Growing R&D-Intensive Firms in Canada

Views of CEOs in the "Greenhouse"

by

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Executive Summary

After discovering that almost none of Canada's R&D-intensive commercial enterprise leaders were involved in the National Innovation Summits of 2002, Dr. H. Douglas Barber and Dr. Jeffrey Crelinsten began research and a series of interviews to determine the state of these enterprises in Canada and what would help in their success. We divided these companies into groups based on R&D spending. In an earlier study, we interviewed 30 executives from R&D Leader firms spending 3-50% of revenue and more than $3 million on R&D. In this study we talked to 30 CEOs from Early-stage firms spending 3-50% of revenue and less than $3 million on R&D and Start-up firms spending more than 50% of revenue on R&D. Our interviews were structured around four questions:

(1) How did your company get started?
(2) What major challenges did you face?
(3) Where do you see your company in five years from now?
(4) Is there anything in the general Canadian environment, including government policies, that could help you if it were changed today?

What we learned from this "greenhouse" group of firms is as follows:

(1) Canada's culture of science and technology is very strong. University and college graduates are world class in technical skills and knowledge.

(2) The culture of commerce is weak in Canada. There is a dearth of sales, marketing and management skills and MBAs do not fill the gap. There is a level of societal distrust and suspicion towards commerce.

(3) Because of the above, these CEOs of Canada's start-up and early-stage companies lack in significant areas of knowledge and experience related to commerce. They struggle determinedly but only 30% of them are profitable. Most of the profitable firms are focused on customers and finance their operations from sales. The rest are preoccupied with financing, relying on investors and lenders. Almost half of the firms initially failed or almost failed due to lack of focus on customers and preoccupation with R&D.

(4) Few companies expect to remain in Canada. Many plan to sell or expect to be bought before reaching $300 million per year in sales.

(5) Venture capital firms offer R&D-intensive firms money to fund technology development and then encourage them to sell early for a "quick exit."

(6) Government programs support R&D but do not support marketing and other business development activities.

(7) Regulatory agencies are not collaborative and timely decisions are not a priority.

(8) In postsecondary institutions, there is a lack of learning related to the human relationship challenges in marketing, sales and management and there are unrealistic expectations of the commercial viability of internally-generated intellectual property.

Some actions that might be helpful to this “greenhouse” group of firms are:

(1) Government granting agencies can shift expectations and success measures from a singular focus on science and technology outputs toward outputs related to success in commerce.

(2) Postsecondary institutions can track the accomplishments of their graduates as a measure of institutional success, rather than focusing exclusively on published papers, conferences, patents, licences, spin-off firms and number of graduates in different disciplines.

(3) Government agencies providing support to industry can acknowledge their imited understanding of commerce and take steps to improve it. For example, agencies providing funding to industry, managing tax incentive programs and providing regulatory services can employ people experienced in commerce.

(4) Government leaders can encourage commerce-responsive creativity and effectiveness in the delivery of government programs. Government agencies would need to recognize and reward people who are achieving positive results.

(5) A program of Canada Commerce Chairs can award postsecondary teaching positions to former CEOs and entrepreneurs who want to teach how to grow successful R&D-intensive firms.

(6) Postsecondary institutions can offer short courses of study on commerce for CEOs and employees of R&D-intensive firms. Government granting agencies can provide support to professors and teachers at postsecondary institutions who teach these courses.

(7) Government can maintain a database of mentors and provide a matching service and networking opportunities for CEOs and mentors.

The evidence we have compiled suggests that the most important action we could take would be to evaluate our assumptions and our beliefs about knowledge-based commerce to ensure that our starting point is sound. Such an evaluation should focus on achieving commercial success and prosperity for Canada. This would necessitate our reinforcing beliefs and attitudes that value commerce. We would need to prepare our people for success by first helping them understand that success will generate wealth, technology and a better quality of life for Canadians.

Introduction

This study is part of an ongoing investigation of Canada's R&D-intensive firms and their ability to contribute significantly to the Canadian economy. We focus on firms that spend a significant amount of their revenue (>3%) on R&D. We do not consider the vast number of firms in other less R&D-intensive sectors. All statements in this report pertain to R&D-intensive firms.

In an earlier paper[1] we used Statistics Canada data on industrial R&D for all companies performing R&D in Canada to analyze their growth from 1994-2001. We divided these firms into four groups based on research intensity (see Exhibit 1):

Low Research Intensity
Firms that spend less than 3% of revenue on R&D.

R&D Leaders
Firms spending between 3-50% of revenue and $3 million or more on R&D. These firms have higher revenues to support their higher R&D spending and are at a later stage of development

Early Stage
Firms spending 3-50% of revenue and less than $3 million on R&D. These smaller firms are typically at an earlier stage of development.

Start-up
Firms spending more than 50% of revenue on R&D. These are generally start-up companies that are being financed by investors or lenders rather than customers. They have higher levels of risk and uncertainty and are more likely to contribute to Canada's performance in a longer timeframe than by 2010.[2]

Our analysis showed that in terms of growth, the R&D Leaders group contributed the most additional revenue ($43 billion) and R&D spending ($4.5 billion) of all groups over the period. This significant contribution was despite the fact that there were only a couple of hundred companies (228) in this group in 2001 compared to a total of almost 9,000 firms. The number of R&D employees in this group grew the most (7% per year) over the period.

The Low Research Intensity group accounted for the lion's share of revenue (90% in 1994 and 83% in 2001), but its revenue as a group grew only 1% per year over the period while its R&D spending declined slightly. Its number of R&D employees declined about 3% per year.

[1] H. Douglas Barber and Jeffrey Crelinsten, "The Economic Contribution of Canada's R&D Intensive Enterprises 1994-2001," (Toronto: Research Infosource Inc., March 2004).

[2] Some larger firms migrate temporarily into this group, for example if they are facing a downturn and they maintain their R&D spending during a period of lower revenues. Or a firm that is using debt or equity financing to invest heavily in a new product may temporarily move into this group.

Exhibit 1. Canada's R&D Intensive Firms by Research Intensity Groups**
Summary of Key Data*, 2001[+]

Low Research Intensity **Research Intensity <3%**	**R&D Leaders** **Research Intensity 3-50%** **R&D spending of $3 million or more**	**Start-up["Greenhouse"]** **Research Intensity >50%**
➢ Number of companies: 2,564 Declining 4.9%/yr ➢ Revenue: $441.4B Growing 1.0%/yr ➢ R&D spending: $1.9B Declining 0.4%/yr ➢ Average research intensity*: 0.4% ➢ Employees: 1,009,690 Declining 3.7%/yr	➢ Number of companies: 228 Growing 8.2%/yr ➢ Revenue: $75.0B Growing 12.9%/yr ➢ R&D spending: $7.8B Growing 13.2%/yr ➢ Average research intensity*: 11.7% ➢ Employees: 208,081 Growing 5.8%/yr	➢ **Number of companies: 1,992** **Growing 2.0%/yr** ➢ **Revenue: $2.8B** **Growing 13.2%/yr** ➢ **R&D spending: $2.3B** **Growing 8.0%/yr** ➢ **Average research intensity*: 104.2%** ➢ **Employees: 58,782** **Growing 13.9%/yr**
	Early Stage["Greenhouse"] **Research Intensity 3-50%** **R&D spending less than $3 million**	
	➢ **Companies: 4,109** **Declining 2.3%/yr** ➢ **Revenue: $11.2B** **Growing 0.5%/yr** ➢ **R&D spending: $1.2B** **Growing 2.1%/yr** ➢ **Average research intensity*: 9.6%** ➢ **Employees: 99,912** **Growing 0.2%/yr**	

Total Companies

- Companies: 8,893
  Declining 2.7%/yr
- Revenue: $530.4B
  Growing 2.1%/yr
- R&D spending: $13.2B
  Growing 8.2%/yr
- Average research intensity*: 1.9%
- Employees: 1,376,465
  Declining 2.5%/yr

*Average research intensity and yearly growth rates based on 1994-2001 numbers +Preliminary numbers
**R&D spending as percent of revenue Note: may not add due to rounding

The Early Stage group was largely stagnant over the period. With over 4,000 firms in 2001, the total number declined about 2% per year. Total group revenue grew at half a percent annually, R&D spending grew 2% per year and number of R&D employees grew annually at 3%.

