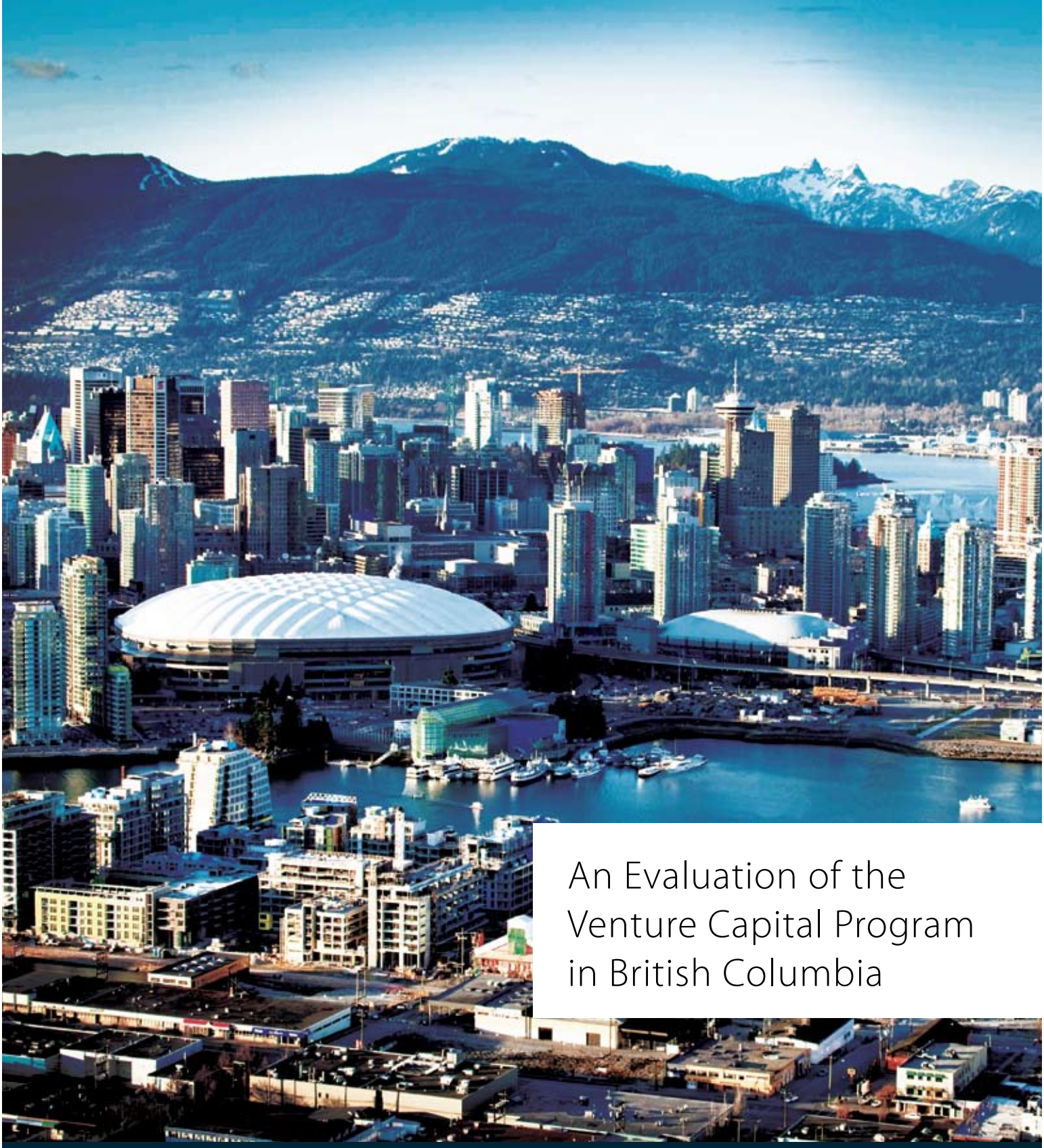

An Evaluation of the Venture Capital Program in British Columbia

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Ministry of
Small Business,
Technology and
Economic Development

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Executive Summary

The objective of this study is to evaluate the economic impact of the venture capital program (VCP) in the province of British Columbia. The study focuses on the economic and financial performance of the companies in the program, including a comparison of the tax credits received versus the taxes paid by these companies.

The VCP provides a 30% tax credit to investors making eligible investments. Formally it includes three distinct programs, one for Labour-sponsored Venture Capital Corporations, also called Employee Venture Capital Corporations (EVCCs), one for Venture Capital Corporations (VCCs) and one for Eligible Business Corporations (EBCs).

Over the period 2001-2008, investments made in 517 companies received a total of $191M provincial and $65M federal tax credits. These companies generated an estimated $379M in provincial and $368M in federal taxes. The estimates suggest that for every $1 of provincial tax credits issued, recipient companies generated $1.98 in provincial taxes; and for every $1 of Canadian (i.e., combined provincial and federal) tax credits issued, they generated $2.92 in Canadian taxes. In short, the BC tax multiplier was 1.98 and the Canadian tax multiplier was 2.92.

The analysis distinguishes between retail funds (professional venture capitalist who invest and manage capital on behalf of qualified investors through prospectus offerings) and nonretail investors who essentially invest their own capital directly (nonretail investors are sometimes referred to as "angel investors"). Retail investors invest through either the EVCC or VCC programs, and nonretail investors through either the VCC or EBC programs. The study finds that retail investors claimed approximately 55% of the BC and 66% of the Canadian tax credits. The Canadian tax multiplier was very similar for the retail and nonretail portions of the program. However, the BC tax multiplier was lower for the nonretail portion: every $1 of BC tax credits generated $2.45 of BC taxes in the retail segment, and $1.41 in the nonretail segment. The difference arises from the fact that the federal government carries some of the costs for the retail segment (namely half of the EVCC tax credits), but does not carry any of the tax credit costs for the nonretail segment.

The tax estimates focus on sales taxes (PST & GST), income taxes and corporate taxes, both at the provincial and federal level. The two largest items were PST, which accounted for 35% of all tax revenues, and federal income taxes paid by employees, which account for 31%. Combined provincial and federal corporate taxes accounted for less than 3%.

Companies in the program generated an average of 2.43 new jobs every year. This compares favorably with a broad control sample of BC companies that generated almost no new jobs at all during the sample period. Net job creation remained positive even in the recession years of 2002 and 2008. The vast majority of new jobs were full-time positions.

For the average company, revenues grew by $572K, based on average revenues of $2.27M. Revenue growth remained positive every year after 2002. Companies financed by retail funds had significantly larger revenues ($5.18M, increasing by $1.18M per year) than nonretail investors ($703K, increasing by $235K), reflecting the fact that retail funds focus more on later stage growth companies that are more mature, while nonretail investors focus more on early stage start-ups, some of which become large established corporations.

In aggregate, we estimate that tax credits of $256M were leveraged into at least $2.3B of equity investments. On average, companies raised a total of $2.14M of equity within the program. Retail-backed companies raised considerably larger amounts ($4.61M) than nonretail backed companies ($810K). We find that for every $1 of equity raised within the program, companies raised on average an additional $3.76 of equity and $1.15 of debt outside the program, demonstrating the program's capital leverage.

Access to capital appears to be significantly better in the two main urban areas of Vancouver (Greater Vancouver Regional District) and Victoria (Capital Regional District) than in the rest of BC, where the average company only raised $952K of program equity, and where every $1 in the program generated only $0.84 of additional equity and $1.19 of debt. These differences seem to be driven in part by companies pursuing more conservative business models, although there also appears to be lower investor appetite in the rest of BC.

2% of companies in the program went public; 7% were acquired. These exit rates appear relatively low compared to other venture capital markets both in Canada and worldwide. Part of this can be explained by the fact that many companies in the program received seed investments that precede venture capital investing. Only 16% of companies ceased operations, suggesting that the majority of companies remained in operation at the end of the observation period, providing benefit to the BC economy for an extended period.

Total amount of funds' raised by retail funds declined from a high of $83M in 2004 to a low of $30M in 2009. Total investments increased from $50M in 2004 to $68M in 2008, but fell to $47M in 2009. Total investments trends follow fundraising trends with a lag of approximately two years. This, combined with the fact that returns have been relatively low and that financial markets are currently experiencing considerable turmoil, suggests that investments by retail funds are likely to stay low and possibly decline even further over the near horizon.

The retail fund's returns have been negative over medium and long-term horizons if we do not take into account the tax credit. From an individual investor's perspective, taking into account tax credits and broker fees, investment returns under- or outperform stock market returns depending on the choice of index and holding period. However, program-supported investments in the retail funds made at the inception date of these funds paid off less than unsupported investments in public equities as represented by either the S&P-TSX Composite Index or the S&P-TSX Venture Composite Index.

While this program evaluation focuses on the companies in the program, it should be mentioned that the benefits of the program are likely to extend to the BC economy more broadly. One important benefit is the legacy created by successful companies in the program. Companies that are acquired typically retain some local presence, their managers frequently move on to play leading roles in new start-ups, and their investors may reinvest part of their gains into the next generation of start-ups. Our report features short case studies, including one of Aspreva Pharmaceuticals Corporation, which demonstrates the legacy benefits of the successful companies in the program.

Policy Recommendations

The primary objective of this report is to provide a quantitative evaluation of the performance of companies in the VCP. Based on our data findings, as well as a survey and a series of stakeholder interviews, we provide our policy recommendations. It should be emphasized that these recommendations are the opinion of the authors, and do not necessarily represent the opinion of the Ministry or the various stakeholders in the program.

We conclude that the venture capital program is fundamentally valuable to the province of British Columbia. While this conclusion is based on a large number of observations, two findings stand out the most: (i) companies in the program generate more taxes than they consume tax credits, and (ii) companies consistently create new jobs. We recommend that the program be at the minimum maintained and ideally strategically expanded. We also recommend some changes to the program as outlined below.

The retail and nonretail segments of the program have complementary roles, with nonretail investors providing funding at the early stage and retail funds investing at the growth stage. It is important to support both market segments. Ideally, the balance of funding for the two segments should be determined by market forces. At present there are budgetary restrictions that prevent the use of funds across segments. Excess demand in the nonretail segment for the period 2006-2007 suggests that this segment is particularly disadvantaged by these budgetary restrictions.

Having excess demand for tax credits in some years and excess supply in others generates inefficiencies and uncertainties. We recommend greater budgetary flexibility where unused credits could be rolled over for several years. We feel that more generally, barriers between different parts of the program, such as between the retail and nonretail segments, as well as between the so-called equity capital, new media, cleantech and community budgets, may impose inefficient limitations.

The long-term decline of funds raised by retail investors appears to be largely driven by the low returns generated by the retail funds, as well as the recent turmoil in financial markets. The time appears to be ripe to rethink the regulatory and governance structure of the retail segment. Given their relatively small size, the costs of managing a venture capital funds pose a particular challenge for several of the retail funds in BC. If no reform of the retail segment is undertaken, an imbalance is foreseeable where early stage companies might find it difficult to obtain follow-up financing at the growth stage. It is clear that rethinking the regulatory and governance structure of the retail funds necessitates careful further study.

There is an imbalance in the program that relates to the funding of tax credits. This study shows that the federal government receives an equivalent amount of taxes from companies funded in the retail and nonretail segments of the program. The federal government contributes to parts of the retail segment, but provides no financial support for the nonretail segment. We believe that the federal government should participate in the costs of the EBC and VCC programs. Any federal support of the BC nonretail program would presumably require a Canada-wide nonretail (or angel) program. Based on the findings of this report, we clearly would welcome such a program.

More generally, the provincial nature of the program creates unhelpful barriers for investments across provinces. BC investors are prevented from making investments outside of BC, and BC companies cannot use any tax credits to attract investors from other provinces. Introducing a federal nonretail tax credits program might help to break down some of these interprovincial barriers. There is also the possibility for regional reciprocity of tax credits, such as across the Western Canadian provinces.

Our study finds clear differences between the two main urban centres of Vancouver (GVRD) and Victoria (CRD) versus the rest of BC, especially in terms of the availability of equity capital. These differences might well reflect natural economies of agglomeration, a hypothesis which we feel merits further investigation. However, we suspect that more could be done to promote equity investments in the rest of BC. Angel networks play an important role in educating and organizing local angel investors, as well as encouraging syndicated investments. While Vancouver has well-organized angel networks, other parts of BC seem to lack them. It might be worthwhile to promote angel investing in general, and angel networks specifically, outside the two main urban areas of Vancouver and Victoria.

Concerning specific program requirements, our survey research indicates that some companies reached the program limit of $5M, and that a small number of individual investors reached their personal investment limit of $200K per year. The rationale for investment limits is more compelling in times when the tax credit budget is fully used, but with a budgetary surplus, such limitations may hinder additional investments. We support moderate increases of these limits, and suggest introducing a system of supplementary allowances in years where the budget is unlikely to be fully used. We also suggest raising the investor limit in proportion to the company limit, so as to allow companies to raise more without having to reach out to a larger number of investors.

Concerning the implementation of the program, our survey and interviews suggest an overall high level of satisfaction. We also support two specific proposals for improvement. First, the online login system could be simplified. Second, the authors of noticed during the course of the study that the evaluation of the program involved processing a large amount of non-electronic data. In addition, we made use of data that is currently no longer collected. We recommend instituting annual electronic reporting requirements for all companies in the program that would require them to report some key statistics. This would allow the Ministry to assess the performance of the program much more easily. At the minimum, companies should be required to report their employment and revenue figures, as well as contact information (telephone number and current email) for up to three senior company executives. To obtain a more comprehensive understanding of the program, it would also be worthwhile to collect information on HST paid, total wages, equity fundraising, and any changes in company status (IPO, acquisition, closure), among other things.

1 | Introduction

1.1 | Objectives and scope of the study

The objective of this report is to provide a critical evaluation of the venture capital program (VCP) in the province of British Columbia, administered by the Investment Capital Branch within the Ministry of Small Business, Technology and Economic Development. This report does not aim to provide a comprehensive review of all aspects of the program, but instead focuses on four key issues.

First, we aim to provide a quantitative evaluation of the provincial and federal taxes generated by companies in the program. In particular, we provide estimates for the taxes paid, focusing on sales taxes, corporate taxes and employees' income taxes. We compare these estimates with the amount of tax credits received by the companies' investors. The comparison of taxes generated with tax credits is an important consideration for government budgets, and also provides a perspective on the economic impact of the program.

