

# Canada's Support for Research & Development

Suggestions to Improve the Return  
on Investment (ROI)

As Canada's business development bank, BDC works with close to 29,000 clients. It does this through a network of more than 100 offices across the country, supported by 1,900 employees and with assets exceeding \$18 billion. In particular, BDC is one of the largest venture capital investors in Canada. It also offers consulting services to support entrepreneurs seeking to innovate.

Over the years, many of its clients served have had to tackle the challenges of innovation and doing R&D. BDC bases this contribution to the R&D Review on the knowledge and insights gained from its relationships with these clients.

Entrepreneurs make an irreplaceable contribution to building an innovative nation. They generate economic activity, and their decisions about how to innovate largely determine Canada's global competitiveness. Fundamentally, they bring to market the new products and services that people value and that bring economic, health and social benefits.

To improve the return on its R&D investments and programs, Canada must increase the commercialization of its inventions. Entrepreneurs are the root of commercialization, and should be supported in their efforts. This will require shifts in:

- > funding (applied research should be encouraged and supported more);
- > focus (from product/technology "push" to market "pull") and;
- > support (to entrepreneurs who are striving to commercialize the fruits of R&D).

## I. THE CONTRIBUTION OF ENTREPRENEURS

The Expert Panel Consultation Paper says that: "the justification for government intervention is strongest in the case of basic research activities" and, that "... the strength of the justification declines as research activities progress through the various stages leading to commercialization – i.e., from basic research to applied research, experimental development and commercialization. The benefits of these successive activities are progressively more likely to be captured by the R&D performer, and there is correspondingly less likelihood of "spill-over" to the larger economy."

This premise is flawed. It casts entrepreneurs and businesses as the last and least deserving in a line of potential recipients of public funds.

In Canada, 99.7% of businesses are small and medium-sized enterprises created and grown by individual entrepreneurs. They are essential for many of the benefits of R&D; irreplaceable people who convert ideas into useful, valued things.

It is true that in return for the money they invest, the risks they take and the effort they make, entrepreneurs profit from their success. But this success has a multiplier effect; it allows Canadians to derive practical, tangible benefits from R&D discoveries or ideas and provides direct and indirect economic benefits. If there is no successful commercialization, there is no “spill-over” benefit.

“*I started this business alone in my basement. Within two years, we were more than fifty people building the world’s first X-ray checkpoint technology that detects potentially threatening objects and liquids. Simply put, we would not be here today if not for BDC’s first round of venture capital funding.*”

– *Eric Bergeron*  
*President and CEO*  
*Optosecurity Inc.*  
*Quebec City, QC*



If Eric Bergeron’s firm succeeds in selling this technology, it will create more than more jobs and corporate tax revenues for government. Airports and embassies will use the product, creating spill-over benefits of cost-effective airport security and enhanced safety for millions of travellers.

It is inaccurate to say that entrepreneurs, when they successfully commercialize a new product based on an idea born of publicly-funded research, enjoy the lion’s share of the benefits of that success. Countries that have promoted commercialization of new products based on an idea born of publicly-funded R&D have seen their economies become more innovative and competitive (Israel is a good example).

It is also entrepreneurs who deliver the parallel public policy goal of economic activity: no successful entrepreneurs, no economic activity. Research and development cannot create all the jobs Canada needs. Entrepreneurs can.

## 2. INNOVATION: BROADER THAN INVENTION

In observing our 29,000 entrepreneur clients, we see that it is a mistake to define innovation too narrowly. We see many who, while operating in traditional sectors, are successfully innovating by creatively improving existing products, services, processes or business models.

“*We improved the mobile air compressor, which construction workers around the world use to power tools such as nail guns and jackhammers. Where it used to be heavy and bulky, we made it lighter, compact and more powerful.*”

– **Jim Hogan**  
*President*  
*Vehicle Mounted Air Compressors (VMAC)*  
*Nanaimo, BC*



Using applied research and a keen sense of market demand, Jim created a multi-million dollar international business for VMAC. Today, you will find its compressors in thousands of trucks worldwide, and 70 employees at its Nanaimo facility.