Almost 2,000 firms comprised the Start-up group, which grew only 2% per year. Revenue growth for this group was significant (13% annually), but the group's total revenue represented less than half a percent of the total for all firms. R&D spending was significant (18% of total spending for all firms) and grew 8% per year. R&D employees grew at 5% annually. Investment exceeds sales in this group.[3]

With about 6,000 firms in the Early Stage and Start-up groups, we found it striking that the R&D Leaders group only increased by about 14 companies each year during 1994-2001, a period of strong economic growth. Despite the large number of firms in the "greenhouse", not many of them are making it into the field. The Early-Stage and Start-up groups[4] are in a state of flux. Companies come and go. The same firms do not necessarily appear in these groups from year to year. While we did not have data on individual firms from StatCan, the smaller Research Infosource database (about 650 firms) indicates that there is a lot of churn in the Start-up group. Companies fail, merge, acquire or are acquired, enter and leave the country. The same is true for the Early-stage group. It is very dynamic. From the lackluster growth of the larger Early-stage group over the period, it is uncertain whether companies in this group will be sufficiently successful in the long term. Survival is a real issue. These data suggest there are factors operating in Canada that make it difficult to grow successful R&D-intensive firms. What might be the nature of these obstacles to growth? Are they financial, institutional, cultural or a combination of these factors?

In previous work[5] we found that in-depth, qualitative interviews with CEOs of R&D-intensive firms can shed light on the nature of their business, their future prospects and the impact of government policies and the general culture on their business. We used this same methodology to investigate the Early Stage and Start-up groups and to identify specific circumstances that face these firms. In particular, we sought to glean information that might indicate in a preliminary way the challenges facing these companies in their attempts to grow their business.

The key objectives of this study include:

1. Examining future growth plans for Early Stage and Start-up companies
2. Identifying challenges and barriers these companies anticipate that might inhibit them from achieving their growth plans

[3] We estimate this investment to be about $3 billion per year, two-thirds of which comes from "angel" investors and the rest from venture capital and public equity offerings.
[4] We call them the "greenhouse" firms.
[5] H. Douglas Barber and J. Crelinsten, "Can the Private Sector Get Canada into the Top Five Innovative Economies of the World by 2010? Views from Leaders of Canada's Innovation-Intensive Firms," (Ottawa and Toronto: ITAC and Research Infosource Inc., September 2003).

3. Exploring how the Canadian environment might change to facilitate the growth of Early Stage and Start-up firms.

We conducted telephone interviews (40-80 minutes in length) with a total of 30 business leaders (CEO/President). Almost half of the interviewees were from the information and communications technology sector and slightly more than a quarter from the biotech/pharma sector. All firms were Canadian-owned. Appendix 1 lists the names of the individuals interviewed and includes some additional demographic information.

The interviews were structured around four questions:

(5) How did your company get started?
(6) What major challenges did you face?
(7) Where do you see your company in five years from now?
(8) Is there anything in the general Canadian environment, including government policies, that could help you if it were changed today?

The following report summarizes the information obtained from these interviews. This report is qualitative in nature. It reflects the view of the respondents and does not necessarily reflect the views of Industry Canada or The Impact Group. Because of the small number of interviews, and because they were not drawn randomly, this report provides only directional information.

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Findings

The interviews we had with the thirty CEOs were candid. It was clear to us that these individuals are not finding commerce easy. They are working hard to find ways to thrive as a business. Many of them are struggling. But all of them are shouldering the responsibility of running their firms in a very competitive environment. Commerce is not a "cake-walk" and being a small company is difficult.

In the following report it may sound as if the CEOs we interviewed were complaining. This is not the case. We asked them to describe challenges that they face, and they did. We asked them to recommend ways for Canada to do things better, and they did. Many admitted to feeling the burden, but they were not grumbling or whining. On the contrary, they were speaking with candour about the impediments they encounter in running their business.

We have grouped the responses into seven sections, based on the answers we received to our four questions.

1. The Cultural Challenge

A majority of interviewees indicated that their firm and others like them in Canada are strongly focused on technology. In most cases, this technical orientation has diverted them from the other essential aspects of the business. Almost half of the companies started out with a poor understanding of business and as a consequence initially failed[6] or almost did. CEOs attributed these failures to a narrow focus on research for its own sake, with little or no emphasis on developing a product that customers wanted. Almost all of these firms required someone to come in and refocus the company. In most of these cases that person is now the CEO. "The founding scientists weren't right to bring the product to market," explained the CEO of a start-up firm. "We had to remove them." Another related: "The company was among the 'walking wounded' when I came on three years ago. They had spent too much money on product development."

In a few cases, the original CEO is still in charge, having realized that the company had been on the wrong track and needed to re-focus. "We didn't do enough marketing," related a CEO of a start-up in the IT sector. "We weren't focused. We spent unnecessary money on other products. Now we've narrowed our focus and cut our burn rate in half."

Very few of these firms are completely "out-of-the woods". This group spanned all sectors and regions of the country.

[6] For example, they filed for bankruptcy protection.

"The company was drifting along in a scientific stupor. There was no will to get one product. Finally a new CEO came in and pushed one through." (Start-up)

"The company started just doing R&D and taking out patents. It almost went bankrupt. Two angel investors saved the firm and brought in a new CEO to focus. We closed offices, relocated the R&D to our manufacturing centre and became cash flow positive." (Early-stage)

"The company started in the wrong market. The business plan showed all the potential markets, but they hadn't talked to any people. They believed strongly in the technology. There was no need for customers. The company filed for bankruptcy and was bought by another company that it had approached to be an agent. Now departments are based on customers, not products. Sales people can cross sell to customers." (Early-stage)

CEOs most often identified two major weaknesses - lack of focus on customers and lack of marketing expertise - as the reasons for initial failure of their business. Even CEOs running companies that did not have an early failure noted the lack of marketing and customer contact skills in Canada. "Recruiting on the sales side is more difficult," commented one CEO, who, like most of the other interviewees, found it easier to find Canadians with technical skills. "The real challenge, especially for small hi-tech companies," said another CEO, "is on the business side." Many CEOs noted that Canadian business leaders in high tech sectors tend to neglect marketing and relationships with customers. "Start-ups should spend more than 50% of their operating funds on marketing," said the CEO of an early stage software firm. "We were spending less than 8%." "For commercialization," emphasized an early-stage manufacturer, "sales is key."