Second, we provide a quantitative evaluation of the economic performance of the companies in the program. We focus mainly on employment creation and company growth, as measured by revenues, but also consider secondary measures such as the total wages and company assets. These measures are widely accepted key indicators of companies' activities and their associated economic benefits.

Third, we examine several key indicators of the financial performance of the recipient companies. We focus on four areas: (i) the amount of funds raised by the company both within the program and outside; (ii) the financial performance of the companies as measured by their survival, and possible 'exit', - defined as a third-party acquisition or an initial public offering; (iii) the returns to venture capital in British Columbia as approximated by the net returns on venture capital investments of the so-called retail funds; and (iv) the financial returns of investors in the program as approximated by investors in these retail funds (see Section 2 for a detailed discussion).

Fourth, we discuss several qualitative issues around the design of the program and possible improvements. This part of the evaluation is based not only on the quantitative performance evaluation, but also a variety of other evaluation methods, including expert interviews and a survey described below.

There are several important limitations for this study. The analysis focuses only on the venture capital program as defined above, and does not examine the employee share ownership program, nor does it evaluate the recent launch of the BC Renaissance Capital Fund. In addition, it should be pointed out that the analysis focuses mostly on the companies in the program, and does not aim to provide a comprehensive evaluation of the investor side of the program. Finally, the focus of our study is mainly descriptive, and the "why" question that explains the findings of our study is often left unanswered due to data limitations.

1.2 | Methodology and prior literature

Our evaluation of the program is based on a variety of methodological approaches. First and foremost, we perform several quantitative measurements that are based on a variety of data sources described in Section 3. Second, in cooperation with Dave Thomas (Rocket Builders), and with the help of Chris Forrest (an MBA student at UBC), we implemented a survey of companies in the program. Third, we held a series of expert interviews with leading stakeholder in the program, to obtain in-depth perspectives on the various qualitative issues surrounding the design and impact of the program. Finally, in cooperation with Thealzel Lee and Dave Thomas from Rocket Builders, we assembled three short case studies of companies in the program that document the economic impact of the companies' activities, and the role of the tax credit program in supporting these activities.

Note also that due to confidentiality reasons, no names of companies or investors are disclosed in this report. There are two exceptions; first, we mention company names in our case studies; the companies we studied gave us explicit consent to mention their names; second, we explicitly mention the retail funds on several occasions. However, the analysis of the retails funds is based on publicly available data sources.

There have been a number of prior studies that examined issues related to this report. Brander, Egan and Boardman (2005) provide an evaluation of the same program. Their report provides some broad overview of and recommendations for the program, albeit at a much earlier stage of the program's life. The report focuses especially on the fundraising process, estimating what they call the 'additionality' of the program, meaning how much more funding was obtained due to the tax credits. The report also makes a recommendation for a study to assess the performance of firms supported by the program. The current report directly responds to that recommendation.

Lee and Thomas (2005) provide survey-based evidence on the activities of VANTEC, a leading angel network in British Columbia. They estimate that 20% of all companies presenting at the VANTEC forum obtained tax credits under the VCP.

Several studies have looked at the Canadian venture capital market more broadly. Duruflé (2009) examines the overall impact of venture capital on the Canadian economy, finding that venture capital plays an important role in the Canadian economy. Hellmann, Egan and Brander (2005) examine the exit performance of venture capital backed companies in Canada and the US, finding that three Canadian provinces, namely Alberta, BC and Ontario, had venture capital activity comparable to the top US states outside of California and Massachusetts. Brander, Egan and Hellmann (2009) provide evidence that Canadian companies backed by government-sponsored venture capital underperform those backed by private venture capital on a number of performance metrics, including exits and patent production. Cumming and MacIntosh (2006) examine to what extent labour-sponsored venture capital crowds out private venture capital, finding some indirect evidence to that effect. Osborne and Sandler (1998) and Sandler (2004) provide a tax expenditure analysis of the labour-sponsored venture capital program, presenting a critical review of the retail program.

2 | Program Structure[1]

The VCP was first established in 1985 under the Small Business Venture Capital Act and is administered by the Ministry of Small Business and Economic Development. At the core of the program is a 30% tax credit for investors who reside in BC. The program has evolved significantly since 1985 and at present it consists of three distinct programs: one for Labour-sponsored Venture Capital Corporations (called EVCCs), one for Venture Capital Corporations (VCCs) and one for Eligible Business Corporations (EBCs).

VCCs and EVCCs are registered holding companies that raise investment capital from BC residents and then invest these funds in qualifying businesses, which are referred to as "eligible small businesses". Hence, tax-credit eligible investments from investors flow through VCCs and EVCCs to eligible small businesses.

Direct investments in companies are also supported by the VCP. A small business can register as a so-called Eligible Business Corporation (EBC) and accept tax-credit eligible investments directly from investors. This direct investment component of the program began in 2003. In our study, we will use the term "companies" to describe both "eligible small businesses" and EBCs, even though the VCP uses slightly different definitions for these terms.

It is important to distinguish between two types of VCCs. The first type of VCC receives funding from qualified (mostly accredited) investors, and then invests the funding in one or several eligible small businesses. This category actually includes a variety of arrangements, ranging from single-purpose VCCs that invest in a single company (some of these single-purpose VCCs registered before 2003 and would register as an EBC today), to multi-purpose VCCs that are effectively "angel funds" (for example, the Western Universities Technology Innovation Fund - WUTIF). The second group of VCCs are the so-called "retail VCCs". Retail VCCs may also raise money from accredited investors; however, they attract most of their funds from "retail investors", members of the general public who do not qualify as accredited investors. Because of their reliance on retail investors, retail VCCs are required to produce an annual prospectus. They maintain reasonably significant investment portfolios and are, in this respect, best comparable to venture capital funds.

The three retail VCCs that currently operate in BC are (i) BC Advantage Funds (which operates two funds, namely the Advantage Growth Fund and the Advantage Venture Fund), (ii) BC Discovery Fund, and (iii) the Pender Growth Fund.

At present there is only a single EVCC fund in BC, called the Working Opportunity Fund (WOF). WOF is managed by GrowthWorks, which is owned by Matrix Asset Management Inc. Like the retail VCCs, WOF raises funds from retail investors. The most important difference between WOF and the retail VCCs is that the 30% tax credits of WOF are shared equally between the federal and provincial governments, whereas the provincial government pays the entire 30% tax credits for the VCCs. There are additional differences in the regulation of VCCs versus WOF relating to various caps, such as differences in the maximum amount that any single investor can invest in the fund, and different investment pacing requirements (which are less stringent for WOF than for the retail VCCs).

In terms of the analysis that follows, we distinguish between the "retail" and "nonretail" segments. The retail segment includes the three retail VCCs as well as WOF, while the nonretail segment includes all other VCCs as well as the EBC program. One issue for the analysis will be that our main unit of analysis is not the investor but the company. One of the analytical challenges will be that some companies obtain funding both from a retail and nonretail investor. In Section 3 we detail how we treat those companies if this applies.

[1]This section draws on Brander, Egan and Boardman (2005) as well as the program website. (http://www.tted.gov.bc.ca/TRI/ICP/Pages/default.aspx), which contains further detail.

3 | Data Overview

3.1 | Base data

The data for this study were gathered from a variety of data sources. The prime sources were documents held by the Ministry of Small Business, Technology and Economic Development (the "Ministry" henceforth). They fall into three main categories. First, the Ministry maintains a database of investments and tax credits, as well as a number of related data items. Second, companies are required to fill out a variety of documents, such as an application form, and an annual return form for several years after receiving a tax credit. These documents include questions on key company statistics, such as employment or revenues. Finally, companies under the VCP are required to file their annual financial statements along with their annual return form. Much of the data were only available in hard copy format and therefore had to be transcribed into electronic format. Moreover, some of the data were provided directly by retail venture capital firms, rather than the Ministry.

The data are based on companies that received funding under the VCP during the period 2001-2008. A total of 519 companies satisfied this criterion, but we were only able to secure systematic data on 317 of them due to missing information (e.g., the company failed to provide the information or it had only recently received its first financing). The other 202 companies represent 15.2% of the tax credits claimed under the program. While the coverage is incomplete, our study captures a large fraction of the companies that make use of the program. We also verified that the percentage of companies that remain active and the percentage of companies that ceased operations (see below for a description of these measures) are not statistically significantly different between the 317 included and the 202 excluded companies. We follow a company from the year of its first tax credit all the way up to its last year, which is either the year that an acquisition occurred, the year that the company ceased operations, or the end of 2008. Table 1 summarizes our sample coverage of companies.

The annual financial statements vary in detail. Some of them are audited statements, but many are not audited but only have a 'Notice to Reader'. These statements tend to be incomplete and sometimes require interpretation. For example, not all statements include a line item for total wages; others do not properly identify total expenses. The coders who transcribed the hard copies were instructed to read through all parts of the financial statement to identify the key items required for the analysis.

The authors augmented the data in several important ways. First, they organized a survey that included questions of recent company data, including employment and revenues. Second, the authors made use of publicly and commercially available data sources. Bureau Van Dyck (drawing on Dunn and Bradstreet data) was used to augment revenues and employment data, as well as a control sample – see Section 5.4. Capital IQ and Thomson One (VentureXpert, SDC Global New Issues and SDC Mergers and Acquisitions) were used for data on exits. SEDAR was used for exit data, as well as, some financial statements of companies that were listed on the TSX or TSX Venture exchanges. BC Online, the Yellow Pages and Google were used for the survival analysis. Finally, the main analysis also makes use of the data collected through the survey described in Section 3.2.

Based on the discussion of Section 2, we separate out those companies that obtained some or all their funding from retail venture capital investors, versus those that obtained no funding from retail venture capital investors. We find that 50 of our companies obtained funding from only a retail venture capital investor (i.e., one of the retail VCCs or WOF) , 206 companies do not have any retail investors, and 61 companies have both types of investors. Most of our analysis uses companies as a unit of analysis. In that case we distinguish between "retail VC backed companies" which includes all 111 companies with retail investors (irrespective of whether they also have nonretail investors), and "Non-retail VC Backed Companies" which includes the 206 companies that had no retail investor. For the calculations of aggregate taxes, our unit of analysis is dollars. In that case we distinguish between a "retail portion" and a "non-retail portion", constructed as follows. The taxes paid by the

206 companies without retail investors are allocated to the "nonretail portion", the taxes of the 50 companies with only retail investors are allocated to the "retail portion", and the taxes of the 61 companies with both types of investors are apportioned to "retail portion" and "nonretail portion" proportionally to the amount of tax credits issued to retail and non-retail investors.

We also classify companies based on the geographic location of the companies' headquarters. We distinguish between the Greater Vancouver Regional District (GVRD, 225 companies), Vancouver Island's Capital Regional District (CRD, 27 companies), and the rest of British Columbia (65 companies).

Table 1: Sample Description

Total Companies Analyzed		
	Count	**Percentages**
Total companies	317	100%
Only retail VC funded	50	16%
Only nonretail funded	206	65%
Both retail VC and nonretail VC funded	61	19%
Vancouver (GVRD)	225	71%
Victoria (CRD)	27	9%
Rest of British Columbia	65	20%
Study period	2001-2008	
Average years in program	5.42	
Number of financial statements used	1141	

3.2 | Survey of program companies

In cooperation with Dave Thomas at Rocket Builders, and with the help of Chris Forrest, we implemented a survey of companies who have investors that are recipients of tax credits. The objective of the survey was to obtain some recent data on revenues and employment, some quantitative data not available in any of the other sources, and some qualitative data about program perceptions.

Appendix A contains a copy of the survey. Key information requested includes employment data, revenues data, the amount and type of investment capital raised, and comments and suggestions for the program.

The research team compiled a list of all available email addresses of the companies and/or their CEOs. The researchers updated the contact information by searching websites and private databases. They telephoned companies to request additional email contact information and ensure the companies were still operating. The invitation email and link to the survey was then sent to the companies using 'Survey Monkey'. In addition, where a firm had received institutional capital, the investing venture capital firm was contacted and they forwarded the survey link to survey companies with a request to complete the survey. At least one follow-up phone call was made for each company to secure a better response rate. The researchers also tracked email responses for all companies on the EBC and VCC and EVCC lists to develop estimates of survival rates. The list of companies in the EBC program was compiled first and companies were contacted starting in November of 2009. The companies in the VCC and EVCC program were contacted starting in February 2010. The survey was closed on March 31, 2010.

A total of 473 companies were contacted. 142 or 30% of companies responded to the survey. Not all companies completed every section of the survey; however, 92 or 65% of the respondents provided full employment data. The response rate was higher for EBCs than for VCC or EVCC-backed companies. The researchers found that the EBC company contacts were more current than those of VCC or EVCC-backed companies. Many EBCs started in the program during 2007-2009 and the contact information included more active email address for personnel that are still with the companies. By contrast, the contact data of VCC or EVCC-backed companies ranged from original contact info that was at times as much as 10 years old.

EBC contacts included some very early stage companies that had just registered in the program. Many indicated that they would be raising capital within the program in 2009 or 2010, but had limited data with which to answer the survey for 2008 or earlier.

Table 2 below indicates the sectors for the companies responding to the online survey. The distribution is similar to the distribution of the companies participating in the program.

Table 2: Sector Profile of Survey Respondents

Sector Profile		
	Response Per Cent	**Response Count**
ICT	33.1%	47
New Media	17.6%	25
Biotech	11.3%	16
Medical Device	5.6%	8
Cleantech	21.1%	30
Advanced Manufacturing	8.5%	12
Tourism	0.7%	1
Mining & Natural Resources	2.1%	3
		142

4 | Tax Calculations

4.1 | Tax methodology

The estimation of taxes and tax credits is an important step in understanding the overall economic impact of the tax credit program on the economy and the government finances. While the comparison of taxes with tax credits is transparent and easy to understand, we should not think of it as a definitive analysis of net fiscal benefits to the government, nor as a complete cost benefits analysis to the province. This is because this simple comparison does not take into account so-called general equilibrium effects (such as economic multipliers), counterfactuals, or externalities of the underlying activities. For example, it could be that many of the companies that benefited from the program would have also been active had there not been any VCP. On the other hand, it is also true that companies that exist in their current form because of the VCP will generally not disappear immediately and will hence continue to yield provincial and federal tax revenues. This is true in particular seen that many companies in the program are entrepreneurial companies in the early stages of their life cycle, and that quite a few will grow to become significant tax-generating corporations. Despite these qualifiers, we believe that the contrast between tax credits and tax receipts is a useful step towards a quantitative understanding of the impact of tax credits on recipient companies.

