Financing Innovation by Established Businesses in Canada
Preface

This report analyzes business innovation finance in Canada. It provides a conceptual overview of the innovation finance challenge, then proposes ways to address that challenge that reflect the perspectives of innovative companies and financiers. The report focuses, in particular, on the special characteristics of Canadian capital markets that determine their suitability for funding innovation. We conclude with some suggestions for improving Canada’s innovation finance system.
# CONTENTS

**Executive Summary** ................................................................. i

**Chapter 1—Introduction** ........................................................... 1

About This Report ........................................................................ 2

**Chapter 2—The Innovation Finance Challenge** .......................... 4

What Is Innovation? ...................................................................... 5

Why Innovate? ........................................................................... 5

Are We Funding Innovation? ......................................................... 5

How Is Innovation Valued? ........................................................... 6

Role of Intermediaries ................................................................... 9

Debt Versus Equity: Contingent Claims .......................................... 10

Build or Buy? ............................................................................. 11

The State of Financial Markets ...................................................... 12

Conclusion ................................................................................ 13

**Chapter 3—The Innovator Perspective** ....................................... 14

How Many Innovative Businesses? ................................................ 15

Strategic Perspective .................................................................... 16

Commercialization: The Weak Link ............................................. 17

Is Financing a Problem? .............................................................. 17

Exit Through Acquisition ............................................................ 20

Conclusion ................................................................................ 21

**Chapter 4—The Investor Perspective** ....................................... 23

The Funding Environment ............................................................ 24

The Funding Structure .................................................................. 25

Pooling ...................................................................................... 31

Conclusion ................................................................................ 33

**Chapter 5—Implications** .......................................................... 34

It Starts With Company Capabilities ............................................ 35

Universities Can Help ................................................................... 35

Role for Government Financial Institutions .................................. 36

Reinforcing a Culture of Innovation and Growth .......................... 36

Building From Our Strengths ....................................................... 36

“I’m From Private Equity, I’m Here to Help” ................................. 36

Fear Not the Foreigner ............................................................... 37

Pension Plans as a Force for Change ............................................ 38

Tools to Help SMEs Access Capital and Expertise for Innovation and Commercialization ................. 38

**Appendix A—Bibliography** ...................................................... 39
Acknowledgements

This report has been prepared by The Conference Board of Canada’s Organizational Effectiveness and Learning Division, under the direction of Dr. Michael Bloom, Vice-President, Organizational Effectiveness and Learning. The report was researched and written by Michael Grant, Director of Research, Organizational Effectiveness and Learning.

The author would like to thank Erin Butler for her assistance with the research. He also thanks Conference Board of Canada reviewers Michael Bloom, Bruce Good, and Sorin Cohn for their helpful comments. Thanks also go to external reviewers Dr. John Chant and Brent Sutton.

The report was prepared with financial support from the Centre for Business Innovation, The Conference Board of Canada.

ABOUT THE CENTRE FOR BUSINESS INNOVATION

The Centre for Business Innovation (CBI) is a five-year initiative to help bring about major improvements in firm-level business innovation in Canada.

The CBI’s mission is to:
- learn why Canada is not a leader in business innovation;
- create insights for firms and capital markets that will improve firm-level innovation;
- generate evidence and track our performance; and
- formulate public policies that will successfully stimulate business innovation.

Positive results will help Canada become a world leader in this area, thereby boosting its competitiveness.
The Centre brings together a group of business, government, and academic leaders to provide guidance; review the findings of the Centre’s in-depth, comprehensive, and objective research; build a shared understanding of the problems and solutions; and advise on disseminating results to firms for uptake and implementation. The core membership of this blue-ribbon advisory group are the financial supporters of the CBI.

CBI INVESTORS

The Conference Board of Canada is grateful to the Centre for Business Innovation investor organizations for their financial support, which has made this report possible:

Bristol-Myers Squibb Canada
Business Development Bank of Canada
Caisse de dépôt et placement du Québec
Canadian Association of Petroleum Producers
Celestica Inc.
Cisco Canada
Deloitte
Desjardins Group
GlaxoSmithKline
IBM Canada Ltd.
ICICI Bank Canada
Industry Canada

Lundbeck Canada Inc.
Music Canada
Natural Sciences and Engineering Research Council of Canada
Ontario Ministry of Economic Development and Innovation
Premier’s Technology Council
Sanofi Canada
SaskTel
Scotiabank
Spyderworks
Sustainable Development Technology Canada
EXECUTIVE SUMMARY

Financing Innovation by Established Businesses in Canada

At a Glance

- This report considers business innovation finance from the perspectives of innovators and investors.
- Innovators need practical tools to help them explain to investors both their innovative activity and the way it makes money.
- Canada has a very strong public equity market but it may lack in areas that are important to small, R&D-intensive companies.
- Canada can improve its funding environment for innovation through its financial institutions, pension plans, universities, and governments.

THE INNOVATION FINANCE CHALLENGE

Innovation is a broad concept. It can be difficult for investors to differentiate between the parts of a business that require innovation and those that do not. In capital markets, management has to be able to tell potential investors a compelling story of growth through innovation. Demonstrating spending on R&D is not enough.

Gompers points to an innovation finance paradox. Large firms have the internal cash flow to fund innovation internally. However, they have a mixed record on innovation because, as they grow, they become more bureaucratic. Small firms are less bureaucratic, so they are often better at innovation. However, they lack sufficient cash flow to innovate.

THE INNOVATOR PERSPECTIVE

Industry Canada has found that most Canadian businesses think they are actively innovative, as self-defined. It is another matter as to whether they would be judged as innovative under stricter criteria. Other surveys have shown as the time between product development and commercialization expands, the financial weakness of companies is stretched. Canada’s relatively poor

---

1 The Conference Board of Canada, Survey on Innovation Metrics and Management.
2 Gompers, “Corporations and the Financing of Innovation.”
3 Industry Canada, Business Innovation and Strategy, 3.
commercialization track record raises a “chicken and egg” question: Is commercialization the problem or are financiers too impatient?

A CBI survey showed that many firms finance innovation through internal cash flow and, not surprisingly, that internal cash flow is the biggest financial barrier to innovative activity. This is typical of the Canadian innovation challenge: great people, great ideas, poor commercialization.

THE INVESTOR PERSPECTIVE

The current global funding environment is inhospitable to risky investments. This is likely to affect riskier innovation strategies—namely, those where R&D expenditures are large in relation to current profits and cash flow. It is unclear how long this trend will last. Are investors likely to stay with the negative real returns on offer in safe government bonds for very long before they choose to invest in risky innovation with higher potential returns?

In 2011, total business expenditures on R&D in Canada were only C$15.6 billion. Canadian-based businesses would need to more than double their annual spending on R&D to US$35 billion for Canada to equal the business R&D intensity of the United States. Also, only 25 companies account for almost half of the business expenditure on R&D in Canada. These companies have good sales and are in technology-intensive industries where product innovation is a key strategic requirement.

Canada has one of the strongest small-cap public equity markets in the world and certainly among the largest in relation to its domestic economy. As Nicholls points out, this provides an incentive for small Canadian companies to go public earlier than their counterparts in the United States. Also, in Canada, the buyout component of private equity is considerably larger than the venture capital component.

Public sector pension plans and the Canada Pension Plan are increasingly moving away from public markets toward private investing. This is a positive development for innovation finance in Canada, although it should be acknowledged that Canada’s pension plans are relatively new to alternative forms of investing.

IMPLICATIONS

Canada has a serious issue with innovation commercialization. Innovators need practical tools to help them explain to investors both their innovative activity (e.g., innovation metrics) and the way it makes money (e.g., the business model and financial projections).

Canadian companies also have to do a better job of commercialization. There are a variety of mechanisms to improve these capabilities:

- In some instances, capital markets can lead company transformations. Canadian innovators should look outside the country for finance and financing expertise, as well as inside.
- Multinationals are transforming their traditional hub-and-spoke models into global value chains. Canadian subsidiaries need to make the case for Canada in this evolving model.
- Canadians need to recognize that a healthy merger-and-acquisition marketplace is a key part of innovation finance.
- Canada’s large pension plans should consider making larger investments in private equity and other alternative asset classes.

---

5 Grant, Valuing Headquarters.
• SMEs could benefit from tools and expert advice to help them develop effective pitches and successfully access capital from potential investors.
• Universities should take a leadership role in developing individuals with both specialized financial analysis skills and expertise in managing commercialization.
• Canada’s business culture needs to focus more on growth through innovation and less on sales to other companies.

• Canada successfully funds risky ventures in mining and oil and gas development. The finance techniques used by these firms need to be adopted in non-traditional areas, such as biotech and clean energy.

The CBI will develop tools and metrics to help Canadian companies improve their capabilities and address these challenges.
CHAPTER 1

Introduction

Chapter Summary

- This report explores innovation finance in Canada from the distinct perspectives of investors and innovative businesses.
- Governments want innovation because it improves national well-being.
- Capital markets are largely agnostic toward innovation; instead, they care about after-tax, risk-adjusted returns.
- Financial mechanisms evolve in their own way, largely disconnected from innovation or any other agenda. For that reason, gaps may arise, making it difficult for innovative businesses to secure funds at a reasonable cost.

In 2011, Tom Jenkins—executive chairman and chief strategy officer of OpenText Corporation—chaired an expert panel reviewing innovation and federal support for research and development. In a key passage of its report, the panel states: “Without an active presence in Canada of adequate sources of capital, some of the commercial benefits of innovations originating in this country could be exploited by firms in other countries with greater risk investment capacity and/or propensity.”

This passage neatly encapsulates many concerns about innovation finance in Canada. It highlights a possible shortage of capital for commercial ventures. It also speaks to the difference between the geographic origins of innovation and of its commercial exploitation. Finally, it suggests that we Canadians are too conservative to support innovative companies—that we lack “risk investment capacity.”

Canadians may be surprised to know that almost 60 per cent of the assets of the Canada Pension Plan Investment Board are foreign.

The panel frames innovation within the context of the Canadian national interest. However, a key source of friction between capital markets and national governments is that the former care less and less about the boundaries set by the latter. Capital is increasingly mobile. The speed of capital transactions has accelerated significantly, thanks largely to new information and communications technology. Stock exchanges, for centuries organized along national lines, are increasingly cross-border affairs. When Canadian entrepreneurs seek to finance growth and production, they look both at home and abroad. When they decide to sell their company, thereby realizing a return, they want to find as many potential bidders as possible, and rarely care whether the bidders are foreign or Canadian.

1 Industry Canada, Innovation Canada: A Call to Action, 2–18.
Canadian pension plans—like their international counterparts—accumulate assets around the globe. Canadians may be surprised to know that almost 60 per cent of the assets of the Canada Pension Plan Investment Board (CPPIB) are foreign and that the Board maintains interests ranging from New York office buildings to Chinese logistics.2 The funding of Canadian seniors’ pensions is tied, indirectly, to the turnover of CPPIB-owned shopping malls in Brazil.

In the Innovator Survey on Innovation Metrics and Management, 25 per cent of respondents identified finance as their number one challenge.

It is common to frame innovation in national interest terms because policy-makers recognize that innovation is critical to long-run prosperity (this is known as “endogenous growth theory”). There is a “market failure” in innovation that spills over to finance, because it is easy for competitors to use innovators’ good ideas without compensation. This rationale is the basis for government involvement in innovation and innovation finance. Yet in the process of intervening to address a market failure, governments may create several others, most notably severing the crucial link between the risk-taking investor and the innovator.

Governments want innovation because it improves national well-being. Capital markets, on the other hand, are largely agnostic toward innovation; instead, they care about after-tax, risk-adjusted returns. Ideally, investors would like to realize “alpha”—exceptional returns created by investment managers. Investment managers may invest in innovative companies to produce such returns, yet exceptional returns can also be produced with other investment strategies. Hence, innovation competes with other strategies for investors’ attention.

