

**VENTURE CAPITAL
AND THE COMMERCIALIZATION OF
RESEARCH AND DEVELOPMENT**

**A DISCUSSION PAPER
BY
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INTRODUCTION

The difficulties encountered in attracting professionally managed venture capital to high technology start-ups constitute a serious drawback to the commercialization of Canada's publicly funded research. They warrant the attention of the Ministry of State for Science and Technology and all government departments involved in the technology diffusion process. Unless more private sector funding can be brought to bear on this end of the innovation process, the demands on government sponsored programs will continue to escalate to unmanageable levels.

Any significant increase in the publicly funded component or our gross expenditures on research and development (GERD) will require a corresponding increase in funding unless the private sector can be persuaded to do more funding at the front end of the innovation process. When the technology transfer results in the formation of a new business venture, the only source of such funds is the venture capital community. At present that community is not pursuing such opportunities to anything like the degree that its counterpart in the U.S. does.

This paper will discuss the reasons for this and will provide the reader with background information on the venture capital industry in general. It will also recommend solutions to the problem.

WHAT IS VENTURE CAPITAL?

There are sixty or so companies in Canada that call themselves venture capital companies and they specialize in financing high risk technology intensive ventures. Generally speaking, such financing takes the form of equity rather than debt because the ventures have no assets that can be used as collateral for a loan. In fact it is the venture investor's money (along with retained earnings) that eventually builds up an asset base which in turn can be used for debt financing.

Obviously, they are in the high risk investment business. The greatest risk is in start-up companies. However, every technology intensive company is risky right up until the time it can be traded on a public stock market. (In fact the risk does not disappear then either, but at least it is shared by several hundred shareholders, by the banks and even by the vendors at that stage).

Such venture capital companies manage pools of money that might range from a few million dollars to a hundred million or more. The largest in Canada is Vencap in Alberta with assets of over \$200 million. It got its original financing from the Alberta government. The others get their

money from pension funds, mutual funds, private individuals and the banks. In fact many of them are partially owned by the banks.

HOW BIG IS THE INDUSTRY?

A report prepared for the Science Council of Canada in September 1985 gives an excellent overview of the venture capital industry. It is entitled "Pension Funds and Venture Capital: The Critical Links Between Savings, Investment, Technology and Jobs" and was prepared by Mary MacDonald of Venture Economics Ltd., a Toronto based consulting firm, and John Perry, a partner in B.I.O.S. Inc.

The following are some key numbers in that report:

1. The entire pool of Canadian pension fund assets in Canada in 1983 was approximately \$85 billion (It is now over \$100 billion).
2. The entire pool of venture capital assets in the same year amounted to \$1.2 billion. (These are the assets of these 60 odd companies).
3. The total of all investments by these firms in 1983 was only slightly more than \$100 million.
4. Of this amount, about 38% was outside of Canada leaving only \$62 million for Canadian ventures.

5. Of this \$62 million, the venture capitalists would claim to have put \$23 million into start-ups. However, their definition of a start-up includes firms that are already in existence and are now getting around to shipping their first product. From our point of view, a start-up is a company that has just been formed to do product development - the kind of company that emanates from an NRC or university laboratory.

6. The Science Council report estimates that only about \$10 million in true start-up money came from these venture capital companies. So in 1983 we had a pool of pension fund money in this country of over \$100 billion, or 25% of our GNP and less than \$10 million of that finds its way into start-ups!!! That is less than 50 cents for every man, woman and child in this country. If one traces the same stream of investment in the U.S., everything follows the traditional ten-to-one ratio that exists between the two countries until we arrive at this start-up figure. In the U.S. start-up investments by the professional venture capital companies amount to more than \$5.00 for every man, woman and child, as compared to our 50 cents. While the situation may have begun to improve in 1985, these figures should be a red flag to us. While it is true that we do not have the same level of military spending and the same "incubation" capability that large companies like IBM and ITT represent, it is difficult to believe that we only have one-tenth the technology per capita to exploit.

