to 1996, data was collected for a five-year period for all sample companies, regardless of when venture capital was secured.)

From inception, the survey results suggest sharply higher growth rates from venture-backed companies than for the economy as a whole and this year's results are no exception. This eighth Annual Survey of the Economic Impact of Venture Capital reconfirms 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 venture capital funds across the country, requesting information on 927 companies financed for the first time between 1995 and 1999. (Canadian venture capitalists actually financed 1662 companies for the first time during this period but have already exited from 337 of these investments. Some venture capitalists have also declined to participate in the survey.) Of the 927 companies remaining in the sample, data was collected on 492 companies, representing a 53% response rate.

Throughout the report, the rate of growth posted by the investee companies, namely in terms of employment and R&D, is reported in two ways. The average annual compound growth rate is 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 for 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 be indicative of 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 1999 as identified by Profit magazine in the Profit 100, 21 have been venture-backed although only 6 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. There has been a noticeable trend towards highly profitable acquisitions this year, as a number of venture-backed technology companies have opted to merge with the world's leading technology companies to ensure their technology has its rightful place as the future unfolds. Toronto-based Solect took its billing and customer care software into the fold of Amdocs this year for a purchase price of more than US\$1 billion. Pixstream's ability to deliver broadcast quality video over high speed networks resulted in a purchase price of US\$369 million from Cisco. And Vancouver-based Abatis Systems, an Internet Protocol services firm with no product revenues, commanded a value of US\$677 million from Redback Networks. The value of Canadian technology is being clearly demonstrated and is translated into significant new wealth for its creators and for the economy as a whole.

DIFFERENT STROKES FOR DIFFERENT SECTORS

Once again this year we have disaggregated the numbers to look more specifically at the growth experience of companies in the IT and life sciences sectors, as well as for the sample as a whole, and the results are documented in the report. Profiles of selected examples of venture-backed successes are also appended to the report.

VENTURE CAPITAL DRIVES RAPID GROWTH

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 1999, the 492 companies included in the sample as a group employed 42,435 people or an average of 86 people per firm. Of particular note, is that more than half of these jobs (54%) were created after venture capital was successfully raised. Intuitively, we know that venture capital gives a high growth company the fuel it needs to accelerate its growth. The employment data bears out this intuition, demonstrating that these emerging companies with significant growth potential are able to rapidly ramp up their teams once they bring in an injection of equity. Equally encouraging is that almost 95% of the new jobs created were based in Canada. So even though these companies are building worldwide networks for their products and in many cases, establishing a significant presence in Silicon Valley or other parts of the US, they are still building the bulk of their teams around their home base.

The Canadian venture capital industry has increasingly been shifting its focus towards technology investments over the past five years to the point where during the first half of 2000, industry members directed 90% of the record \$2.3 billion invested over the six months to technology-based companies. Year after year, the survey data has shown that technology firms tend to outperform the sample as a whole in terms of employment growth and data this year proves it again. The economic impact of these investments just continues to grow as a result.

The companies in this year's survey sample increased their employment base by an average of 39% per year

compounded after they raised their venture capital, illustrating the aggressive growth strategies they can pursue with outside equity. Economic conditions have generally been strong for the past five years, contributing to an environment that has nurtured the development of emerging growth businesses. And venture capitalists have been increasingly prepared to invest in very early stage companies which are still pre-revenue and which may well have a few false starts before they start to really ramp up.

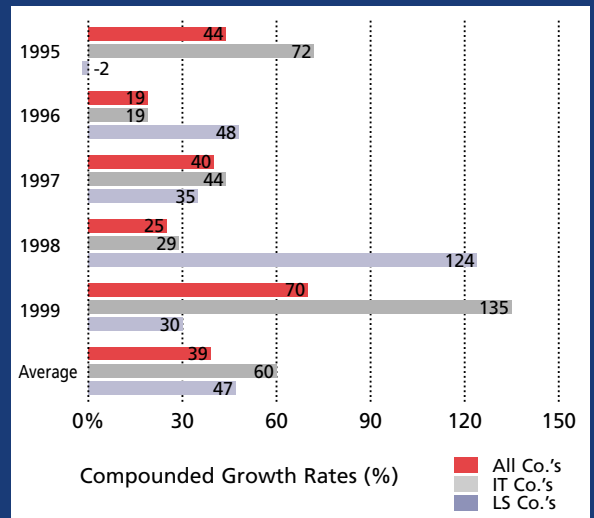
While the rate at which new jobs have been created by these firms varies by the year in which the companies were financed (see chart below), the performance has been consistently strong across all vintage years with the exception of 1996. The companies financed in that year turned in a more modest 19% annual compound growth rate in terms of employment. Companies financed in 1995 have seen their employment base grow by 44% annually compounded over the five-year period and companies financed in 1997 have grown their employment base by an average of 40% per year in the intervening period. The firms financed last year posted an average increase in employment of 70% over the prior year.

