Angels and Venture Capitalists: Complements or Substitutes?

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Abstract

We examine the relationship between angel investors and venture capitalists. Specifically we analyze how companies dynamically choose between these alternative investor types, and how these choices affect company performance. The paper juxtaposes a complements hypothesis – angel financing is a springboard for venture capital, against a substitutes hypothesis – angel financing and venture capital are distinct financing methods that do not mix well. Using a unique detailed dataset of start-ups in British Columbia, Canada, we find companies that obtain angel financing subsequently obtain less venture capital, and vice versa. On average venture capitalist makes larger investment, but this alone cannot explain the substitutes patterns. The substitutes effects are stronger for companies funded by less experienced angels. Using variation in tax credits as an exogenous instrument we find evidence for both selection and treatment effects. As for performance, companies funded by venture capital experience more successful exits than angel backed companies. However, there is no strong evidence that mixing angel and venture capital funding would be associated with significantly better or worse performance. Overall the evidence favors the substitutes hypothesis.

1. INTRODUCTION.

Much of the policy debate and academic literature on entrepreneurial finance focuses on venture capital. But, angel investors are another important source of funding for start-ups. An OECD report from 2011 notes that "While venture capital tends to attract the bulk of the attention from policy makers, the primary source of external seed and early-stage equity financing in many countries is angel financing not venture capital" (OECD 2011, p.10). This same report estimates that the total angel market is approximately the same size as the venture capital market, an estimate in line with earlier studies (e.g. Mason and Harrison, 2002, Sohl, 2003).

In this paper we ask whether angel investors and venture capitalists (VCs henceforth) should be thought of as complements or substitutes? We address two main aspects of the relationship between these two types of financiers. First, in the context of dynamic investment patterns, we ask whether companies that obtain angel financing are more or less likely to subsequently obtain VC, and vice versa. Second we consider the relationship between investor types and outcomes, and ask whether companies that combine angel and VC financing outperform companies that obtain financing from only one source.

What should we expect about the dynamics of angel and VC investments? Under the substitutes hypothesis, angels and VCs constitute alternative investment models that do not mix well together. Once a start-up has chosen one type of investor, it is less likely to switch to the other type. Under the complements hypothesis, however, each type of investor offers a different piece of the puzzle. Obtaining one type of financing actually increases the start-ups' chances of obtaining the other. For instance, one may conjecture that angel financing is a springboard to obtaining VC.[4]

What performance implications should we expect of using different investor combinations? Under the complements hypothesis start-ups have supermodular production functions, where the use of one input becomes more valuable in the presence of the other. By contrast, the substitutes hypothesis argues that the production function is submodular, so that the use of one input becomes less valuable in the presence of the other. The difference between complements and substitutes can be viewed as a horse race between the benefits of diversity versus the benefits of specialization.

This paper presents new empirical evidence that allows us to examine these alternative hypotheses. By far the biggest obstacle to researching angel investments has been access to credible and systematic data. We collect data from the Venture Capital Program in British Columbia, Canada (henceforth the VCP). While venture capital programs exist in many part of the world, British Columbia is one of the few places where the tax credits are made available not only to VC firms but also to angel investors (Sandler, 2004). The regulatory filings under the

[4] Famous examples of start-ups that started with angel funding and proceeded to VC include Facebook and Google.

VCP offer a unique opportunity to obtain systematic and detailed data on angel as well as VC investments. A useful feature to this dataset is the availability of documents that list all the companies' shareholders over time, which allows us to construct detailed and comprehensive financing histories of start-ups. Our data includes 469 starts-up that were first funded over the period 1995-2009.

Our data also posits challenges. For example, there is no universally accepted definition for what exactly distinguishes angels from VCs.[5] We adopt the following approach: an angel investor invests his/her own family's wealth, whereas a VC invests on behalf of other fund providers.[6] This definition is based on a fundamental economic distinction between direct versus intermediated financing. From a theoretical point of view, one would expect that investors investing their own money face different incentives and constraints than investors who are intermediaries that act on behalf of others.[7] In addition to angel investors and VCs, we also identify a variety of other investors, including corporations, financial institutions, not to mention founders and their families.

We analyze financing patterns by utilizing the dynamic structure of data, asking specifically how prior investments relate to subsequent investment choices. Our regressions contain a rich set of controls, including company characteristics and a variety of time clocks. We find strong evidence for dynamic persistence within investor types. A company that already obtained funding from one particular type of investor is likely to raise more funding from that same type. We also find a clear substitutes pattern between angels and VCs. Companies that have obtained VC funding are less likely to subsequently obtain angel funding. Moreover, companies that have obtained angel funding are less likely to then obtain VC funding. These findings apply equally to the probability of obtaining funding as well as the amounts raised in case of funding.

This pattern of substitutes could be due to selection or treatment effects. Both of these are economically meaningful. In case of selection, it suggests that angels and VCs offer different investment experiences that suit to different companies. In this case we should interpret angels and VCs as separate components of the financial ecosystem that focus on financing different types of entrepreneurial companies. In the case of treatment, it suggests that if a company is randomly assigned to one type of investor, it then gets locked into that type of investor. The initial choice of investor then has implications for the subsequent financing path of the company.