Innovation usually involves upfront effort for later benefits. That is also true of finance. An important financing problem relates to how to fund upfront effort. That involves judging whether and when benefits will materialize—in other words, identifying and hedging for risk—and determining how to share the benefits when they do materialize. In effect, innovation and investment finance are two sides of the same coin. This may explain why innovative firms usually cite finance as an important issue. For instance, The Conference Board of Canada’s Centre for Business Innovation (CBI) carried out the Innovator Survey on Innovation Metrics and Management. In that survey, 25 per cent of respondents identified finance as their number one challenge, a figure that was about four times higher than that for the next most-identified challenge.3

If money grew on trees, well-forested Canada would be a world leader in business innovation finance. However, in the real world, financial markets and associated processes—complicated interactions between investors and innovative businesses—are critical to innovation. A thicket of financial intermediaries, markets, and financial contracts links investors and businesses in ways that, ideally, satisfy the needs of both parties. But these financial mechanisms evolve in their own way, largely disconnected from innovation or any other agenda. For that reason, gaps may arise, making it difficult for innovative businesses to secure funds at a reasonable cost.

ABOUT THIS REPORT

This report is the first of a series of Centre for Business Innovation reports considering business innovation finance. It is concerned primarily with innovation finance for established businesses. A later report will consider the special problem of business start-up financing.

2 Canada Pension Plan Investment Board, People, Purpose, Performance, 10, 16–17.

3 The Conference Board of Canada, Survey on Innovation Metrics and Management.
This report explores innovation finance in Canada from the distinct perspectives of investors and innovative businesses. Our analysis draws on a thorough review of the relevant literature; secondary source data from Statistics Canada and private data collectors; interviews with experts in innovation finance and innovative businesses seeking finance; and original data from the CBI’s Survey on Innovation Metrics and Management.

The report moves from theory to empirical evidence. It begins with a conceptual review of the innovation finance challenge in Chapter 2. Chapter 3 examines company perspectives, including the way firms see the innovation finance challenge. Chapter 4 considers the challenge from the perspective of financiers, to understand how innovation fits into their portfolio decisions. Conclusions are presented in Chapter 5.
Financial markets bring savers and investors together in mutually beneficial ways. Savers want a place to store money for later consumption. Business investors want to use savers’ money to create value in their businesses. When businesses create value that they can share with savers, then savers can afford more future consumption than they could if they stuck their money under the mattress.

In the case of the sole proprietor of a successful business, the business finance problem is greatly simplified. In this case, the saver and the investor are one and the same, and the success of the business provides the funds for investment. It is fairly straightforward for proprietors to decide on the appropriate capital structure and the best way to invest internal cash. They have only themselves to convince.

Yet successful businesses often have ambitions that exceed their internal financial resources. As the business grows, its capital structure may become more complex. Now the proprietor has a challenge—how to bring external money into the business while continuing to add value to the business. If the costs of funds exceed the return in the business, then external finance can actually destroy corporate value. Undoubtedly, proprietors think that they are best placed to make decisions about their business, but now they have to consider the needs of their funders in addition to their own. This is an issue for all businesses seeking external funds. However, as we will explain in this chapter, it can be a particular challenge for innovating companies.

**Chapter Summary**

- Concerns about a lack of innovation finance are usually based on differences of opinion between managers of companies and financiers.
- Three types of information are important to external funders: business-specific financial and operational data and analysis; industry metrics or benchmarks; and market metrics.
- Financiers are primarily concerned with assessing creditworthiness. Thus, the challenge for innovators is to tell potential investors a compelling story of growth through innovation. Demonstrating spending on R&D is not enough.
- Notwithstanding the globalization of capital markets, people tend to invest close to home.

Yet successful businesses often have ambitions that exceed their internal financial resources. As the business grows, its capital structure may become more complex. Now the proprietor has a challenge—how to bring external money into the business while continuing to add value to the business. If the costs of funds exceed the return in the business, then external finance can actually destroy corporate value. Undoubtedly, proprietors think that they are best placed to make decisions about their business, but now they have to consider the needs of their funders in addition to their own. This is an issue for all businesses seeking external funds. However, as we will explain in this chapter, it can be a particular challenge for innovating companies.
WHAT IS INNOVATION?

We begin our discussion with the CBI definition of innovation:

Innovation is a process through which economic and social value is extracted from knowledge through the generation, development, and implementation of ideas to produce new or improved strategies, capabilities, products, services, or processes.¹

Innovators have to understand their market and its appetite for innovation.

Our definition is comprehensive. It considers a wide range of changes to business activities to be “innovative.” It encompasses a variety of business strategies, tactics, and processes that improve products, services, and production and marketing methods. Under these terms, innovation is not limited to invention, although much of the public policy discourse focuses on new products and services.

WHY INNOVATE?

Companies innovate to enhance their competitive position in the marketplace. We differentiate between two kinds of innovation: product and process innovation. Companies have different incentives to use product and process innovations to compete, depending on the nature of each company and the markets it serves.

Markets differ in their demand for innovation. In some product markets, such as consumer electronics, customers constantly demand new and improved products. A company that competes in this space dares not be seen as passé. In other markets, such as family restaurants and classical music recordings, customers may actually prefer old ways. These markets prefer the “authentic” to the “new and improved.” Still other markets favour the reliable over the untested. This suggests that innovators have to understand their market and its appetite for innovation.

New market entrants often face the challenge of stealing market share from incumbent companies. In the words of one interviewee, “We think about innovation as a strategy to create options to keep ahead of the competition.” Product innovation is one way to do this. Small firms that come up with new or better products may take market share away from larger, well-established competitors. Of course, incumbent firms are aware of this possibility, which encourages them to innovate in order to protect their market share or to steal market share from other incumbents.

Product innovation is also a strategy for increasing margins through uniqueness. Consumers are initially willing to pay more for the latest thing but, eventually, competitors will try to replicate any success and often end up lowering prices in the process. Cellphones are a good example of this dynamic. Regardless of the motivation, successful product innovation typically helps companies increase market share and revenues.

Process innovation is usually geared toward improving efficiency or effectiveness. Efficiency innovations decrease the cost to market, whereas effectiveness innovations increase customer satisfaction—which, in turn, improves customer retention and lowers marketing costs because there is less churn of customers.

ARE WE FUNDING INNOVATION?

The broad nature of innovation presents a challenge to financiers, because they may not know whether they are funding innovation. When businesses solicit external funds in the form of debt or equity, they invariably describe the business and its plans. It can be difficult for investors to differentiate between the parts of the plan that require innovation and those that do not. Investor funding is fungible—it can be used for many purposes. Typically, the business seeking capital does not set aside an envelope called “innovation.”

¹ The Conference Board of Canada, Centre for Business Innovation, 5.
Thus, investors may not know whether or how their financial contribution is being used in the (often mysterious) innovation process. This may not be very important to the investors, since their primary goal is to obtain a suitable financial return. For this reason, investors are not so much interested in the “new” aspect of innovation, as they are in the “improved” part. The proof of improvement is in the firm’s strengthening financial position over time, which provides it with the wherewithal to compensate external financiers. Commercialization is, effectively, the proof that a new idea is an improvement. This is why it is important for innovators to connect their innovative activity to financial performance.

Any improvement in a firm’s financial position may have many sources, some that are innovative, others that are not. For instance, the improved financial position of Canadian resource companies since the 1990s is largely attributable to the emergence of newly industrializing countries, especially China, that have demanded more commodities and bid up their long-term price in global markets. It is a matter of “right place, right time.” That is not to suggest that Canadian resource companies are not innovative. However, companies’ financial fortunes can change significantly with swings in markets. This shows that market dynamics can be as important a factor in firm performance as innovation. It can be difficult to disentangle these performance factors.

An interviewee from a Canadian private equity company told us that he identifies potential portfolio companies based on their ability to defend a market position that produces above-average returns. According to the strategist Michael Porter, “five forces” shape profitability. Three of these relate to industry characteristics (such as barriers to competition) and two to the uniqueness of the business. In economic jargon, the business earns rents—that is, returns above normal profits—through exclusivity. Innovation is one pathway to exclusivity.

One interviewee referred to the business-specific factors as the “secret sauce” of the business. To stretch the analogy, the recipe may have 10 ingredients and each ingredient is more valuable when combined with the others. He cited the example of Southwest Airlines in the United States as a company that combines unique ways of doing business into one business model. That model includes its rejection of the “hub and spoke” model, its use of a single type of aircraft, its online booking system, and its labour relations. (Canada’s WestJet has applied these same techniques to the oligopolistic Canadian air travel market.)

Is Southwest Airlines “innovative”? Southwest Airlines equity and bondholders would likely answer “yes.” Yet Southwest Airlines did not invent all the ingredients of its innovative business model. Its annual report cites plenty of customer satisfaction metrics; for instance, the company’s rate of customer complaints is about one-third the industry average. Southwest’s management constantly thinks about changing things to improve business performance. In CBI terms, it uses its knowledge of customer needs to generate economic value through improved services and processes.

**HOW IS INNOVATION VALUED?**

That brings us to the ways a business communicates the value of innovation to financiers. (A forthcoming CBI report on metrics will address this topic in some detail.)

Three types of information are particularly important to external funders. One type is business-specific financial and operational data and analysis that speak to the financial performance and solvency of the business. A second is industry metrics or benchmarks that allow the investor to compare the business to other similar businesses. The third type is market metrics that address the way the firm’s securities trade in public debt and equity markets, a measure of the financial market’s valuation of the business. All businesses track their own financial performance, but industry benchmarks and financial market valuation become more important when the firm relies on external sources of funding.

---


3 Govindarajan and Lang, *Southwest Airlines.*

Business-specific financial reports are constructed under accounting rules. Canadian Generally Accepted Accounting Principles (GAAP) set accounting standards for research and development (R&D) expenditures and general business financial reporting. Of particular interest is the treatment of intangible assets, which must meet viability standards before being recorded as assets. (Canadian GAAP are currently being harmonized to International Financial Reporting Standards.)

The standardization and reliability of financial reports is extremely important to external funders. Using these reports, financiers assess a company’s creditworthiness. To some extent, financial metrics speak to innovation activity. Ratios of R&D expenditures to various financial metrics tell investors that a firm has a strategy for developing new products and processes. Industries such as computer software, pharmaceuticals, and equipment are characterized by high rates of R&D expenditures in relation to financial metrics such as sales, earnings, and book value. (See Table 1.) R&D is the way that firms in these sectors compete. Yet firms do not develop these business models in isolation—customers of these industries expect the new and improved. In these markets, developing new products may be the only way for a firm to establish uniqueness and, therefore, earn profits.

When a business lists shares on public equity markets, market trading tells the company what the market thinks of its business model, via market valuation. Typically, the value of a business is gauged by an assessment of its future earnings, discounted to the present. As the saying goes, “time is money”—discounting is a way of accounting for time and inflation. Company stocks that trade at relatively high multiples of current earnings are those that the market sees as having good growth prospects.

Forbes ranks companies based on innovation valuations; to be included on the list, companies must have a market capitalization of at least US$10 billion and spend at least 1 per cent of their assets on R&D. (See Table 2.) It estimates future cash flow from the growth of an existing business and calculates the company’s net present value (NPV). Forbes then compares the net present value with the current market capitalization as determined by public equity markets. Companies whose market capitalization exceeds their discounted NPV are said to have an “innovation premium.”