Appendix A is a listing of the recommendations in the Macdonald report. It should be noted that they do not refer to the Small Business Investment Corporation (SBIC) legislation which was introduced in the May 1985 budget and published in November 1985. As mentioned later in this paper, industry reaction to that legislation has been very negative.

THE START-UP PROBLEM

The problem in its simplest terms is that we have not found a way of getting these sixty or so venture capital companies to invest in technology. I think they are essential to the commercialization of research and development and unless this happens more aggressively in the publicly funded sector, additional funding may be put into question.

I say "industry-oriented" R&D because obviously some of our publicly-funded research goes to support Department missions, or is basic research, or is diagnostic in nature, etc. Nevertheless, I believe we are justified in expecting technology diffusion from nearly all of the science and technology activities of the Canadian government today. Certainly, we should expect a very high level from research funded by such agencies as the Natural Sciences and Engineering Research Council (NSERC).

As a taxpayer, I do not object to paying civil servants to do research, both pure and applied research, but until we can find ways to turn the results of that research into more new business ventures, I do not believe we should

increase such spending - and specifically the spending on industry-oriented research. This applies even in Agriculture and Fisheries and Energy, Mines and Resources. In addition to solving the problems of their respective industries, their research efforts should be orientated to the creation of new business ventures.

The biggest "showstopper" is the tax treatment the venture capital companies receive on the capital gains they make when they sell such enterprises. The fact is that they don't get capital gains treatment like private individuals do. The situation at this time is that if a venture capital firm and a dozen private individuals invest in the launching of a Mitel Corporation and they all sell their holdings when the firm goes public some years later, the venture capital company's gain could be taxed as straight income, while that of the individuals is taxed as capital gains. In effect, we tend to reward the amateurs and to penalize the professionals. (And bear in mind that the amateurs are being given a \$500,000 lifetime deduction as well).

Revenue Canada will argue that there is a provision whereby the venture capital companies can elect to receive capital gains treatment, but it is not being taken up by the venture capital companies. The reason is that they are not allowed to write off their expenses in full. This is unfair because a well-managed venture capital company incurs significant expenses in market research to assess each investment and to provide hands-on management afterwards. Unfortunately, the pay-offs come at

unpredicted intervals and in unpredicted amounts, and such companies bear no resemblance to an investment company that buys and sells securities for a living. The same tax rules should not apply.

THE NEED FOR PROFESSIONALISM IN THE START-UP PROCESS

Starting a high technology company bears no similarity to starting a hardware store or a tourist lodge. It requires a unique combination of skills on the part of the investor group, and these skills are usually beyond the capability of a private investor. In the United States, the average venture capital company has a sophisticated in-house market research capability and it is able to draw on the skills of hundreds of technical and business consultants who service the industry. Generally speaking, venture investments in the high technology industry are not for individuals. We must find ways of bringing the professional firms into the act and allowing them to become even more professional at it.

Another aspect of high technology start-ups is that the people who have the technical ideas and the knowledge to implement them are very young and have no assets of their own. While it may be tempting to dismiss this issue of the lack of start-up funding by suggesting that the best test of a new venture is the amount of money the founder is willing to invest, these founders do not have a home to mortgage or even a car to sell. And they should not go to a rich relative because that person likely does not know how to evaluate the opportunity or enforce the necessary management

discipline to protect the investment. The most fortunate thing that could happen to both parties is for a venture capital company to take a major position in the venture. It would put together a board of directors and implement a planning and reporting system that would give the young founders the key ingredient to their success, namely discipline. If one of the rich relatives want to take part in the venture as well, they should be allowed to do so, but not as the lead investor. In fact they might make excellent members of the board of directors, because those who know very little about the technology are likely to ask "dumb" questions in board meetings, and thus provide a stabilizing influence.

I believe we should set a goal for ourselves to have at least \$4 per Canadian citizen (\$100M) going into start-ups from the venture capital community by 1988 - that is the sort of the message the Minister of State for Science and Technology might want to deliver.