Another major weakness CEOs identified was poor management skills and lack of the appropriate business experience. "The typical Chief Scientific Officer doesn't understand dilution, or how to manage a company," remarked the CEO of a biotech start-up. The problem seems to be cultural. Several CEOs have recruited senior executives from Europe or the United States because they can't find them in Canada. "Executive talent is easier to find in the U.S.," noted a biotech CEO in the Early-stage. "It also exists in Denmark, Germany and Austria."

"We hired senior management from the U.S. Canadians do well in the discovery area. For manufacturing, there's nothing here. For sales and marketing, there's nothing like the U.S." (Start-up)

"It's not easy to find a CFO or a science affairs executive with regulatory expertise in Canada." (Early-stage)

"Most engineering students get very little business exposure. Engineering schools should teach entrepreneurship – payables, receivables; how do you make money." (Early-stage)

"We got lots of ideas, but we need customers – for the cash." (Start-up)

"The company started, burned through cash and went into receivership in less than three years. Management and marketing were the problems. The assets were transferred to investors, and a new firm was incorporated. The marketing model was changed." (Early-stage)

When asked for the one thing that might have helped their business when they got started, at least 20% of the interviewees mentioned that they could have used a mentor.

> "A 'guardian angel' or mentor who understood electronic manufacturing would have been invaluable. I didn't have experience in running an R&D operation. It's very tough. It takes different management. It's hard to pull it off with small resources." (Start-up)
>
> "I need someone to bounce ideas off of, who knows my business." (Early-stage)

"I needed a coach, someone who could talk to me about how to design the business," said a CEO who is still in early-stage growth, but has survived initial start-up. "I was focused on meeting the payroll. I did no long range planning." "We didn't know enough about corporate finance," noted the CEO of a Start-up.

CEOs emphasized the need to educate Canadians about business and commerce. Having gone through the "trial by fire" themselves of running a knowledge-based company, they feel strongly that the lessons they learned the hard way are transferable to others. "There's got to be a template that can be taught, mentored, frameworked," insisted the CEO of a Start-up firm, "that helps companies fare better and faster than what I've had to do." Some CEOs suggested that universities need to do a better job educating young people, especially those in engineering and medical faculties, about the basics of business. Others suggested that government might support some form of mentoring or business education for CEOs. "We need a mentoring system for CEOs," said the CEO of an early-stage firm. "Most of them focus on raising money and take their eye off the ball."

2. Financial Challenges

Raising money was a preoccupation for most of the CEOs we interviewed. Only 7 out of 30 are financing their operations exclusively with revenue from customers. Eleven are relying exclusively on investors, while the rest have a combination of sources, including investors, debt and sales.

CEOs consistently emphasized that the task of raising money is one of the major challenges they face in running their business. At first one might conclude that lack of available money was the issue. While a few CEOs, especially in the biotech sector, raised this issue, it was not prevalent. In fact, lack of available money was not the biggest hurdle. "There are large pools of capital available for fields other than mining and software," asserted one biotech CEO, "but few people who can get a product to market and get a major partner."

CEOs feel that a technology focus leads many business leaders to lose sight of customers and concentrate on finding money to fund research. In these firms, this lack of customer focus and concentration on research creates a unique financial conundrum. No customers means no revenue. Yet it costs money to do research. Therefore most CEOs are relying on equity, tax credits, government grants and debt to fund their R&D and operations.

Some CEOs explicitly identified this as a problem. “Its brutal living on R&D money and angel investors,” exclaimed a CEO in the IT sector. “My biotech colleagues are too complacent,” said one biotech CEO. “They’re far too willing to go to the financial markets for money. I’ve done it for specific reasons, which makes it easier to raise the money.” And another: “There’s nothing wrong with research in Canada that money can’t fix. It’s not the same with companies. Money isn’t the answer.” In some cases, the incumbent CEO was not the original founder and came in to address this specific issue. They removed the original founder and refocused the company on customers and products to meet specific customer needs. Invariably, they also reduced the research activity.

> “There was an early burst of success with equity financing. This is the worst thing for people with no business plan. When I arrived, there was lots of research going on. One product was in the market but not making any money. There was no manufacturing and no FDA approvals. We made changes. We stopped most research except the one product, and drove through FDA approval for it. We took on manufacturing. We cut the sales force and changed to a partner for sales and marketing.” (Start-up)

Not all the CEOs see their heavy reliance on financing as a problem per se, just a hassle. In fact, a majority of the CEOs interviewed are relying on equity financing to run their companies. This is easy to understand. We have estimated that the total amount of financing for the Start-up group of almost 2,000 companies in 2001 was about $3 billion. For the Early-stage group it was about $1 billion. The total amount of dollars available through tax credits and government grants is tiny in comparison to these totals. Lenders require collateral, which these firms largely do not have. So they must rely on investors. The prevalent business model appears to be to finance R&D, then hope to find a marketing and distribution partner to sell the product or service.

Interestingly, we found a striking correlation between profitability and source of financing in this sample of firms. The seven firms that are financing their firms exclusively from sales were all profitable. Out of the other 23 firms, only two were profitable.

Challenges of Being Public

Our sample included 25 public companies and 5 private firms. The preoccupation with financing appears to have led many CEOs to go public very early. Several CEOs reported that their firms went public in order to raise R&D and operating funds before they had any significant customer base. Most of these CEOs judged in retrospect that they went public too early. In some instances, the incumbent CEO inherited the situation from the founders, who did not have a customer orientation and burned cash from IPOs on unfocused R&D. They are now stuck, unless they could bring the company private. While some of the CEOs we interviewed would have liked to do this, they could not. In other cases, the original CEO who took the company public is still at the helm.

In the IT sector, the dot.com boom exacerbated this tendency to go public too early. Several IT CEOs described how the venture capital community encouraged CEOs to go public even if they had no revenues or customers. Some of the CEOs interviewed took over firms in this situation or were brought in to manage them. In some cases, the

original founder is still leading the company. “We went public when there was a feeding frenzy among brokers and everything that moved got funded,” recalled one CEO of a Start-up firm. “It was way too early. We’ve since changed the business model and survived the downturn. Now it’s one customer at a time.”

> “They were private for five years and then did a reverse takeover with an operating company. They raised $16 million and blew it in 18 months. They had only $1.2 million left when we took them over. We sold off a subsidiary for cash and raised $20 million. Now we’re very frugal and have a low burn rate.” (Start-up)
>
> “The company started in the mid-80s. It licensed technology to manufacturers, but floundered because the price was too low. It went public on the TSE and raised $15-17M which was ploughed back into the R&D swamp.” (Start-up)
>
> “I was brought in by a VC. The company was burning cash. It had the wrong business model and was too capital-intensive. The technology was good enough for early adopters. Features and functionality aren’t so important. Marketing is much more important. We let a few people go and dropped some projects. We used the VC money mostly for marketing and operations. We became profitable, and then went public for the VC’s exit. It probably would have been better to stay private.” (Early-stage)

Most CEOs we interviewed who took their Start-up firms public early find it difficult being small, unprofitable and public. Reporting requirements are onerous, consuming 30-40% of the CEO’s and other senior management’s time. With no profits, they can only accumulate SRED tax credits. “There is a huge disadvantage in going public too early, because you need to manage the investment community,” said one CEO of a Start-up firm. “It involves lots of travel. It takes $120,000 in paperwork to raise $1.5 million. And you can’t get tax credits as a public company.” “An IPO was the only alternative,” explained another, “but ironically it’s the worst thing for us now.” And another: “If I could do it again, I wouldn’t have gone public so soon.” We heard similar comments from CEOs from all sectors.