---

5 Callimaci and Landry, “Market Valuation of Research and Development Spending.”


Table 1
Computer Software, Pharmaceutical, and Office Equipment Firms Spend Proportionally More on R&D, Selected Companies,* United States, 1975–95

<table>
<thead>
<tr>
<th>Industry</th>
<th>R&amp;D expenditure as percentage of</th>
<th>R&amp;D capital as percentage of book value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales</td>
<td>Earnings</td>
</tr>
<tr>
<td>Computer software and services</td>
<td>16.6</td>
<td>207.1</td>
</tr>
<tr>
<td>Drugs and pharmaceuticals</td>
<td>11.9</td>
<td>92.2</td>
</tr>
<tr>
<td>Computer and office equipment</td>
<td>7.1</td>
<td>159.3</td>
</tr>
<tr>
<td>Measuring instruments</td>
<td>5.6</td>
<td>89.8</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>4.9</td>
<td>58.2</td>
</tr>
<tr>
<td>Communications</td>
<td>3.7</td>
<td>98.1</td>
</tr>
<tr>
<td>Transportation equipment</td>
<td>3.6</td>
<td>125.5</td>
</tr>
</tbody>
</table>

*Sample of domestic firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and NASDAQ. Source: Chan, Lakonishok, and Sougiannis, “The Stock Market Valuation of Research and Development Expenditures.”
In effect, this method of innovation valuation does not differ greatly from growth valuation. It simply distinguishes the sources of growth in existing and future businesses. As one interviewee—a private equity general partner (a manager who executes investments for funders)—argued, “Growth is innovation.”

Our interviewee suggested that it is extremely difficult to grow a business, and thereby increase its value, unless the business innovates. This is especially true in the current slow-growth economic environment. His private equity fund specializes in realizing the growth potential of Canadian family-owned businesses. A typical company in his fund’s portfolio is headed by an entrepreneur with a great idea and a dedication to customers. Often the “innovation” has already occurred, and therefore R&D plays little or no part in the valuation of the firm. Rather, valuation is based on the potential of the firm to reach more customers through a combination of incentives (such as aligning incentives for senior management with shareholders’ interests), marketing innovations, and strategic acquisitions.

Hence, in capital markets, management has to be able to tell potential investors a compelling story of growth through innovation. Demonstrating spending on R&D is not enough. Indeed, Booz and Company has found no statistical relationship between R&D spending and firm performance. (See Chart 1.) When it asked corporate leaders which companies they thought were the most innovative, Apple, Google, 3M, and General Electric topped the list. Yet these companies ranked well down the list in terms of R&D intensity. Southwest Airlines does not mention R&D once in its entire 2010 annual report.\(^7\) This is not to suggest that R&D is irrelevant to

---

\(^7\) Southwest Airlines, Annual Report.
financial performance, but rather that it is only one strategy. And among R&D-intensive companies, that strategy often fails.

This explains why innovation metrics, beyond R&D expenditure, are very important to communicate to stakeholders of the firm, including potential investors. Accounting metrics are simply too narrow to capture all the ways that a business adds value through innovation. Accounting looks at what happened; innovation metrics go further to look at what may happen. Financial performance metrics are the dominant metrics for capital allocation, but innovation metrics help explain the underlying business model that produces financial results.

**ROLE OF INTERMEDIARIES**

Explaining a business model—that is, the way a business makes money—is not a trivial exercise. Many businesses are started (and often run) by technicians. For instance, a 2006 study by SpencerStuart of Standard and Poor (S&P) 500 CEOs found that those with engineering backgrounds (20 per cent) outnumbered those with business school backgrounds (15 per cent). However, the same study found that many CEOs made their way to the C-suite through the finance function.

Financial markets allocate capital based on financial metrics. Technicians, on the other hand, often define the business in terms of technique, such as the way a product is designed and made. Much of that detail is indecipherable to the financier. Professional financiers focus on the financial reports of the business. The challenge for an investor is to understand both the underlying business and the company’s finances in order to make a good investment decision. Layers of analysts, investment advisors, professional investment managers, and others are there to help the investor make sound investments. These intermediaries play a powerful role in determining the how and where of investments. Given these advisory layers, it can be difficult to distinguish between the preferences of investors and those of the intermediaries.

Certainly, public equity markets allow retail investors to buy directly into innovative businesses. The emergence of discount brokerages has made direct investing easy. Yet, regardless of whether funds are invested directly or through intermediaries, investors face the same challenge. Once they invest in a business, they rely on the managers of the business to represent their interests. In other words, the managers of the business are the most important intermediaries between the investor’s intentions and the actual use of the funds.

In the 1980s, Harvard Business School’s Michael Jensen launched a devastating critique of public corporations. He pointed to the “agency” problem. Business executives are the agents of the shareholders, yet they usually own a small percentage of the business. This creates a wedge between those managing the risk (the executives) and those who take the risk (the shareholders). Jensen is skeptical of boards of directors’ ability to discipline senior managers who stray from the focus on shareholder value. This largely explains the emergence of various forms of private equity in the 1980s. As a private equity general partner interviewee put it: “We create alignment between the shareholders and the senior management.”

These issues are pertinent to innovation finance because managers at “innovative” firms may be more interested in the underlying technologies of the business than they are in the needs of shareholders. In highly complex, technology-based businesses, the gap between investors’ knowledge and managers’ knowledge can be vast.

This speaks to the informational nature of risk. One of the reasons that external capital is more expensive than internal capital is that external investors assume higher risk, since they are removed from the day-to-day management of the company. As such, some innovation projects...

---

8 SpencerStuart, *Leading CEOs.*

9 Jensen, “Eclipse of the Public Corporation.”
may have a theoretical higher internal rate of return (as calculated by management) than external rate of return (as calculated by the investment market). This is one reason why entrepreneurs may experience finance problems—the discount rate for internal funds differs (sometimes significantly) from the discount rate used by external funders, as the risk is higher for the latter group.

**DEBT VERSUS EQUITY: CONTINGENT CLAIMS**

A common misperception about the roles of debt and equity in funding risk is pertinent to any discussion of innovation finance. Debt and equity holders have different claims on the business and, within equity, incumbent shareholders have a different position than new investors do. (See Exhibit 1.) A natural tension exists between debt claims, equity claims, and the potential claims of new shareholders.

In a corporation, the existing owners have limited liability, so they can only lose the capital that they put into the business. In financial jargon, they have a long position. As the value of the enterprise increases, the value of existing equity goes up. This contrasts with debt holders, who can claim the principal of the loan, associated interest payments, and nothing more. Debt holders, therefore, have a short position related to the term of the loan.

These different positions mean that equity holders are much more likely to favour taking risks than debt holders are, for the simple reason that they have a much greater potential upside. Equity holders have a strong incentive to “gamble” with lenders’ money. Retail banks understand this, which is why they scrutinize business loans, establish claims to tangible assets (collateral), and ensure their claims will be given priority over equity claims if the firm becomes insolvent. This

---

**Exhibit 1**

**Contingent Claims Framework**

- **Existing equity**
  - Existing owners use their internal cash and have full control
  - Long position (“call option”) benefits when the enterprise’s value increases
  - Limited personal liability (through incorporation), limited downside
  - Incentive to leverage (debt)
  - High risk means better returns

- **Debt**
  - Short position (“put option”)
  - No upside beyond debt plus interest
  - Debt holders want to limit volatility due to limited upside
  - Source of tension with equity holders

- **New equity**
  - Long position, but dilutes the value of the existing owners’ equity
  - Leads to reduction of control by existing owners
  - Source of tension between new equity holders and established owners

Source: The Conference Board of Canada.
creates a problem for R&D-intensive firms because they rely disproportionately on intangible assets that are difficult to redeploy.\(^{10}\)

Moreover, retail banks are funded largely through demand deposits and are constrained by capital adequacy regulations. As a result, they tend to refrain from excessive risk. Banks’ risk management perspective also explains why they separate their capital market business from their retail banking business.

Now, consider the role of potential new equity holders. Existing owners are naturally reluctant to issue new equity for two reasons. First, issuing equity often involves relinquishing control.\(^{11}\) Second, the claims of new equity holders dilute the claims of existing equity holders, thereby lowering existing shareholders’ value. Still, new equity issuance is generally a better way to fund risk than debt, because the nature of equity claims makes equity investors more comfortable with risk-taking.

\[\text{Internal cash flow is arguably the best source of innovation finance, as the existing owners are already successful and reasonably likely to invest cash wisely.}\]

Arguably, the best source of innovation finance is internal cash flow. There is no ambiguity about who owns the cash (the existing owners), and there is an alignment between the ownership of the cash and its use in funding risk. Also, the existing owners are reasonably likely to invest cash wisely, because they can use solid information to align risk and return, and because they have already succeeded—otherwise, there would be no excess cash in the business to use for innovation purposes.

This is one reason why innovation commercialization is key—it puts more investment resources in the hands of successful innovators.

\[\text{BUILD OR BUY?}\]

Gompers points to an innovation finance paradox.\(^{12}\) Large firms have the internal cash flow to fund innovation on their own account. However, these firms have a mixed record on innovation because, as they grow, they become more bureaucratic. Small firms are less bureaucratic, so they are often better at innovation. However, small firms lack sufficient cash flow to innovate.

This innovation finance paradox helps explain why large innovative companies such as Google, Cisco, and Microsoft spend as much, or more, on acquisitions as they do on in-house R&D. It also explains why junior mining companies specialize in exploration, whereas senior mining firms specialize in operations. In fact, corporate venture capital—where large corporations create a pool of funds to invest in promising companies—is a key financing innovation explicitly designed to help companies innovate through acquisition. (See Table 3.)

We interviewed a representative of a major multinational pharmaceutical company who explained why the firm was active in corporate venture capital. The interviewee pointed to two key advantages. First, the existence of corporate venture capital signals to the market that the company is serious about innovation. Second, venture capitalists give their investments more time to show results than the typical public shareholder does. This longer time period is helpful for innovations that have naturally long development cycles.

A healthy mergers and acquisition (M&A) market is a key component of the innovation finance market. Innovators need healthy M&A markets where they can sell their company, in whole or in part, so that they can access capital for business or personal use. They may wish to sell for many reasons: they prefer starting up new businesses to operating mature businesses; they want to retire; or they have a new idea that requires a new business. Exit strategies are part and parcel of the private equity business model.

\[\text{10 Himmelberg and Peterson, “R&D and Internal Finance.”}\]

\[\text{11 One unique feature of Canada’s equity markets is the use of dual class shares to separate control rights from cash flow rights.}\]

\[\text{12 Gompers, “Corporations and the Financing of Innovation.”}\]
THE STATE OF FINANCIAL MARKETS

There is a symbiotic relationship between a country’s overall economic development and its capital market development. Notwithstanding the globalization of capital markets, people tend to invest close to home. There is also a tight relationship between national savings and national investment. The explanation is straightforward—people are familiar with their country. They are comfortable in their legal rights. For these reasons, domestic capital markets often reflect the strengths and weaknesses of the economy of a country. Arguably, globalization has a much larger influence on the specialization of businesses than it does on capital flows. As businesses specialize, they change the nature of domestic capitalization, because of the home country bias. (This is changing, as large institutional shareholders are recognizing the need to diversify geographically and so are accumulating foreign assets. However, retail investors are still very focused on domestic investments, for the reasons we indicate here.)

