Does Spending Time in the Minors Pay Off?

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Abstract

This paper compares the performance of firms that first go public on the Toronto Venture Stock Exchange (TSX-V) and then graduate to the senior Toronto Stock Exchange (TSX), to the performance of VC-backed firms that directly have an IPO on the TSX. Controlling for potential selection biases stemming from the original decision to list on the TSX-V rather than receiving a VC injection, as well as from the subsequent listing decision on the TSX, we find TSX-V graduations on average outperform VC-backed IPOs by 31.2 percentage points in the three years following the TSX listing. Overall, our results indicate that the TSX-V is an effective "incubator" market for developing firms, and thus provide important policy and regulatory insights.

Keywords: Second Markets; Graduations; IPOs; Venture Capital; Long-Run Returns; Stock Market Regulations

JEL Classifications: G15, G30

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1. Introduction

Early stage companies need capital to grow and develop and often rely on specialized investors such as venture capitalists (VCs) and business angels to finance their ventures. These investors conduct extensive due diligence, impose strict governance requirements, implement effective contracting, and provide ongoing monitoring to help these companies develop to the point where they can have an initial public offering (IPO) or be acquired. Indeed, the literature provides ample evidence that VC-backed IPOs perform better than non-VC backed IPOs (e.g. Brav and Gompers, 1997; Chemmanur, Krishnan, and Nandy, 2011). Much of this literature is based on US studies, but there are key differences between the US capital markets and the markets in other countries. For example, recent OECD data shows that the amount of venture capital investments as a percentage of GDP is significantly lower in all countries (with the exception of Israel) than in the US. Such capital market differences have led firms in other countries to seek development capital from other sources.

Many countries try to overcome their relative lack of venture capital by allowing smaller firms to access the public equity markets. Vismara, Paleari and Ritter (2012) document the experiences of a number of European countries in setting up second-tier equity markets. However, they find that IPOs on second-tier markets perform poorly relative to IPOs on the senior markets. More importantly, with the exception of London's Alternative Investment Market (AIM), second-tier markets in continental Europe have not been an effective "incubator" for junior firms, since almost no firms graduate from the junior to the senior market. Jenkinson and Ramadorai (2013) provide evidence that, prior to the Internet crash in 2001, some London AIM firms were able to graduate to the senior

Main Market of the London Stock Exchange (LSE), but since then the movement of firms has predominantly been from the main market to the second-tier AIM (Vismara et al., 2012).

In Canada, the second-tier Toronto Venture Stock Exchange (TSX-V) is an alternative to traditional venture capital through which early stage companies can attract public capital. In contrast to the NASDAQ[1] in the US and the second-tier markets in Europe, the TSX-V is expressively designed as a public venture capital market to provide companies with "the opportunity to gain a solid foothold in the public market, with the potential to work towards graduation to the senior exchange".[2] Pandes and Robinson (2013) note the long history of Canada's junior public equity markets and the TSX-V, which is used primarily by retail investors to provide capital to early stage companies. The authors document key regulatory differences between the TSX-V and European second markets and find that new listings on the TSX-V have remained strong even after the Internet bubble collapse of the early 2000s and the credit market crisis of 2008.

In this paper, we study whether the TSX-V is an effective incubator market for developing firms by comparing the long-run stock performance of firms that graduate from the TSX-V to the senior Toronto Stock Exchange (TSX) against the performance of VC-backed firms[3] that have a direct IPO on the TSX. This is a natural comparison since both samples are newly listed on the TSX and have thus fulfilled all the TSX listing

[1] We note that unlike almost all countries, NASDAQ is a competitor rather than a junior market to the NYSE. Indeed, as of the end of 2015, the three largest market cap firms in the US – Apple, Google, and Microsoft – are all NASDAQ-listed.

[2] See the TSX guide to listing: www.tsx.com/resource/en/181/guide-to-listing-2015-06-26-en.pdf.

[3] Our sample of VC-backed financings includes investments in non-technology firms, which in fact comprise both traditional VC investors and other private equity (PE) investors. For the purposes of our study the distinction between VC and PE investors is not considered relevant, and thus for ease of exposition we call all such investors VC investors in the paper.

requirements. Moreover, by restricting our sample of direct TSX IPOs to VC-backed firms, we are creating a stronger test of the effectiveness of the TSX-V, since VC-backed IPOs have been found to outperform non-VC-backed IPOs (Brav and Gompers, 1997). We are also mindful of potential selection biases. In this regard, our regressions include selectivity instruments for the original decision to list on the TSX-V rather than receiving a VC injection as well as for the subsequent listing decision on the TSX.

While a firm that goes public on the TSX-V will forego the value-added support provided by a VC, there are several reasons why we would expect graduations from the TSX-V to the TSX to outperform VC-backed IPOs. First, being listed on the TSX-V provides the management team with invaluable experience on how to operate a public company and deal with the various public market stakeholders, such as shareholders, analysts, regulators and the media. Second, since the TSX-V listing and governance requirements are slightly relaxed versions of those on the senior TSX, the transition process for a junior equity firms' management team and board members to the senior exchange is relatively seamless. There is evidence that firms from outside Canada, even technology firms from the US, have started to appreciate the development opportunities associated with a junior public listing on the TSX-V. For example, in 2011 the US-based technology firm ePals Corporation went public and raised $23 million in secondary financing using the TSX-V.[4] More recently, a Silicon Valley startup, Frankly Inc., decided to turn down VC financing and instead pursued a public listing on the TSX-V to raise $23 million (US).[5]

[4] See Barry Critchley, , "EPals has first for Canada?", *Financial Post* (August 8, 2011).

[5] See Niall McGee, "Silicon Valley startup goes public via Canada: IM firm Frankly plans to monetize its app on TSX, turning down offers from U.S. venture capitalists", *Globe and Mail* (November 22, 2014).

Thus, US firms are starting to note what Canadian firms have known for a number of years: the Canadian junior public equity market offers an effective substitute to VC financing.

In our study we find that the number of graduations from the TSX-V to the TSX has been steady over our test period (2000-2014) and has not been particularly affected by major capital market disruptions. Remarkably, we show that graduations from the TSX-V to the TSX exhibit positive long-run buy-and-hold abnormal returns, contrary to the long-run underperformance of IPOs documented in the literature.[6] The three-year buy and hold abnormal returns of TSX-V graduations average 19.1%, which is similar to the values reported by Ritter (2015) for growth capital-backed IPOs. We also find that the returns of the TSX-V graduations significantly outperform VC-backed IPO returns in the 1, 2 and 3 years following the TSX listing. These results are robust to the inclusion of other potential determinants of firm performance, the possible endogeneity in the choice of public versus private VC financing as well as the choice to list on the TSX, and holds for quantile regressions ranging from the 25^{th} quantile to the 95^{th} quantile. We also note that the long-run outperformance of the TSX-V graduations implicitly implies that the market does not correctly price the value created by a TSX-V listing following their graduation to the senior market. Overall, our results provide strong support for the success of the TSX-V as an "incubator" market for developing firms.

The remainder of the paper is structured as follows. Section 2 provides a literature review and background on the private VC and public venture markets in various countries. Section 3 describes our data and presents the descriptive statistics. The results of our empirical analyses are presented in Section 4, and we provide concluding remarks in

[6] See, for example, Ritter (1991) and Loughran and Ritter (1995) for US evidence and Jog (1997) and Kooli and Suret (2004) for Canadian evidence.