The calculation of taxes and tax credits can be conceptually divided into three distinct steps. In the first step we estimate the amount of tax credits, in the second step we estimate the amount of taxes paid by the 317 companies in the sample and in the third step we aggregate the data to represent the total program. Our methodology for estimating taxes is based on recommendations from Professor Trang Chung at the University of British Columbia and David Trang and Don Furney from PricewaterhouseCoopers.

For the first step, we need to estimate the amount of tax credits. For the non retail investors, we obtained from the Ministry the precise numbers on the amount of investments eligible for tax credits. Using a 30% tax credit, we calculate the amount of tax credits paid. The only minor limitation of this data is that the dates used are those provided in the Ministry's database, which represent the time of payment of the tax credit, not the date of the investment. For the retail investors, we use the same methodology of starting with the Ministry's list of company investments, but with two adjustments. First, we take into account that the venture capitalists are an intermediary between the companies and retail investors. Tax credits are issued to retail investors who invest in a venture capital fund that has to invest 80% of those funds, but can use up to 20% for expenses. We therefore assume that for every $1 of fundraising, 80 cents is invested in companies, implying that every $1 invested requires $1.25 of fundraising. It follows that for every $1 invested, we apply a tax credit of 30%x$1.25 = 37.5 cents. Second, we need to distinguish between two retail programs. The retail VCCs receive all of their tax credits from the provincial government, whereas the EVCCs receive half of their tax credits from the provincial government and half from the federal government.

For the second step, we perform distinct calculations for seven types of taxes paid by the companies. Four taxes are provincial taxes: PST in outputs, PST on inputs, BC corporation taxes and BC income taxes. The remaining three are federal taxes: GST, federal corporation taxes and federal income taxes. Below we describe our methodology for each of the seven taxes. If for a particular year where the company is known to be active we are unable to calculate the taxes due to missing data, we use the company's average taxes paid from the years with available data. The construction of the underlying data, such as revenues or wages, is explained in further detail in Section 5.

PST on outputs is calculated by multiplying BC revenues with the appropriate PST rate. The Ministry data contain information for some companies about the fraction of revenues that is generated within BC. If no such information is available for a company, we estimate this fraction by using the average fraction found for those companies where the data is available.

PST on inputs is estimated using the following formula: Tax basis = Total Expenses – Deductions, where Deductions = Cost of Goods Sold + Total Wages + Amortization + Purchase of Plant, Property and Equipment. The tax basis is then multiplied with the appropriate PST rate. None of the special exemptions for PST were taken into account for this calculation, implying that there may be some overestimation of PST input taxes in this respect. If no information was available on a particular deduction, it was set to 0. If no information was available for total expenses the tax basis was set to 0, implying that there may be some underestimation of PST on inputs in this respect.

For the BC corporate tax, we calculate taxable income using the company's net income from the financial statements, and adding back in any amortization and the value of any stock-based compensation. This provides an estimate of the taxable corporate income. We then estimate the fraction of income taxable in BC by multiplying taxable income by the fraction of employees that work in BC (or the average fraction of employees working in BC in the sample, if no such fraction is available for the company). We further estimate any losses carried forward by calculating a five year trailing net loss. We then apply the appropriate BC corporate tax rate to this BC net taxable income, taking into account the two-tiered rate structure of the corporate tax.

To estimate BC income taxes, we need to take into account the progressive nature of the income tax system. We do not have data on individuals' salaries (let alone any special exemptions), so instead we estimate the average income tax paid on every dollar that the firm pays out in wages. In other words, the idea is to take a typical firm's wage bill and estimate how much personal income taxes it generates. The key step is therefore the estimation of the average income tax rate. Our survey includes some questions about the number of full-time employees in each of the income brackets. From the survey data, we thus calculate the average fraction of employees in each of the income brackets. Assuming a uniform distribution within each bracket, the mid-point of each bracket defines the average salary for employees in that bracket. For the top income bracket, there is obviously no upper limit and thus no mid-point. We sought advice from compensation consultants 'Corporate Recruiters' who suggested that top salaries for our set of companies would be at least $140,000. We therefore use $140,000 as our upper boundary for the top income bracket, which then allows us to identify a mid-point just like for all other income brackets. We then multiply each fraction of employees with their respective income bracket midpoint, and add up across brackets to create a measure that we can think of as the 'company's normalized wage bill'. As a next step, we calculate for each income bracket the average taxes paid by employees in that bracket, and then add up the income taxes across all employees to create a measure that we can think of as the 'company's normalized income taxes'. Dividing the 'company's normalized income taxes' by the 'company's normalized wage bill' we obtain our estimate of the average income tax rate paid on wages. For our set of companies, we estimate the BC provincial average income tax rate to be 8.31%. This rate actually varies by year, going from 10.01% in 2001 to 7.28% in 2008[2]. For each company and each year, we then apply this average income tax rate to the total wage bill to obtain our estimate of the BC income taxes generated by the company.

We use very similar methodologies to estimate all federal taxes. The GST calculations are based on the same revenues as the output PST. For the fraction of revenues outside BC we have too little information on whether they were generated inside or outside Canada. We therefore use the conservative assumption that they were generated outside Canada, thus generating a conservative estimate for GST. We do not estimate any offsets to the GST payments, on the assumption that even though the company may offset some of its expenses against GST, that GST revenue is likely to be paid by the company's suppliers. Note also that there is no equivalent to the PST on inputs at the federal level. For the fraction of employees outside BC we have too little information on whether they work inside or outside Canada. We therefore use the conservative assumption that they work outside Canada, which generates a conservative estimate for federal taxable corporate income. For the federal income taxes we estimate the federal average income tax rate to be 18.87%, ranging from 19.20% in 2001 to 18.64% in 2008.

[2]Note that our income tax calculations do not take into account any deductions that employees may use, generating an upwards bias. At the same time, it is possible that some employees have other sources of income that would increase their average tax rates, resulting in a downward bias of our estimates.

The above methodology allows us to estimate the seven types of taxes paid by the 317 companies in our sample. For the final step of the analysis we want to estimate the total amount of taxes generated by the companies in the program. In the results we will report so-called "tax multipliers" for BC and Canada. These tax multipliers are constructed as follows. For the BC tax multiplier we sum up all the BC taxes paid by the 317 sample companies and divide this by the sum of all the tax credits they received. The Canadian tax multiplier is obtained by summing all BC and federal taxes and dividing the total by the sum of the combined BC and federal tax credits. We then use the tax multipliers to estimate the aggregate amounts of tax credits and taxes paid, at the provincial and federal level. We also use these multipliers to estimate the annual amounts. Note that calculations are based on the amounts of tax credits issued in a particular calendar year. They therefore do not match exactly the timing of the taxes paid, nor the fiscal year aggregates reported by the Ministry.

Our estimates of tax credits paid are highly accurate, although it should be noted that the recipient companies may well have received other tax credits, most notable Scientific Research and Experimental Development, as well as government grants such as National Research Council and others. By contrast, any estimation of taxes, including ours, requires methodological assumptions that may lead to potential biases in the estimates. Our assumptions may lead to upward or downward bias of our computed tax calculation. Let us re-emphasize two main sources of upward and two main sources of downward biases.

In terms of upward bias, our aggregation method uses the information from the 317 sample companies, but applies it to all the tax credits issued, including the 202 companies for which we did not have sufficient information. Our methodology effectively assumes that these companies behave similarly as the 317 for which we have information. It would be easy to relax this assumption. For example, if one were to assume that the 202 missing companies never generated any taxes, we would have to reduce the aggregate taxes by 15.2%, representing the fraction of tax credits used up by these missing companies. A second potential upward bias may stem from our treatment of missing year observations for the 317 companies. If we face missing data for a particular year, say because of a missing financial statement, we estimate tax receipts to be the average amount of taxes paid in all other years. It is possible however that fewer taxes were paid in the missing years than the average paid in the other years.

The two main reasons that our estimates may underestimate taxes are missing data and missing taxes. In terms of missing data, our methodology for estimating wages is likely to underestimate the true amount for several reasons: we are often unable to identify all the wages paid to employees, we are unlikely to identify founder compensation, and we do not attempt to calculate taxes based on the wages generated by the companies' contractors and consultants, let alone suppliers. We are also likely to underestimate revenues and profits generated outside BC, but within Canada. And we do not capture any of the taxes after an acquisition: these could be significant, given that acquisitions are a common exit option for successful companies.

In terms of missing taxes, our study did not capture several potentially important sources of tax revenues, most notably capital gains taxes, property taxes and taxes generated by the venture capital firms.

4.2 | Results on total taxes and tax credits

The total taxes and tax credits are shown in Table 3 below. The data shows results for the entire program, as well for a breakdown of tax credits from the retail and nonretail segments of the program. Recall that taxes from companies that made use of both retail and nonretail tax credits were apportioned according to the fraction of tax credits received from those two types of investors.

The most important finding is that the taxes generated by the program recipient companies are clearly larger than the total amounts of tax credits issued to BC investors. This is true both at the provincial and the federal levels, and it is remains true for both the retail and nonretail portions of the VCP.

The overall tax multiplier of 1.98 suggests that for every dollar of tax credit issued under the program, a company generates $1.98 of provincial taxes; and $2.92 of Canadian taxes (combined provincial and federal).

The Canadian multiplier is very similar for the retail (2.92) and nonretail (2.91) portions of the program. However, the BC multiplier is 42% lower for the nonretail portion (1.41) than for the retail portion (2.45). This reflects the fact that the federal government, while benefiting from the taxes paid by all companies in the program, only provides tax credits to parts of the retail program (specifically the EVCC), but does not contribute at all to the nonretail portion of the program.

Another interesting finding is that the retail portion is always larger than the nonretail portion. This contrasts with the findings from Table 1, where we saw that there are more companies in the nonretail segment than in the retail segment. It points to the fact that the companies in the two programs are very distinct in terms of size. Recall that most companies in the program are in the early stages of their life cycle, a fraction of which is expected to grow into significant tax-generating corporations. This is particularly true for the nonretail segment of the program, which are used by companies at a very early stage of their development.

Table 3: Aggregate Taxes and Tax Credits

	All	Retail Portion	Non-retail Portion
BC Taxes Paid	$379.57	$257.01	$122.55
Federal Taxes Paid	$368.04	$238.49	$129.55
Canadian Taxes Paid	$747.61	$495.50	$252.10
BC Tax Credits	$191.44	$104.73	$86.72
Federal Tax Credits	$64.81	$64.81	$0.00
Canadian Tax Credits	$256.26	$169.54	$86.72
BC Multiplier	1.98	2.45	1.41
Canadian Multiplier	2.92	2.92	2.91

Table 3 shows the aggregated results for the period 2001-2008. We are also interested in how these results develop over time. Table 4 provides an annual breakdown of taxes and tax credits. However, as discussed in Section 3, all estimates should be considered as approximations as it is not always possible to provide an exact timing of taxes and tax credits.

Table 4: Annual Taxes and Tax Credits for the Period 2001-2008

Taxes and credits by year, in $M	2001	2002	2003	2004	2005	2006	2007	2008	Total 2001-2008
BC Taxes Paid	$47.18	$40.91	$39.57	$47.21	$39.72	$51.60	$58.14	$55.24	$379.57
Federal Taxes Paid	$45.09	$41.13	$40.21	$46.33	$39.88	$47.60	$56.89	$50.90	$368.04
Canadian Taxes Paid	**$92.26**	**$82.04**	**$79.78**	**$93.55**	**$79.60**	**$99.20**	**$115.04**	**$106.14**	**$747.61**
BC Tax Credits	$21.62	$17.89	$12.31	$23.36	$24.55	$31.53	$36.07	$24.12	$191.44
Federal Tax Credits	$14.43	$10.12	$6.53	$7.17	$5.99	$7.57	$6.63	$6.37	$64.81
Canadian Tax Credits	**$36.05**	**$28.01**	**$18.85**	**$30.53**	**$30.54**	**$39.10**	**$42.70**	**$30.49**	**$256.26**
Net BC Taxes	$25.56	$23.02	$27.26	$23.86	$15.17	$20.07	$22.08	$31.12	$188.13
Net CDN Taxes	**$56.21**	**$54.03**	**$60.94**	**$63.02**	**$49.05**	**$60.10**	**$72.34**	**$75.65**	**$491.35**

Probably the most important insight from Table 4 is that taxes exceed tax credits in every year. We also note both tax credits and taxes are relatively stable over time. Unlike the strong cycles frequently observed with private venture capital investing, we find that investments remained reasonably steady throughout the period. Moreover, the data suggests a slight upward trend in the amount of taxes paid. Most notably, the last row shows that net federal taxes increase approximately 29% in 2007 and 2008, relative to the average over the period 2001-2006.

Table 4 provides insight into the overall trend for companies that are within the program. However, it does not capture the full dynamic impact that the tax credits may have, as it does not measure the legacy impact of companies that have matured beyond the program. Once a successful company is acquired, it leaves the dataset, but its economic activities persist. A good example for this is Aspreva Pharmaceuticals Corporation, which was sold for over US$915M to Galenica Holding SA. The company continues to have a local presence in BC. Probably more important, several managers from Aspreva went on to work for new local companies, such as MedGenesis Therapeutix Inc. Moreover, many of the investors who benefitted from Aspreva's success reinvested funds into the next generation of start-ups, including Sirius Genomics Inc. and Protox Therapeutics Inc.. The appendix provides a short case study on the long-run impact of Aspreva Pharmaceuticals Corporation.

4.3 | Results on breakdown of taxes

Table 5 provides a breakdown of the main types of taxes paid. While Tables 3 and 4 report aggregate dollar amounts, Table 5 reports the taxes on a per-company basis. This normalization helps to draw out some of the important differences between companies financed by retail versus nonretail investors. Note that the "Retail VC Funded" category now includes all companies that receive funding from retail investors, irrespective of whether they also received funding from non retail investors. The "Not Retail VC Funded" includes all companies that had no retail investors.

The most important insight from Table 5 is that sales taxes are main source of tax revenues at the provincial level, accounting for a third of all taxes paid. At the federal level, employee income taxes are the largest source, accounting for 31% of all taxes paid. Corporate taxes are less important, accounting for less than 3% of the tax revenues.

Note that the introduction of the Harmonized Sales Tax (HST) might affect the future composition of taxes, especially since companies should be able to offset their PST on inputs against PST on outputs, suggesting decreased provincial tax revenues. There may also be some indirect effects of HST not accounted for by this.