Healthy financial markets draw savers and investors together, which presents opportunities to match needs. Liquid markets allow financial claims to be traded easily. This, in turn, allows investors to exit their position and hedge risk. Liquid markets are also characterized by low transaction costs—often measured as the difference between bid and ask prices—that lower the overall cost of capital. Witmer and Zorn estimate that a 1 per

### Table 3
Largest Sole-Sponsored Corporate Venture Fund Launches, 2011

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Fund name</th>
<th>Size (US$ millions)</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tencent</td>
<td>China</td>
<td>Industrial Collaboration</td>
<td>1,500</td>
<td>Media</td>
</tr>
<tr>
<td>Chesapeake</td>
<td>U.S.</td>
<td>Chesapeake NG Ventures</td>
<td>1,000</td>
<td>Clean tech</td>
</tr>
<tr>
<td>Comcast</td>
<td>U.S.</td>
<td>Comcast Ventures*</td>
<td>750</td>
<td>Media</td>
</tr>
<tr>
<td>LVMH</td>
<td>France</td>
<td>LVMH Asia</td>
<td>640</td>
<td>Consumer</td>
</tr>
<tr>
<td>Merck</td>
<td>U.S.</td>
<td>Merck Global Health Innovation</td>
<td>500</td>
<td>Health</td>
</tr>
<tr>
<td>SAP</td>
<td>Germany</td>
<td>SAP Ventures</td>
<td>350</td>
<td>IT</td>
</tr>
<tr>
<td>Intel</td>
<td>U.S.</td>
<td>Ultrabook</td>
<td>300**</td>
<td>IT</td>
</tr>
<tr>
<td>Baxter International</td>
<td>U.S.</td>
<td>Baxter Ventures</td>
<td>200</td>
<td>Health</td>
</tr>
<tr>
<td>BMW</td>
<td>Germany</td>
<td>BMW iVentures</td>
<td>100</td>
<td>Transport</td>
</tr>
<tr>
<td>Visa</td>
<td>U.S.</td>
<td>Visa Ventures</td>
<td>100</td>
<td>Financial</td>
</tr>
<tr>
<td>Perfect World</td>
<td>China</td>
<td>Perfect World Fund</td>
<td>100</td>
<td>TMT**</td>
</tr>
<tr>
<td>AstraZeneca</td>
<td>U.K.</td>
<td>MedImmune Ventures</td>
<td>100</td>
<td>Health</td>
</tr>
<tr>
<td>Intel</td>
<td>U.S.</td>
<td>AppUp</td>
<td>100</td>
<td>IT</td>
</tr>
</tbody>
</table>

*Comcast Ventures was formed through a merger with the Peacock fund.
**Intel also invests a further US$300 million to US$500 million a year through its other funds and from its balance sheet.
***Technology, media, and telecommunications.
Source: Global Corporate Venturing, “Largest Sole-Sponsor Fund Launches in 2011.”
A 1% improvement in a public stock market’s turnover ratio affects the equity cost of capital by 10 basis points (i.e., 0.1 per cent). Low transaction costs are good for all firms, both innovating and non-innovating.

Financial markets can be prone to herd behaviour—sometimes manifested in what a former chair of the U.S. Federal Reserve Bank characterized as periods of “irrational exuberance” when excessive risk becomes the norm. The funding environment in technology in the late 1990s (the dot-com boom) was one such period. Then, the valuations of Internet companies were pushed extremely high and their cost of capital was extremely low. Nanda notes that “hot” and “cold” financial markets can affect the relative importance of different kinds of innovation finance (e.g., private versus public equity). In the wake of the credit crisis of 2007–08, the financial market herd has moved in the opposite direction, eschewing risk in favour of safe, low-yielding assets.

CONCLUSION

Our analysis of innovation finance has pointed out that financiers are primarily concerned with assessing credit-worthiness through standardized financial reporting.

Thus, the challenge for innovators is to explain the business value of innovation to financiers. That discussion becomes somewhat easier when innovators have a good track record on commercialization—money talks.

Selling technical concepts is a harder proposition than selling financial success. The innovator can sell to those who understand and believe in the concept, but that may be a limited market. A lack of innovation funding, therefore, may actually reflect that there are either too few worthy investments or too few people who understand the value of innovation.

Concerns about a lack of innovation finance are usually based on differences of opinion between managers of companies and financiers. There may be a misalignment between the innovation investment opportunities and investors’ demands for risk and returns. Innovators may be reluctant to give up control of their ideas to outside investors, while investors may want more control. Financial markets may not efficiently bring together investors and companies.

With these possible shortcomings in mind, we now turn to the specific challenges of Canadian business innovation finance.

14 Witmer and Zorn, Estimating and Comparing the Implied Cost of Equity.
15 Nanda, “Entrepreneurial Finance.”
The Innovator Perspective

There are two relevant perspectives on innovation finance—those of innovative companies and those of investors. When an innovative company succeeds, it generates positive net cash flow. This places the company in a position of financial strength. Success puts the firm in a stronger position to invest in innovations on its own account. It also enhances its creditworthiness, which makes it easier to raise external funds for in-house innovation and strategic acquisitions.

We often hear calls for government to fill the innovation finance gap. These often come from the representatives of innovative companies—the demand side. However, any innovation finance gap that exists may do so for many reasons. Firm-specific reasons may make a company an undesirable investment. Market factors may also play a role; companies that use innovation as a business strategy may be out of favour. Finally, some countries support innovation better than others due to their financial structure.

In this chapter, we explore innovation finance from the perspective of innovative Canadian companies. Later, we consider the unique characteristics of Canadian financial markets that are pertinent to innovation finance.
HOW MANY INNOVATIVE BUSINESSES?

How many “innovative” businesses are there in Canada? If we understand this, we will be in a better position to understand the nature of demand.

There are over 2 million registered businesses in Canada. Of these, just over 1 million are operating businesses that file corporate tax returns. These corporate tax filings say much about the structure of enterprises. Tables 4 and 5 highlight the data.

Canada is an economy of small businesses, measured by the number of enterprises in each size category. Ninety-nine per cent of Canadian businesses have less than C$25 million in operating revenue. Indeed, most are micro businesses: almost all the small businesses are Canadian owned, with average annual operating revenues of less than C$700,000. Foreign-owned small businesses are larger, with an average of over six times the operating income of Canadian-owned small businesses. There are roughly six times as many Canadian-owned medium-sized businesses as foreign-owned ones; they have about the same revenues. Canadians own almost 60 per cent of Canada’s large businesses, but firms with foreign owners have slightly higher revenues. Foreign-owned entities may be more likely to carry out innovation activities from their home base because they often have well-established relationships with universities and research institutes there.

At the outset, we quoted from the report of the expert panel on federal support for research and development, which expressed concern about innovation in Canadian-owned companies. This is understandable, given that over 90 per cent of all Canadian companies are small, Canadian-owned entities. Moreover, between 2008 and 2010, Canada actually experienced a net loss of about 400 medium-sized and 97 large companies. Although the Canadian business sector is owned mainly by Canadians, it has many firms with limited wherewithal. Relatively few firms account for most of the revenue. (We elaborate on this point later when we consider the R&D activity of firms in Canada.)

This business structure is pertinent to innovation finance. Small businesses typically have thin cash flow, which means they may lack the resources to fund innovative activity on their own account. Moreover, they exist in a precarious state, which makes them risky. When Statistics Canada studied firm survival rates for the period 1991 to 2003,¹ it found that an average of 15 per cent of small companies folded each year. By contrast, large firms have an annual death rate of about 1 per cent. Interestingly, the study found that only one in four firms that started in 1992 survived longer than 11 years, largely because of the low survival rates for small businesses.

Combining small business risk with a business strategy that relies on upfront innovation effort funded by external funders is a recipe for an innovation funding gap. In the European context, Murro found that firm risk (which he defines as default probability) reduces innovation.² The main channel through which firm risk reduces innovation

---

² Murro, *The Determinants of Innovation,* 2.
is by discouraging finance. He found that firm risk had a particularly dampening effect on product innovation, because this type of innovation is more likely to depend on external funds. So there is a direct connection between the financial precariousness of companies and innovation finance.

Firm risk had a particularly dampening effect on product innovation, because this type of innovation is more likely to depend on external funds.

Given our definition, it is difficult to say how many Canadian businesses are “innovative.” The most common approach is to equate R&D activity with innovation. It is well known that Canadian businesses do not fare well in international comparisons of private R&D. For instance, Canada ranks 14th out of 23 Organisation for Economic Co-operation and Development (OECD) countries in business expenditures on R&D as a share of gross domestic product. (See Chart 2.) By this measure, Canada’s business activity is less R&D intensive than that of many other countries. However, according to the World Bank, Canada has a higher per capita gross national income than 7 of the 13 countries that surpass it in business R&D expenditures.3 This speaks to the fact that innovation is broader than R&D, and that other factors—including resource endowments—drive living standards.

From 2007 to 2009, Industry Canada conducted a Survey of Innovation and Business Strategy among Canadian companies.4 Two out of three enterprises in Canada—including four out of five manufacturing enterprises—indicated that they had innovated in the 2007–09 period. This suggests a level of innovative activity far greater than that indicated by data on R&D. Indeed, based on these data, the vast majority of Canadian businesses think they are actively innovative, as they define that term. It is unknown whether they would be judged as innovative under stricter criteria, such as introducing a new product or process to the North American market.

---

3 World Bank, *GNI Per Capita*.
Commercialization: The Weak Link

Other Canadian business surveys have shown that Canadian companies’ product positioning strategy may come apart during the commercialization process. Incremental changes to products do not seem to present a problem. However, as the time between product development and commercialization expands, the financial weakness of companies—especially that of small and medium-sized firms—becomes more of an issue. Cohn has found, for example, that it takes a Canadian company about 1.5 times longer to commercialize an innovation (to break even) than it takes to develop the innovation from an idea to a product or service ready for the market.\(^5\) The entire cycle can take between four and seven years.

In this cycle, companies may run out of funds in the early marketing stage. They end up in what Cohn calls the “death valley” of funding. They lack internal resources and have little proof of viability in the form of profitable sales. Venture capital funds, in particular, operate on a staged funding model. General partners of venture capital funds want to see some progress on commercialization before committing more resources. When profitable sales do not arrive, they are likely to cut their losses and refrain from further rounds of funding. To the entrepreneur, this may seem short sighted, but to the investor it is a matter of risk management.

\(^5\) Cohn, Beyond R&D, 6.

Is Financing a Problem?

Canada’s relatively poor commercialization track record raises a “chicken and egg” question: Is commercialization the problem or are financiers too impatient? The size (or existence) of the innovation finance gap depends on perspective—not just the different perspectives among innovators and financiers, but also those among various types of business people.

Consider, for example, survey data from Canadian Manufacturers & Exporters, which periodically canvasses its members on a variety of business issues, including finance conditions. Manufacturing is one of the most R&D-intensive subsectors; it accounted for 49 per cent of Canada’s business expenditure on R&D in 2011, yet accounted for less than 13 per cent of industry output. (In contrast, service industries accounted for 43 per cent of R&D expenditures but 71.5 per cent of output.)\(^6\) However, manufacturers seemed to have little trouble finding venture capital or financing product development. (See Table 6.) This may not be representative of all manufacturers in Canada, as members of Canadian Manufacturers & Exporters are viable businesses with decent cash flow for which financing is less of a challenge than normal.

Other surveys tend to show higher rates of finance difficulty. For instance, a 2009 Government of Canada survey of innovative firms showed much higher levels of financing constraints. (See Table 7.) This survey was interesting because it categorized different kinds of business constraints. It showed higher levels of constraint on internal finance than on external finance, presumably because the responding firms looked to internal cash before considering external sources.

However, the survey also considered other business conditions related to finance, even though they were not directly described as finance. The top constraint was uncertainty and risk. As we explained in the previous chapter, this is the essence of finance. The issue of market size is clearly related to the commercialization

\(^6\) Statistics Canada, CANSIM tables 358-0024 (expenditure) and 379-0025 (industry output).
Finally, the survey measured a number of internal capabilities, such as skill level, collaboration, and the use of intellectual property. All of these factors are important to the commercialization process and the success of companies.