Section 5.

2. Related Literature and Venture Capital in Canada

2.1. Related Literature

A key stage in the development of a growth-oriented firm is a public listing on a senior equity market. However, in order to access the capital that allows a firm to grow until it is large enough to list on a senior exchange, many private firms rely on VC financing. Venture capitalists are specialized intermediaries that have developed the expertise to address the information asymmetry problems faced by investors in entrepreneurial firms. In general, VCs conduct extensive due diligence, implement effective contracting, and provide ongoing monitoring (e.g., Admati and Pfeiderer, 1994; Lerner, 1995; Kaplan and Stromberg, 2001; Kaplan and Stromberg, 2003; Bengtsson, 2011). VCs then add value to their investee firms in a number of ways including helping the firm develop and implement its strategy, helping build the management team, and assisting the firm in developing strategic partnerships.

More specifically, previous research documents several advantages to a firm attracting VC financing. Hellmann and Puri (2000) show that VC investors are more likely to finance innovator as opposed to imitator firms, and that VC-backing helps firms bring their products to market more quickly. Hsu (2006) shows that VC funding is positively associated with the likelihood of a start-up firm having an IPO, and this effect is accentuated for more reputable VCs. Similarly, Chemmanur, Krishnan, and Nandy (2011) find that VC-backed firms are more efficient and have a significantly higher probability of a successful exit either through a merger or an IPO than non-VC-backed firms. Several

studies further show that VC-backed firms have more effective governance structures than non-VC-backed firms at the time of the IPO with the effect being stronger for higher quality VCs (e.g. Baker and Gompers, 2003; Campbell and Frye, 2009; Suchard, 2009).

Numerous papers also examine the impact of VC-backing on a firm's post-IPO performance. Brav and Gompers (1997) report that VC-backed IPOs outperform non-VC-backed firms in the first five years following the IPO when the returns are equal-- and value-weighted, and that VC-backed IPOs perform as well as listed firms. Belden, Keeley and Knapp (2001) also document similar findings. Meanwhile, Nahata (2008) and Krishnan, Ivanov, Masulis, and Singh (2011) find that IPOs backed by more reputable VCs have higher long-run performance and better corporate governance than IPOs backed by less reputable VCs. Ritter (2015) finds that, since 1980, investing in growth capital-backed IPOs has produced mean three-year style-adjusted buy-and-hold returns of 25.2%, in contrast to style-adjusted returns of approximately zero for other VC-backed and buyout-backed IPOs.[7]

2.2. Private Venture Capital in Canada

In Canada, there is also an active venture capital sector, but it is still relatively small compared to the US VC community. Recent data (OECD, 2015, p. 89) shows that as a percentage of GDP, the amount of Canadian VC capital is less than one-third that of the US. Also similar to the US, Canadian VCs tend to concentrate their investments in three main provinces (Ontario, Quebec and British Columbia), and they focus on technology

[7] Ritter (2015, p. 482) defines "… a growth capital-backed IPO on the basis of three criteria: (1) the issuing company has a financial sponsor that provides equity capital and actively invests; (2) the financial sponsor is not necessarily taking a controlling position, unlike a buyout; and (3) the issuer has been investing in tangible assets as a material part of its business and/or making significant acquisitions, unlike pure VC."

investments. However, unlike the US, almost 60% of the financings in the first half of 2015 were for seed and early stage investments (CVCA, 2015).

Reasons for the lower VC involvement in Canada can be attributed to its more resource based economy, a lower allocation of pension and endowment fund capital to alternative asset classes, and the relatively poor historical performance of Canadian VC funds.[8] For example, to illustrate the importance of Canada's resource sector, CVCA (2015) data for the first half of 2015 indicates that total VC investments were $0.939 billion while total private equity investments in the energy, mining and resource sectors was $4.456 billion (Canada has a number of specialized PE investors in these sectors).

Notwithstanding the relatively lower importance of VC financing in Canada versus the US, Hellmann, Egan, and Brander (2005) find a number of similarities on exit values for VC investments between the two countries over the period 1997-2004. The authors conclude that although the total and average exit values are smaller in Canada, when they account for the difference in the size of the two economies, the Canadian venture capital market performed surprisingly well and even better than in the US. Moreover, a recent Canadian study (Industry Canada, 2013) compares the performance of VC-backed and non-VC-backed firms over the period 1999-2009, and concludes that VC-backed firms experience higher growth of sales, employees, and assets than non-VC-backed firms in the one, three and five year periods after receiving their initial VC investment.

[8] Much of this underperformance can be traced to the development of tax advantaged Labor-Sponsored Venture Capital Corporations (LSVCCs) in the mid-1980s (See Cumming and MacIntosh, 2006; Cumming, MacIntosh and Godin, 2007).

2.3. Public Venture Capital (Second-Tier Equity) Markets

In studying the second-tier equity markets in Europe, Vismara, Paleari and Ritter (2012) identify three types of second markets: sequential, sectorial, and demand-side segmentation. In the sequential segmentation model, a firm is expected to become "seasoned" on the junior market and use the experience to grow the firm and graduate to the senior exchange. The sectoral segmentation is a variation on the sequential model whereby the market is focused on assisting in the development of specific types of firms, typically with a technology focus in Europe. While the authors find that these two types of markets successfully help firms raise IPO and secondary financing, they also find that the long-term performance of the listed firms is poor and the number of listings that these exchanges have attracted has diminished since 2000. According to the authors, the more successful model in terms of attracting listings is the demand-side segmentation model developed by the London AIM, and thus other European stock exchanges have moved to adopt that model.

Under the demand-side model, securities market regulators do not officially regulate the market, and instead listing requirements and listing decisions are left up to the exchange (this type of market is also called an exchange-regulated market). As noted above, the main example of the demand-side model is the LSE's AIM. Gerakos, Lang and Maffett (2013) study firms listed on the AIM and show that its newly listed firms underperform firms that are listed on more established exchanges with higher regulations. Jenkinson and Ramadorai (2013) examine firms that switch between the AIM and main market over the period 1995-2006, and conclude that firms appear to choose their optimal level of regulation depending on their specific needs. Empirically, the paper finds that prior

to the end of 2000, firms would predominantly switch from the junior to the senior exchange, but since then firms have mostly been switching from the senior to the junior exchange. In addition, Jenkinson and Ramadorai (2013) find that firms moving from the junior to the senior exchange experience a positive announcement effect of around 5%, but in the year after the switch returns are broadly neutral and the operating performance of these companies shows no clear trend in the five years around the switch date. Meanwhile, the authors find that moving down to the junior market has a negative announcement effect that is reversed in the six months after the firm has started trading on the junior exchange.

A key difference between Canada and the US, and indeed between Canada and other OECD countries, is the greater importance of the junior public equity market in supporting the development of growth-oriented firms. Pandes and Robinson (2013) note that Canada's junior public equity market, the TSX-V, is primarily used by retail investors, and that it has continued to attract listings even after the global capital market slowdowns in the early 2000s and in 2008. On the other hand, most of the IPOs on Europe's exchange-regulated markets are offered exclusively to institutional investors, and are equivalent to private placements. Moreover, since inclusion on these markets does not constitute a listing on an official market, the EU regulatory requirements for organized markets do not apply to these listings and the publication of a prospectus is not required for "non-public" offerings that are intended for qualified institutional buyers. These second market IPOs, which frequently raise only a few million dollars, rarely develop liquid trading or attract retail investors (Vismara, Paleari and Ritter, 2012).