Table 5: Breakdown of Different Taxes Generated by Program Companies

Taxes Paid Yearly averages per company	All Companies	% of total taxes	Retail VC Funded	Not Retail VC Funded
PST per Company on Outputs	$68,825	18%	$154,315	$22,760
PST per Company on Inputs	$62,034	17%	$144,641	$17,523
BC Corporate Tax	$3,902	1%	$10,353	$426
BC Income Tax	$54,035	14%	$98,943	$29,837
GST per Company	$61,907	17%	$140,595	$19,507
Federal Corporate Tax	$7,124	2%	$18,402	$1,047
Federal Income Tax	$116,522	31%	$214,413	$63,774
Total	$374,349	100.00%	$781,662	$154,875

5 | Economic Performance

5.1 | Methodology

In this section we consider several key economic indicators that characterize the economic activities of the companies funded in the VCP. The main focus is on company employment, wages, revenues and assets, which are the standard measures of economic activity. While we are able to draw on a large variety of data sources, the data still remains incomplete to varying degrees, for a variety of reasons. Employment figures, for example, are never reported in the annual financial statements. We report on the number of companies for which at least one, and also at least two years of data were available. If data were missing for some year(s), but available for both earlier and later year, we used the growth rate for the available years to estimate the data for the missing years. If a company is known to have gone out of business (but not in case of an exit via acquisition or IPO), we set employment, wages, revenues and assets to 0 for the year after the last year of operations, to account for the cessation of business activities. All tables report the number of companies with at least one year of data. For those calculations that require more than one year of data, the number of companies actually used is lower since all companies with only one year of data are naturally dropped.

The tables below are reporting per-company averages. "Annual averages per company" are always based on all companies with at least one year of data. "Annual average increases" and "growth rates", require at least two years of data. An annual average increase is calculated as the difference in values between two adjacent years, whereas the average annual growth rate is calculated by taking an average of a company's annual growth rates. Finally, the compound annual growth rate is calculated as the annual growth rate using only the first and last available years of data. Both the average annual growth rate and the compound annual growth rate have advantages and disadvantages. The average annual growth rate captures the fact that a company may have created some economic value (say revenues) for several years, even though it may have ceased to operate in the end. The compound annual growth rate does not recognize the economic value created in interim years, since it only recognizes the initial and final data values; however, the former method values all growth rates equally, irrespective of the initial number they are based on. As a consequence we may find that the average annual growth rate is particularly influenced by outliers measured in the early stages of company growth where the denominator is very small.

A challenge to the estimation of wages is that many financial statements do not directly identify the total wage bill. Sometimes wages are found on the income statement, but they could also be found in other statements or the notes, where they are recorded as part of a capitalized asset or part of research and development expenses, or provided in a schedule of a larger expense like marketing or general and administration. While the data coders looked through the entire financial statement to record wages found in any possible recording method, it is likely that they underestimated to the total wage bill for several reasons. First, compensation to founders and senior managers is not always identified. Second, the above mentioned methodology only recognizes those wages that could be found, but is likely to miss miscellaneous other wages not mentioned in the financial statements. Third, some companies make use of contractors that generate wage income, which we do not recognize with our methodology.

5.2 | Results on employment and wages

Table 6 reports the results for employment, reporting totals as well as a breakout by whether a company is retail or nonretail funded. We find that, on average, companies employ approximately 13 full-time employees. Companies funded by retail investors are more than 3 times larger than those funded by only nonretail investors (25.15 versus 8.17), reflecting that the retail investors invest at a later stage.

Probably the most important finding is that companies in the program add 2.43 employees per year, representing 18% of the average employment. Retail backed companies are at a stage where they generate significantly more jobs than nonretail backed ones (5.25 new jobs per company versus 1.08), suggesting that retail investors focus on growth companies whereas nonretail focus mostly on the initial exploratory stages of company formation. However, if we compare the number of new jobs created relative to the amount of tax credits used, we note that the nonretail generates more jobs on a per-tax-credit basis (2.15 jobs per $10K versus 0.3). Recall that the retail column includes the 61 companies that received both types of financing.

Table 6: Employment – with Retail Breakdown

Employees	All Companies	Retail VC Funded	Not Retail VC Funded
Average per Company	13.23	25.15	8.17
Average Annual Increase (Jobs Created)	2.43	5.26	1.08
Jobs Created per $10K of Tax Credit	1.55	0.30	2.15
Average Annual Growth Rate	48.97%	76.33%	35.40%
Compound Annual Growth Rate	11.80%	35.00%	0.11%
Number of Companies	282	84	198

Figure 1 examines the year-to-year patterns of employment, focusing specifically on the annual average increases in employment, i.e., the number of new jobs. The most important message from this figure is that almost all annual increases are in the positive range, indicating that on average companies grew every year. After 2003 the average increase for all companies remains fairly stable, with more than 2 new jobs per year. With the exception of 2003, retails backed companies add more employees than nonretail backed companies. Nonretail backed companies created net jobs in most years, with the exception of the 2002 and 2008 recessions.

Figure 1: Trends in Job Creation

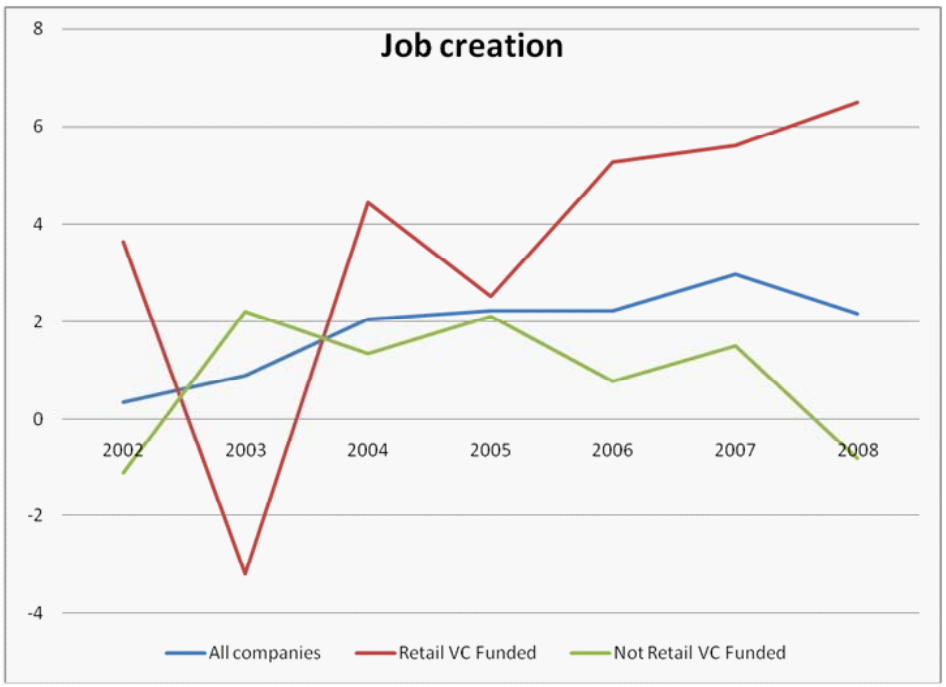


Table 7 examines companies' wage bills. We find that total wages exceed $600,000, which corresponds to over 150% of the equity capital received within the program, showing that wages constitute a large fraction of the companies' costs. The wage bill increases by almost $75,000 annually.

Table 7: Total Wages Paid – with Retail Breakdown

Wages	All	Retail VC Funded	Not Retail VC Funded
Average per Company	$635,173	$1,160,665	$352,019
Average Annual Increase	$74,626	$31,706	$96,462
Average Annual Growth Rate	122.52%	154.02%	105.91%
Compound Annual Growth Rate	55.01%	87.38%	37.07%
Number of Companies	317	111	206

Tables 8 and 9 build on the analysis of Tables 6 and 7, and provide a regional breakdown of the employment and wage data. Since the Greater Vancouver Regional District contains by far the most companies, its average values resemble those of the overall program average. The Capital Regional District on Vancouver Island also matches the average fairly closely, except that we find more modest average wages and wage increases. The more important finding concerns the rest of BC, where companies have 25% fewer employees (9.87 compared to the average of 13.23), add fewer jobs (0.38 compared to 2.43), and pay 45% less in wages ($290K instead of $635K). The fact that companies in the rest of BC are smaller and grow at a slower pace suggests that agglomeration economies matter, and that entrepreneurial companies outside of BC's two main urban areas pursue different growth strategies.

Table 8: Employment – with Regional Breakdown

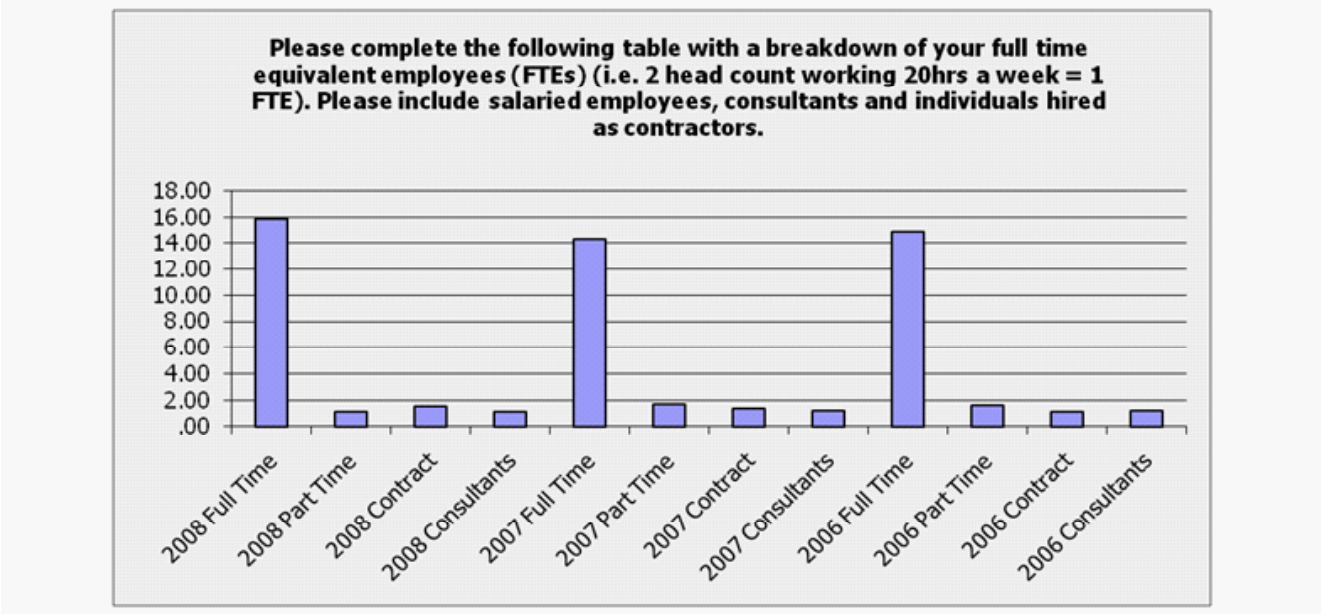
Employees	All	GVRD	CRD	Rest of BC
Average per Company	13.23	14.59	11.46	9.87
Average Annual Increase (Jobs Created)	2.43	3.06	2.88	0.38
Jobs Created per $10K of Tax Credit	1.55	2.14	0.54	0.22
Average Annual Growth Rate	48.97%	59.80%	20.70%	27.72%
Compound Annual Growth Rate	11.80%	19.27%	-6.12%	-4.02%
Number of Companies	282	192	26	64

Table 9: Total Wages Paid – with Regional Breakdown

Wages	All	GVRD	CRD	Rest of BC
Average per Company	$635,173	$770,017	$341,858	$290,243
Average Annual Increase	$74,626	$88,773	$52,040	$34,787
Average Annual Growth Rate	122.52%	112.10%	140.10%	151.10%
Compound Annual Growth Rate	55.01%	46.24%	1.34%	106.67%
Number of Companies	317	225	27	65
Number of Companies	282	192	26	64

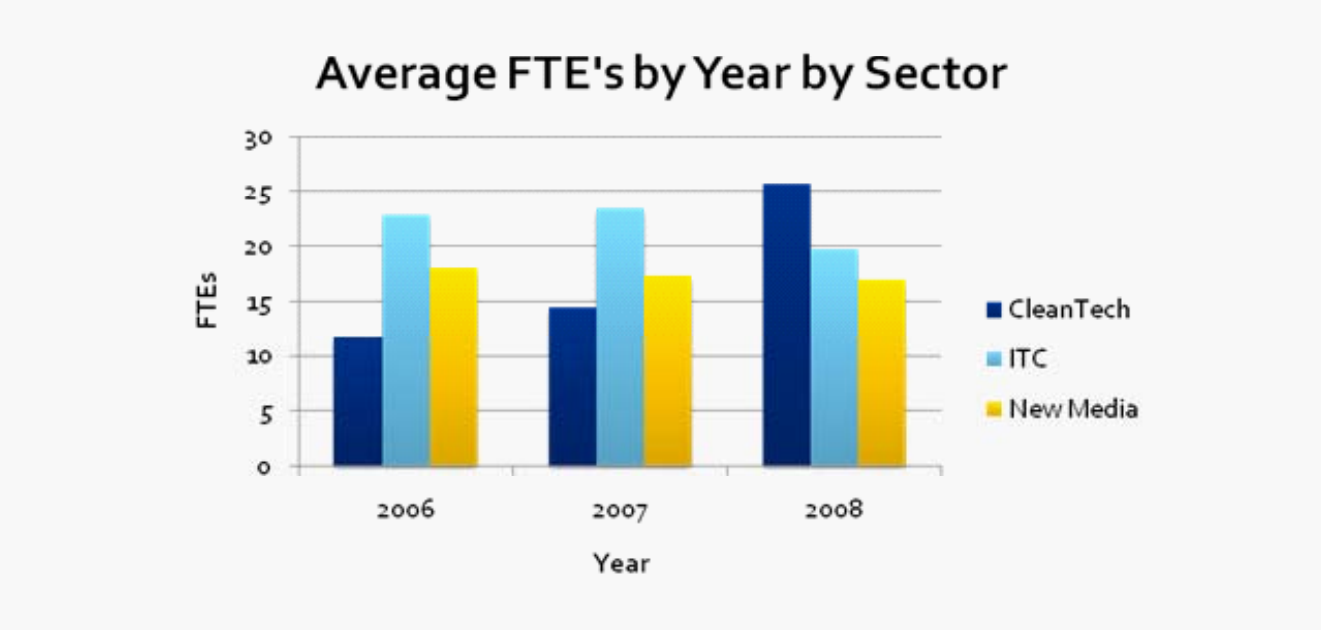
Our survey inquired about the type of positions. We find that the vast majority are full-time employees, and that the companies have relatively little part-time or contract personnel, as shown in Figure 2:

Figure 2: Average Number of Employees, by Employment Type



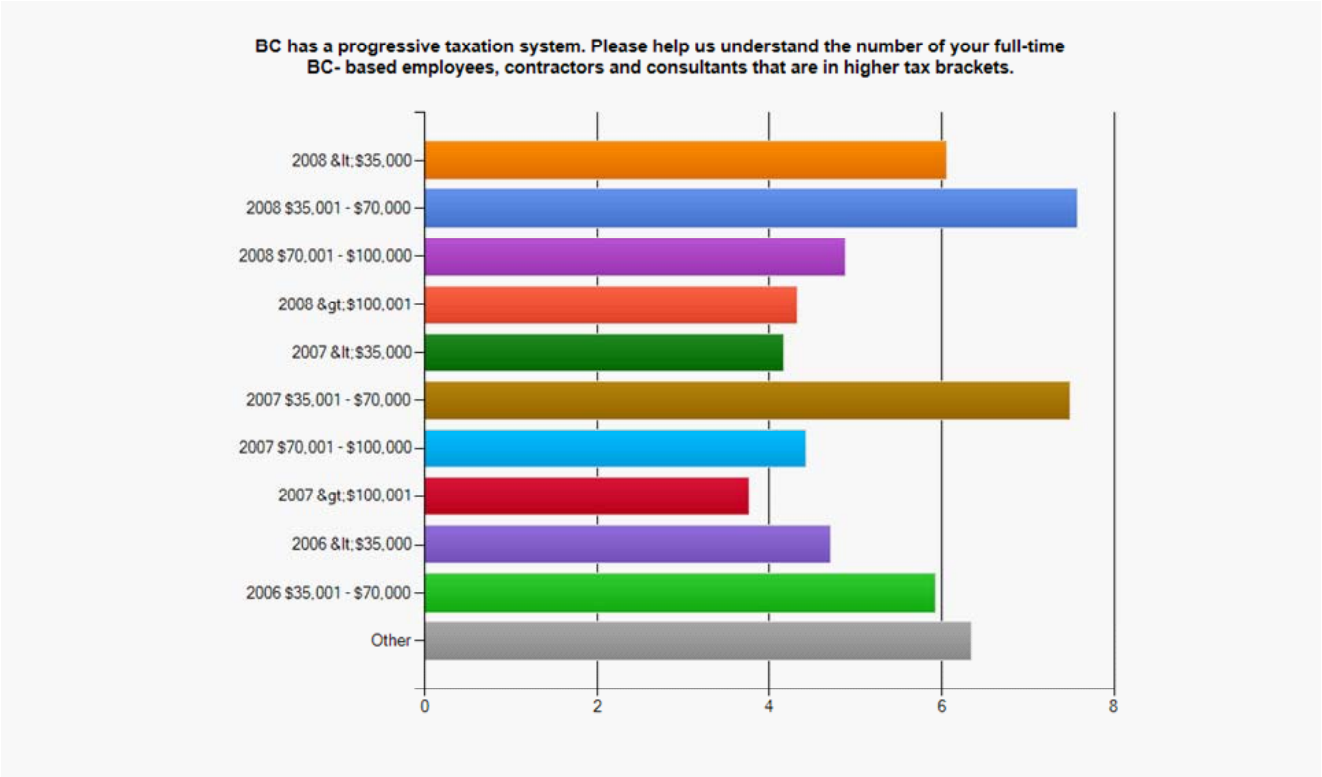
The survey data also allows for a sector breakout, distinguishing between cleantech, ITC (information technology and communications) and new media. Figure 3 indicates the number of Full Time Employees for each sector from 2006 to 2008. The figure shows the greatest growth in the cleantech sector, although that result is partly driven by a small number of outlier companies. Both ITC and new media show a modest decline in employment, suggesting only a moderate adjustment to the recession.

Figure 3: Employment Figures from Survey Respondents



The survey also asked companies to indicate the number of employees that they had in various tax brackets. The responses to the survey questions provide an important input into the tax calculations discussed in Section 4.1., but the data are also of interest by themselves. Figure 4 shows the distribution of employees across intervals that approximate the current Canadian income tax brackets. The figure shows that the largest fraction of employees earns between $35K and $70K, and a nontrivial fraction earns above $100K.

Figure 4: Average Number of Employees, by Income Brackets



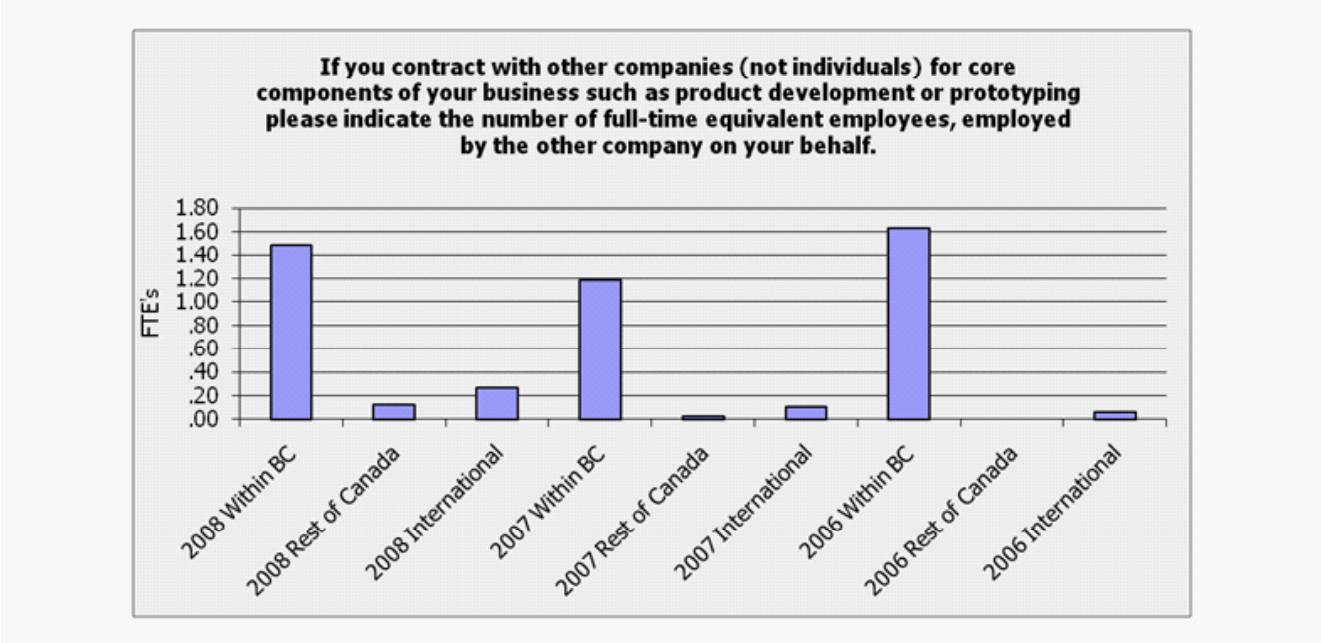
The survey also asked respondents to indicate where their employees were located. Table 10 shows that over 93% of the companies' workforce is located in British Columbia. Most of the employees outside of BC are not in Canada but international. Based on interviews and anecdotal evidence, it appears that most international employees are associated with sales and marketing.

Table 10: Labour Force by Geographic Location of Work Place

	FTE's	% of Labour Pool
2008 Within BC	16.9	93.7%
2008 Rest of Canada	0.1	0.7%
2008 International	1.0	5.6%
2008 Total	**18.0**	
2007 Within BC	18.2	94.6%
2007 Rest of Canada	0.1	0.7%
2007 International	0.9	4.7%
2007 Total	**19.2**	
2006 Within BC	17.4	93.0%
2006 Rest of Canada	0.6	2.9%
2006 International	0.8	4.1%
2006 Total	**18.8**	

The survey also inquired about outsourcing. Figure 5 shows that very few companies contract for services, and if so, the jobs remain within BC. In 2008, 53% of responding companies contracted out some work, albeit only very limited amounts.

Table 5: Average Outsourced Employment, by Geographic Location



5.3 | Results on revenue and asset growth

In addition to employment and wages, we examine the economic performance of the companies in the program by measuring their revenues and asset growth, both of which are standard measures of company performance.

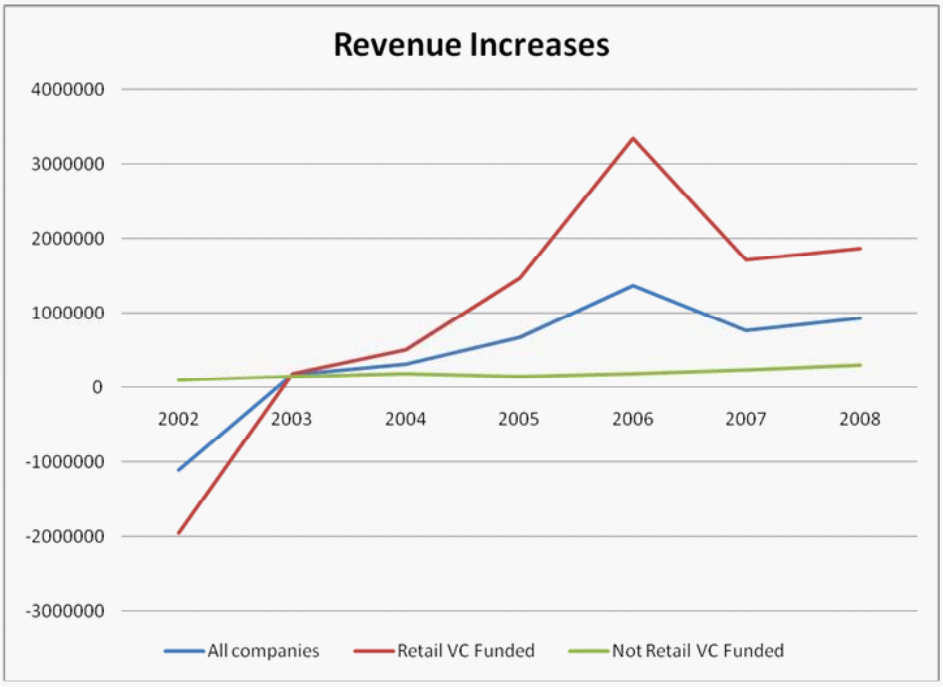
Table 11 shows that companies in the program have average revenues of $2.27M, and their revenues increase by over half a million dollars on average. We find that companies funded by retail investors have more than 7 times larger revenues than those funded by nonretail investors ($5.18M versus $0.70M). This is in part driven by the fact that many nonretail backed companies are in fact pre revenue. The presence of companies with very little revenues also explains the extraordinary average annual growth rates, which cannot be compared well with the growth rates of more established companies.

Table 11: Revenues – with Retail Breakdown

Revenues	All Companies	Retail VC Funded	Not Retail VC Funded
Average per Company	$2,275,651	$5,179,293	$703,436
Average Annual Increase	$571,827	$1,184,372	$235,087
Average Annual Growth Rate	2429.14%	3452.96%	1868.07%
Compound Annual Growth Rate	136.68%	54.91%	188.66%
Number of Companies	316	111	205

Figure 6 shows the year-to-year evolution of the annual revenue increases. With the exception of the tech downturn in 2002, companies continue to grow their top line revenues. Indeed, the figure shows that the annual increases remain in the positive range every year after 2002, reaching a peak in 2006. Overall, this figure suggests that the companies in the program are resilient despite the recent macro-economic trends.

Figure 6: Trends in Annual Revenues Increases



Revenues contain a strong export component. Our data suggest that 47.35% of all revenues are generated outside BC. In addition, the survey shows that the percentage of sales outside BC is particularly high in the cleantech sector, reflecting the fact that energy is relatively cheap to produce in BC. An interesting point in case is Endurance Wind Power Inc. Appendix B provides a short case study about this company, which sells over 90% of its wind turbine products outside Canada.

Table 12 examines the assets of the companies in the program. The average increase of $657K represents over 18% of the average level of $3.56M. Again we find significantly larger values for companies funded by retail VCs.

Table 12: Assets – with Retail Breakdown

Assets	All Companies	Retail VC Funded	Not Retail VC Funded
Average per Company	$3,558,022	$7,861,939	$1,227,608
Average Annual Increase	$657,622	$1,447,983	$219,487
Average Annual Growth Rate	608.31%	1463.15%	129.23%
Compound Annual Growth Rate	478.49%	1235.89%	46.91%
Number of Companies	316	111	205

Tables 13 and 14 are similar to Tables 11 and 12, providing a regional breakdown. Similar to the results of Section 5.2, we find that companies outside of BC are significantly smaller and grow significantly slower than the companies in the major urban areas of Vancouver and Victoria. The elevated revenues and assets for the Capital Regional District are driven by a few outlier companies that experienced high growth during that period. We should not over-interpret these numbers, given that they are based on only 27 companies, representing less than 10% of our sample.

Table 13: Revenues – with Regional Breakdown

Revenues	All	GVRD	CRD	Rest of BC
Average per Company	$2,275,651	$2,528,964	$3,250,070	$997,937
Average Annual Increase	$571,827	$437,422	$2,620,098	$195,077
Average Annual Growth Rate	2429.14%	2923.22%	2730.95%	632.52%
Compound Annual Growth Rate	136.68%	86.65%	622.88%	82.45%
Number of Companies	316	224	27	65
Number of Companies	282	192	26	64

Table 14: Assets – with Regional Breakdown

Assets	All	GVRD	CRD	Rest of BC
Average per Company	$3,558,022	$3,813,706	$6,044,082	$1,610,326
Average Annual Increase	$657,622	$374,355	$4,062,675	$184,631
Average Annual Growth Rate	608.31%	793.30%	216.65%	126.11%
Compound Annual Growth Rate	478.49%	640.93%	88.94%	82.35%
Number of Companies	316	225	27	64
Number of Companies	282	192	26	64

5.4 | A comparison with companies outside the VCP

The main analysis of this report focuses on the performance of companies within the VCP. To take a broader perspective it is desirable to compare companies against similar companies outside the program. However, finding a truly comparable control sample is difficult given the limitations of accessing private company data. We obtained access to a commercial database from Bureau van Dyck (BvD henceforth) that includes data about BC companies originally collected by Dunn and Bradstreet. The database contains a total of 150,780 BC companies. It includes a very broad spectrum of companies, but still does not contain all BC companies. We matched them against our sample of program companies and identified 91 companies that appear in both samples. While our study rendered a lot more information on these 91 companies, we only use BvD's own data for them to make for a fair comparison with the full BvD sample. We also define a second, broader control group in the BvD data that consists of 49,651 high technology companies based on a NAIC industry classification code.