A survey on innovation commercialization by the Canadian Advanced Technology Alliance (CATA) reinforced these findings, specifically the conflation of finance, markets, and internal capabilities. In Chart 4, we re-order the original data and highlight the different factors according to their underlying nature. Even though finance comes out as the most important barrier (the green bars in the chart), these issues are clearly related to a lack of internal capability. Marketing (the yellow bars) stands out as a major weakness. The dark blue bars are, in essence, market/supply chain issues.

Table 6
Canadian Firms’ Access to Financing Varies by Financing Type, 2009
(per cent of respondents)

<table>
<thead>
<tr>
<th>Type of financing</th>
<th>Extreme (unable)</th>
<th>Significant</th>
<th>Possible but more expensive</th>
<th>No difficulties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financing for working capital purposes</td>
<td>3</td>
<td>7</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>Operating line of credit</td>
<td>3</td>
<td>8</td>
<td>15</td>
<td>56</td>
</tr>
<tr>
<td>Equity financing</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>Financing for capital investment</td>
<td>4</td>
<td>9</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>Financing for investment in new technologies</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Equipment leasing</td>
<td>4</td>
<td>1</td>
<td>7</td>
<td>34</td>
</tr>
<tr>
<td>Financing through bonds or commercial paper</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Venture capital</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Financing for new product development</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>Export financing</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Export credit insurance</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Financing for business acquisitions</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Other types of business financing</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>17</td>
</tr>
</tbody>
</table>


Table 7
Obstacles to Innovation in Canadian Companies Vary by Firm Size, 2009
(per cent of respondents; n=3,573)


<table>
<thead>
<tr>
<th>Source: Industry Canada, Business Innovation and Strategy, 59.</th>
<th>Large</th>
<th>Medium-sized</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty and risk</td>
<td>*</td>
<td>44.4</td>
<td>35.0</td>
</tr>
<tr>
<td>Lack of skills</td>
<td>19.7</td>
<td>26.7</td>
<td>26.3</td>
</tr>
<tr>
<td>Internal financing</td>
<td>*</td>
<td>22.2</td>
<td>22.1</td>
</tr>
<tr>
<td>Market size</td>
<td>*</td>
<td>22.2</td>
<td>16.0</td>
</tr>
<tr>
<td>External financing</td>
<td>*</td>
<td>18.7</td>
<td>15.2</td>
</tr>
<tr>
<td>Regulatory issues</td>
<td>20.2</td>
<td>27.8</td>
<td>13.8</td>
</tr>
<tr>
<td>Agreements with external collaborators</td>
<td>*</td>
<td>8.7</td>
<td>10.8</td>
</tr>
<tr>
<td>Intellectual property</td>
<td>10.5</td>
<td>3.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Government competition policy</td>
<td>3.6</td>
<td>3.9</td>
<td>4.0</td>
</tr>
</tbody>
</table>

*Data were insignificant
whereas the light blue bars are legal constraints. Respondents who said the “market is dominated by established firms” may not have innovated sufficiently to gain market share.

We are back to our “chicken and egg” problem. We have business management issues that manifest themselves in finance issues. The strategic question is whether one can address the business management issues through the finance lever.

The Centre for Business Innovation (CBI) Survey on Innovation Metrics and Management provided further evidence. As indicated previously, about a quarter of survey respondents noted finance as the number one challenge, a proportion about four times higher than that for the next identified challenge. The responses to questions on the nature of the finance challenge were most revealing. First, we asked the respondents to rank their top three sources of finance. (See Chart 5.) Then we asked them to rank their top three finance challenges. (See Chart 6.) These questions revealed that firms did, in fact, finance innovation through internal cash flow and, not surprisingly, that internal cash flow was the biggest financial barrier to innovative activity. It is not clear whether using internal cash flow was their preference or simply their reality.

Federal and provincial government programs scored highly because they had a direct bearing on after-tax internal cash flow. However, governments can achieve the same effects through lower corporate income tax rates. Indeed, general tax cuts disproportionately favour firms that are more successful at innovation because they, by definition, have higher taxable income. Tax credits, on the other hand, distribute relatively more cash to firms that lack internal cash.

To get a sense of the cash constraint, we asked our survey population a hypothetical question: What would they do if they had an infusion of cash equal to 10 per cent of the previous year’s revenue? Some survey respondents were highly constrained; one said, “Buy a cup of coffee.”

In 2007, Hottenrott and Peters conducted a similar experiment using panel data from German manufacturing firms (the 2007 wave of the Mannheim Innovation Panel). They got the idea from Hall. The experiment was designed to determine whether firms were financially constrained in funding innovation projects.

Hottenrott and Peters distinguished between three types of firms, depending on their use of the additional cash—those that would use additional cash for:

- purposes other than innovation (not constrained);
- innovation and for other uses (partly constrained); and
- only for innovation (fully constrained).

Chart 7 shows the results. The CBI survey population exhibited a higher rate of constrained innovation than the Mannheim Innovation Panel of German manufacturing firms did. (On the other hand, the previously mentioned results from the Canadian Manufacturers & Exporters

---


© The Conference Board of Canada. All rights reserved. Please contact cboc.ca/ip with questions or concerns about the use of this material.
survey suggest that manufacturers, in general, were less constrained.) As Hottenrott and Peters point out, greater financial constraints are usually a sign that innovative capability (in terms of the skills of people and the generation of ideas) exceeds internal cash. This is typical of the Canadian innovation challenge: great people, great ideas, poor commercialization.

EXIT THROUGH ACQUISITION

A major source of friction between entrepreneurs and innovation policy-makers relates to exit strategies. A familiar refrain is that Canada’s innovative companies sell their intellectual property too early and therefore Canada does not fully benefit economically from innovative ideas. These companies are said to sell “cheap.”

A recent example is Salesforce.com’s C$326-million acquisition of the Canadian social media monitoring company Radian6 in 2011. This is a typical case of a large American interest acquiring a Canadian tech company. However, such strategic acquisitions may very well be in the entrepreneurs’ and even Canada’s best interest. John Risely, the Atlantic Canadian entrepreneur behind Clearwater Seafoods, put it this way:

… if the business is globally competitive from its Canadian base, then it’s got to be because the local people have made it that way. And if that’s the case, I can promise you that the international buyer will not move the business, because in moving the business they will lose the company’s global competitiveness …. [At Radian6] there have been no layoffs, the work being done

---

9 For an example of this argument, see Hurwitz, The Canadian Government’s $400 Million Venture Capital Plan, 1.
in New Brunswick is not being transplanted …. You can’t be part of a global economy, which is what we must aspire to be, and at the same time say we want to put up walls and retain ownership of all these exciting new companies.\textsuperscript{10}

Indeed, successful entrepreneurs who create companies that are targets for major players are the ones generating a return through these acquisitions. In the case of Radian6, Risely called the returns “spectacular.” These serial entrepreneurs are the ones Canada needs to start other innovative businesses, as Risely did previously with Clearwater Foods Inc. and Ocean Nutrition Canada. Acquisitions allow these entrepreneurs to realize a handsome return and provide them with the funds they need for further ventures.

The business information company, Thomson Reuters, tracks venture capital exits.\textsuperscript{11} (See Table 8.) Between 2007 and 2011, foreign acquisitions accounted for half of all Canadian venture capital exits. Nationalists may lament this trend, but they need to recognize that acquisitions are a key aspect of capital markets and crucial to the functioning of private equity markets (in the broadest sense). Even while Canadian companies are being sold to foreigners, Canadians are accumulating foreign assets in a similar fashion. Indeed, we interviewed a representative of one company that started as a division of a cross-listed Canadian technology company, was acquired by U.S. interests, and is now owned by a Canadian private equity company. Companies can fly under many flags over the course of their history.

Moreover, as we point out elsewhere, between 1997 and 2006, Canadian companies acquired foreign companies worth a total of C$418 billion, while Canadian companies worth a total of C$387 billion were sold to foreign companies.\textsuperscript{12} At the outset of the report, we alluded to the growing international portfolio of Canada’s large pension plans. Unlike, say, bank finance, the merger and acquisition marketplace is truly a cross-border affair.

**Table 8**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total exits</th>
<th>By acquisition</th>
<th>By initial public offering (IPO)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Of which foreign</td>
</tr>
<tr>
<td>2007</td>
<td>50</td>
<td>38</td>
<td>21</td>
</tr>
<tr>
<td>2008</td>
<td>24</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>2009</td>
<td>27</td>
<td>26</td>
<td>11</td>
</tr>
<tr>
<td>2010</td>
<td>39</td>
<td>33</td>
<td>22</td>
</tr>
<tr>
<td>2011</td>
<td>28</td>
<td>25</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: Thomson Reuters.

CONCLUSION

There is no objective way to determine the existence or size of an innovation finance gap. The “gap” is a malleable concept. Its existence and size depends on one’s perspective.

The gap is large when viewed from the perspective of creative companies that have yet to master the intricacies of commercialization. These companies usually have more good ideas than money. On the other hand, the gap is small for companies with good cash flow that perhaps do not rely as much on R&D as the basis of their competitive position. Given the high number of

\textsuperscript{10} Preville, “Focus on Global Opportunities.”

\textsuperscript{11} Thanks to Kirk Falconer of Thomson Reuters for providing these data.

\textsuperscript{12} Grant and Bloom, “Hollowing Out”—Myth and Reality, 39.
Canadian companies that claim to be innovative, it is easy to confuse a few companies’ finance challenges with a general bias against innovation finance.

Clearly, there will be instances where companies cannot secure financing for their innovative activities. Perhaps financiers simply do not understand the innovation and how it generates a return. That suggests that innovators need to do a better job of explaining the value proposition of their innovation. The conversation between innovators and financiers also improves when the latter develop competencies in evaluating innovation (through, for instance, input from analysts).

We now turn to the investors’ perspective to evaluate the likelihood of the finance sector supporting more innovation and improving innovation performance.
CHAPTER 4

The Investor Perspective

Chapter Summary

- This chapter's assessment of Canada's finance market considers three factors: the funding environment (investors' attitudes toward risk); the funding structure (the nature of financial markets); and the relative roles of institutional and retail investors.
- The current funding environment is not favourable to risk. However, Canadians may eventually develop a greater appetite for risk as a way to earn higher returns.
- Since the U.S. economy is roughly nine times the size of Canada's, its venture capital (VC) industry is considerably larger than Canada's. As a result, VC investing is much more likely to see foreign involvement than are more standard financing arrangements.
- The concentration of funds in large, professionally managed pension plans is a key feature of Canadian capital markets. Pooling allows the plans to take calculated risks.
- The debate on innovation finance focuses mainly on the sophistication of Canada's well-developed financial markets in regard to some sectors.

In the wake of the credit crisis of 2007–08, Canada's banking system has become the envy of the world. Canada has a tradition of conservative banking that held it in good stead during the crisis. In the not-too-distant past, Canada's largest investment banks were absorbed into its major commercial banks. Canada's commercial banks largely avoided the extremely risky practices that led to the collapse of major U.S. investment banks such as Lehman Brothers and Bear Stearns, and the conversion of Goldman Sachs and Morgan Stanley to bank holding companies. The underwriting standards and regulation of Canadian banks are widely acknowledged as key competitive advantages when major financial disruptions such as the credit crisis occur.

Canadian banks are sometimes accused of being too conservative and not supporting innovation. As explained in Chapter 2, this accusation may be rooted in a misunderstanding of the appropriate role of commercial banks and debt holders. In fact, “risky” innovation is more appropriately funded through “risky” channels, where investors know they are taking appreciable risks, have methods for assessing and controlling the risk, and can share in the losses and returns. As such, a broader assessment of the finance market is necessary to assess whether the market is conducive to innovation finance.