The success of entrepreneurs like Jim makes it clear that innovation is broader than invention. Invention is the discovery and development, often through technology firms, of new products and services resulting from R&D. Innovation is broader, more comprehensive and can be done by all companies: improve existing products, processes, services, and business models, create new products, etc.

In sum, innovation is new ways—often incremental—of doing things that consumers will want to pay for.

Incremental innovations like those of Jim Hogan are the key to improving the productivity and competitiveness of Canadian businesses. Indeed, Canada needs far more incremental innovation.

That said, “radical” innovation must also be nurtured to create the large winners of tomorrow.

### 3. ACCESS TO RISK CAPITAL: VENTURE CAPITAL AND OTHER SOURCES

#### Venture Capital

Canada has failed to convert its impressive investments in R&D into a correspondingly impressive number of large technology firms. Contrary to widely held belief, the reason for this is not money. The weak link is often commercialization.

The broad venture capital “ecosystem” is a complex place with many players, each of whom plays a precise, sophisticated role that affects others’ ability to perform. For the whole to succeed, all must work well.

In a recent comprehensive analysis of Canada’s venture capital industry (See Appendix I) BDC has concluded that the industry is hamstrung by an array of difficulties that are more deeply rooted than can be explained by normal market swings. It has also concluded that the scarcity of venture capital, while obviously important, is not the core issue. Canada has too few entrepreneurs and too few angel investors to provide capital and advice. It has too few venture capital funds that are appropriately sized and managed by experienced, globally connected professionals. It also had too much capital going to poorly performing funds instead of to the best performing funds. Overall, the industry is trapped in a vicious circle of poor returns, smaller fund investments, often-dysfunctional syndicates and a resulting reluctance by institutional investors to invest in the asset class.

To reverse this situation, we must restore investors’ faith in the asset class by returning the industry to a state of profitability. The change most likely to help bring this about would be the emergence of a greater number of large, skilled General Partnerships (GPs). BDC, drawing on its role and strengths, will support this goal with a four-part strategy. BDC believes there are strong reasons for optimism. (See Appendix I.)

#### Risk, Intangible Assets and Non-dilutive Capital

Risk capital is more than venture capital. Entrepreneurs often struggle to get financing for many of the steps needed to bring a product to market, e.g., some types of applied R&D, trade missions, etc. Many financial institutions are reluctant to finance projects such as these, or to assign a value to intangible assets such as intellectual property, distribution networks and branding. In some countries, the state supports these commercialization activities e.g., demonstration plants.

In Canada, the state supports the management of “technology” risk—the risk entailed in developing the technology. Might it be appropriate to consider supporting the management of “market” risk—the risk entailed in bringing the technology to market? More specifically, should the SR&ED program be modified to include expenses related to sales and marketing, require entrepreneurs to prove the market relevance of their project in order to be eligible for funding, cease penalizing Canadian technology firms that secure foreign venture capital investment, and permit expenditure on research done outside Canadian territory when this can be justified?

# CONCLUSION AND RECOMMENDATIONS

We base our comments not on economic theory but on close observation of our clients, whose competitors in other countries are worldly in their ambitions, highly innovative and often enjoy the direct support of their governments.

In general, we believe it essential to distinguish between investments that “push technology” (technology born of curiosity and research, with hopes someone will want to buy it) and investments that “pull technology” (those derived from applied research, directed by information about what consumers and businesses find valuable or desirable).

To increase the benefits it gets from its R&D investments, Canada should:

- > rebalance the budget allocation so that applied research is more encouraged and supported;
- > refine public support for a closer, mutually productive relationship between researchers and entrepreneurs, and;
- > provide better support for entrepreneurs’ commercialization efforts.

In sum, more applied research and more product development, tied to what customers want to have.

In our view, R&D should also:

- > support the sorts of incremental innovation exemplified by Jim Hogan and VMAC;
- > emulate other countries’ use of non-dilutive financial support for firms striving to commercialize the fruits of R&D, and;
- > refine incentives to ensure they drive the desired behaviour before the fact, rather than serve as a nice bonus to claim after the fact.