Table 15 shows the comparison of companies within and outside the program. The most important result is that the companies in the program outperform their controls groups on every measure: they are larger, they create more new jobs, and their revenues grow significantly more. Some of the differences are quite striking: the 91 program companies found in the BvD dataset generate 1.09 new jobs per year, whereas companies in the broad control group creates 0.13 jobs and firms in the narrow high technology control group actually lose 0.26 jobs over the period. This contrast is even more dramatic if we remember from Table 5 that the average company in the program actually adds 2.43 jobs per year. The difference is due to the fact that the 91 program companies found in the BvD dataset are not fully representative of all companies in the program. Indeed, the BvD data captures a slight larger set of companies, in terms of both employees and revenues. However, it is not clear that this bias should affect the main insight from Table 16, because selection biases are likely to affect both program companies and the control group.

Table 15: Comparison of Program Companies against Control Groups

Employees	VCP	BC High Tech	BC All
Average per Company	18.40	11.02	12.12
Average Annual Increase	1.09	-0.26	0.13
Average Annual Growth Rate	15.79%	13.50%	14.04%
Compound Annual Growth Rate	10.71%	7.50%	7.50%
Number of Companies	91	49651	150780
Employees	**VCP**	**BC High Tech**	**BC All**
Average per Company	$5,779,654	$1,312,520	$1,917,558
Average Annual Increase	$2,121,877	$1,238	$116,200
Average Annual Growth Rate	57.63%	18.68%	28.54%
Compound Annual Growth Rate	40.33%	11.30%	12.46%
Number of Companies	105	48343	146022

6 | Financial Performance

We now turn to the financial performance of companies in the VCP. In this section we examine the companies' success in terms of raising funds and generating an exit for their investors, and their survival chances.

6.1 | Fundraising

We first examine how much equity was raised within and outside the program. We also examine the amount of funds raised as debt. Our base data come from the annual financial statements and the other ministry documents. The Thomson One VentureXpert was used to augment the data.

Table 16 summarizes our main findings. Companies raise an average of $1.3M per year, and $7.2M in total. The majority of the equity is raised outside of the VCP. The average investment amount claimed within the program amounts to $415K per year, for a total of $2.1M.

A useful way of summarizing the fundraising information is to consider what we call the equity and debt leveraging factors. The equity leveraging factor is defined as the total amount of equity raised (excluding the equity raised in the VCP), divided by the equity raised in the VCP. The debt leveraging factor is defined as the total amount of short and long term debt raised, divided by the equity raised under the VCP. The equity leveraging factor is 376%, indicating that for every dollar of equity raised in the program, companies raise an additional $3.76 of equity outside the program. In addition, the debt leveraging factor of 115% suggests that they also raise an additional $1.15 of debt. Note that the equity leveraging factor differs from a simple comparison of the averages reported in Table 17 (e.g., (total investment – program investments) / program investments = ($7.27M - $2.14M) / $2.14M = 239%), because the average value of a ratio is different from the ratio of the average values.

Retail backed companies raise a lot more money, reflecting the greater cash needs at the growth stage. Interestingly, however, there is almost no difference between retail and nonretail backed companies in terms of their ability to leverage tax credit investment with outside equity, as shown by the fact that their equity leveraging factors are within 10% of each other. Another interesting finding is that nonretail companies access relatively more debt capital, raising $1.29 of debt capital for every dollar of equity capital attracted through the program, compared to $0.90 for retail backed companies. This difference is partly driven by the fact that some large retail backed companies raise very little debt at all.

Table 16 reveals the regional patterns for the fundraising process. The most important finding is that average investment amounts within the VCP are less than half in the rest of BC, compared to Vancouver (GVRD) and Victoria (CRD). In addition we find that the equity leveraging factor of 84% for the rest of BC is less than a quarter the size of the factor for the full sample. Raising equity outside of the two major urban areas remains a formidable challenge to start-up companies. Interestingly, the debt leveraging factor for the rest of BC is close to the sample average, indicating that the shortage concerns equity and not debt financing. Note also that the low debt leveraging factor for the CRD is partly driven by a few large investments that used relatively little debt.

Table 16: Average Fundraising

(in $, per company)	All Companies	Retail VC Funded	Not Retail VC Funded
Total Investments	$7,270,685	$16,970,040	$2,044,332
Annual Investments	$1,274,108	$2,958,430	$366,537
Total Investments Within VCP	$2,142,825	$4,611,774	$812,469
Annual Investments Within VCP	$415,408	$894,732	$157,132
Equity Leveraging Factor	375.94%	381.06%	373.18%
Debt Leveraging Factor	115.40%	90.00%	129.08%
	GVRD	**CRD**	**Rest of BC**
Total Investments	$8,606,409	$10,361,750	$1,363,041
Annual Investments	$1,533,263	$1,450,396	$303,807
Total Investments Within VCP	$2,535,338	$1,739,180	$951,793
Annual Investments Within VCP	$491,167	$280,070	$209,383
Equity Leveraging Factor	435.44%	582.54%	84.17%
Debt Leveraging Factor	121.18%	57.62%	119.37%

Aggregating the total investments of the companies in the sample, we estimate that companies raised a total of $2.3 billion dollars of equity. This is almost certainly an underestimate, because our sample does not contain all the companies in the program. We also estimate the total amount of new debt to be at least $324M.

The survey contains additional insights into the fundraising process. Figure 7 indicates the funds raised from investors that are eligible for the tax credit and from investors outside of the program, as well as the overall amount of funds that were sought. Funds raised from inside and outside the program equal the total funds that were raised in a given year.

Figure 7: Survey Respondents' Fundraising Amounts

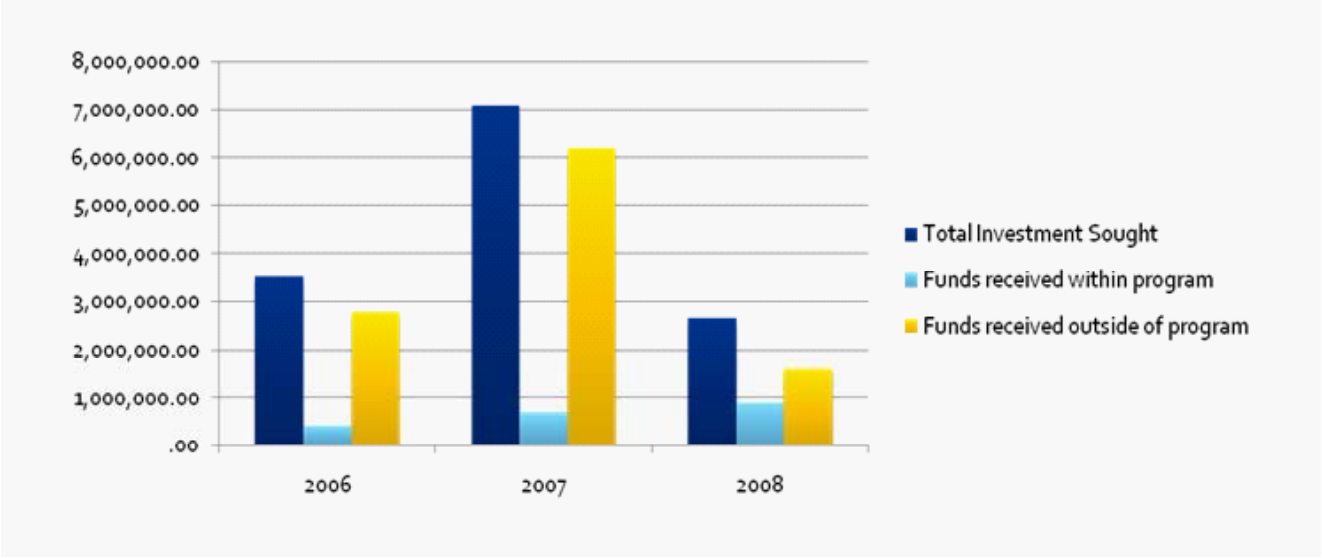


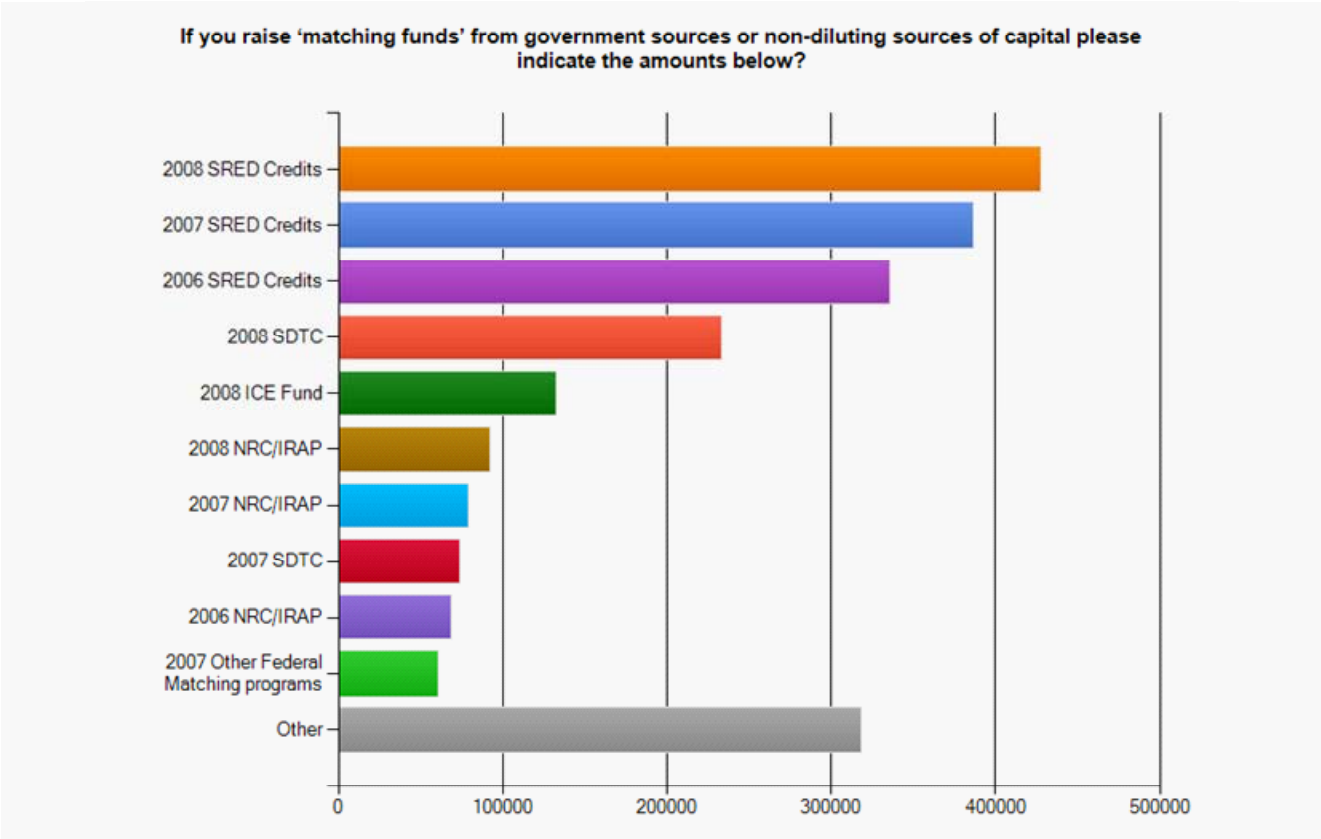
Table 17 shows survey evidence indicating that while overall investments declined with the economy in 2008, investment inside the program grew consistently from 2006 to 2008. This suggests that the government program may play a role in terms of maintaining the supply of capital in economic downturns.

Table 17: Survey Respondents' Attempted Fundraising

Investment Sources			
Growth rate	**2006**	**2007**	**2008**
Total investment sought		100.9%	-62.6%
Funds received within program		66.0%	31.2%
Funds received outside of program		122.4%	-74.3%
Composition of funding source			
Funds received within program	11.7%	9.6%	33.9%
Funds received outside of program	79.1%	87.5%	60.2%
Funds not raised	9.2%	2.8%	5.9%

The survey also inquired about non-dilutive sources of funding: i.e., sources of funding where the company incurs no financial obligations. Sixty-one percent of companies indicated that other government programs such as SR&ED, NRC/IRAP, SDTC or the ICE Fund enhanced their ability to fundraise from private investors. Figure 8 shows the average amounts of funding raised through non-dilutive sources.