Three factors must be considered during such an assessment. One is the funding environment, specifically investors’ attitudes toward risk. The second factor is the funding structure, which speaks to the nature of and structure of financial markets (such as money,
bond, and equities markets). Finally, there is the issue of the way savings are pooled, and the relative roles of institutional and retail investors.

**THE FUNDING ENVIRONMENT**

The current funding environment is not favourable to risk. Investors are fleeing to safe haven instruments such as low-yielding government bonds. The current funding environment has its roots in two periods when innovation funding went very wrong: the dot-com bust in 2000–01 and the credit crisis of 2007–08. Indeed, these two events are connected and have their roots in innovation.

---

**Investors are now inclined to steer clear of risk in general and equities in particular. Institutional investors have also scaled back their stock holdings.**

In the 1990s, investors were gripped by an “irrational exuberance” (in the words of former Federal Reserve Chair Allan Greenspan) for tech company stock. This saw investors bid up the stock prices (and lower the cost of capital) of tech companies well beyond a reasonable assessment of their long-term earning potential. Canadians were not immune. In July 2000, Nortel Networks accounted for about a third of the weighting of the Toronto Stock Exchange (TSX) 300 Composite Index. The collapse of Nortel affected the financial fortunes of many Canadians. The company’s coup de grâce came with its delisting from the TSX in 2009.

Monetary authorities responded to the dot-com bust by flooding the market with liquidity, the textbook prescription for avoiding a recession when asset values collapse. Although the technique worked (the economic downturn following the bust was a mild one), it set the conditions for the next crisis.

---

THE FUNDING STRUCTURE

A nation’s funding structure—specifically, the roles played by the companies themselves, deposit-taking institutions, and capital market institutions, such as equity and bond markets—evolves slowly over time. The funding structure reflects the nature of the underlying economy, the approach to financial market regulation, and even the country’s finance culture.

INTERNAL FINANCE

Given the importance of internal cash flow to innovation finance, any consideration of the funding structure needs to start with company financial health. As of the first quarter of 2012, Canadian-based companies had cash reserves of over C$451 billion. They generate profits of between C$63 and C$67 billion per quarter. As the saying goes, “Cash is king.” In other words, companies with good cash flow and strong cash reserves are in a strong position to innovate. Cash reserves at this level mean that many companies are in a strong position to innovate using internal resources.

We spoke with a representative of an oil field service company that is a good example of a company that innovates through strong cash flow. It established a solid business based on good customer service. Over time, the firm’s managers realized that they needed to make innovations to their service offering to address evolving customer needs. Because they had a strong core business, they were able to fund the innovations internally. Cash reserves at this level mean that many companies are in a strong position to innovate using internal resources.

In 2011, total business expenditures on R&D in Canada were only C$15.6 billion, or about 25 per cent of the profits in a typical quarter and less than 3 per cent of cash reserves. To put things in perspective, Canadian-based businesses would need to more than double their annual spending on R&D to US$35 billion (an increase of US$20 billion) for Canada to crack the top 10 of the OECD rankings for R&D spending as a share of GDP and to equal the business R&D intensity of the United States. (See Chart 2.)

At a macro level, the cash is there. The issue is not so much the cash as the distribution of the cash. A look at the top corporate spenders on R&D is revealing. (See Table 9.) Only 25 companies account for almost half of the business expenditure on R&D in Canada. These companies have good sales and are in technology-intensive industries where product innovation is a key strategic requirement. This is reflected in the relatively high average ratio between sales and R&D expenditures (at just over 14 per cent). So, companies with strong financials and in which R&D is a prerequisite to compete dominate R&D expenditures in Canada.

It is also interesting to note that the organizations are a mixture of substantially Canadian-owned private sector companies (such as Research in Motion, BCE, and Magna International), Crown corporations (such as Atomic Energy of Canada, Ontario Power Generation Corporation, and Hydro-Québec), and foreign-owned companies (Pratt & Whitney, Alcatel-Lucent, GlaxoSmithKline, and Pfizer). All these companies have considerable financial wherewithal to finance R&D through internal cash.

EXTERNAL FINANCE

Although R&D expenditures are clearly concentrated in large firms, small firms are more likely to have limited internal cash flow, which requires them to look for external sources of finance. However, the vast majority of Canadian companies are too small to access public equity and debt markets, a reality reflected in the low ranking of importance that companies gave to public debt and equity markets in the Centre for Business Information (CBI) survey. When going outside the company, the first stop for most of these companies is commercial loans. (See Table 10.)

Commercial Loan Financing

The loans outstanding to business in Canada amount to almost half a trillion dollars. The market is dominated by deposit-taking institutions—such as banks, credit unions, and caisses populaires—which account for
roughly 65 per cent of the marketplace. So-called “knowledge-based industries” hold less than 5 per cent of the loans.

Another survey by Statistics Canada, for Industry Canada, focused on small business sector loans. The survey revealed an important distinction between the intended use of funds and the characteristics of the firms that received loans. Most loans were used for working capital and fixed assets. (See Chart 8.) Identifiably innovative uses, such as R&D and new market entry, form a very small share of intended uses of loans. However, any loan can support innovation, because money is fungible. When the survey’s authors looked at the characteristics of firms that received loans, they found reasonably high innovation and approval rates. (See Table 11.) Commercial loans, however, are likely to be focused on creditworthy companies as opposed to commercially risky companies. The latter type of speculative finance is better left to equity markets, for reasons that we outline in Chapter 2.
Public Equity

One measure of a country’s financial maturity is the ratio of market capitalization of publicly listed companies to GDP. By this measure, Canada is a mature, sophisticated financial market. (See Chart 9.) Canada ranks with finance powerhouses such as the U.S. and the United Kingdom on this measure. (Indeed, in the wake of the credit crisis and commodity boom, Canada now exceeds the U.K. in the relative size of its public equity markets).

Canada has one of the strongest small-cap public equity markets in the world, particularly in relation to its domestic economy.

Canada’s equity markets have unique features when compared with other countries’ markets. First, a handful of large issuers dominates the market. Nicholls found that the top 200 issuers account for almost 90 per cent of the market capitalization of public exchanges. At the same time, Canada has many small listed companies. Nicholls found about a thousand of the nearly 4,000 listed companies had a market capitalization of less than C$5 million, while another 385 companies had a market capitalization of between C$5 million and C$10 million. He calculated that the market capitalization of the smallest 2,000 listed issuers accounted for less than 9 per cent of the total market capitalization of all companies listed on the TSX and TSX Venture (TSX-V) exchanges. Today, the average market capitalization of a company listed on the TSX-V is just over C$21 million. (See Table 12.)

The Canadian equity market’s bifurcation reflects Canada’s economic development as a nation. Eastern-based exchanges developed to fund large banking, transportation, utility, and manufacturing interests in central Canada. Western exchanges developed to fund resource companies, such as junior miners, forestry firms, and oil and gas exploration and service companies. After the demutualization of exchanges in 2000, Canada’s stock exchanges went through a period of amalgamation, spearheaded by TMX Group Inc., which ended up operating both small-cap (TSX-V) and large-cap (TSX) exchanges.

One of the main attractions of the TMX Group to the London Stock Exchange Group, when the latter proposed a merger in 2011, was the TMX Group’s strength in small-cap listings. Canada has one of the strongest small-cap public equity markets in the world, particularly in relation to its domestic economy. As Nicholls

Table 10
Business Debt Outstanding, by Industry and Supplier Type, 2010 (C$ millions)

<table>
<thead>
<tr>
<th>Provider</th>
<th>All industries</th>
<th>Knowledge-based*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic banks</td>
<td>268,832</td>
<td>13,010</td>
</tr>
<tr>
<td>Other banks</td>
<td>63,587</td>
<td>1,973</td>
</tr>
<tr>
<td>Credit unions/caisses populaires</td>
<td>50,014</td>
<td>n.a.</td>
</tr>
<tr>
<td>Finance companies</td>
<td>51,675</td>
<td>1,498</td>
</tr>
<tr>
<td>Portfolio managers, funds, and insurance companies</td>
<td>55,370</td>
<td>n.a.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>489,480</strong></td>
<td><strong>16,833</strong></td>
</tr>
</tbody>
</table>

n.a. = not available
*Knowledge-based industries are defined as knowledge producers (science and technology-based firms) and high knowledge users (business innovators and large-scale knowledge user firms). Typically, firms involved in pharmaceuticals, health biotechnology, development of new materials, telecommunications, information technology, software design, medical equipment manufacturing, and avionics are considered knowledge-based industries. These industries are a subset of all industries listed in the table above. Source: Statistics Canada, Survey of Suppliers of Business Financing.

Chart 8
Working Capital Most Popular Use of Debt Financing by Small Business, 2010 (per cent of respondents; n=3,573)

Source: Statistics Canada, Credit Conditions Survey.
points out, this provides an incentive for small Canadian companies to go public earlier than their counterparts in the U.S. do.

Is this strength in small-cap public equity good for innovation? Again, that depends on one’s definition of innovation. Charts 10 and 11 look at the sector distribution of the TSX and TSX-V exchanges by quoted market valuation (QMV), a measure of market capitalization. Given the history of the TSX-V exchange, it is not surprising to see the prominence of oil and gas and mining companies. Many of these companies go on to establish themselves on the TSX exchange. In global terms, the TSX is a medium-sized exchange focused mostly on domestic companies, yet it is a world leader in mining finance.

Resource companies do not rank highly in R&D expenditures when compared with technology, clean tech, and life sciences companies (which are also served by these exchanges, albeit in smaller numbers). But that does not mean they are lacking in innovation. The techniques of oil and gas and mining exploration and extraction are undergoing significant transformation in response to the world’s demand for resources. Indeed, fracking technology, which has revolutionized the recovery of tight formations of gas and oil, owes much to the technological contributions of Canadian companies.

Private Equity

Private equity involves the organization of funds to invest in private companies. These funds differ in their strategies and finance methods. Private equity has three main sub-components: buyout (which takes equity stakes), mezzanine (which uses unsecured debt and preferred shares to finance buyouts), and venture capital (VC) (which focuses on early-stage investments in promising companies).

When people think about private equity’s contribution to innovation, they usually think of VC, as this private equity style explicitly focuses on young, growing companies. However, the buyout component of private equity is considerably larger than the VC component. According to Thomson Reuters, in 2011 buyout deals in Canada amounted to C$11.5 billion, compared with VC deals of C$1.5 billion.6

The sector distribution of buyout deals shows that private equity buyout funds target undervalued companies in traditional sectors, whereas VC targets emerging growth companies. (See Table 13.) In other words, VC is a form of speculative capital, whereas buyouts seek to uncover value through established businesses. Both are risky forms of investing, but the degree of speculation is an

---

6 Thomson Reuters, Canada’s Buyout and Private Equity Market in 2011; Thomson Reuters, Canada’s Venture Capital Market in 2011, 7.
important distinction. According to the National Venture Capital Association in the U.S., about one-third of VC investments fail, meaning that the remaining investments require a high return in order to justify the risk inherent in the VC approach.7

For small technology companies, VC is a key source of both finance and (equally important) managerial expertise. For instance, small-cap life sciences companies raised just over C$100 million on the TSX-V exchange in 2011, whereas they raised C$343 million through VC. (See Table 13.)

VC addresses a major weakness in the commercialization process through the infusion of managerial expertise, which is a central element of the VC investing model.