> “We’re too small. The new reporting requirements are too hard. It costs too much.” (Start-up)
>
> “The company went public too early. It costs $300,000 a month to keep the doors open and handle the reporting requirements.” (Start-up)
>
> “The CEO concentrates 75% of his time on the public side of the business – financing and shareholders.” (Start-up)
>
> “We’re too small to be a public company. I would have taken it private. I spend about 40% of my time on reporting.” (Start-up)

Several interviewees referred to the new requirement to expense options as punitive. “We can’t hire people with a large option package,” related one CEO, “because we have to expense options.” For another, the issue is one of competitiveness. “We need stock options as a retention strategy,” explained this CEO. “The Canadian government doesn’t get it. We’re a global community. Global competition makes it more expensive to run your business.”

The tendency for Canadian knowledge-based firms to go public too early weakens their ability to take advantage of generous tax credits available to firms that conduct R&D. Many small, public firms have been accumulating tax credits, because they have no profits. Some CEOs note that in practice this situation encourages small Canadian firms to sell their companies early, to larger firms that want the tax credits and the technology to fuel their own growth. This exacerbates a situation, discussed below, in which CEOs favour selling their firms over growing them and staying on to manage them.

Capital Markets in Canada and Abroad

With their preoccupation with financing, it was not surprising to find CEOs we interviewed expressing views about venture capital. There is a perception among many of them that the venture community in Canada is conservative compared to peers in the U.S. and Europe. Many interviewees claim difficulty in finding patient venture capital with reasonable terms in Canada. As one CEO noted: "There's not enough patient capital without robbing you." Several said that they have secured financing abroad.

Some CEOs of more established firms want to use debt to expand but claim it is impossible to find appropriate vehicles in Canada. Several of the interviewees have had success in the U.S. and Europe. "There are some very creative financing vehicles out there in Europe and the U.S.," asserted the CEO of a start-up company.

> "Finding patient venture capital that will ride out the early development is difficult. There are limited numbers of knowledgeable VCs in Canada. I traveled to the U.S. and Europe where there's a broad portfolio of VCs. In the 1990s there was lots of government-backed venture capital in Quebec." (Start-up)
>
> "There are about ten biotech analysts in Canada and each one is "in love" or "in hate" with one company. It's much more competitive in the U.S." (Start-up)
>
> "State funding in New York is easy to get. I've considered incorporating in the U.S." (Early-stage)

CEOs in Western Canada noted that the financing community is predominantly interested in the resources sector and tends to stay away from the high tech sector. "It's difficult to raise capital in Canada," said one Western CEO. "The Vancouver stock exchange used to be good, but tech is overshadowed now by resources." And another: "There is very little money going to knowledge-based industries in Alberta."

A number of CEOs remarked that the size of Canadian markets compared to those in the U.S. is a real problem. "The Venture Exchange hasn't panned out," said one CEO. "Volumes are too small and the interest just isn't there." The small volumes can wreak havoc for public companies. "There are lots of issues with being a public company on the Venture Exchange," noted one CEO. "A trade of 500 shares can knock $1M

> "The TXS is okay for early stage growth. NASDAQ is more liquid for later stages." (Start-up)
>
> "The capital market in the U.S. is where we will compete. We trade 2-3 NASDAQ to 1 TSX." (Early-stage)

off your market cap. You're illiquid and orphaned."

CEOs had some recommendations for government in this area. One was to reduce paperwork. The CEO of a Start-up firm said he doesn't use BDC for this reason. "I don't want to fill out 20 pages and give them [BDC] all my data." Another recommendation is to reduce the corporate tax burden. One CEO of an Early-stage firm called Canadian taxes "a bit punitive" and said he is "reorganizing to reduce the overall tax burden." In some cases "reorganizing" could mean moving some parts of the firm offshore. Another CEO wants to see entrepreneurs better rewarded through the tax system. "The tax structure has to address successful entrepreneurs. Serial entrepreneurs need tax incentives."

On the debt side, one CEO suggested that the government could create a vehicle to provide debt to more mature firms that have the positive cash flow to support debt for growth. "The Canadian government should establish a mutual fund and set investment criteria for Canadian companies like ours," he said. "We would pay as much as 20% for debt financing with no dilution. But don't use the BDC. It should be a serious attempt to help growing firms. We can't compete with the Europeans and Asians right now, because we can't commit to large orders."

3. Corporate Growth Strategies

Half of the CEOs project that within 5-10 years their company will be sold. More than 25% of the CEOs interviewed have an explicit strategy to sell their company. Several of them are serial entrepreneurs who start firms or come in at a later stage to groom them for an "M&A" (merger and acquisition). Others have been brought in to turn a troubled company around. And still others formed the company and want to grow it. Of these, many grow to sell; only a few grow to build and manage a larger enterprise. Even among those CEOs who did not explicitly mention selling as their ultimate strategy, many feel the chances are good that they will be bought.

Many CEOs believe that the Canadian environment encourages selling of small firms in Canada, because it lacks the support and entrepreneurial focus that favours organic growth. Others pointed to more specific factors that incent firms to sell early: a conservative financing community, lack of support for business-relevant activities such as marketing, lack of a domestic talent pool for executive managers and a hostile regulatory environment. One CEO noted that small companies with good technology, people and a significant cache of unclaimed tax credits are attractive acquisition targets. He suggested that the SRED tax policy encourages firms to sell early rather to grow. Another CEO simply declared: "It's hard to flourish in Canada when you're small."

> "We will grow from $50 million to $300 million, but we'll never see it. We're being groomed to be sold. I feel like a calf being led to slaughter. Companies in Canada are designed to sell. We develop technology and get a few accounts. Then a big player zooms in and gets the market and a huge loss carry forward." (Start-up)

It is clear from our interviews that many of the CEOs simply plan to sell their company. Selling early was a prevalent strategy among CEOs of Start-up firms. Often it is not by choice. Venture capitalists want quick exits. Furthermore, many CEOs noted that later stages of growth are difficult to finance in Canada because capital pools are too small and investors are less sophisticated. Here again, we see the emphasis on financing. CEOs mentioned other factors. Almost all of them mentioned that the requisite skills in sales, management and marketing are difficult to find in Canada. Yet we did find a few CEOs who are managing to grow their firms, and plan to keep going. They are successfully running profitable enterprises on cash flow from customers. They have clear growth strategies. These few CEOs appear to be the exception that proves the rule.