Another important highlight of the TSX-V is that the number of junior firms going public has been less cyclical compared to other second-tier markets over the last two

decades (e.g., OECD, 2005; Pandes and Robinson, 2013). In contrast, Gao, Ritter and Zhu (2013) note that the number of IPOs by smaller firms in the US has dropped significantly since 2000. Ritter, Signori and Vismara (2013) also find similar patterns in Europe.

More to the point, the TSX-V is a sequential segmentation market and, while it has modified listing and governance requirements compared to TSX firms, TSX-V IPOs are approved by the same securities regulators as senior market IPOs and are brought to market by the same underwriters. Indeed, the implementation of a robust set of corporate governance practices is a key aspect in the effective development of a junior public firm to the point where it can graduate to a senior equity market. In Canada, the corporate governance regulations governing public firms are outlined in National Policy 58-201, which provides guidance to all publicly listed firms. As noted in Broshko and Li (2006), Canada uses a principles-based approach to corporate governance as opposed to the rules-based approach in the US. The Canadian approach has allowed for the development of slightly relaxed governance requirements for junior listed firms, which allows these firms the opportunity to develop effective corporate governance practices without having to pay the higher compliance costs faced by larger Canadian public firms. This progressive approach to junior public firm governance means that at the time a junior public firm graduates to a senior exchange, it has to make very limited changes to its governance practices and procedures. In addition, managers of junior public firms have had the opportunity to better understand how to operate in the public markets and how to effectively deal with the diverse stakeholder groups associated with a public firm.

In the academic literature, Carpentier, L'Her and Suret (2010) provide evidence that the TSX-V is successful in helping to develop small firms. In particular, over the period

1986-2006, the authors show that there are a greater number of TSX-V graduations to the TSX than VC-backed IPOs, and they provide indirect evidence that the overall returns of Canadian junior public firms are higher than VC returns earned by limited partners. The authors also find that firms that graduate from the TSX-V to the TSX perform well prior to the graduation, but find mixed results with respect to their post-graduation performance. Our study provides clarity by directly comparing the post-graduation performance of TSX-V firms with VC-backed firms that completed a TSX IPO. In addition, we focus on the graduations of regular IPOs of operating companies and exclude the graduations of alternative public listings such as reverse mergers (RMs) and Capital Pool Companies (CPCs). [9] Finally, since the results may be affected by the endogenous choice of funding from the different sources, we address this endogeneity in our paper.

2.4. Hypothesis Development

Our null hypothesis is that the TSX-V is not a viable market for the development of growth-oriented firms and any firms that do graduate to the TSX will underperform VC-backed TSX IPOs. The null hypothesis is based on European studies of second-tier stock markets and on the body of predominantly US-based literature that VC backing increases the quality of a firm and enhances its futures earnings potential. In addition, since VCs are financially motivated long-term investors with a history of exiting firms, the VCs will be able to effectively determine the most opportune time to take an investee firm public. The null hypothesis is a joint hypothesis, with the second part of the joint hypothesis being that

[9] Carpentier, Cumming and Suret (2012) document that RMs provide less disclosure to investors than IPOs, suffer from a higher degree of information asymmetry between the firm and its investors, and have poor performance compared with regular IPOs. Moreover, as noted in Carpentier, L'Her and Suret (2010) and Pandes and Robinson (2013), a large portion of the TSX-V IPOs are accounted for by CPCs, which are a specialized form of "blind pool" offering (see also Robinson, 2007, and Pandes and Robinson, 2014). We exclude CPCs in this study since their listing decision is exchange-regulated.

the market is not correctly pricing these characteristics at the time of the graduation or the TSX IPO.

Our alternative hypothesis is that the TSX-V does provide a viable alternative to firms seeking development capital and firms that receive public venture financing and graduate from the TSX-V to the TSX will outperform firms that receive VC financing and have an IPO on the TSX. There are several reasons to expect TSX-V graduates to perform better than VC-backed IPOs. In particular, spending time on a junior public market provides key learning for a firm's management team and board as operating a public company is quite different from operating a private firm. For example, public firms need to publish quarterly interim financial statements, a Management Discussion and Analysis (MD&A) report, as well as prepare for analyst and investor presentations.

Furthermore, public firm governance requirements are more onerous and public companies are subject to scrutiny by regulators. The management team of a public company needs to interact with a diverse group of shareholders, effectively communicate the firm's long-term goals so that they are not jeopardized by the market's emphasis on short-term results, and to react to external economic factors and fluctuations in the stock market that are out of the firm's control but can affect the value of the company and employee morale. Finally, firm insiders have to learn how to maintain confidential information and to refrain from trading during certain blackout periods, to learn how to exercise caution when discussing internal affairs, and to monitor ongoing trading of the firm's shares to be alert to a potential hostile takeover. Therefore, a TSX-V listing provides a firm's management team and board with

invaluable public market experience, which allows for a more seamless transition to the TSX compared to a private company that directly lists on the TSX.[10]

3. Data and Descriptive Statistics

3.1. Data

We examine the performance of TSX-V graduations[11] to the TSX and VC-backed TSX IPOs over the period 2000-2014. The beginning of our sample period coincides with the merging of several regional exchanges in Canada, the most important of which was between the Alberta and Vancouver exchanges. We gather the data used in this paper from several sources. In particular, we obtain data on venture capital and private equity investments from Thomson Reuters, which yields 3,151 observations. Of these 3,151 observations, 173 are identified as going public in the database, while the remaining observations are classified as either exiting in an M&A transaction, are bankrupt or defunct, or are still active as private companies. We further cross-check the 173 going public observations with the Financial Post (FP) Advisor[12] database and newswire searches in Factiva and identify 38 of the 173 observations as VC-backed IPOs on the TSX. We confirm that the remaining 135 observations went public on other exchanges such as the TSX-V, the AIM, the over-the-counter (OTC) market, NASDAQ, or became public through an alternative channel such as a reverse merger.

[10] Our hypothesis therefore also relates to the deep scientific literature on learning. The relevant literature is too vast to cite fully; however, we note papers by Subrahmanyam and Titman (1999) on managerial learning and Wiersma (2007), who provides an excellent literature review on learning at the organizational level.

[11] Our sample of TSX-V graduation firms is restricted to regular IPOs so that they are more directly comparable to VC-backed TSX IPO firms. As such, we exclude TSX-V firms created by a reverse merger and firms created by a CPC IPO.

[12] The FP database is a new issues database in Canada. It is equivalent to the Securities Data Corporation (SDC) new issues database in the U.S.