The continued shift in focus towards technology is undoubtedly playing a role in the impressive growth rates being delivered by venture-backed companies. In recent years, we have seen a maturing of the venture capital industry itself in terms of its ability to effectively finance young high growth technology companies. And we have seen a maturing in the technology community with a growing number of entrepreneurs emerging from successful technology ventures to try their hand at company

creation yet again. The Ottawa area is a perfect example of how success compounds itself and growth leads to more growth. JDS Uniphase, which did not even exist when this survey was launched in 1993, has assumed, in a remarkably short period of time, a leading role on the world stage, generating mind-boggling rates of growth and new wealth creation in the process. Other companies like Philsar have achieved a level of success with their technology and demonstrated market potential and sold their enterprise to larger players at a significant price. These types of successes create a pool of experienced entrepreneurial management talent and financial wealth, both of which are important inputs to the company creation process. Enough critical mass has now developed in the Ottawa market enabling the emergence of hundreds of other young technology companies in the Ottawa Valley in recent years. Many of them are now attracting very significant amounts of venture capital from domestic and foreign venture capital funds.

As the rate of adoption of Internet technologies and the applications of information technology continue to spiral upward, it is not surprising that the successful venture-backed IT sector is growing at a remarkable rate. There is little doubt in our minds that the results being achieved in this sector are in fact significantly understated by the survey results. Of the 492 companies in the sample, only 177 were IT companies (computer related, communications, electronics and industrial automation) representing 36% of the survey sample. But more than 60% of industry disbursements are now being directed towards IT companies. Many of the venture groups investing in these firms find it difficult to justify the time to participate in the survey given the demands created by the rapid growth of their portfolio companies. Nevertheless, the IT companies in the sample created almost 9000 new knowledge-intensive jobs subsequent to raising their capital, generating an average annual compound growth rate of 60% in their employment base.

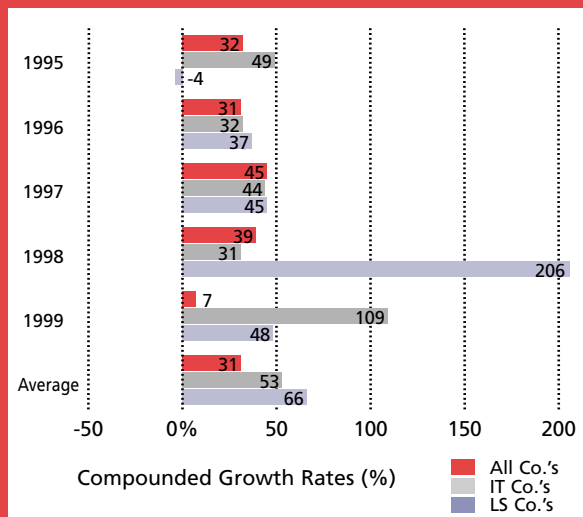
Venture-backed Companies Grow Jobs Fast Compounded Annual Growth Rates



It would appear that the ability of IT companies to raise increasing amounts of capital in Canada is also contributing to their ability to ramp up their teams more quickly. The companies financed last year grew their pool of employees by 135% over the course of the year. It is interesting to note that the vast majority of these jobs have been created in Canada.

The biotechnological and other life sciences firms have also shown considerable strength, posting annual average growth rates in employment of 47%. The 82 surveyed companies in this sector (16% of sample) employed an average of 37 people each at the end of 1999, after growing at 47% per year (compounded), suggesting that many of these firms are still just starting to build a commercial base around their scientific research. Because of the long testing and approval cycles in the biotechnological world, many of these companies are still in the development phase and therefore likely to deliver slower growth in terms of employees than their IT counterparts.