> "We identified a real need, created a prototype, got a good product, built a scalable system and then we started to sell. We focused on sales, not broadening the product offering, and we built our customer base. Now, in the second phase, we're focusing on more product. We'll increase the revenue per customer." (Early-stage)

Most CEOs suggested that organic growth is difficult. More tellingly, they feel it is too slow. As one CEO of a Start-up explained: "We will probably be acquired. Organic growth would have to be really fast, from $100M to $300M." This sense of urgency often comes from the equity investor. As one start-up CEO remarked: "VCs have an insatiable appetite for quick hits." Yet in some of our interviews, the urgency was coming from the CEO. Whether by necessity or design, many of the CEOs clearly see their firms being sold within five to ten years. In many cases, this is an explicit strategy. In a few cases, it is not their desired outcome, but they see it as almost inevitable.

> "We have to grow, but can't do it organically. We'll need an M&A to reach a market capitalization of $100M. We'll likely be acquired by a big company. (Start-up)
>
> "We will eventually become an acquisition target." (Start-up)
>
> "We will have an M&A type of exit. This won't be an independent business in ten years." (Start-up)

This tendency to want a relatively quick exit resonates with the preoccupation we found with financing. Most of the CEOs we interviewed, either intentionally or more unconsciously, are trying to build an enterprise that will attract a buyer. It is as if the CEOs have taken on the agenda of short-term investors or venture capitalists, rather than that of a business owner wanting to build a global enterprise.

Market Size and Market Share

The perceived inevitability of early sale of these firms may stem from a strategy that we encountered, sometimes explicitly mentioned but implicit in other cases. Several of the CEOs we interviewed are targeting extremely large global markets, with the aim of capturing a small fraction of this huge market. Their strategy is not to become a significant player, but rather to be a small player in a market big enough to generate significant revenue. "We plan to grow to $500M – $1B in 5-10 years," one CEO of a Start-up projected. "This would represent 0.25% of a U.S.$400B per year market."

Some CEOs in this situation clearly plan to sell, while others did not describe such an "exit strategy." In fact, some expressed frustration that they might be bought rather than be able to grow to a significant size.

A few CEOs have picked a target niche market and are growing their firm organically for the long term. "I don't want to go public," said one CEO who has passed the Start-up phase and is running an Early-stage firm. "We won't be a $100 million company. We're a niche supplier to other markets. Our target is to be a $10-20 million company." These individuals appear to be the exception that proves the rule. A larger number of the CEOs are running firms that have selected a huge global market and aim to capture a tiny percentage of it. The latter group tends to favour the M&A exit, whereas the former group prefers organic growth.

Most growth strategies CEOs described involve a combination of acquisitions and working with partners. One CEO turning around a start-up firm has a clear plan: "We'll use M&A to grow, as well as partners. When we're at $50M I will transition out of the CEO position." If the firm were private, however, this CEO might have stayed. "I might not feel that way if we weren't public." Financing continues to be important as well. "First we're looking for private placements to fund marketing," explained one CEO. "Then we'll use debt to finance growth. Finally we'll look for an equity partner for distribution." In some cases, the CEO has recruited executive talent to move the firm forward. "I recruited a new COO to take the company to the next level," said the CEO of one Early-stage firm. Other CEOs plan to leave at a certain stage of growth. Others are still trying to decide the best way to proceed. "We're at a crossroads," explained one early-stage CEO. "We can either buy or build a new product, or partner with someone." Many of these CEOs are uncertain of the future. They are not sure how it will end.

> "We need sales offices in other parts of the world. The volume of calls is critical, as is customer care. Do they find value? Are they happy? Once we get to the next level, we will get acquired." (Early-stage)
>
> "We're trying to align with another company and use a reverse buyout to go public." (Early-stage)

4. Regulatory Challenges

In discussing the overall Canadian environment, attitudes in Canada's regulatory agencies received a lot of attention. More than half (17) of the CEOs discussed this issue. CEOs in the biopharma sector see Canada as slow and uncooperative in the regulatory area. Most CEOs in this sector are working outside Canada to conduct their R&D and run clinical trials. "We're leaving Canada to the last," said one Start-up CEO. "It will take forever in Canada." Biopharma CEOs

> "When you do clinical trials overseas, you essentially leave Canada. But there is a multi-year gap in getting new drugs approved in Canada vs. Europe or the U.S." (Start-up)
>
> "We get no cooperation from Health Canada. They think companies are looking for shortcuts, so they put hurdles to slow them down. There's a total lack of transparency. People are invisible." (Start-up)
>
> "Approval times are slow in Canada." (Early stage)

perceive a cumbersome and often hostile regulatory environment in Canada. “The [agency] was a true impediment,” recalled the CEO of an Early-stage firm. “We were treated as the suspicious kid on the block.” CEOs feel that an attitude of suspicion is slowing Canada’s regulatory system too much. They claim that other countries have a more positive view toward business that speeds up the process. Some CEOs emphasized that it is not merely speedy approval that they are seeking, but clarity and quick decisions so that they can move forward more quickly. The result is that companies leave Canada to do their clinical studies. “The regulatory process for clinical studies is way too slow,” said one Start-up CEO. “Most companies go to the U.S. or Europe.”

In the manufacturing and aerospace sectors, CEOs also described regulatory impediments due to bureaucratic mistrust of business. Some CEOs emphasized that regulators in Canada cannot make a decision and put roadblocks in the way of firms. The diversity of sectors highlighting this issue speaks to the suggestion of some CEOs that it is a cultural issue, stemming from a general mistrust of business.

> “Our biggest challenge is regulatory bureaucracy. They wouldn’t talk to us a couple of years ago and now they’re putting up hurdles for us to jump. There’s no mechanism to get government support for testing the Canadian market. The U.S. provides this kind of support.” (Early stage)
>
> “Fix the regulatory situation. Government should facilitate business, not impede it.” (Early stage)
>
> “[Agency] blocks approval. They can’t make a decision. It’s a big problem.” (Early stage)

CEOs raised similar concerns about the tax system. Companies wanting to apply for tax credits find the different rules for small firms and public firms difficult to interpret. The paperwork is onerous and the people administering the program do not always make the rulings on eligibility clear. “We have a regulatory over-burden,” said the CEO of a Start-up firm. “Government needs to streamline the process. They should minimize the burden at the beginning and then escalate. Right now, the bureaucrats won’t help up front.”

CEOs interviewed felt that regulators do not have a clear mandate to help business nor a sense that a “Team Canada” approach to commerce is necessary. Most CEOs commenting on the regulatory environment feel that regulators see their role as slowing them down and keeping them honest. In the biopharma sector, the CEO of a Start-up firm attributed the problem to under-funding of the regulatory agency. Lack of resources prevents regulators from getting the necessary specialist input. “The U.S. FDA pays 2-4 times the salaries at Health Canada,” this CEO pointed out. “Health Canada has no budget for consultants. So, they block you, because they don’t know. It creates non-regulatory barriers. They know it, but they can’t do anything about it…. Canada should put more money into Health Canada. There would be a massive increase in clinical studies.”

The most frequently mentioned recommendation was for Canada to adopt reciprocal standards with the U.S. and Europe. "We need to develop reciprocal standards," the CEO of an Early-stage firm insisted. "This could cut 3-6 months of approval time." Some CEOs, however, feel that this strategy is politically unpalatable in Canada, even though it is used in other countries such as Australia.