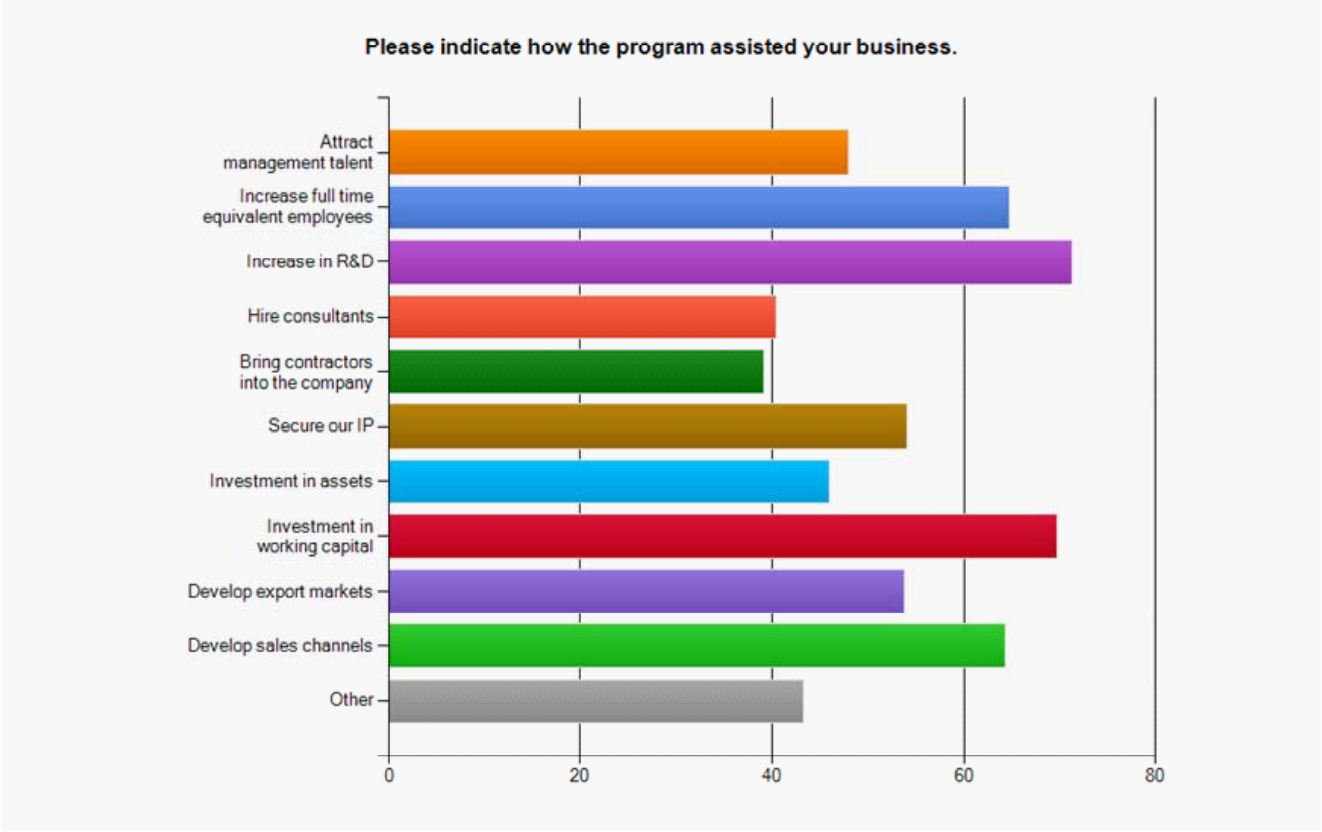
Figure 8: Sources of Non-dilutive Funding



Clevest Solutions Inc., is a good example of a company that made use of the tax credit program, raising most of their funding from angel investors. They then augmented their funding with several non-dilutive funding sources, such as SRED and NRC/IRAP. The appendix features a short case on the company.

The survey also inquired about the use of funds. Figure 9 shows the percentage of respondents who indicated that this use of funds applied to them. Funds were most often used to fund R&D, increase employment and expand working capital. These employment increases reflect the needs of early stage companies to complement technical personnel with sales and marketing resources required for the commercialization of products and services.

Figure 9: Percentage of survey respondents that had following uses of funds



6.2 | Exit and survival analysis

In this section we examine the financial success of companies in the VCP by looking at exit events. Exits through acquisition or initial public offering (IPO) are widely considered to be the landmarks of investment success in start-up companies. Ideally one would like to study investor returns, or exit values. In general the data required for such a calculation is not publicly available and we had no privileged access to any private data sources (see also Section 7). Hence we limit our focus to analyzing the rates at which exit occurs. In addition, we also look at the rate at which companies cease operations.

For the exit and survival analysis we make use of the entire population of 519 companies. We examine their active/inactive status as of March 2010, and any exit information for each company from the start of the program to the end of 2009. The exit information combines research from a variety of data sources. Specifically, to determine whether each company is

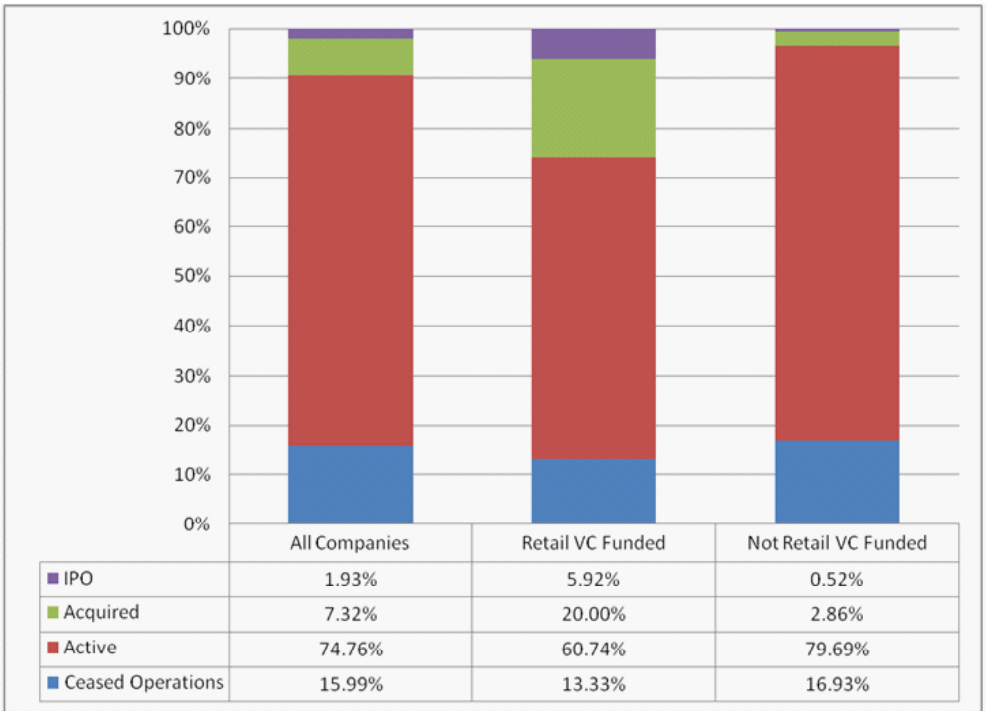
still active or not, the following steps were undertaken. First, for each company we searched for possible exits via IPO or acquisition, using several commercial databases, namely Thomson One (VentureExpert, SDC Global New Issues and SDC Mergers and Acquisitions) and Capital IQ. Second, each company was searched on the BC Online database. If a company existed on this database, it was marked as active. Third, all companies that returned the survey associated with the VCP study was marked as active. Fourth, all remaining companies were searched on Google and the Electronic Yellow Pages to check for active status. Companies with active websites or phone numbers were marked as active. Finally, information regarding the status of companies provided by local experts and venture capital firms was used to augment the information gained from all previous sources.

Figure 10 shows the exit and survival rates for the entire sample, as well as for retail and nonretail backed companies. The most important result is that successful exits, as measured by IPOs and acquisitions, occur in less than 10% of all companies. By comparison, Brander, Du and Hellmann (2010) examine exit rates worldwide for the period 2000-2008, finding exit rates of 14.4% worldwide and 20.63% for Canada; IPOs account for 4.53% of all exits worldwide and 5.47% for Canada, the remainder of the exists being acquisitions.

Breaking out exit rates by whether or not companies are funded by retail VCs, we find that the exit rate is significantly higher for retail backed companies than for nonretail backed companies. It should be noted here that the companies not funded by retail VCs are significantly smaller and younger. In that sense, the comparison with the results of Brander Du and Hellmann are more appropriate for the retail VC backed companies. For the retail backed companies, the exit rate is actually higher than that of Brander, Du and Hellmann (2010). For the nonretail backed companies, however, the data suggests that exit remains a significant challenge, which may be partly due to the early stage nature of the program.

Another interesting finding from Figure 10 is that the failure rate is relatively low across all segments of the program. This is a sign of the resilience of companies in the program, although informal discussions with program participants also suggest that some companies may be effectively out of business but retain the corporate shell for other reasons.

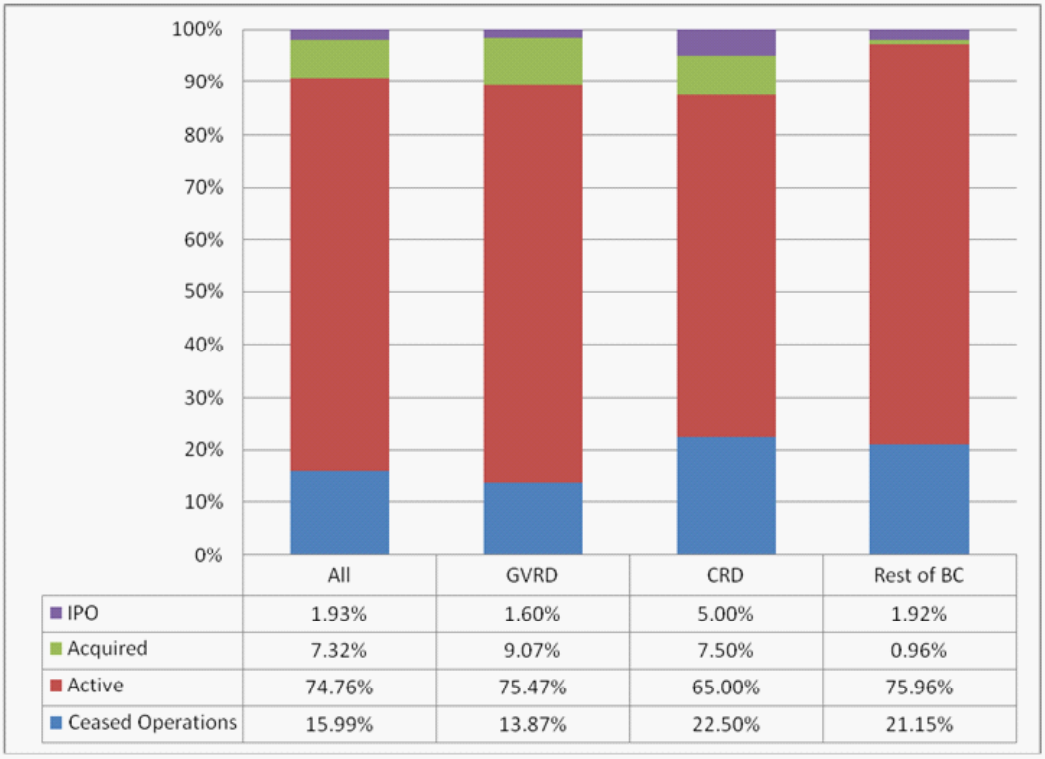
Figure 10: Exit and Survival – with Retail Breakdown



	All Companies	Retail VC Funded	Not Retail VC Funded
IPO	1.93%	5.92%	0.52%
Acquired	7.32%	20.00%	2.86%
Active	74.76%	60.74%	79.69%
Ceased Operations	15.99%	13.33%	16.93%

Figure 11 provides an analysis of exit and survival separating out the main regions of British Columbia. The most striking finding is that the exit rate for the rest of BC is much lower than for the Vancouver and Victoria areas. This is related to our previous finding that fundraising is more challenging in the rest of BC, indicating that companies outside the two major urban areas are facing constraints in terms of equity financing at all stages of the lifecycle, including the exit stage. It may also reflect differences in company's business model, in terms of a preference for continued business operations.

Figure 11: Exit and Survival – with Regional Breakdown



	All	GVRD	CRD	Rest of BC
IPO	1.93%	1.60%	5.00%	1.92%
Acquired	7.32%	9.07%	7.50%	0.96%
Active	74.76%	75.47%	65.00%	75.96%
Ceased Operations	15.99%	13.87%	22.50%	21.15%

7 | Financial Performance of Retail Funds

In this section, we examine the financial performance of the retail funds, namely the three VCCs (BC Advantage, Discovery and Pender) and the EVCC (Working Opportunity Fund, or (WOF) administered by GrowthWorks. We discuss their fundraising, investments and returns. Our analysis focuses on the period 2003-2008, because the VCC funds were only started between November 2002 and August 2003.

The data for Sections 7.1 and 7.2 was obtained from the Ministry of Small Business, Technology and Economic Development. The returns computations in Sections 7.3 and 7.4 are based on data reported in publicly available data sources, namely GlobeAdvisors and Datastream International and the Canadian Venture Capital Association (CVCA).

7.1 | Fundraising by retail funds

Table 18 shows that the amounts raised by retail funds totaled $394M over 2003-2009, and that this amount was split about equally between the retail VCCs and WOF. The most important insight from Table 18 is the significant decline of fundraising amounts over time. By the end of 2009, fundraising was down by 64% relative to the peak of 2004, with the retail VCCs being down by 40% and WOF by 80%. This downward trend cannot be explained alone by the 2008/2009 recession; it was already apparent by 2007. Relative to WOF, the retail VCCs are more stable over time, in part because the retail VCCs had reached their maximum amount of tax credits in several years, notably in 2004, 2006 and 2007 (not shown in table).

Table 18: Annual Fundraising for Retail Funds

Retail Fund Fundraising (in $Million)	2003	2004	2005	2006	2007	2008	2009	2003-2009
Advantage Growth Fund	$ 0.05	$ 7.00	$ 5.08	$ 3.33	$ 6.15	$ 2.01	$ 0.30	$23.91
Advantage Venture Fund	$11.85	$ 9.93	$10.00	$13.43	$10.00	$ 4.58	$ 5.30	$65.09
BC Discovery Fund	$15.74	$10.02	$ 9.06	$ 6.37	$10.00	$ 8.64	$ 4.20	$64.04
Pender Growth Fund	$ 5.93	$ 7.00	$ 6.97	$ 4.51	$ 5.92	$ 5.42	$ 3.40	$39.15
Total Raised by Retail VCCs	$33.57	$33.95	$31.11	$27.64	$32.07	$20.65	$20.65	$199.64
Working Opportunity Fund	$47.58	$49.54	$34.26	$19.01	$21.13	$12.89	$ 9.65	$194.05
Total Raised by all Retail Funds	$81.14	$83.49	$65.37	$46.65	$53.20	$33.53	$30.30	$393.69

7.2 | Investments by retail funds

In order to understand the investments of the retail funds, it is important to be aware of the investment pacing rules imposed by regulation. The program requirements mandate that retail VCCs invest 80 % of the funds raised in a particular calendar year within two calendar years. The remaining 20% of the funds raised may be spent on expenses. The EVCC program, applicable to WOF, mandates that funds invest 80% of the funds raised in a particular calendar year within four calendar years. Again, the remaining balance of 20% of the funds may be spent on expenses. If the retail funds generate a return on exit of the investment, they may be required to reinvest their costs if the exit too place within 5 years of the investment moment. If the exit take place later than 5 years from the investment moment the retail funds may also reinvest into new portfolio companies; however, they also have other options for using those proceeds.