Technology Firms Ramp Up Sales Compounded Annual Growth Rates



SALES

In 1999, the combined sales of the companies in the sample were \$14.2 billion or an average of almost \$9 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 more than 40% of the capital now being invested by the venture industry is going into early stage companies. In other words, firms that have not yet reached full commercial production. Overall, the sample firms increased their sales by an average of 31% per year after securing venture capital. The 114 companies financed in 1997 posted the strongest performance, increasing their sales by 45% per year over the period subsequent to being financed.

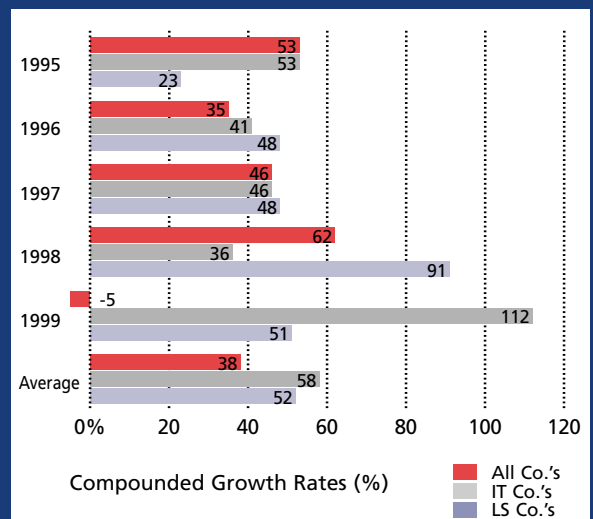
The IT companies across all vintage years have achieved an average 53% annual growth in their sales, with the IT companies financed in 1995 delivering an increase in sales of 49% annually. The life sciences firms across the sample increased their sales by 66% per year after raising venture capital, although this average was lifted upwards by the remarkable 206% annual growth in sales posted by the life sciences firms financed in 1998. The life sciences firms financed in 1995 actually experienced a decline in sales over the period, while the firms financed in all other years covered in the survey produced annual sales growth of between 35% and 50%.

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 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 reinforce this trend, since sample companies overall increased their exports each year by an average of 38% after securing venture capital. Technology companies continue to drive these numbers to a large extent, with the IT firms in the sample showing annual growth in exports of 58% per year since raising venture capital and life sciences firms generating growth rates of 52% per year in the exports.

In short, venture-backed firms continue to be highly focused on the export markets and are meeting their global competitors head-on in their effort to secure market share. Total export sales for the 492 firms in the sample were \$2.94 billion in 1999 and these firms collectively generated \$5.4 billion in export sales between the time they secured venture capital financing and the end of 1999.

Technology Companies Continue to Be Export-Focused Compounded Annual Growth Rates



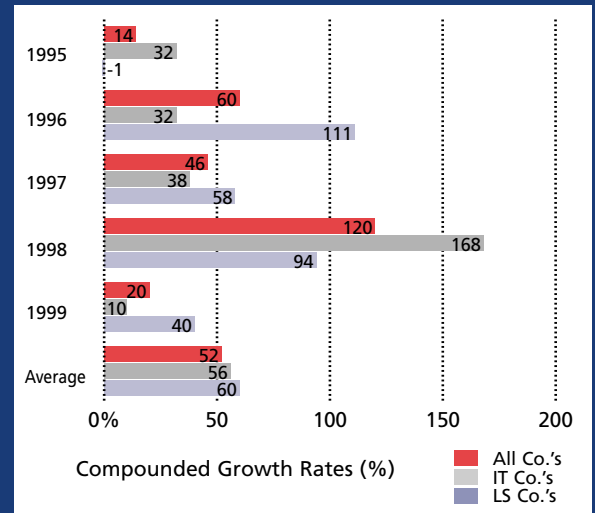
R&D

It almost goes without saying that a successful technology company will make a significant commitment to R&D and the survey results once again bear out this truism. R&D expenditures rose by an average of 52% each year after the venture capital financing took place across the sample as a whole. The sample companies invested a total of \$792 million in R&D between the time they brought in venture financing and the end of 1999, \$348 million of which was committed to R&D last year.

As expected, technology 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.