THE NEED FOR A NEW VENTURE STRATEGY

This whole situation would not be so discouraging if the need for a new venture strategy were not so obvious. The only way that Canada is going to turn around the spiralling trade deficit in technology-intensive goods and services is to create more new business ventures of its own. It is not strictly related to a level of research and development, because we could bring more companies like IBM and Digital and Burroughs to the country and ask them to do more and more R&D. Yet it is those very companies that

are contributing most to our trade deficit. We simply have to create more Canadian-owned technology-intensive companies.

While it is unreasonable to expect all publicly-funded research to lead to new ventures, the emphasis should be in that direction. The U.S. experience has shown that the technology can be exploited faster and with greater innovation in a small company than in a large one. All too often our government laboratories rely on the larger companies as a technology transfer vehicle with little or no concern about the ownership of the company or the level of its innovation ability. I would like to see a better choice of such vehicles, particularly at the small end.

WHAT ABOUT IRAP, PILP and IRDP AND OTHER GOVERNMENT INDUSTRY SUPPORT PROGRAMS?

The numbers I quoted at the beginning of this paper should help to illustrate the futility of attempting to use the Industrial Research Assistance Program (IRAP) and the Program for Industrial Laboratory Projects (PILP) to transfer all of our technology out of the labs. I find it ironic to see us quibbling over whether IRAP and PILP should be funded at \$75M or \$100M or \$150M when in fact there is over \$1 billion of venture capital money which is basically on strike in the country. As a taxpayer, I have no objection to the current levels of IRAP and PILP funding, but when we are spending ten times as much on such funding as we are able to entice out of the venture capital companies in start-ups, then I know there is something wrong.

There is a misconception that IRAP and PILP money can be used to start new ventures or new product lines in existing companies. The fact is that they cannot. In the case of a new venture, the IRAP rules require that an appropriate corporate entity already exists and that there are some assets in place either in the form of debt or equity before funding is given. That is why it is sometimes easier to give such grants to the larger companies than to the smaller ones. Granting officers feel they are on safer ground financially, even though they know such companies are less innovative.

Even if IRAP and PILP monies could be used to start new ventures, the people who manage them do not have the full spectrum of capabilities referred to above. They have excellent capabilities in assessing the technology and in implementing a reporting system to ensure that the research is properly done, but they usually do not have the other skills that are necessary to make a new company successful. The major difference between venture capital and IRAP and PILP funding is that the venture capital funds go to finance not only the research, but the marketing, the selling, the financial management, the inventory and the accounts receivable. In fact, R&D expenditures are often the least significant of all.

The above discussion does not mean to suggest that the IRAP and PILP programs should be scrapped. On the contrary, I believe they should be strengthened and expanded. As pointed out in the Wright Report of 1984 on Science and Technology, they have proven to be effective over the years and I believe they provide a reasonable Canadian equivalent to the

development money that is available through various military programs in the United States. Another very large granting program is the Defence Industry Productivity Program (DIPP) but it is not as directly focussed at the front end of the innovation chain. In fact, most of the money goes to large multi-national corporations: (In 1983/84 General Motors received \$17.6M in DIPP funding.)

WHAT ABOUT THE MAY 1985 FEDERAL BUDGET?

The federal budget of May 1985 brought about new legislation which was intended to encourage pension funds to invest more money in venture capital and into small businesses generally. It is known as the Small Business Investment Corporation (SBIC) legislation. It does not appear as if it is going to address the problems I refer to in this paper for the following reasons:

1. It is extremely complex and most venture capitalists could not live within the various constraints that are written into the legislation - Finance seems to be overly cautious because of the abuse of the Scientific Research Tax Credit (SRTC).
2. It presupposes investment vehicles other than the established venture capital companies, and unless these other vehicles are put in place very quickly the problem will go unsolved for some time to come.

3. It does not address the fundamental "showstopping" issue of taxation.
(The report to the Science Council places top priority on this issue).

The industry has made several suggestions to Finance and it is encouraging to note that some of the more constructive ones have now been adapted. For example, a venture capital company operating under these rules will now be able to own more than 30% of the shares in a company - usually an essential in the case of a start-up. Also, in the past, limited partnerships, vehicles commonly used in start-ups, were classified as foreign property. This meant that pension funds tended to avoid them because they must limit their total foreign investments to 10% of their portfolios. Given the choice of investing in IBM or a Canadian high technology start-up the choice is obvious unless the start-up looks awfully good. This "classification" problem has apparently now been solved. However, it is important that in drafting any such legislation in the future, the unique problems of high technology start-ups are taken into account.