> "In NAFTA negotiations we should piggyback reciprocity on IP recognition, patents and regulatory approval." (Early stage)
>
> "Health Canada should have a policy to accept what the FDA accepts. Australia does it. But here it's politically untenable." (Start-up)

5. Working with Universities

CEOs in the biopharma sector were most likely to refer to universities. A significant number of CEOs in this sector (5 out of 8 interviewed) identified working with Canadian universities as a major challenge. The major difficulty stems from what they perceive as a poor understanding in universities of the business development process and an over-inflated view of the potential profits that can accrue from a single piece of intellectual property (IP). "The view in Canada is that spin-off companies are a source of money," remarked one CEO. Several CEOs singled out university administrators and industrial liaison offices (ILOs) as having too high expectations regarding potential income from licences or collaborations with industry. "Most R&D is done in companies, not academia," a CEO pointed out. "Universities point to Gatorade, but this is ridiculous. It's the exception, not the rule." CEOs emphasized that individual professors are not the problem. They expressed concern that universities are forcing ILOs to generate significant revenue, and this distorts the process. One CEO related that a well-known university's ILO "wanted a huge amount of equity." Some CEOs feel that universities should standardize their IP policies and create IP bundles across institutions; but they worry that individual institutions want to reap financial rewards, and this desire is preventing collaboration. Most of the biopharma CEOs we interviewed are collaborating with universities offshore. "All my basic research is being done with universities in the U.K. and the U.S.," said one CEO. "Canadian universities will never take a clear position. At Stanford, you know in fifteen minutes if you have a deal."

> "We're too small to have professionals on staff. We tried to contract academics, but the Industrial Liaison Office wanted to own or share IP….We found it surprisingly impossible to work with these organizations. We had to go to European institutions." (Biopharma start-up)
>
> "Clustering doesn't work. The cost isn't worth it. There's a huge misunderstanding in Canadian academia about the size of the initial investment (invention) compared to the whole thing. The system is broken in Canada. The Netherlands and Germany have figured out that the ILO has to back off." (Biopharma start-up)
>
> "It's easy to set up a company in Canada. This is a competitive advantage. But our universities are a disadvantage. It's not the professors. It's possible to educate them. The university administrations are the problem….Technology transfer offices are always in deficit. Professors are giving it away because they're frustrated." (Biopharma start-up)

6. Government Leadership

When it came to discussing how the overall environment in Canada might change to make it easier, CEOs expressed similar sentiments that CEOs of R&D Leader firms did in our previous study.[7] The lack of a commerce culture and Canadian antipathy toward business were the overarching areas where they would like to see change. As noted in Section 1, many of these CEOs felt they could have used a mentor to help them on business matters. This underlines the cultural issue on a more immediate and practical level.

> "You can't be wracked with self-doubt all the time. When I'm enthusiastic, people often ask if I'm an American. I just want to be successful. You can be "pushy" and still be a nice Canadian. We need to address this culture." (Start-up)

We asked CEOs to comment on governments' attempts to help knowledge-based businesses. CEOs recognize that Canada offers a range of incentives and support for industrial R&D, but feel that the support is uneven and the incentives are not adequately focused on business needs. Again, we heard that governments support research well, but not commerce. The CEO of a Start-up firm put it succinctly: "There should be more focus on assisting commercialization – that is finding customers," he suggested. "There's lots of money around for R&D, but R&D is actually the result of commercial success. Finding customers and listening to their needs is what drives R&D."

Many CEOs suggest that if governments want to assist knowledge-based companies to grow, then they will have to address the early stage of business development, where firms find out what customers need. This customer need identification is what initiates the R&D. "Anything that spreads the cost of business development activities will help R&D," explained the same CEO. "The more involved the customer is, the better the R&D is." One CEO of an Early-stage firm was not convinced that governments could do anything at all on the commerce side. "The tax payer can support R&D," he acknowledged, "but not commercialization. The Liberals don't understand this."

Despite some skepticism regarding government's ability to help commerce, the consensus among CEOs we interviewed was that government has an important role to play. But CEOs insisted that it must have a clear focus. As the CEO of a Start-up firm put it: "The federal government and the provinces should streamline their programs. There's a lack of a central coordination function. There are no clear measurable objectives. And they don't define desired outcomes clearly enough." While this individual prefers "a simpler system, like a government backstop to commercial loans," most CEOs were willing to discuss the strengths and weaknesses of existing programs. However, it was very clear to us that many of the CEOs feel the programs in place merely 'tinker at the edges'.

For most CEOs, the real role of government is to provide leadership in raising awareness of the importance and benefits to Canadians of commerce and entrepreneurship, and to help create a good environment for business. "If you can make

[7] See Note 3.

Canada attractive and the leaders come," said the CEO of a Start-up firm, "they will build businesses here."

Several interviewees pointed out how high the stakes are. CEOs were eloquent about Canada being a great place to live and they want to stay here. However, many noted that once they find a successor, their firm might not stay in Canada. This possibility is very real for growing firms that need access to the larger and more innovative financial markets in the U.S. and Europe as well as the skilled managers outside of Canada. CEOs feel that governments can help to change attitudes that make Canada a more attractive place to grow and operate knowledge-based companies. They recommended policies that educate more Canadians about business, in particular postsecondary students, bureaucrats, regulators and CEOs of existing Canadian firms.

> "We're in Canada and we love living here. Highly qualified people are cheaper here. For the price of one skilled person in the U.K., you can hire two Canadians. For one equivalent American, you can get one and half Canadians." (Start-up)
>
> "Canada is a great place to live. We have good immigration policy, but an over-bureaucratic and conservative financial environment." (Start-up)
>
> "Canada has missed the boat in supporting small business. We do manufacturing in Korea, we partner in Milan and Mexico, and we raise capital offshore." (Start-up)

> "Our next manufacturing facility will be in the U.S. We have created 500 jobs in Canada, and the next 500 jobs will be in the U.S. Legislation is more restrictive in Canada. The only reason the company is here is because the CEO is here. This might change with succession. Canadian quality of life is better than in the U.S., but U.S. cities are improving." Early-stage

CEOs emphasized that if the government's goals and objectives are clear, then the people in the various agencies delivering programs will have an easier time making decisions and assisting companies. If government sets unambiguous objectives to stimulate commerce and the organic growth of knowledge-based firms, the rest will follow.

7. Government Support Programs

Most CEOs have used specific government programs. Many have found them useful for their business, in some cases crucial. Again, we heard from some interviewees that support for R&D is excellent, but assistance in areas important for business, such as marketing, are weak or non-existent. One CEO of a firm past the start-up phase and in the Early-stage group, mentioned that useful programs in the past no longer exist. "We received critical support from federal and provincial programs that don't exist today," this CEO remarked.

> "R&D support was great. We'd like to see similar support for tapping other markets, marketing assistance, sales in different geographic areas, sales collateral, sales studies.' (Start-up)
>
> "An Ontario Export Grant allowed me to go to France where I met a serious investor." (Early-stage)

"Without these, we wouldn't be here today." Other firms have not had good experience with government. "The Canadian government has not been that helpful," said another Early-stage CEO. "It's been lukewarm."

Most CEOs find government programs overly bureaucratic and difficult to approach. Some suggested that commerce-experienced bureaucrats would be much more understanding and helpful.

One CEO suggested governments should provide assistance to firms trying to access government programs.