Technology Companies Drive R&D Expenditures

Compounded Annual Growth Rates



Technology Firms Outperform Average Annual Growth Rates 1995-1999

	All Surveyed Companies	IT Companies	Life Sciences Companies	Technology Companies
Jobs	39%	60%	47%	54%
Sales	31%	53%	66%	50%
Exports	38%	58%	52%	56%
R&D	52%	56%	60%	52%

VENTURE-BACKED FIRMS CONTINUE TO OUTSTRIP THE ECONOMY

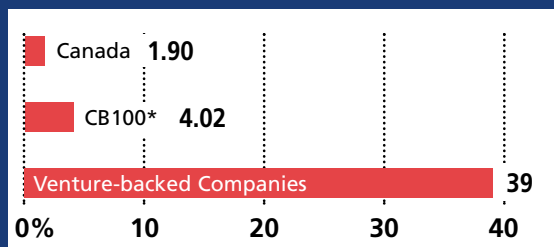
It is abundantly clear that venture capitalists are, for the most part, financing firms that have significant growth potential. The survey results indicate that when it comes to jobs, venture-backed companies have increased their ranks of employees at a very rapid rate, far outstripping the growth rates achieved by large companies or the economy as a whole. While employment growth has been strengthening in Canada, total employment increased by an average of 1.9% per year for the period from 1995 through the end of 1999. Canada's largest 100 companies (by sales) have been enjoying solid growth over the past five years, and increased

Venture Backing Fuels Growth 1995-1999*

Job Creation	23,052
Sales	\$14.2 billion
Exports	\$5.37 billion
R&D	\$792 million

* Cumulative results subsequent to venture capital investment

Venture-backed Companies Outstrip Most Others in Job Creation (1995-1999)



* CB100 is the top 100 companies (by sales) from *Canadian Business' Corporate 500*.

Sources: Statistics Canada, *Canadian Business*

their employment ranks by an average of 4.0% per year over this period as a result. But venture-backed companies in the sample increased their employment base by an average of 39% 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.

■ CAPITAL REQUIREMENTS CONTINUE TO ESCALATE

Speed to market has become everything in the technology world today. As a result, the amount of venture capital being invested in promising young technology firms is growing very quickly. In the US, the average financing is now over \$20 million while in Canada the average is still only running at about \$3.5 million. However, a growing number of large deals are being made—in fact, about 45 Canadian companies secured in excess of \$20 million in the period from January through June 2000. The stakes are clearly rising.

The 428 companies in the sample this year that are still private have already completed an average of 2.5 rounds of financing each and have on average raised \$6.4 million. Given the dramatic increase in the frequency of large financings, there is little doubt that many of these companies will raise a good deal

more capital before going public or being purchased by a strategic buyer.

The amount of capital required by those high growth companies that ultimately turn to public markets is likely to continue to grow for the foreseeable future at least. Those venture-backed companies in the sample that have gone public consumed an average of \$23 million in private capital before embarking on their IPO.

Private equity requirements continue to vary across industry sectors. Firms in the electronics and communications sectors that are still private have already raised an average of \$10.2 million and \$11.7 million respectively while companies in the energy and environmental technology arena have raised an average of \$2.3 million.

Technology Companies Continue to Consume Large Amounts of Capital

Sector	Private Companies		Public Companies*	
	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	2.90	7.50	3.60	53.00
Medical and Health	3.32	6.50	2.17	31.20
Communications	2.96	11.70	2.33	16.30
Computers	2.97	8.60	1.44	16.10
Electronics	2.91	10.20	1.00	15.30
Energy and Environment	1.54	2.30	2.00	4.10
Industrial Automation	2.23	5.20	3.00	26.00
Consumer	1.90	4.70	1.00	1.10
Manufacturing	2.06	4.10	1.33	4.30
Miscellaneous	1.75	3.00	2.58	29.10
Average	2.45	6.40	2.13	23.30

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

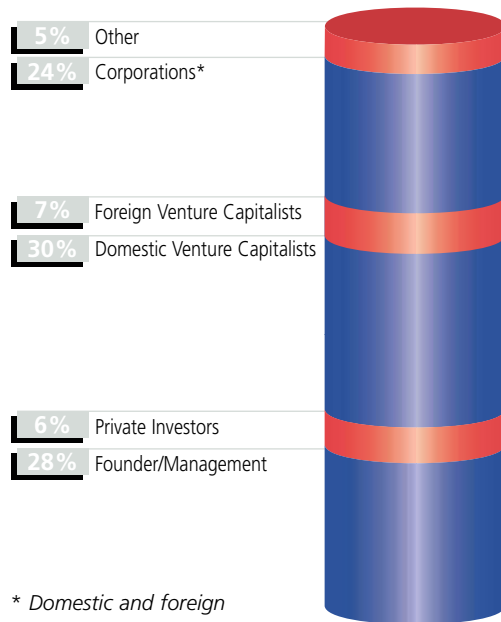
SOURCES OF EQUITY

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, 37% of the total equity in the private companies in the sample, allowing them to play a meaningful role without assuming control. The founders themselves had a substantial stake—28% of the equity capital—directly aligning their interests with those of their investors.