We obtain the TSX-V IPO data from the FP database, which we augment by hand-collecting the incorporation date and location for each TSX-V IPO firm. Meanwhile, the list of graduating firms from the TSX-V to the TSX is provided to us by the TMX Group. The FP database yields 572 TSX-V IPOs for the 2000-2014 period, and after merging these IPOs to the graduations data, we end up with 55 TSX-V IPOs that graduate to the TSX. Finally, we obtain stock return data from the TSX/CFMRC database, and financial data from Compustat, which is augmented with data from company financials. An overview of the sample is provided in Table 1. Specifically, we present a yearly breakdown of the 3,723 entrepreneurial firms that either receive a private VC injection or a public VC injection through an IPO on the TSX-V. We further present the number of these private VC injections and TSX-V IPOs that subsequently went public on the TSX. The yearly breakdown reveals a rather balanced number of IPOs and TSX-V graduations over the sample period, with a modest increase in the 2004-2008 period, which coincides with a period of rather strong economic activity in Canada.

[TABLE 1 SOMEWHERE HERE]

3.2. Descriptive Statistics

In Table 2 we provide the definitions for the variables used throughout the paper, and in Table 3 we report the descriptive statistics for the sample of 3,723 Canadian entrepreneurial ventures that receive their first VC injection or go public on the TSX-V. The descriptive statistics are presented for the full sample, and for the subsamples of VC-backed firms and TSX-V firms along with the tests of differences between the two

subsamples. We first report the average investment amount ($INV_{INITIAL}$) for the sample, which is the first capital injection. The average $INV_{INITIAL}$ is $5.6 million for the full sample, and $5.9 million for VC firms and $3.7 million for TSX-V firms, but this difference is statistically insignificant. We further find the average firm age ($AGE_{INITIAL}$) to be 5.3 years, and notice a statistically significant difference in firm age between VC firms and TSX-V firms. In particular, the average age of firms when they receive their first VC investment is 5.8 years and the average age of firms when they list on the TSX-V is 2.3 years, indicating that younger firms on average seek financing on the TSX-V. We also measure the average lagged monthly market return ($LMRET_{INITIAL}$) at the time of the initial VC injection or the TSX-V IPO. We find $LMRET_{INITIAL}$ to be 0.36% for the full sample, while the average $LMRET_{INITIAL}$ is 0.18% for VC firms and 1.17% for TSX-V firms, and this difference is statistically significant. Since the TSX-V is a public venture market, it is not surprising that $LMRET_{INITAL}$ is higher for firms deciding to list on the TSX-V.

Next, we report the geographic dispersion of our sample within Canada. For the full sample, the largest percentage of observations are found in Quebec, Ontario, Alberta and British Columbia, which are the main centers of economic activity in Canada. Interestingly, when we break the sample down by VC firms and TSX-V firms, we find that Quebec and Ontario have the largest percentage of VC firms, while British Columbia and Alberta have the largest percentage of TSX-V firms. These findings are consistent with the geographic dispersion of economic activity in Canada. More specifically, the western Canadian provinces are mainly resource-oriented, whereas the central and eastern Canadian provinces are more manufacturing- and technology-oriented. Moreover, the TSX-V, which had its origins in western Canada, is known to be a more resource-oriented

exchange, with a history of many listings by junior mining and energy companies. The industry descriptive statistics also paint a similar picture. In particular, 82.7% of the TSX-V listings are in the Mining, Energy and Construction industries, while 36.2% of the VC-backed firms are in the Services and Technology industries, and 21.1% and 12.1% of the VC-backed firms are in the Heavy Manufactured Products and Light Manufactured Products industries, respectively.

[TABLE 2 AND 3 SOMEWHERE HERE]

4. Empirical Analysis

4.1. Selection Issues

In comparing the return performance of TSX-V graduations to TSX IPOs, we invariably face selection issues. To help control for this, we examine the choice of private versus public venture capital financing, as well as the choice of going public on the TSX. We then compute the predicted probabilities and use these as instruments in subsequent regressions examining long-run returns.

In Table 4 we present the logit regression results for the choice of private versus public VC financing. The dependent variable takes a value of one if the firm goes public on the TSX-V, and zero if the firm receives private VC financing. Our independent variables include $INV_{INITIAL}$, $AGE_{INITIAL}$, $LMRET_{INITIAL}$, and dummy variables for the province of incorporation and industry dummy variables. The results indicate that $AGE_{INITIAL}$ is an important determinant of the choice of private versus public financing. Specifically, the coefficient on $AGE_{INITIAL}$ is negative and statistically significant at the

1% level.[13] The negative coefficient implies that younger firms are more likely to list on the TSX-V. In addition, we find the coefficient on $LMRET_{INITIAL}$ to be positive and statistically significant at the 1% level, suggesting that strong public market performance increases the likelihood of listing on the TSX-V. This finding is intuitive, since one would expect strong stock market performance to encourage public financing. We also find the coefficients on the province of incorporation dummies to be positive and statistically significant, except for the provinces of New Brunswick and Saskatchewan, indicating that relative to Quebec (the base case in the regressions) firms incorporated in the other provinces are more likely to list on the TSX-V. Turning to the industry dummy variables, the coefficients are negative and statistically significant, except for SIC code 9, which indicates that firms in industries other than natural resources (the base case) are less likely to list on the TSX-V.

[TABLE 4 SOMEWHERE HERE]

In Table 5 we turn to the logit regression results examining the likelihood of listing on the TSX, where the dependent variable takes a value of one if a firm lists on the TSX, and zero otherwise. In Model 1, we present the baseline regression results. The results indicate that listing on the TSX-V (versus receiving a private VC injection) increases the likelihood that a firm will subsequently list on the TSX. Moreover, the positive and statistically significant coefficient on $INV_{INITIAL}$ indicates that firms that raise more capital either through private VC financing or IPO proceeds on the TSX-V are more likely to

[13] The estimated marginal effect implies a 4.5% decrease per year in the probability to go public on the TSX-V.

subsequently list on the TSX. We also interact our dummy variable for listing on the TSX-V with $INV_{INITIAL}$, $AGE_{INITIAL}$ and $LMRET_{INITIAL}$ to see whether firms listed on the TSX-V that had a larger initial financing, are older, or listed on the TSX-V during better market performance are more likely to list on the TSX. Indeed, we find that the interaction between listing on the TSX-V and $INV_{INITIAL}$ is significantly positive, indicating that firms that receive a larger initial financing on the TSX-V are more likely to list on the TSX. We also note a weakly significant negative coefficient on the interaction term between listing on the TSX-V and $LMRET_{INITIAL}$, suggesting that firms that went public on the TSX-V during periods of strong market performance are somehow less likely to graduate to the TSX. In Model 2, we include a selectivity instrument, which is the probability of listing on the TSX-V as computed from Table 4. Some firms might be inherently more likely to list on the TSX-V, and so controlling for this likelihood directly addresses the potential sample selection bias. The results indicate no change in the size, sign, or significance of any of the independent variables after controlling for the selection bias.

[TABLE 5 SOMEWHERE HERE]

4.2. Buy-and-Hold Abnormal Returns

In this subsection we examine the long-run stock performance of firms that list on the TSX via a TSX-V graduation or via an IPO. In Table 6 we report the basic descriptive statistics for the sample of graduations and IPOs. As the dependent variable, we calculate the buy-and-hold abnormal return (BHAR) of each graduation and IPO firm, which allows us to reduce the right-skewness associated with the distribution of buy-and-hold raw

returns. BHARs are calculated as in Loughran and Ritter (1995) using monthly returns from the beginning of the holding period until the minimum of the end of the holding period or the delisting date, as follows:

$$BHAR_i = \left[\prod_{t=1}^{\min(T,delist)} (1 + R_{i.t})\right] - \left[\prod_{t=1}^{\min(T,delist)} (1 + R_{M,t})\right]$$

where $R_{i,t}$ is the return on stock *i* at time *t*, *T* is the time period in which the BHAR is to be determined, and $R_{M,t}$ is the raw return of the TSX/CFMRC value-weighted index.[14] As control variables, we include firm and market indicators in line with previous studies on the long run performance of IPOs (Ritter, 1991).