Private equity has some inherent advantages over public equity, especially for small growth-oriented companies. Private equity tightens the relationship between shareholders and senior managers. In the process, private equity general partners are typically directly involved in company governance and seek to address weaknesses in firm management. We have shown that commercialization is a major challenge for Canadian innovators. Private equity companies help companies navigate what Cohn characterizes as the “death valley” of early-stage marketing by injecting managerial expertise.8

The public discourse on innovation finance focuses on VC because it is clearly funds companies that want to enter new markets through product innovation. Moreover, VC also addresses a major weakness in the commercialization process through the infusion of managerial expertise, which is a central element of the VC investing model. Still, in the broader scope of innovation finance, VC is a niche form of capital. According to Thomson Reuters, about 444 Canadian companies were financed through

---

7 National Venture Capital Association, VC Industry Overview, 8.
8 Cohn, Beyond R&D.

<p>| Table 12 |</p>
<table>
<thead>
<tr>
<th>Characteristics of the TSX Venture (TSX-V) and TSX Markets, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TSX Venture</strong></td>
</tr>
<tr>
<td>Number of issuers</td>
</tr>
<tr>
<td>Quoted market value (C$ billions)</td>
</tr>
<tr>
<td>Average quoted market value (C$ millions)</td>
</tr>
<tr>
<td>New listings</td>
</tr>
<tr>
<td>Equity capital raised (C$ millions)</td>
</tr>
<tr>
<td>Number of financings</td>
</tr>
<tr>
<td>Volume traded (billions of shares)</td>
</tr>
<tr>
<td>Value traded (C$ billions)</td>
</tr>
<tr>
<td>Number of trades (millions)</td>
</tr>
</tbody>
</table>

Source: TMX Market Intelligence Group.

| Chart 10 |
| Quoted Market Value of TSX, by Sector, 2011 (C$ billions) |

Source: TMX Market Intelligence Group.

| Chart 11 |
| Quoted Market Value of TSX-V, by Sector, 2011 (C$ billions) |

Source: TMX Market Intelligence Group.
VC funds in 2011. This is equivalent to about a fifth of the issuers on the TSX-V and amounts to only a very small fraction of the tens of thousands of businesses that access commercial loans.

As with business R&D, Canada does not fare well in international rankings of VC activity. In some years, however, Canada’s VC activity (seed and development finance) as a percentage of GDP has been roughly comparable to that in the United States. However, since the U.S. economy is roughly nine times the size of Canada’s, even its relatively small share (as a percentage of GDP) of seed and development finance results in a VC industry with a considerably larger scale, breadth, and depth of expertise than exists in Canada. In 2011, the Canadian VC industry registered disbursements of US$1.5 billion. By contrast, the U.S. state of California had disbursements of over US$14.4 billion, Massachusetts had almost US$3 billion, and New York US$2.3 billion.

The Canadian VC industry is embryonic when compared with its U.S. counterpart; it lacks the capabilities of the U.S. industry. The aforementioned Jenkins panel pointed to the lower returns generated by the Canadian VC industry, and its lack of ability to select and mentor young companies. This explains why, in its 2012 budget, the federal government allocated C$400 million to support the development of the Canadian VC sector.

In fact, foreign VC companies accounted for about a third of the VC dollars invested in Canada in 2011. American VC funds invest more per deal in Canadian companies than do Canadian VC funds. Simply put, a specialized area such as VC investing is much more likely to see foreign involvement than are more standard financing arrangements, such as bank financing and public equity. Those who want to see a larger role for private equity and VC in Canada should be comfortable with the idea that this will likely involve more foreign involvement with Canadian companies.

---

**Table 13**

<table>
<thead>
<tr>
<th>Capital Raised by Market, Canada, 2011 (C$ millions)</th>
<th>Private equity</th>
<th>Public small cap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Buy out</td>
<td>Venture capital</td>
</tr>
<tr>
<td>Clean technology</td>
<td>n.a.</td>
<td>343</td>
</tr>
<tr>
<td>Health care and life sciences</td>
<td>250</td>
<td>343</td>
</tr>
<tr>
<td>Software and information technology</td>
<td>550</td>
<td>692</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>1,100</td>
<td>n.a.</td>
</tr>
<tr>
<td>Mining</td>
<td>1,300</td>
<td>n.a.</td>
</tr>
<tr>
<td>Information and media</td>
<td>1,650</td>
<td>n.a.</td>
</tr>
<tr>
<td>Oil and gas</td>
<td>2,250</td>
<td>n.a.</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2,850</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

n.a. = not available

Source: Thomson Reuters, TMX Market Intelligence.

---

13 Thomson Reuters, *Canada’s Venture Capital Market*.
14 We discuss this in Grant and Bloom, “Hollowing Out”—Myth and Reality. Even American buyout specialists such as Bain Capital have made a positive impact on Canadian firms, such as the low-cost retailer Dollarama.
POOLING

The way savings are pooled has important implications for the way savings flow from households to businesses. An optimal retirement investment portfolio is diversified across asset classes and geographies in order to balance risk and returns. For the individual retail investor, the level of savings is typically too low to justify excessive risk within such a limited portfolio. Moreover, the retail investor usually lacks the sophistication required to take calculated risks. For these reasons, most retail investors rightly stick with mutual funds. Today, these mutual funds have just over C$615 billion in assets under management. (See Table 14.) Even then, the nature of Canadian equity markets means that even retail investors are subject to considerable risk, not so much from speculative innovations as from commodity prices.

The exceptions to this portfolio rule are high net worth individuals (HNWIs). (See Chart 12.) These are investors with over US$1 million available for investing. This group can be further segmented into three categories: those with US$1 million to US$5 million in investable assets; those with US$5 million to US$30 million (so-called “mid-tier millionaires”); and those with US$30 million or more (“ultra-HNWIs”).15 Risk tolerance grows with the amount of investable assets.

HNWIs are, in essence, their own pool. Many got rich through their business acumen and have sufficient resources to take calculated risks. HNWIs are a key source for angel, VC, and other private equity funds. Canada has proportionally as many HNWIs as the U.S. (at 280,000, compared with over 3 million), but as with private equity funds, scale and concentration are important. The preponderance of HNWI in California, in particular, helps to explain the incredible success of California-based VC firms.

Of greater importance than HNWIs in Canada are large pension funds. According to Benefits Canada, the top 100 employer-based pension plans have over C$750 billion in assets under management.16 These are dominated

---

16 Benefits Canada, “Risking It All,” 20.
by large public sector pension plans. (See Table 15.) In addition, Canada has moved the Canada Pension Plan (CPP) toward full funding. Large defined benefit plans and the CPP now account for close to C$1 trillion in assets under management. The concentration of funds in large, professionally managed plans is a key feature of Canadian capital markets. Pooling allows the plans to take calculated risks because the entire portfolio is large enough that it can sustain short-term losses. Moreover, the professional management of these funds means that they are more likely to take sensible calculated risks.

Public sector pension plans and the CPP are an increasing force in alternative asset financing, some of which finds its way to innovative companies. These funds are moving away from public markets, which they find expensive, toward private investing. For instance, the CPP Investment Board (CPPIB) speaks to private investing’s advantages and the way it affects the CPPIB’s portfolio decisions:

… we continued our efforts to construct a broadly diversified global portfolio by adding additional investments in various private markets; currently, approximately 25% of the portfolio is invested in private assets such as real estate, private equity, infrastructure and private debt. While the valuations of these assets do not change as quickly as they do in the public markets, we can afford to be patient and wait for the returns that these investments are expected to generate over longer periods of time. Given our advantages, the portfolio is primarily designed to deliver returns over a period of decades, rather than over six-, 12- or 24-month periods.17

In other words, pension plans are patient forms of capital. Most of Canada’s large pension plans pursue similar strategies. This is a positive development for innovation finance in Canada, although it should be acknowledged that Canada’s pension plans are relatively new to alternative forms of investing. According to one pension expert we interviewed, “Most pension plans have no exposure to private equity. Of 100 pension plans, perhaps only 25 would have an allocation. [Of the top 100 plans by assets], the average would be about 2 per cent [of assets under management] but the median [that is, the 50th-ranked pension plan] would be zero.”

Table 15
Top Pension Plans, Assets Under Management, Canada, 2010
(C$ billions)

<table>
<thead>
<tr>
<th>Pension Plan</th>
<th>Assets (C$ billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada Pension Plan</td>
<td>127.7</td>
</tr>
<tr>
<td><strong>Public sector plans</strong></td>
<td></td>
</tr>
<tr>
<td>Ontario Teachers Pension Plan</td>
<td>104.7</td>
</tr>
<tr>
<td>Ontario Municipal Employees Retirement Plan</td>
<td>53.3</td>
</tr>
<tr>
<td>Quebec Government and Public Employees Retirement Plan</td>
<td>41.3</td>
</tr>
<tr>
<td>Healthcare of Ontario Pension Plan</td>
<td>35.7</td>
</tr>
<tr>
<td>Public Service Pension Plan</td>
<td>33.7</td>
</tr>
<tr>
<td>B.C. Municipal Pension Plan</td>
<td>26.8</td>
</tr>
<tr>
<td>B.C. Public Service Pension Plan</td>
<td>18.1</td>
</tr>
<tr>
<td>Alberta Local Authorities Pension Plan</td>
<td>17.7</td>
</tr>
<tr>
<td>Ontario Pension Board</td>
<td>17.5</td>
</tr>
<tr>
<td>B.C. Teachers’ Pension Plan</td>
<td>16.4</td>
</tr>
</tbody>
</table>

Sources: Canada Pension Plan Investment Board; Benefits Canada.

Public sector pension plans and the CPP are an increasing force in alternative asset financing, some of which finds its way to innovative companies.

By contrast, large pension plans in other jurisdictions have shown more willingness to invest in alternative assets. For example, the California Public Employees Retirement System (Calpers), the largest pension fund in the U.S., invests 14 per cent of its assets in alternative assets, including VC, private equity, buyout funds, and mezzanine debt.18

---

17 Canada Pension Plan Investment Board, People, Purpose, Performance, 21.
18 Forgione, Cash-Strapped U.S. Pension Funds.
CONCLUSION

Canada has well-developed financial markets. And Canadians do take risks. Thousands of Canadians run their own businesses. Canadians have funded one of the top small-cap exchanges in the world. Canada maintains stock exchanges that are large in relation to its economy. They are exposed to considerable risk through the gyrations of commodity markets, not to mention the occasional bursting of asset bubbles.

Thus, the debate on innovation finance focuses mainly on the sophistication of Canada’s financial markets in regard to some sectors. Those who are disappointed with Canada’s record in innovation finance are looking at the problem from the perspective of companies in niche sectors that are R&D intensive, such as technology companies. Those firms rely disproportionately on specialized sources of finance, such as VC, that admittedly are not as well developed in Canada as they are in the United States. In this sense, the innovation finance issue seems to be more about a desire by some to change the industrial structure of Canada than it is about the financial capabilities of Canada.
From a national economic perspective, innovation is desirable because it is at the heart of competitiveness. Innovative economies create and adopt better ways of doing; they also perform better in global markets. Not surprisingly, our appreciation of innovation can easily morph into a desire to do something to make it happen. However, the journey from appreciation to the actual creation of an innovative economy can be rocky.

Capital markets rarely lead economic development—they usually support a country’s natural economic advantage, since that is where the best returns are likely to be found. Since Canada has a history of resource development, Canadian capital markets have a level of comfort with resource projects that is shared by the small investor buying penny stocks on the TSX-Venture exchange, the mining analyst in Toronto, and the junior oil company in northern Alberta. When resource returns are decent, then capital markets fund resource projects.

A key mandate of the Centre for Business Innovation (CBI) is to explore practical steps for improving Canada’s innovation performance. The diagnostic provided in this report suggests the following concrete areas for action relating to capital markets.
IT STARTS WITH COMPANY CAPABILITIES

Increased funding for business innovation needs to be matched by improvements to firm-level business capacity—notably, the capacity to commercialize and develop markets. In fact, history has shown that companies usually need to show a level of commercial success before financial markets will fund them to do more. Unfortunately, commercialization skills are an area of real weakness within firms, which impedes their access to capital.