Corporate investors continue to play a significant role in this market, providing 24% of the equity to private companies while private investors accounted for another 6% of the total. The final 5% of equity has come from employees, governments and universities.

Venture Capitalists Are Important Sources of Equity

Sources of Equity for Private Companies



IMPACT CONTINUES AFTER THE IPO

Venture-backed companies that have gone public on the TSE have outperformed their non-venture-backed counterparts overall (and the TSE 300) for the past several years. This trend has become even more pronounced over the past year or so as the technology sector has come into its own. While most

companies fall outside the parameters of the survey sample by the time they do their IPO, this chart demonstrates that many of the companies, which attract venture capital, continue to thrive as they mature, providing an on-going stream of significant benefit to the economy.

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

March 1993 - September 2000 (TSE)

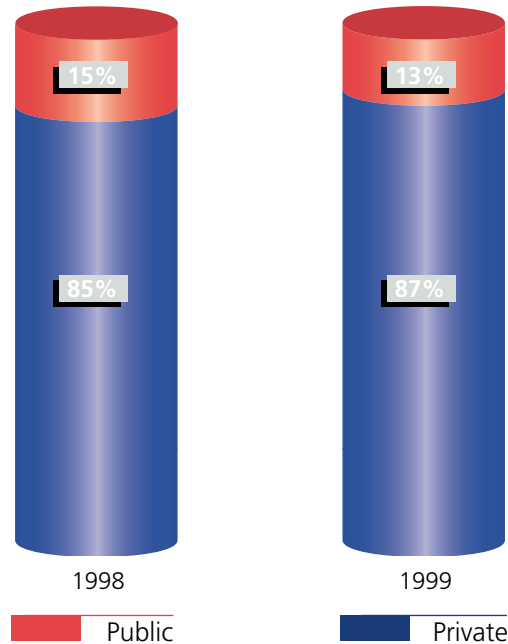


PROFILE OF SAMPLE COMPANIES

■ 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 1999, 428 of the companies in the sample (87%) were privately held. This is consistent with the public/private split evident in prior surveys.

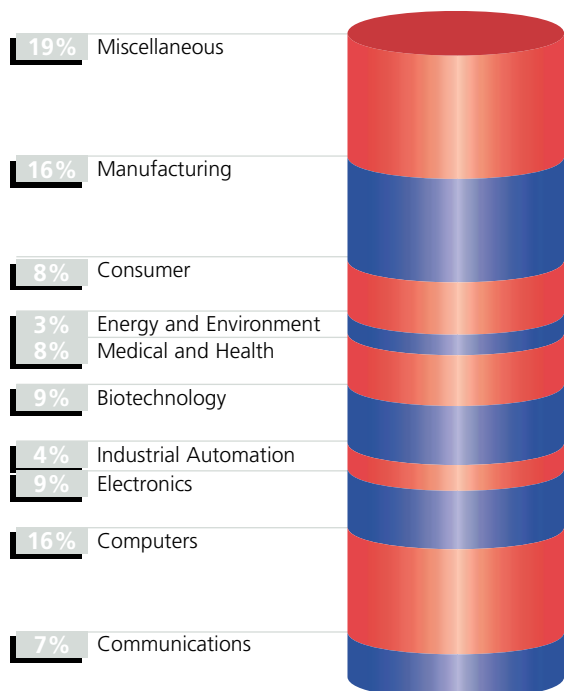
Distribution of Investee Companies Private vs. Public



■ TECHNOLOGY FOCUS CONTINUES

The orientation of the Canadian venture capital community towards technology financings has strengthened significantly in recent years to the point that 90% of the \$2.3 billion disbursed in the first six months of 2000 went to technology-based companies. The representation of technology companies in the survey sample this year is significantly lower than that, with only 57% of the companies in the sample being technology companies. This further reinforces the results of the survey in that the technology companies in the sample outperformed the sample as a whole on all counts.