We first find that for the full sample, the average 3-year BHAR is 10.5%. However, when we split the sample into VC-backed IPOs and graduations from the TSX-V, we find that the VC-backed IPOs have a mean 3-year BHAR of -2.1%, while the graduations have a mean 3-year BHAR of 19.1% and we find this difference to be statistically significant at the 5% level. The positive average outperformance for graduations is novel in light of the post-IPO underperformance documented in the prior literature. Next, we find the mean time from the first VC injection to the IPO is 3.9 years for VC-backed firms, while firms that first list on the TSX-V, on average, graduate to the TSX after 2.9 years, a difference that is statistically significant at the 5% level We also find VC-backed firms to be significantly older than the graduating firms from the TSX-V. The mean firm age is 8.6

[14] The TSX/CFMRC value-weighted index is the market value weighted average monthly return for all domestic common equities in the CFMRC (Canadian Financial Markets Research Centre) database. This index is the Canadian equivalent of the CRSP value-weighted index in the U.S.

years for VC-backed firms, while the mean firm age is 6.2 years for the graduating firms, and this difference is statistically significant at the 5% level. In addition, VC-backed IPOs are larger than the graduations to the TSX. The average size of the assets is $426.2 million for VC-backed IPOs, while the average size of the assets is $80.2 million for the graduations, with a statistically significant difference of 5%. VC-backed IPOs also have an average book-to-market ratio of 0.19, which is lower than the average book-to-market ratio of 0.34 for graduating firms, and this difference is statistically significant at the 10% level. We do not find statistically significant differences in the lagged monthly market return at the time of the decision to go public on the TSX ($LMRET_{TSX}$) and the operating performance ($OPERF_{TSX}$) between VC-backed IPOs and graduations from the TSX, but we do find that VC-backed IPOs have a significantly higher leverage ratio than graduations from the TSX. In particular, VC-backed IPOs have a mean leverage ratio ($LEVERAGE_{TSX}$) of 60.2%, while graduations from the TSX have a mean leverage ratio of 26.1%.[15]

[TABLE 6 SOMEWHERE HERE]

In Table 7 we compare the long-run stock performance of VC-backed IPOs and TSX-V graduations while controlling for other effects. We also control for the selection of listing on the TSX and the selection of listing on the TSX-V. We begin by presenting a baseline regression in Model 1, which does not include any of our selectivity controls. We find that the graduations to the TSX outperform the VC-backed IPOs. Specifically, the coefficient on the graduation dummy variable is positive and statistically significant at the

[15] The average leverage ratio of VC-backed IPOs is especially high due to some large outliers. The median leverage ratio of this group is 39.5%. In the sub-sample of graduations, the median leverage ratio is 18%.

5% level. The coefficient of 0.312 implies that controlling for other effects, TSX-V graduations on average outperform VC-backed IPOs by 31.2 percentage points as measured by the 3-year BHAR. In addition, we find the size of the IPO to have a positive and statistically significant coefficient at the 5% level, indicating that larger TSX listings have better long-run stock performance. We further find that the lagged monthly market return at the time of the TSX listing has a negative coefficient that is statistically significant at the 10% level. This suggests that firms that list on the TSX when the market performance is strong tend to exhibit poorer long-run stock performance, which is consistent with the market timing literature. We do not find statistically significant coefficients on any of the other control variables, and we find the regression to have reasonably high explanatory power, with an R-squared of 0.495. Turning to Model 2, we now include a selectivity control for the likelihood of listing on the TSX, estimated at the time of receiving a first VC injection or being listed on the TSX-V. We continue to find the coefficient on the graduation dummy to be positive and statistically significant at the 5% level, which again implies that graduations have better long-run stock performance than VC-backed IPOs. Moreover, firm size at the time of the TSX listing and the lagged monthly market return remain significantly positive and negative, respectively. We also note that the selectivity control, the likelihood of listing on the TSX, is insignificant. The explanatory power in Model 2 is also similar to Model 1. In Model 3 we include the additional selectivity control, the likelihood of first listing on the TSX-V versus receiving a VC injection. The results again indicate that the graduations outperform the VC-backed IPOs, as indicated by the positive and statistically significant coefficient on the graduation dummy variable. The coefficients on the remaining independent variables yield qualitatively similar results as in

the previous models, and the explanatory power in Model 3 is also similar to the earlier models.

[TABLE 7 SOMEWHERE HERE]

In Table 8, we present alternative measures of post-IPO performance, and examine 1-year and 2-year BHARs. Similar to Table 7, we present three models for each of the performance measures. We find that the results continue to support our predictions. In particular, the coefficient on the graduation dummy continues to be positive and statistically significant for both the 1-year and 2-year BHARs. Moreover, in all the BHAR results we find the coefficient on the size of the firm at the time of the TSX listing to be positive and statistically significant, but find no significance for the coefficients on the lagged monthly market return at the time of the TSX listing. Moreover, the selectivity controls are insignificant suggesting that the results are not influenced by sample selection issues.

[TABLE 8 SOMEWHERE HERE]

In further tests, we also run quantile regressions on the long-run returns performance. These regressions allow us to see whether the results are dependent upon any skewness in the data and also to see whether our results are robust to outliers. We present the quantile regression results in Table 9. In particular, the results are reported for quantiles

q=0.25, q=0.50, q=0.75, and q=0.95[16], where the dependent variable is the 3-year BHAR. In each of the quantiles, we find that the graduation dummy variable is positive and statistically significant at the 10% level, consistent with our main findings in the paper. Turning to the control variables, we find that the size of the firm at the time of the TSX listing has a significantly positive coefficient in each of the quantiles, and the coefficient on $LMRET_{TSX}$ is negative in each of the quantiles, significantly so for the smallest and the largest quantile regressions we present. Moreover, we find the coefficients on the book-to-market ratio and firm leverage to be positive and significant in the q=0.95 quantile. Finally, we also include our selectivity controls, and find that they have no influence on the 3-year BHARs.

[TABLE 9 SOMEWHERE HERE]

4.3. Time to Graduation

In this subsection we examine the time it takes for firms that are either listed on the TSX-V or that receive private VC financing to subsequently list on the TSX. More specifically, we run Cox proportional hazard regressions where the dependent variable is the time to the TSX listing, and the regressors are the same as those found in earlier tables. The regression results are presented in Table 10, where we present two models. In Model 1, we do not include the selectivity control for the likelihood of listing on the TSX-V, and we find significantly positive coefficients on the TSX-V listing dummy variable and on the

[16] The estimates in quantile regressions measure some conditional quantiles of our dependent variable (3-year BHARs), given the predictor variables. In our table, we estimate coefficients for the first quartile (q=0.25), for the median (q=0.5), for the third quartile (q=0.75), and for the threshold isolating the 5% top performers (q=0.95).

size of the deal. Therefore, firms that receive public venture financing via the TSX-V take longer to list on the TSX than VC-backed firms, and firms that receive a larger first capital injection take longer to list on the TSX. In Model 2, we include the selectivity control for the likelihood of listing on the TSX-V, and we find similar results. In particular, the coefficient on the TSX-V listing dummy is positive and statistically significant and the coefficient on the size of the first capital injection is positive and statistically significant. In addition, we find the coefficient on firm age to be negative and statistically significant, indicating that older firms take less time to list on the TSX.