> "Government should provide education and support for dealing with them. I could use someone who knows my business and could help with programs and tax credits. There's lots of paperwork for these programs and you don't know if you qualify." (Early-stage)

Tax Incentives

The SR&ED tax incentive program received a great deal of comment from CEOs. Most of those we interviewed use or have used the program. They acknowledge that it has been useful, but many feel it needs to be focused more on business needs. At the early start-up stage, private firms benefit from the program. It allows them to hire an extra highly qualified person for every two, for the same amount of money. However, the tendency for small firms to go public early disadvantages them, since the SR&ED tax credit drops to 20% for public companies, and it can only be applied to a profit.

> "We did three years of heavy R&D. We got significant refunds from SREDS. Almost $1M over the three year period." (Start-up)
>
> "SRED saved our bacon. I can hire three people instead of two." (Early-stage)
>
> "SRED was good for us when we were private. Now it's lost some of its attractiveness." (Early-stage)

Some CEOs find the SR&ED program much too bureaucratic. They raised similar issues to those mentioned with regard to Canada's regulatory environment – too much paperwork, uncertainty regarding eligibility and too long to get an answer.

> "We got $70-80K in tax credits, but it took a year to get. It's very difficult for software." (Start-up)
>
> "SRED is not worth it because of the paperwork." (Early-stage)

The different treatment the program gives to small private and public companies received a great deal of comment, mostly negative. "I was shocked that SREDs for public companies could only accumulate," admitted the CEO of a start-up firm. "There's no logic to this policy." One CEO of a start-up firm that went public suggested that for public companies "Canada should replace them [tax credits] with better capital gains."

Another CEO suggested a two-tiered "mechanism for public companies to use SREDs. At the first tier, you are automatically eligible. At the second tier, selection criteria should be developed that incent firms to stay in Canada." The criticism of the SR&ED policy toward public firms is understandable, given that so many firms go public too early. If companies would wait until they are profitable before they go public, perhaps the policy might not be so onerous.

> "The SR&ED tax credits are goofy. A private company gets 30% refundable, whereas a public company only gets 20%. Most VC money is public anyway." (Start-up)

A significant number of CEOs pointed out that while SR&ED tax credits can help reduce R&D costs, there are costs associated with customer needs and marketing that are just as significant for a company. Furthermore, these marketing costs come earlier in the business development cycle and have a direct impact on R&D activity. "We need a long-term financing partner. The government doesn't work," remarked one CEO of a start-up firm. "We need financing for market research and talking to customers before we do any product development. SREDs don't help in this." Some CEOs suggested that the Canadian government should modify its SR&ED program to include incentives for some of these business development activities. Those mentioned most often for tax relief were customer need identification, marketing and technology adaptation. CEOs felt that if the government wants to assist commercialization, such incentives are more relevant than an exclusive focus on encouraging research.

> "There should be marketing tax credits for time and travel to develop new markets. You have to adapt technology for different markets, and to do that you have to go down and talk to people face-to-face." (Early-stage)
>
> "Canada should use export tax credits to support its industry. Japan and Italy, for example, give favorable treatment to companies located there." (Start-up)

Other CEOs were less inclined to suggest an expansion of a government program. They identified the same need, but did not see tax credits as an effective vehicle. "SREDS are just game playing," said the CEO of an early-stage firm. "Government should address the need for more people trained in business. They should incent universities to have one third of their courses on business."

> "The biggest challenge is finding money for marketing – to do surveys that determine customer challenges and needs. Cash wouldn't necessarily help this problem. Time for education of marketers is more important. 'Build customers and sell!'" Early-stage

IRAP and TPC

Many of the CEOs have used programs such as IRAP and TPC. While they were very important for some CEOs early in their companies' existence, most feel that the programs need significant improvement. Many CEOs remarked that IRAP is very dependent on the individual officer, the Industrial Technology Advisor (ITA). "IRAP is still great, but the interpretation of eligibility is dependent on the individual ITA," said one Early-stage CEO. "It's like dancing with an octopus. You're never sure." Depending on the ITA they got, CEOs were often uncertain whether or not they were eligible for a grant.

> "IRAP helped in the R&D stage." (Early-stage)
>
> "IRAP has been useful. They've been very good to us." (Early-stage)
>
> "It took me a year to get TPC funding, but we got a good hearing. It was better than the granting council." (Start-up)
>
> "I got an early IRAP grant with help from the University of Toronto, but funding dried up after that. IRAP is a basic mess." (Early-stage)
>
> "I launched a company with IRAP and angel funding and sold it in 13 months. (Start-up)

A number of CEOs mentioned that IRAP involves too much paperwork; and it takes a significant investment of time. Some CEOs told us they do not apply for IRAP because they consider it is not worth the effort given the uncertainty. In one case, a firm had to walk away from a deal with IRAP because of control issues. "IRAP insisted on having a say on how the manufacturing would be done. It was a deal breaker."

> "We got a little direction from IRAP, but it was draining. We went through seven drafts and then the ITA changed in the middle. We got no cash. It's a disincentive to do R&D." (Start-up)
>
> "IRAP is ITA dependent. We had to go through 6-7 drafts. It took 4-5 months." (Early-stage)

Procurement

CEOs had a lot to say about this topic. Several commented that government procurement policies in Canada are antiquated. They pointed to other countries that use national procurement to support domestic industry in areas of national interest, such as infrastructure and security. "Government procurement programs like Hong Kong, Israel and Singapore would help Canadian firms," suggested one CEO of a start-up firm. In Canada, some CEOs have experienced a disconnect between the political level and the bureaucracy in this area. "I've seen three ministers and everybody loves it [software]," related a CEO in the IT sector. "But the bureaucrats are in with [large U.S. firm]." The most common remark was that government agencies in Canada invariably use a lowest bidder approach to procurement. In other countries, the

> "Canada isn't an early adopter. Government procurement would help." (Start-up)
>
> "Canada doesn't want to eat its own dog food. We can't give them software for free. They'd rather blow their brains out on a U.S. $40M product." (Start-up)

approach is more strategic. “The U.S. asks two or three companies to do a piece of work,” explained one Early-stage CEO. “They pick the one who most closely meets the need. Canada’s tendering process is based on the lowest bidder.”

Business Support

CEOs emphasized that they operate on a global stage, but many feel that the federal government is falling short in this arena. “Government tries to help,” the CEO of an early-stage firm acknowledged, “but it doesn’t understand the real world. 95% of our products go offshore. Foreign counselors help by offsetting 50% of the costs of going to other countries; but some competitors get 100% support from their governments.” CEOs are looking for more customized and targeted assistance in foreign countries rather than support for trade shows, for example. Several CEOs identified specific areas where government trade offices should beef up their expertise in order to assist firms. These areas included regulatory expertise and targeted contact information in host countries. While some CEOs have had positive experiences with trade counselors abroad, many have not. “An export agent in the U.S. is more useful than government counselors,” commented one CEO. “They have more contacts.”