Technology Focus Prominent Distribution of Investee Companies by Sector

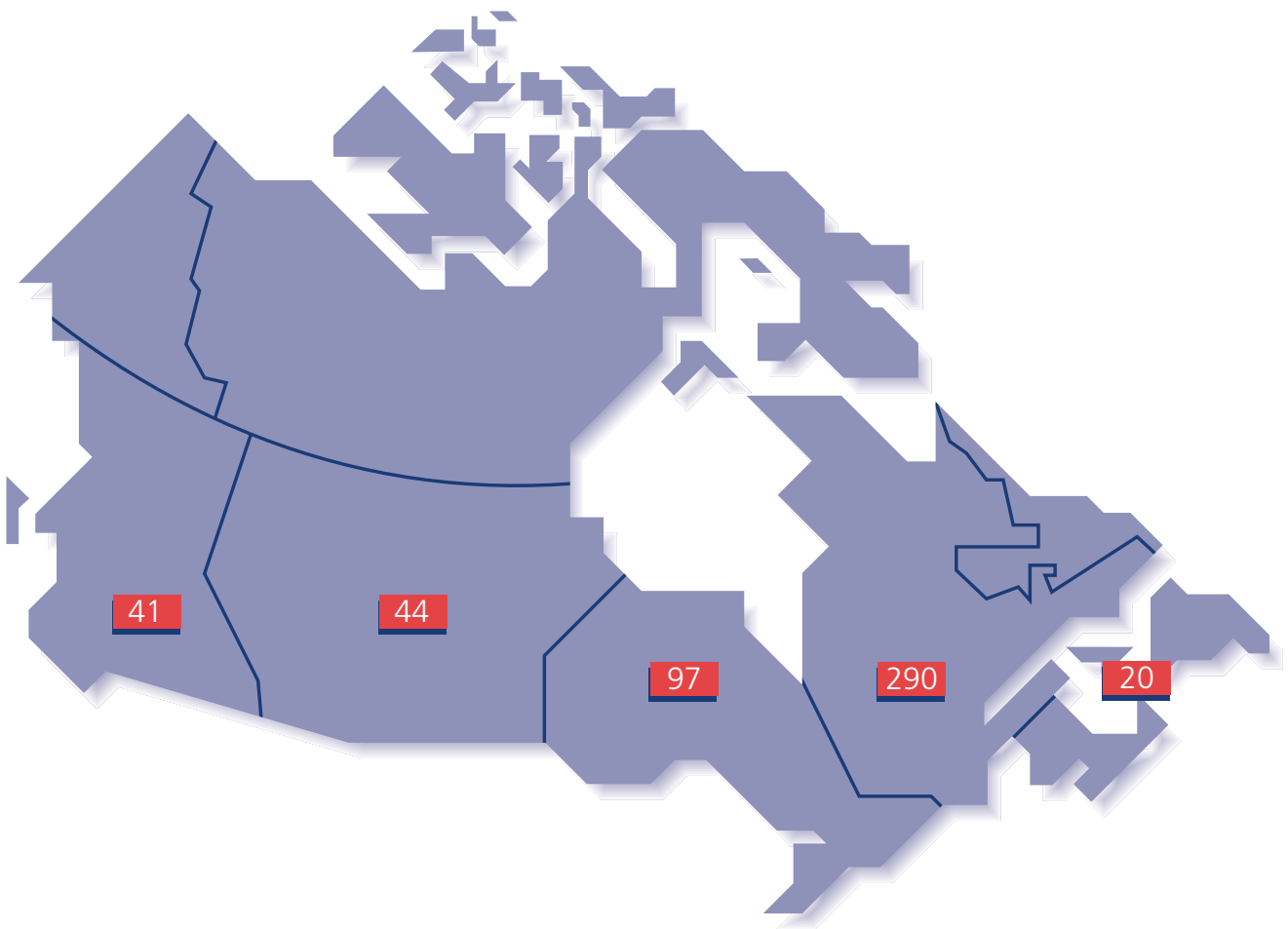


■ SAMPLE COVERS THE COUNTRY

The 492 companies in the sample were dispersed geographically although the respondents were heavily skewed towards Quebec this year.

Of the 492 companies, 41 were based in B.C. (8%), 44 in the Prairies (9%), and 20 in Atlantic Canada (4%). There were 97 companies from Ontario in the sample this year accounting for 20% of the sample while there were 290 from Quebec, accounting for 59% of all firms analysed.

Distribution of Investee Companies by Province or Region - 1999



BDC is proud to
showcase Canadian
innovations and to pay
tribute to entrepreneurs
whose efforts and
achievements have
contributed to Canada's
economic prosperity.

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