It is hard to avoid the conclusion that innovation finance debate has to focus on company capabilities, especially commercialization.

Of course, thousands of companies innovate without help from the capital markets—they fund themselves. In fact, innovating companies with adequate resources often prefer to fund their innovations by using internal cash. On the other hand, the CBI’s innovation survey shows that many firms see a lack of internal cash as the main barrier to more innovation. However, they cannot get over their cash crunch without better commercialization skills. Commercialization is essential to building revenue and the financial track record that external financiers look for when making investment decisions.

It is hard to avoid the conclusion that the innovation finance debate has to focus on company capabilities, especially commercialization.

For some, the problem is their inability to describe their business model in terms that financiers can understand. Innovators need practical tools to help them explain both their innovative activity (e.g., innovation metrics) and the way it makes money (e.g., a business model and financial projections). The CBI is developing metrics and tools that firms can use for these purposes.

However, there is a bigger issue at play. Canadian companies have to do a better job of getting their products into the hands of paying customers. That involves gaining the business management skills and marketing skills that are lacking in many firms. There are a variety of mechanisms to improve these capabilities.

UNIVERSITIES CAN HELP

The post-secondary system has an important role to play. There have been major strides made in improving university-based innovation. Universities must develop these skills in the next generation of entrepreneurs and innovators. These institutions are well positioned to take a leadership role in developing individuals with a combination of specialized financial analysis skills and expertise in managing commercialization. For instance, they could help people learn to identify markets, define and produce products and services, increase sales, form partnerships, use technology to support processes, and plan and execute expansion and growth.

An important aspect of the training would be to help graduates analyze risk so that they can make precise decisions and recommendations related to commercializing products and services. This stage could include mentoring and work experience that would place advanced students in actual commercialization environments.

One approach would be to create master of commercialization (MC) or master of business commercialization (MBC) degree programs in selected Canadian business schools. These high-level graduate programs would train individuals to perform dual financing and innovation/commercialization management roles in operating businesses and start-ups. The resulting flow of highly skilled graduates with a passion for commercialization would build our overall corporate capacity to turn innovation into profit, thereby growing the economy and creating many new skilled jobs.
ROLE FOR GOVERNMENT FINANCIAL INSTITUTIONS

Government financial institutions such as the Business Development Bank of Canada, Export Development Canada, and the National Research Council’s Industrial Research Assistance Program, which interact with and provide debt funding to many SMEs and small entrepreneurs, have an important role to play. Commercial banks, which fund many small companies, also are well positioned to offer commercialization advice. These entities should consider coupling their financial service offerings more deeply with expert managerial advice and engagement in firms, either directly or through partnerships with leading management consulting firms.

REINFORCING A CULTURE OF INNOVATION AND GROWTH

Another contentious issue relates to the development cycle of promising Canadian firms. Too few seem to have the drive, the ambition, and the financial means to build themselves into viable medium-sized and large companies. Again, this is a business culture issue that is likely to change only gradually over time. This evolution could be aided by the infusion of expertise and commercialization skills and a better capacity to assess and manage risk. That would support a stronger culture of innovation and desire for growth within firms and their key personnel.

Some Canadian companies sell early in their development cycle. In our future work, we will highlight companies that have decided to build their capabilities in Canada. This will provide young companies with models of growth that they can follow. We also intend to help connect young companies with growing companies that can provide good advice on pursuing other business approaches aside from the “develop and sell” approach.

BUILDING FROM OUR STRENGTHS

Canada has one of the world’s most sophisticated financial markets. We have a particular strength in small-cap public equity markets. In this report, we have made the case that innovation finance has depended on healthy equity markets and will likely continue to do so, in the absence of major growth in the scale of private equity engagement in Canada. Small Canadian innovators do have a home-grown advantage in Canada’s small-cap equity marketplace. To be sure, managing a public company entails different capabilities than managing a private company—specifically, bridging the gap between the technical competencies of managers and those of non-technical shareholders. Governance can be complicated. That is another skill set that Canadian innovators need to develop if they are to grow.

Future CBI work will highlight the relationship between Canada’s excellent small-cap marketplace and its venture capital (VC) market. This is about developing the capacity of both innovative Canadian firms and public equity markets to have a well-informed funding conversation. Canada already has well-established capabilities in evaluating resource projects. If we extend these analytical capabilities into emerging areas, such as biotechnology, then investors are more likely to be in a position to make informed decisions on the relative virtues of those investments. The problem is not that Canadians do not take risks, but rather that they need better information to assume the risks that these other industries pose.

“I’M FROM PRIVATE EQUITY, I’M HERE TO HELP”

One way to improve commercialization skills is through private equity investments. This is a direct way to inject management expertise and to tie it to financing. In this sense, the finance tail can indeed wag the innovation dog.
A good example is the case of Google.¹ Until venture capitalist Kleiner Perkins got involved, Google was a money-losing search engine run by a couple of academics as a sort of science experiment. VC money and discipline honed Google’s business model (search-based advertising), which at that time was out of favour, as the portal model was the rage. Today, Google has a market capitalization of over US$200 billion. Today’s Google would never have happened without the involvement of VC finance, providing much-needed funds and business acumen.

Thus, there are instances where capital markets can lead company transformations. However, as we have shown, the California VC market alone is almost 10 times larger than the entire Canadian market. Scale is often associated with better capabilities to assess and contribute to the management of portfolio companies. Yet it is not only about the amount of private equity; it is also about the development of “smart” money and the use of accomplished private equity firms to improve the capabilities of portfolio companies.

Recently, the Canadian government made a further major commitment to developing Canada’s VC marketplace. It recently completed consultations on the best way to structure its C$400-million investment in VC. It is now committed to a fund-of-funds approach. In this approach, it will make investments in privately run funds that are also capitalized by other investors. Each fund has a different strategic mandate. Canadian-based funds will have access to the funding and will be allowed to partner with foreign VC specialists. This should help the Canadian VC industry develop its capabilities to execute deals while also providing critical finance for underserved sectors, especially those in non-traditional industries. If successful, such an approach could provide a major boost to the Canadian VC sector.

FEAR NOT THE FOREIGNER

Innovation policy often comes wrapped in the Canadian flag. This puts it at odds with finance, which is increasingly a cross-border affair. Foreign companies are among the top R&D spenders in Canada and foreign private equity funds have a significant share of the Canadian market. Foreign exchanges such as NASDAQ specialize in technology. It simply makes no sense to view innovation finance through a nationalistic lens.

It makes sense for Canadian innovators to look outside the country for finance and financing expertise, as well as inside.

Since capital markets tend to reflect the comparative advantages of a country, they may be underdeveloped in areas into which the country wants to diversify. So it makes sense for Canadian innovators to look outside the country for finance and financing expertise, as well as inside. The U.S. is the world’s VC juggernaut. It is time for Canadian innovators to follow the advice of bank robber Willie Sutton—pitch your ideas in the United States, because that’s where the money is. The CBI will explore ways for Canadian innovators to tap this critical source of capital.

The same can be said for Canadian subsidiaries of foreign multinationals. As we discuss elsewhere, multinationals are transforming their traditional hub-and-spoke models into global value chains.² In this approach, global companies locate centres of excellence around the world. Canadian subsidiaries need to make the case for Canada as a hub in this multi-hub model. Clearly, the Canadian subsidiaries of IBM, Pratt and Whitney, GlaxoSmithKline, and others have figured this out—they are among the leaders in R&D spending in Canada. The CBI will help other Canadian subsidiaries understand the secrets of these foreign R&D leaders.

¹ Vise, The Google Story.
² Grant, Valuing Headquarters.
Canadians need to recognize that a healthy merger-and-acquisition (M&A) marketplace is a key part of innovation finance. Canadian companies and pension funds accumulate assets around the globe. Canadians need to become more comfortable with the give and take of international capital markets, in general, and with the M&A marketplace in particular. Our ongoing work will continue to push for a healthy M&A marketplace.

PENSION PLANS AS A FORCE FOR CHANGE

While the federal government is adding funding to develop the VC industry, Canada’s large funded pension plans also have an important and growing role to play. These funds control around C$1 trillion in assets. Many are moving away from passive investment strategies and public equity markets toward active investments in private equity and other alternative asset classes. These changes have the potential to transform innovation finance in Canada and bring a scale of financial support more comparable to that in the United States.

Some pension plans, like the Ontario Teachers Pension Plan, have developed the internal capacity to manage private equity investments. Others, like the British Columbia Investment Management Corporation, work closely with private equity funds to execute their investments. Either way, Canada is benefiting from the gradual movement of its large pension funds to support innovative companies.

More Canadian innovators must reach out to large pension funds to request inclusion in their portfolios. The CBI will develop tools and techniques to link these pension funds to innovation investments. We will also highlight effective partnerships between pension plans and innovative companies.

TOOLS TO HELP SMES ACCESS CAPITAL AND EXPERTISE FOR INNOVATION AND COMMERCEALIZATION

SMEs represent the vast majority of businesses in Canada. However, many struggle to access the capital they need to innovate and grow, because they lack the innovation track records that larger companies have established. They also may lack business savvy and expertise that could help them overcome barriers to accessing capital.

In these instances, SMEs could benefit from tools and expert advice to help them develop effective pitches and successfully access capital from potential investors through either debt or equity. To help them overcome this hurdle, the CBI will identify the criteria that investors—including banks, government, venture capitalists, and angel investors—look for when evaluating companies for new investment opportunities. Using these criteria, we will create a set of tools that can help companies make an effective business case to investors about their plans for innovation. The tools will help companies to calculate the metrics they must generate, and articulate the likely return on investment that a new product or service offering could generate.

> Tell us how we’re doing—rate this publication.

www.conferenceboard.ca/e-Library/abstract.aspx?did=5308
APPENDIX A

Bibliography


The Conference Board of Canada is establishing the Centre for Business Innovation (CBI) as a five-year initiative to help bring about major improvements in firm-level business innovation in Canada. The CBI’s mission is to learn why Canada is not a leader in business innovation, to create insights for firms and capital markets that will improve firm-level innovation, to generate evidence and track our performance, and to formulate public policies that will successfully stimulate business innovation. Positive results will help Canada become a world leader in this area, thereby boosting its competitiveness.

Key Objectives
CBI’s key objectives are to:

• learn why Canada is not a leader in business innovation;
• create insights for firms and capital markets that will improve firm-level innovation;
• generate evidence and track our performance; and
• formulate public policies that will successfully stimulate business innovation.

Positive results will help Canada become a world leader in this area, thereby boosting its competitiveness.

Who Should Invest
Investors in this major new initiative will help to fundamentally change Canada’s business innovation performance. The Centre is a five-year, multimillion-dollar initiative that will devote its resources and expertise to gathering essential information (much of which does not currently exist); analyze the root causes of Canada’s lagging business innovation performance; and develop firm-level solutions and public policies that will enable businesses to become more innovative. These actions will result in raising our national innovation performance and enhancing our competitiveness in global markets.

The Centre will appeal to investors from both the private and public sectors. Private sector firms want to better understand the different ways that innovation occurs, and how it can be enhanced in their workplaces. Public sector organizations have an interest in stimulating business innovation throughout Canada’s economy. They are responsible for the policy and regulatory environment in which the private sector corporations operate. In addition, public sector organizations are familiar with the complexities and inter-relationships between federal departments, and among their provincial counterparts, which affect the macro environment in which businesses must operate.

E-MAIL contactcbi@conferenceboard.ca to receive more information.

Insights you can count on [conferenceboard.ca/CBI]