[TABLE 10 SOMEWHERE HERE]

5. Summary and Conclusions

In this paper we examine whether the Canadian junior equity market, the TSX-V, represents a viable alternative to traditional VC financing for firms seeking development capital. The study is important in light of the recent literature showing that the European junior public equity markets have not generally been effective in developing firms to the point where they can graduate to a senior equity market.

We find that firms that list on the TSX-V tend to be younger and concentrated in industries and geographic regions that have less access to private VC-financing. In addition, there is evidence that firms seek a junior market public listing following periods of robust stock market movement. Controlling for the possible selection bias in firms listing on the junior exchange, we find that such firms are more likely to graduate to the senior

market especially if they attract a larger amount of IPO capital and have had a longer time to grow and mature.

In comparing TSX-V firms with VC-backed firms at the time they move to the senior TSX market, we find that there are significant differences between the two types of firms. VC-backed firms tend to be older, larger, and more heavily levered than TSX-V firms at the time they list on the TSX. In terms of long-run stock performance, we find that TSX-V graduations outperform VC-backed IPOs by 31.2 percentage points in the three years after the TSX listing. This superior performance continues even after we control for a host of other variables and for the selectivity of firms seeking either public VC or private VC financing and the selectivity to the senior TSX market. Our results thus implicitly provide evidence that the market does not correctly price the benefits that a TSX-V listing provides when these firms graduate to the TSX.

We also examine the factors that affect how long it takes for either type of firm to list on the TSX. These results indicate that TSX-V firms take longer to graduate to the TSX than firms that receive VC financing, but that this effect is lower if there is positive prior market performance.

Our study has a number of implications for firms seeking development capital and for regulators seeking to create a regulatory framework to support these firms. At the firm level, our results show that firms that have the opportunity to gain public venture capital financing and to learn what it takes to be an effective public company can perform better than VC-backed firms. We therefore conclude that spending time in the "minors" – the junior public equity markets – pays off for firms and their investors who experience positive market-adjusted returns subsequent to the graduation.

For regulators, our results illustrate that the sequential segmentation model of junior market regulation can be effectively implemented and can provide an opportunity for junior public firms to seamlessly transition to a senior stock market. The Canadian junior and senior stock markets are owned and operated by the same firm (TMX Group, Inc.), are regulated by the same securities regulators, are supported by the same underwriters, and share many of the same governance regulations. This integration between the two markets provides a tiered-approach to capital raising for firms that allows them to enter the public markets at various stages of their business development depending on their needs and the expertise of their management and boards.

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Table 1. Sample Overview

This table reports a yearly breakdown for the sample of 3,723 Canadian entrepreneurial ventures in the period 2000-2014. The yearly breakdown includes private VC injections and public VC injections through a TSX-V IPO, and the number of these private VC injections and TSX-V IPOs that went public on the TSX and graduated to the TSX, respectively.

Year	VC Injections	Of whom, went public on TSX	TSX-V IPOs	Of whom, graduated on TSX
2000	494	2	44	-
2001	287	1	25	-
2002	259	2	26	3
2003	200	3	31	3
2004	194	5	30	7
2005	225	4	46	6
2006	169	3	58	6
2007	162	8	67	7
2008	142	1	49	7
2009	130	1	24	2
2010	162	1	52	4
2011	183	3	53	6
2012	210	2	49	2
2013	241	1	13	2
2014	93	1	5	-
Total	3,151	38	572	55

Table 2. Variable Definitions

Variable	Definition
Dependent variables	
TSXV-IPO	Dummy variable, equal to 1 for firms that went public on the TSX-V, and 0 otherwise
TSX-IPO	Dummy variable, equal to 1 for firms that first went public on the TSX, and 0 otherwise
BHAR	3-year Buy-and-Hold Abnormal Returns calculated as in Loughran and Ritter (1995). If returns are available for less than 3 years, the variable is calculated with the maximum amount of data available
TIME-TSX	Number of years between a TSX-V IPO and graduation to the TSX for firms going public on the TSX-V or the number of years between the first VC investment and an IPO on the TSX for firms receiving private VC
Independent variables – Private vs. Public VC financing	
$INV_{INITIAL}$	Initial capital injection for firms receiving private VC, or total IPO proceeds for firms going public on the TSX-V (natural logarithms in regressions)
$AGE_{INITIAL}$	Years since incorporation at the time of the initial VC injection, or at the time of the IPO on the TSX-V (Natural logarithms of $(1+AGE_{INITIAL})$ in regressions)
$LMRET_{INITIAL}$	The CFMRC/TSX value-weighted return in the month prior to the VC injection or the IPO on the TSX-V
Province dummies	Set of dummies for Canadian provinces (see Table 2 for the list of provinces)
SIC dummies	Set of industry dummies (SIC first digit).
Time dummies	Set of year dummies (years 2000-2014).
$LIST_{TSX-V}$	Dummy variable equal to 1 for firms listed on the TSX-V
$PRONE_{TSX-V}$	Fitted probability of going public on the TSX-V at the time of the initial capital injection from private or public VC (TSX-V) financing
Independent variables – Post-IPO performances (BHAR)	
GRAD	Dummy variable equal to 1 for firms that were listed on the TSX-V before their access to the TSX
AGE_{TSX}	Years since incorporation at the time of the TSX listing
$SIZE_{TSX}$	Inflation-adjusted total assets in the year prior to the IPO, or prior to the graduation, in 2014 prices (natural logarithms in regressions)
B/M_{TSX}	Post-issue book value of equity over market value of equity using the first month TSX prices (number of post-issue shares outstanding)
$LMRET_{TSX}$	The CFMRC/TSX value-weighted return in the month prior to the listing on the TSX
$OPERF_{TSX}$	Ratio between earnings before interest and taxes (EBIT) and total assets, in the year prior to the listing on the TSX (ROA)
$LEVERAGE_{TSX}$	Ratio of financial debt to total assets, in the year prior to thelisting on the TSX
$PRONE_{IPO}$	Fitted probability of going public on the TSX at the time of the first capital injection from private or public VC (TSX-V) financing
$PRONE_{TSX-V}$	Fitted probability of going public on the TSX-V at the time of the first capital injection from private or public VC (TSX-V) financing

Table 3. Descriptive Statistics: Private versus Public VC Financing

Average values are calculated on the sample of 3,723 Canadian entrepreneurial ventures that receive their first VC injection or go public on the TSX-V in the period 2000-2014. The significance levels for the tests of differences between VC firms and TSX-V firms are based on t statistics (mean) or Z tests of equal proportions, as required. ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