In the U.S. some of the state pension funds are forced to invest a certain percent of their assets in venture capital. With such a pro-active approach there, and with Canadian legislation that has favoured an IBM investment over a Canadian start-up, it is little wonder that our start-up investment ratio is only one tenth on a per capita basis.

In addition to recognizing the special needs of high technology, it is important that Finance act to create the fiscal environment needed to stimulate the start-up of new firms.

WHAT TO DO?

I believe the Ministry of State for Science and Technology should call a meeting of senior people from MOSST, DRIE, NRC, Finance, Revenue Canada, the Pension Funds and the Venture Capital community to achieve the following:

1. A consensus on the rules of the venture capital game.
2. The establishment of a goal for the amount of money flowing into start-ups from the venture capital community - I suggest at least \$100 million per year.
3. Address the recommendations of the Macdonald report to the Science Council (See Appendix)

In order to encourage greater participation by government departments in actively sponsoring the creation of start-up companies, consideration should be given to rewarding the departments through a mechanism to supplement their R&D budgets by an incremental amount for each new start-up resulting from technology transfer.

WHAT WOULD THIS COST?

Obviously the tax revenue being generated from the venture capital community is very small because, as mentioned above, the community is basically on strike. With only \$62 million going into Canadian investments per year, I would estimate there is only a working taxable part of about \$300 million in place today. If one assumes that it has a rate of return of 20%, that amounts to only \$60 million per year in taxable income. The difference between capital gains treatment and income treatment would only amount to 25% of that, or \$15 million. When one considers that total federal expenditures for Science and Technology are in excess of \$4 billion, it does not seem logical to hang onto \$15 million so tenaciously. Even if the flow of venture capital should increase by a factor of ten, it would still be a small price to pay for the leverage which I think it would achieve. The bottom line is that the supposed loss would in fact result in a net gain in tax revenue since the resulting increase in investment would generate considerable more revenue both in the short and long term.

SUMMARY

We have a situation in Canada whereby we are highly dependent on publicly funded research because there is a relatively low level in the private sector. Even though that publicly funded research should be available for public exploitation, we do not have the vehicles in place to do it. The

intricacies of high technology investment are such that it is not a game for amateurs. It will be necessary to get the professionals into it before Canadians can claim the kind of leverage that we deserve from our publicly funded research. Unfortunately, the professional players are on strike and we must find a way to get them back onto the playing field. I believe that the Minister of State for Science and Technology can and should draw attention to the issue because he is in a position to assist the others in resolving the problem. Also he has ultimate responsibility for the IRAP and PILP programs and they are being called upon to fulfill a task which is beyond their mandate.

APPENDIX A

RECOMMENDATIONS FROM MARY MACDONALD REPORT

REGULATIONS:

- RECOMMENDATION 1: Eliminate the designation of limited partnerships as foreign assets.
- RECOMMENDATION 2: Permit a proportion of public-sector funds to be set aside for venture capital.
- RECOMMENDATION 3: Expand the basket clause to allow the investment of up to 15 per cent of assets under this provision.

EXPERIENCED VENTURE CAPITALISTS

- RECOMMENDATION 4: Institute an apprenticeship program to train venture capitalists.

LIQUIDITY

- RECOMMENDATION 5: Develop policy initiatives to strengthen the over-the-counter market in Canada.
- RECOMMENDATION 6: Ensure speedy and efficient review mechanisms under Investment Canada for foreign acquisitions of small Canadian technology firms.

TAXATION

- RECOMMENDATION 7: Eliminate capital gains tax for shares purchased in the initial public offerings of junior companies and held for a minimum of three years.
- RECOMMENDATION 8: Clarify tax policies concerning the income of venture capital firms.
- RECOMMENDATION 9: Review tax policies on stock options with a view to simplifying the policies and providing more favourable treatment of stock options.