Table 19 examines the aggregate amounts of investments made by retail funds. WOF investments have been relatively stable over time, ranging from $30M to $40M. Retail VCC investments varied over the years. In their "start-up years" 2003 and 2004, investment amounts were obviously low, but between 2005 and 2007 total investments ranged from $21M to $28M. In 2008, they reached a peak at $34 M, largely driven by the fact that 2007, especially was a strong year for fundraising. In 2009, however, they fell by almost half, reflecting lower fundraising in 2008 as well as the economic downturn.

The data provides partial support for the claim that retail funds play an important role in maintaining the supply of venture capital in an economic downturn. The investment levels are largely, constrained by the investment pacing rules described above. To the extent that fundraising also declines in a recession, the retail VCCs (and to a lesser extent the EVCCs) are likely to lag business cycles by one to two years. This suggests that retail funds would not be able to sustain elevated investments levels in a prolonged recession.

Comparing Tables 18 and 19, we note that over the period 2003-2009, the retail VCCs invested $135M, which is 68% of the funding they raised. The 68% falls short of the required 80% by the programs. However, the investment pacing rules described above allow that funds raised in 2008 and 2009 be invested only in 2010 or 2011. The same investment pacing rules resulted in WOF investing 27% more during 2003-2009 than the funds they raised during this period (investments of $246M, while fund-raising was at $194M). This can be attributed to the fact that WOF funds had raised considerable amounts just prior to the observed time window (more than $70M in each of these three years 2000, 2001, and 2002).

Another important finding that emerges from Tables 18 and 19 is that the three retail VCCs are small funds by the standards of the venture capital industry. None of the funds raised or invested more than $20M per year. In 2008, none of the three funds raised more than $9M; in 2009 none more than $6M. Even with a 20% expense allowance, these firms have relatively small budgets by the standards of the venture capital industry. Operating a retail venture capital fund involves considerable fixed costs, especially if raising funds from retail investors. While an examination of the cost structure of the retail venture capital funds is beyond the scope of this study, it should be noted that if the downward trend in fundraising continues, there are some important open questions about the viability and cost-effectiveness of operating such small venture capital funds.

Table 19: Annual investments for Retail Funds

Retail Fund Investments (in $million)	2003	2004	2005	2006	2007	2008	2009	2003-2009
Advantage Growth Fund	$ -	$ 0.50	$ 2.05	$ 2.81	$ 4.92	$ 3.75	$ 3.50	$17.53
Advantage Venture Fund	$ -	$ 2.53	$ 8.86	$ 7.43	$ 7.41	$15.44	$ 4.70	$46.38
BC Discovery Fund	$ 1.08	$ 3.40	$10.88	$ 5.76	$ 8.43	$11.15	$ 4.50	$45.20
Pender Growth Fund	$ -	$ 3.92	$ 6.48	$ 4.80	$ 2.65	$ 3.50	$ 4.80	$26.15
Total Invested by Retail VCCs	$ 1.08	$10.34	$28.27	$20.80	$23.42	$33.85	$17.50	$135.26
Working Opportunity Fund	$34.84	$39.23	$31.95	$40.35	$35.38	$33.98	$29.84	$245.56
Total Invested by all Retail Funds	$35.92	$49.57	$60.22	$61.15	$58.80	$67.83	$47.34	$380.82

7.3 | Fund returns for retail funds

In this section, we examine the returns of the retail funds at the level of their funds. The objective is to provide an assessment of the investment success of the retail funds by themselves. In this section, we are therefore not yet concerned with the investment success of the individual investors who benefit from the tax credits – we delay that discussion until Section 7.4.

Our returns are reported in terms of holding period returns (i.e, simple "non-annualized" returns over a certain time period). They measure how a $1 investment would have fared over the time period under consideration. To account for the fact that venture capital concerns long-term investments, our analysis focuses on holding period returns over relatively long time periods. We will report holding period returns net of fund expenses as these can be directly computed from the return statistics of the GlobeAdvisors and Datastream International data.

Table 20 reports the percentage holding period returns of the retail VCCs as well as WOF Growth Series 1 over three different periods, namely January 2007 - December 2009 (3 years); January 2005-December 2009 (5 years); and the period since the inception date of the fund and December 2009 (since inception).

It should be noted that we examine returns at a point in time where many financial markets are in turmoil, especially since the onset of the US financial crisis of 2008. Needless to say, Canadian markets, including the venture capital market, are not immune to these "bearish" market forces.

The last column of Table 20 reports returns of a benchmark, namely the returns for so-called captive venture capital funds, as calculated by the Canadian Venture Capital Association (CVCA). The returns reported by the CVCA are based on the return data of captive (or "evergreen") venture capital funds. However, the return data published by the CVCA are the gross returns of funds' portfolio investments. The net returns passed on to investors will be lower because of management fees charged by these funds. To compare the gross-of-management-expenses return of the CVCA to the net-of-management-expenses returns of the retail VCCs and WOF, we subtracted an estimated annual management fee of 3% from the CVCA returns.

The calculation of returns for WOF is complicated by the fact that the funds offered by GrowthWorks mix in a substantial amount of non-venture investments with their investments in WOF. In Table 20 we report the returns for WOF Growth Series 2, one of the more important WOF-based funds. This fund invests not only in WOF but also in Canadian public equities as well as government bonds and liquid assets. For example, in 2009 the WOF Growth Series 2 fund invested 70% in WOF, 7% in bonds and 23% in what boils down to the TSX Composite Index. The percentage of investments of the WOF Growth Series 2 fund in WOF is lower than the 70% figure in 2009, namely 63% in 2008, 48% in 2007, and merely 40% in 2006. The bottom line is that the structure of WOF's funds makes it difficult to assess the return on WOF's investment in venture capital.

Table 20 shows that all retail funds posted negative returns over each of the reported holding periods. This means that each of the funds has generated capital losses over the longer term. Note that many of these capital losses have yet to be realized by retail investors as the programs encourage investors to keep their money invested in the funds for a period of 7 years.

Note also that Table 20 does not include holding period returns for the Advantage Life Science Fund, which was discontinued in April 2009. The Advantage Life Science Fund generated a holding period return of +114.5% between November 2003 and April 2009 and hence generated capital gains for its investors.

Table 20 suggests that investments by the retail VCCs have generated lower returns than comparable funds in Canada based on the reported 3-year and 5-year CVCA returns. The exception to this rule is the Advantage Venture Fund, which has performed roughly in line with the CVCA benchmark[3].

The results of Table 20 form a contrast to the exit analysis of Figure 10 in Section 6.2., where we saw that the retail funds had exit rates that slightly exceed the Canadian average. Theoretically, there are two main reasons why fund returns could be relatively low while exit rates are high. One is that the fund invested at relatively high valuations and therefore did not make

[3]The Advantage Growth Fund was managed by Pender Capital until November 2007, after which BC Advantage took over the management of fund.

a significant return at exit. The other is that fund has high expenses and possibly generous profit sharing for fund managers. While an analysis of the reasons behind the discrepancy between Table 21 and Figure 10 is an important question, it is beyond the scope of this study.

Table 20: Net Fund Returns of the Retail Funds.
Venture capital returns in British Columbia over holding periods ending on 31 December 2009 as based on the net asset values of the currently surviving VCC funds and the Working Opportunity Fund. Calculations are based on data supplied by GlobeAdvisors (Fund data), Datastream International (S&P-TSX Venture Composite Index), and the Canadian Venture Capital Association (Captive VC fund return).

Fund returns	Adv. Growth	Adv. Venture	BC Discovery	Pender Growth	WOF Growth S2	CVCA*
3 years	-47.3%	-10.9%	-20.9%	-18.3%	-17.7%	-17.7%
5 years	-57.2%	-23.6%	-24.7%	-35.3%	-11.1%	-19.3%
Since inception	-57.2%	-23.6%	-30.6%	-35.5%	-15.1%	N/A
Inception date	Jul 2003	Nov 2002	Jan 2003	Aug 2003	Aug 2003	N/A
Years since inception	6.50	7.17	6.80	6.38	6.33	N/A

* Based on Canadian Venture Capital Association performance data for Captive VC funds (assuming a 3% MER for the funds).

7.4 | Investor returns for retail funds

In this section we estimate the returns of individuals who invested in retail funds and obtained a tax credit for it. There are two important reasons that the return realized by retail investors differs from the fund returns described in Table 21. First, investors invest in the funds through a broker who charges a broker fee. Retail investors typically pay a minimum upfront broker fee of 5%. Second, investors in the funds supported by the program obtain their 30% tax credit.

We estimate the holding period return of program investors by combining the fund return statistics with these two factors. Specifically, we assume that the broker fee is 5% and that it is paid at the time the investment is made. The remaining 95% of the invested funds are assumed to deliver a return which is taken from the respective retail fund as reported in Table 21. The 30% tax credit is assumed to be received one year after the investment and is assumed to yield an annual return of 4% over the remainder of the applicable holding period.

The holding period returns for program investors are reported in Table 21. The table shows returns over two long-term horizons, namely January 2005-December 2009 (5 years); and the period since the inception date of the fund and December 2009 (since inception). The focus on a longer horizon is appropriate as the program encourages investors to lock up their investments for a period of at least 7 years.

In the last three columns we report returns of three benchmarks. We again report the captive venture capital returns already discussed in Section 7.3. In addition, we report index returns for the S&P-TSX Composite Index and the S&P-TSX Venture Composite Index. Clearly these two indices represent public market returns that are not directly comparable to the private investments made by retail funds. However, unlike the analysis of Section 7.3, which focused on the relative performance of the retail funds themselves, we are mainly interested in the attractiveness of investing in retail funds from the perspective of the individual small investor. Those investors face a portfolio choice of allocating their wealth into a variety of asset classes. We therefore follow the standard approach in finance of comparing the returns from investments against a set of stock market indices. A comparison of investor returns against the TSX Composite Index answers the question of how the individual investors would have fared if they had invested in a broadly diversified Canadian stock portfolio, the TSX Venture Composite Index if they had invested in a higher risk small stock portfolio. Intuitively speaking, investors may well consider investments in the TSX Venture as a relatively close substitute for investments in the retail funds.

Table 21 reveals that retail investors who invested in Advantage Venture, BC Discovery and WOF Growth realized a positive holding period return despite the relatively poor returns realized by these funds as reported in Table 20. This underscores the fact that taking into account the 30% tax credit substantially increases the attractiveness of investing in retail funds. At the same time, we observe that in the longer run, investments in any of the retails funds do not achieve higher returns than an investment portfolio consisting of the TSX or TSX Venture.

Table 21: Net Returns of VCP Investors in Retail Funds

Holding period returns (HPRs) over the period ending on 31 December 2009 of the currently surviving VCC funds and the Working Opportunity Fund. Calculations are based on data supplied by GlobeAdvisors (Fund data), Datastream International (S&P-TSX Venture Composite Index), and the Canadian Venture Capital Association (Captive VC fund return). HPRs incorporate an assumed 5% front end load fee charged by the broker and a 30% tax credit. The 30% tax credit is assumed to be received 1 year from the investment date, and to yield an annual return of +4%

Investor returns	Adv. Growth	Adv. Venture	BC Discovery	Pender Growth	WOF Growth S2	CVCA*	TSX	TSX Venture
5 years	-24.24%	7.68%	6.62%	-3.44%	19.58%	-19.31%	27.03%	-16.69%
Since inception	-22.11%	10.79%	3.59%	-1.68%	17.59%	N/A	39.4% to 58.9%*	22.6% to 61.6%*
Inception date	Jul 2003	Nov 2002	Jan 2003	Aug 2003	Aug 2003	N/A	Nov'02–Aug'03	Nov'02–Aug'03
Years since inception	6.50	7.17	6.80	6.38	6.33	N/A	6.33 to 7.17	6.33 to 7.17

* Worst possible and best possible holding period return of the Index with purchase moment between mid November 2002 and mid August 2003.
** Based on Canadian Venture Capital Association performance data for Captive VC funds (assuming a 3% MER for the funds).

8 | Program Feedback from Stakeholders

The prime objective of this study is an evaluation of the economic performance of the companies in the BC venture capital program. As a byproduct of our investigation, we also obtained some preliminary feedback on other aspects of the program. In this section, we briefly summarize additional qualitative feedback on the VCP that was received through the survey as well as during interviews with program stakeholders, mainly company managers, but also investors.

Overall satisfaction with the VCP is very high with positive comments on its ease of administration, effectiveness and accessibility. In terms of registration, application and program components, the feedback from companies was very positive. Over 80% said they were aided by program personnel and that the program was easy to understand and complete. Over 70% of respondents indicated that their cost to apply and comply with the program was less than $5,000, indicating a low cost of administration.

Many stakeholders would like to see an increased budget for the program. Some representative suggestions are:

"I would like to see it expanded. Huge benefit to companies and the economy as it de-risks new investment dollars which allows investors to invest more. This money is used to hire people and expand markets."

"Triple the budget for Eligible Businesses. The economic multiplier would be wonderful for the province."

The survey inquired about the importance of so-called investment caps i.e., upper limits on the amounts companies can raise in the program, currently $5M over a company's lifetime. The majority of survey respondents indicated that $5M was adequate for their current investment requirements. However, 12% of respondents reported that the annual cap on total tax credits had limited their ability to raise funds. These companies indicated that they were unable to utilize the program when annual allocations were reached. They noted that this does not occur every year and that this issue was more important in times when the economy was strong. Some respondents reported having a committed investor and then being unable to secure investment as the allocation had expired.

A representative comment for companies unaffected by the caps is:

"$5 million is a good cap to give more companies access to the pool."

Respondents affected by the caps made the following comments:

"We have raised almost $3.7M under the EBC program. Increasing the cap would improve our ability to raise funds in the future."

"This year we need to raise additional $12 million and we have already reached our cap. It will be much more difficult to raise the funds."

The survey also inquired whether companies had encountered any difficulties with the limitation that individuals can invest no more than $200K per year within the program. 20% of survey respondents reported that some of their individual investors had reached the $200K limit. 43% of those respondents (9% in total) indicated that they could have raised additional investment from the same investor if the threshold had been higher.

Survey respondents also made some suggestions for the website and user interface. All appreciated the ability to file online and support upgrades to the system. The following are representative examples of feedback about the online system:

"Reducing the number of system logins required to interact with the program (currently you need to maintain 3 separate sets of login credentials)."

"Easier web site access - EBC website is difficult to navigate & log into. The online process has still got some bugs and is not as user friendly as it might be."

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Appendices

The appendix contains a copy of the company survey, and three case studies on Aspreva Pharmaceuticals Corp., Clevest Solutions Inc. and Endurance Wind Power Inc..

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