	Full sample	VC firms	TSX-V firms	t-test/Z-stat
$INV_{INITIAL}$ (mCAD)	5.61	5.90	3.72	1.27
$AGE_{INITIAL}$ (years)	5.26	5.80	2.27	26.45***
$LMRET_{INITIAL}$ (%)	0.36	0.18	1.17	-4.36***
Province = AB (Alberta) (%)	8.7	7.1	17.1	-7.77***
Province = BC (British Columbia) (%)	16.1	9.0	54.9	-27.45***
Province = MB (Manitoba) (%)	1.8	2.0	1.0	1.50
Province = NB (New Brunswick) (%)	2.1	2.5	0.3	3.22**
Province = NL (Newfoundland and Labrador) (%)	0.2	0.2	0	1.20
Province = NS (Nova Scotia) (%)	1.6	1.9	0	3.30***
Province = ON (Ontario) (%)	28.1	30.2	16.8	6.57***
Province = QC (Quebec) (%)	35.6	40.5	8.2	14.86***
Province = SK (Saskatchewan) (%)	2.9	3.4	0.3	3.97***
Province = other (%)	2.9	3.2	1.4	3.12**
SIC=1: Mining, Energy and Construction (%)	19.9	8.5	82.7	-44.13***
SIC=2: Light Manufactured Products (%)	10.8	12.1	3.8	5.83***
SIC=3: Heavy Manufactured Products (%)	18.6	21.1	4.4	9.48***
SIC=4: Transportation and Utilities (%)	5.2	5.8	1.6	4.23***
SIC=5: Trade (%)	5.9	6.7	1.4	4.93***
SIC=6: Finance, Insurance and RE (%)	2.6	2.9	0.7	3.08**
SIC=7: Services and Technology (%)	31.3	36.2	4.4	15.12***
SIC=8: Health, Education, Legal (%)	5.4	6.3	0.3	5.82***
SIC=9: Public administration and other (%)	0.3	0.3	0.7	-1.72*
Obs.	3,723	3,151	572	

Table 4. Likelihood of Private versus Public VC Financing

This table reports logit regression results for the probability of going public on the TSX-V rather than receiving a capital injection from a private VC (1=TSX-V, 0 otherwise). The sample is composed of 3,723 Canadian entrepreneurial ventures that receive their first VC injection or go public on the TSX-V in the period 2000-2014. The model includes time dummies (coefficients are not reported). The reference case for Province is QC (NL, NS, PE and YT dummies are dropped for the limited number of observations). The reference case for SIC is 1 (Mining, Energy and Construction). Robust standard errors are in parentheses. ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

Probability of listing on the TSX-V	
$INV_{INITIAL}$	-0.031
	(0.025)
Ln (1+$AGE_{INITIAL}$)	-0.455***
	(0.044)
$LMRET_{INITIAL}$	2.540***
	(0.915)
Province=AB	0.773***
	(0.125)
Province=BC	1.395***
	(0.110)
Province=MB	0.549*
	(0.292)
Province=NB	-0.153
	(0.417)
Province=ON	0.478***
	(0.111)
Province=SK	-0.948**
	(0.379)
SIC=2: Light Manufactured Products	-1.504***
	(0.133)
SIC=3: Heavy Manufactured Products	-1.784***
	(0.124)
SIC=4: Transportation and Public Utilities	-1.784***
	(0.189)
SIC=5: Trade	-1.587***
	(0.211)
SIC=6: Finance, Insurance and Real Estate	-1.862***
	(0.269)
SIC=7: Services and Technology	-2.275***
	(0.111)
SIC=8: Health, Education, Legal services	-2.560***
	(0.317)
SIC=9: Public administration and other	-0.275
	(0.488)
Constant	0.046
	(0.367)
Obs.	3,723
log likelihood	-670.6

Table 5. Likelihood of Going Public on the TSX

This table reports logit regression results for the probability of going public on the TSX, after receiving a first VC injection or being listed on the TSX-V. The sample is composed of 3,723 Canadian entrepreneurial ventures that receive their first VC injection or list on the TSX-V in the period 2000-2014. Model (1) is a baseline specification, while Model (2) adds a selectivity instrument estimated from the probability to be listed on the TSX-V rather than receiving VC at first, as estimated in Table 3. Both models include time, industry, and province dummies (coefficients are not reported). Robust standard errors are in parentheses. ***, ** and * represent statistical significance at less than 1%, 5% and 10% respectively.

	Probability of listing on the TSX	
$LIST_{TSX\text{-}V}$	0.783***	0.789***
	(0.251)	(0.277)
$PRONE_{TSX\text{-}V}$		-0.004
		(0.079)
$INV_{INITIAL}$	0.204***	0.204***
	(0.055)	(0.056)
Ln $(1+AGE_{INITIAL})$	0.083	0.082
	(0.075)	(0.082)
$LMRET_{INITIAL}$	0.987	0.995
	(1.274)	(1.282)
$LIST_{TSX\text{-}V} \times INV_{INITIAL}$	0.216**	0.216**
	(0.092)	(0.092)
$LIST_{TSX\text{-}V} \times$ Ln $(1+AGE_{INITIAL})$	0.077	0.077
	(0.141)	(0.142)
$LIST_{TSX\text{-}V} \times LMRET_{INITIAL}$	-7.596*	-7.590*
	(4.145)	(4.146)
Constant	-6.542	-6.549
	(132.378)	(132.349)
Obs.	3,723	3,723
log likelihood	-319.6	-319.6

Table 6. Descriptive Statistics: Straight-IPOs versus Graduations

The mean values are calculated on the full sample of 93 Canadian entrepreneurial ventures that went public on the TSX after receiving a first VC injection or being listed on the TSX-V in the period 2000-2014, and on the subsamples of straight IPOs and graduations. The mean tests of differences between the straight IPOs and graduations are based on t-statistics. ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

	Full Sample (93 Obs)	Straight IPOs (38 Obs)	Graduations (55 Obs)	Tests of Differences
3y-BHAR (%)	10.46	-2.06	19.11	-21.17**
TIME-IPO (years)	3.31	3.93	2.88	1.05**
AGE_{TSX} (years)	7.53	8.63	6.24	2.39**
$SIZE_{TSX}$(mCAD)	211.47	426.19	80.16	345.93**
B/M_{TSX}	0.28	0.19	0.34	-0.15*
$LMRET_{TSX}$ (%)	0.79	1.12	0.57	0.55
$OPERF_{TSX}$ (%)	-6.43	-6.82	-6.20	-0.62
$LEVERAGE_{TSX}$ (%)	40.06	60.22	26.12	34.10***

Table 7. Post-IPO Long-Run Performance

This table reports OLS regression results for the post-IPO performance, measured as 3-year BHAR, for 93 Canadian entrepreneurial ventures that went public on the TSX after receiving a first VC injection or being listed on the TSX-V in the period 2000-2014. The post-IPO performance is measured as 3-year BHAR. Model (1) is a baseline specification. Model (2) adds Time to IPO and its interaction with the Graduation dummy. Model (3) adds the square term for Time to IPO, as well as its interaction with the Graduation dummy. All models include time and industry dummies (coefficients are not reported). Robust standard errors are in parentheses. ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