> “Trade missions need knowledgeable people who can identify people and who understand the regulatory processes in the host country. Right now, the help they provide is superficial.” (Start-up)
>
> “There’s little support for international experience from Canada. Trade offices have not been much help so far. Paris was not helpful. Trade offices should react when asked. They should develop specific, focused programs beyond the standard trade show booths. (Early-stage)

A common refrain throughout the interviews was the importance of marketing and sales. This theme came out in discussions about what governments could do to assist firms further than they do presently. “Government could assist by having a system to assess markets and competitors,” suggested the CEO of an Early-stage firm. “They could help companies navigate through the bureaucracy.” Most CEOs are familiar with government practices around the world and they mentioned successful programs offered to competitors elsewhere. “In Ireland,” commented one CEO, “the government will give grants for feasibility studies to test the business plan.”

Several CEOs feel that governments can show leadership by facilitating workshops for entrepreneurs and CEOs of Start-up firms. “We need conferences for new businesses getting started,” commented the CEO of an Early-stage firm.

Conclusions

The goal of this study was to find out from CEOs in a small sample of “greenhouse” firms what kinds of challenges they are facing in attempting to grow their business.

To a striking extent, CEOs mentioned a “technology culture” and a lack of focus on commerce. The predominance of these remarks suggests that a deeper cultural issue underlies many of the practical problems these CEOs are facing. In a nutshell, it is a belief that technology drives commercial success. This belief encourages certain attitudes and behaviours. For example, this belief encourages the attitude that if funding for technology is available, then commerce will automatically, or more easily, follow. This attitude fosters a preoccupation with financing as opposed to building a customer base to generate revenue. As several CEOs noted, these attitudes and behaviours often result in commercial failure. In many other cases, it has led to problems.

The same “technology culture” drives attitudes and behaviours in the financial community. Many investors believe that financing technology will bring commercial success. Venture capital organizations reduce their risk by spreading their investments over many firms. They structure deals so that a few winners will compensate for the more numerous losers. This “portfolio” approach leads many VC firms to court companies even when they believe they have a high risk of failure. This practice encourages firms to take on equity financing too early in their growth. They think they will be among the few winners; but the investors may be taking them on thinking they are among the higher risks within their portfolio. Many CEOs we interviewed realized too late that they, or their predecessors, had made a mistake by taking on equity financing too early. Now they are paying dearly for it.

Given that this cultural issue underlies many of the challenges that the CEOs raised, potential solutions will need to address how to change beliefs and attitudes. It is not immediately obvious that a new major government program will do the trick. A more effective approach might be to reorient existing programs to encourage the necessary changes.

For example, federal and provincial governments fund an enormous amount of research in postsecondary institutions. Granting agencies can shift expectations and success measures from an exclusive focus on science and technology output toward adequate preparation of people for success. Postsecondary institutions might need to track the career path of graduates and alumni, rather than focusing on number of graduates in specific disciplines, published papers, conferences, patents, licences and spin-off firms.

Another fruitful area would be to recruit people experienced in commerce to work in government agencies providing support to industry, managing tax incentive programs, or providing regulatory services. Public service unions would have to be on-side and support this effort. Government leaders would have to make it a priority to encourage commerce-responsive creativity and effectiveness in programs. Recognition and reward would need to come to the people who are achieving positive results.

If governments want to try new programs, the emphasis should be on improving our culture of commerce. Successful programs that encourage research could be adapted to stimulate commerce. For example, the Canada Research Chairs program can be emulated in a Canada Commerce Chairs program. Chairs could be awarded to former CEOs and entrepreneurs who want to teach at postsecondary institutions about how to grow successful R&D-intensive firms. Or, granting agencies could offer a new program that provides support to professors and teachers at postsecondary institutions who provide short courses of study on commerce for CEOs and employees of R&D-intensive firms.

Government could provide a range of support to address the need for mentors to CEOs of “greenhouse” firms. For example, it could develop and maintain a database of mentors and provide a matching service and networking opportunities for CEOs and mentors.

In thinking about ways to support industry, governments must be cautious in interpreting certain measures of a country’s economic viability and applying them to specific programs. It may be true, for example, that a correlation exists between a country’s economic performance and the extent to which its private sector adopts new technologies. However, programs that incent or subsidize firms to adopt new technologies encourages them to focus on getting this support rather than identifying and attracting customers. Successful firms with good cash flow from customers are more likely to adopt new technologies to compete globally.

It will take imagination and leadership to identify opportunities to modify existing programs and create new ones that address this important cultural challenge. One of the best ways to ensure that this will occur is to open a dialogue between government leaders and the CEOs who are active or have been successful in commerce. One of the most compelling messages of this study and our earlier study of R&D Leaders was that the voice of our commerce leaders is not heard in government or in the media. Government leaders need to have frank and open communication with our commerce leaders about what Canada needs. Government needs to celebrate our successful entrepreneurs and commerce leaders. Postsecondary institutions need to as well.

We must first recognize how our belief in the primacy of technology in generating commerce is hampering our efforts to support commerce. Only then will we be able to shift gears and understand that success in commerce will generate wealth, technology and a better quality of life for Canadians.

Appendix. List of Interviewees

Sylvain Abitbol, President and CEO, NHC Communications Inc.
Steven Arless, President and CEO, CryoCath Technologies Inc.
Martin Barkin, President and CEO, Draxis Health Inc.
Steve Barrett, President and CEO, Active Control Technology Inc.
Dave Barron, President and CEO, AOG Air Support Inc.
Monty Bowers, President and CEO, Capitol Energy Resources Inc.
Gary Calderwood, President and CEO, Perfect Fry Corporation
Colum Caldwell, President and CEO, Optimal Geomatics
James Chivers-Wilson, President and CEO, EquiTech Corporation
John Cross, CEO, Philom Bios Inc.
David Demers, CEO, Westport Innovations Inc.
Karen Fegarty, CEO, MailWorkZ Inc.
Jonathan Goodman, President and CEO, Paladin Labs Inc.
John Greenwood, President and CEO, Wood Composite Technologies Inc.
Dave Harestad, President and CEO, eOptimize Advanced Systems Inc.
Lee Hartwell, CEO, Hemosol Inc.
Jamie Hill, CEO, iWave Information Systems Inc.
Leslie Klein, President and CEO, C-Com Satellite Systems Inc.
Joel McLean, CEO, Info-Tech Research Group Inc.
Harry Moskoff, Founder and CIO, eWatertek Inc.
John Putters, President, CSM Systems Corp.
Robert Rudman, President and CEO, SmarTire Systems Inc.
Cameron Serles, President, Xiris Automation Inc.
John Stannard, President and CEO, Fuel Cell Technologies Corporation
Paul Sullivan, CEO, Guest-Tek Interactive Entertainment Ltd.
Johann Tergesen, President and COO, Burcon Nutrascience Corporation
Brad Thompson, Chairman, President and CEO, Oncolytics Biotech Inc.
Peter van der Gracht, President and CEO, Ignition Point Technologies Corp.
Paul Walker, Director, President and CEO, Spectral Diagnostics Inc.
John Wright, President and CEO, Luxell Technologies Inc.

Industry Sector of Firm	
Aerospace	1
Comm/telecom equipment	5
Computer equipment	2
Medical devices and instrumentation	3
Other manufacturing	2
Pharmaceuticals/biotechnology	8
Primary energy	1
Software and computer services	7
Transportation	1

Domestic/Foreign Ownership	
Canadian-owned firms	30
Foreign-owned subsidiaries	-

Location of Headquarters (or Canadian head office)	
BC	7
Prairies	8
Ontario	10
Quebec	3
Atlantic Canada	2