	(1)	(2)	(3)
GRAD	0.312**	0.351**	0.364**
	(0.149)	(0.165)	(0.265)
Ln (1+AGE_{TSX})	-0.022	-0.018	0.099
	(0.135)	(0.129)	(0.125)
$SIZE_{TSX}$	0.295*	0.288*	0.329*
	(0.177)	(0.163)	(0.165)
B/M_{TSX}	0.531	0.533	0.589
	(0.730)	(0.738)	(0.753)
$LMRET_{TSX}$	-9.122*	-9.108*	-8.785*
	(5.017)	(5.035)	(4.915)
$OPERF_{TSX}$	-0.369	-0.362	-0.548
	(0.318)	(0.322)	(0.344)
$LEVERAGE_{TSX}$	0.291	0.284	0.338
	(0.307)	(0.302)	(0.316)
$PRONE_{IPO}$		-0.058	-0.047
		(0.313)	(0.319)
$PRONE_{TSX\text{-}V}$			-0.374
			(0.227)
Constant	-2.194**	-2.066**	-2.527**
	(1.050)	(1.011)	(1.046)
Obs.	93	93	93
R-squared	0.495	0.495	0.510

Table 8. Alternative Measures of Post-IPO Performance

This table reports OLS regression results for the post-IPO financial performance, measured as 1-year and 2-year BHAR, for 93 Canadian entrepreneurial ventures that went public on the TSX after receiving a first VC injection or being listed on the TSX-V in the period 2000-2014. Model (1) is a baseline specification. Model (2) adds a selectivity instrument estimated from the probability of being listed on the TSX at the time of receiving a first VC injection or being listed on the TSX-V, as estimated in Table 4. Model (3) adds a selectivity instrument estimated from the probability of being listed on the TSX-V rather than receiving VC financing first, as estimated in Table 3. All models include time and industry dummies (coefficients are not reported). Robust standard errors are in parentheses. ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

	(1) 1y-BHAR	(2) 1y-BHAR	(3) 1y-BHAR	(4) 2y-BHAR	(5) 2y-BHAR	(6) 2y-BHAR
Graduation	0.160*	0.175*	0.178*	0.228*	0.267*	0.246*
	(0.089)	(0.097)	(0.096)	(0.138)	(0.153)	(0.131)
Ln (1+ AGE_{TSX})	-0.041	-0.038	-0.029	-0.038	-0.057	-0.069
	(0.029)	(0.024)	(0.024)	(0.024)	(0.032)	(0.049)
$SIZE_{TSX}$	0.214***	0.229***	0.218***	0.313**	0.369***	0.272**
	(0.057)	(0.059)	(0.063)	(0.122)	(0.138)	(0.111)
B/M_{TSX}	-0.041	-0.027	-0.024	0.278	0.326	0.339
	(0.180)	(0.181)	(0.179)	(0.255)	(0.267)	(0.245)
$LMRET_{TSX}$	-1.854	-1.896	-1.911	-3.848	-3.666	-3.481
	(2.377)	(2.384)	(2.364)	(4.653)	(4.617)	(3.991)
$OPERF_{TSX}$	-0.083	-0.142	-0.130	-0.125	-0.086	-0.051
	(0.202)	(0.205)	(0.218)	(0.365)	(0.367)	(0.429)
$LEVERAGE_{TSX}$	0.017	0.036	0.025	0.072	0.141	0.036
	(0.125)	(0.131)	(0.134)	(0.264)	(0.276)	(0.259)
$PRONE_{IPO}$		-0.138	-0.136		-0.059	-0.056
		(0.118)	(0.121)		(0.034)	(0.038)
$PRONE_{TSX-V}$			-0.092			-0.808
			(0.146)			(0.608)
Constant	-0.640	-0.850*	-0.649	-3.815**	-4.696**	-2.554**
	(0.496)	(0.495)	(0.650)	(1.816)	(2.076)	(1.149)
Obs.	93	93	93	93	93	93
R-squared	0.421	0.430	0.434	0.294	0.325	0.398

Table 9. Quantile Regressions on Post-IPO Performance

This table reports quantile regression results for the post-IPO financial performance, measured as 3-year BHAR, for 93 Canadian entrepreneurial ventures that went public on the TSX after receiving a first VC injection or being listed on the TSX-V in the period 2000-2014. Model (3) from Table 6 is run with reference to quantile 0.25, 0.50, 0.75 and 0.95. All models include time and industry dummies (coefficients are not reported). ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

	q=0.25	q=0.50	q=0.75	Q=0.95
GRAD	0.391*	0.390*	0.494*	0.537*
	(0.236)	(0.209)	(0.263)	(0.257)
Ln (1 +AGE_{TSX})	-0.079	-0.086	-0.075	-0.073
	(0.097)	(0.164)	(0.354)	(0.150)
$SIZE_{TSX}$	0.166**	0.259**	0.542**	0.600***
	(0.067)	(0.113)	(0.244)	(0.104)
B/M_{TSX}	-0.324*	0.530	0.812	1.050***
	(0.191)	(0.323)	(0.698)	(0.296)
$LMRET_{TSX}$	-3.661*	-3.030	-2.230	-8.451***
	(2.007)	(3.393)	(7.338)	(3.117)
$OPERF_{TSX}$	-0.163	-0.326	-0.471	0.176
	(0.263)	(0.445)	(0.963)	(0.409)
$LEVERAGE_{TSX}$	-0.013	0.066	0.867	0.461**
	(0.141)	(0.238)	(0.514)	(0.218)
$PRONE_{IPO}$	-0.099	-0.034	-0.028	-0.088
	(0.137)	(0.232)	(0.502)	(0.213)
$PRONE_{TSX-V}$	-0.050	-0.043	-0.329	-0.261
	(0.127)	(0.214)	(0.463)	(0.197)
Constant	-2.028***	-2.377***	-4.360**	-1.804**
	(0.516)	(0.873)	(1.889)	(0.802)
Obs.	93	93	93	93
Pseudo R-squared	0.49	0.31	0.35	0.56

Table 10. Time to List on the TSX

This table reports Cox proportional hazard regressions on the time to graduation after being listed on the TSX-V or on completing a TSX IPO for a VC-backed firm. The sample is composed of 3,723 Canadian entrepreneurial ventures listed on the TSX-V or VC-backed over the period 2000-2014. Model (1) is a baseline specification, while Model (2) adds a selectivity instrument estimated from the probability of being listed on the TSX-V rather than receiving VC financing first, as estimated in Table 3. Both models include time, industry, and province dummies (coefficients are not reported). Robust standard errors are in parentheses. ***, ** and * represent statistical significance at less than 1%, 5% and 10%, respectively.

	(1)	(2)
$LIST_{TSX\text{-}V}$	1.833***	1.863***
	(0.562)	(0.573)
$PRONE_{TSX\text{-}V}$		-1.480
		(0.869)
$INV_{INITIAL}$	0.527***	0.507***
	(0.158)	(0.161)
Ln (1 + $AGE_{INITIAL}$)	0.010	-0.644*
	(0.171)	(0.346)
$LMRET_{INITIAL}$	-0.841	2.903
	(3.175)	(3.636)
Listed on TSX-V × $INV_{INITIAL}$	0.093	0.103
	(0.198)	(0.201)
Listed on TSX-V × $AGE_{INITIAL}$	0.240	0.257
	(0.251)	(0.252)
Listed on TSX-V × $LMRET_{INITIAL}$	-7.424	-9.844
	(6.560)	(6.594)
Obs.	3,723	3,723
log likelihood	-605.6	-603.0