[5] This is further discussed also OECD (2011) and Goldfarb, Hoberg, Kirsch, and Triantis (2012)

[6] In the data we still have to deal with several borderline cases, most notably so-called "angel funds" where several individuals pool their investment funds. One of them typically takes a leadership role in terms of screening out projects, and hence acts a little bit like an intermediary for the others. Empirically it is difficult to distinguish between active and passive investors, but the fact that all these individuals invest their own money suggests they are angels.

[7] See also Diamond (1984) and Axelson, Strömberg and Weisbach (2009).

To empirically separate selection and treatment explanations we use two methods for controlling for unobserved heterogeneity. First we add company fixed effect that control for time-invariant unobserved heterogeneity. We find that both substitution coefficients, from angel to VC and vice versa, remain significant. Second, we use exogenous variation in the tax credit program as an instrument to control for time-varying unobserved heterogeneity. We find that exogenous increases in the availability of angel financing lead to less subsequent VC financing. However, exogenous increases in the availability of VC financing do not lead to less subsequent angel financing. This suggests that both selection and treatment effects are at work. It is also worth noting that while the distinction between a selection and treatment effect is interesting, it is not central to our main research questions. We are mainly interested in understanding to what extent angels and VC form an integrated versus separated financial ecosystem, both the selection effect and the treatment effect are components of that question.

A unique strength of our data is that it allows us to distinguish between different types of angels. We separate angels into less versus more committed angels based on whether they invest in a single or in multiple companies. We also separate out angel funds. We find that the substitute pattern is most pronounced for the less committed angels. Specifically, our results suggest that companies backed by one-company angels experience significantly lower chances of obtaining VC funding. One possible interpretation of this result is that VCs tend to avoid mixing with less committed angels.

To analyze performance we consider several outcome measures. The most common measure of success in the VC literature is whether a company exits, either through an acquisition or an IPO (see Phalippou and Gottschalg, 2009). We also consider the likelihood of death, i.e. going out of business. Another indirect measure of success can be whether a company raises financing from an reputable foreign venture capital firm. We examine the likelihood of raising an investment round from US venture capital firms. For a subset of our sample companies we are also able to observe revenues and employment.

We first examine the direct relationship between investor type and company performance. Without instrumental variables we find that obtaining more venture capital is associated with better performance outcomes, a result that is consistent with much of the prior literature. Interestingly, the same is typically not true for investments from angel or other investors. Moreover, companies funded by less committed angel investors tend to have a somewhat lower performance than those funded by more committed angels. When we apply our tax credit instrument to the outcome regressions we find that the coefficient for VC becomes insignificant, suggesting that an exogenous increase in venture capital does not lead to higher exit performance.

We then augment the model to also include interaction effects. In the un-instrumented regression all the estimated coefficients on the interaction terms indicate a negative relationship, although only some are statistically significant. However, when we apply our tax credit instrument, none

of the coefficients remain significant. Again it appears that selection effect may be the reason behind the negative interaction effect. This would be consistent with the notion that weaker companies need to raise funding from both angels and venture capitalists, but that stronger companies rely on a single investor type. Overall the evidence neither suggests a strong super- or submodular production function, where mixing angel and VC funding is associated with higher or lower performance, compared to using either only-angel or only-VC funding.

Overall our evidence clearly favors the substitutes over the complements hypothesis in terms of the dynamic investment patterns. However, in our data we are unable to detect a strong causal relationship between investor choices and company outcomes.

The academic literature on angel financing remains underdeveloped. The paper closest to our is Goldfarb et al. (2012), who make use of a unique dataset from a bankrupt law firm that contained term sheet from client firms, some of which obtained angel and/or VC financing. They show that VCs obtain more aggressive control rights than angel investors. This finding is consistent with what we know about VCs (e.g. Kaplan and Strömberg, 2003) and other research on angel investors (Van Osnabrugge and Robinson (2000) and Wong (2010)). Most interesting, Goldfarb et al. (2012) find a negative effect of mixing angel and VC funding, similar to the results found in this paper. Their analysis suggests that this result is driven by split control rights, where neither angels nor VCs have firm control over the companies' board of directors. Our analysis augments the work of Goldfarb et al. (2012) in several important ways. For each company they only have a single snapshot of one financing round, whereas we have an entire financing history. As a result, Goldfarb et al. mainly focus on syndicated investment where angels and VCs invest in the same round. Our data allows us to consider richer dynamic relationships. Interestingly, our data also suggests that syndicated angel-VC investments are somewhat rare. In our sample only 7% of all financing rounds involve syndication between angels and VCs.

Kerr et al. (2013) examine data from two angel funds that keep track of which companies present in front of the group, and which companies actually get funded. Using a regression discontinuity approach, they find evidence that obtaining angel funding affects the companies' growth and survival rates. While they have more detailed evidence on the investment decisions of angel investors, they can only look at a specific part of the angel community, namely those associated with angel networks. They also do not consider the interrelationships between angels and VCs.

Two papers provide some theoretical foundations for comparing angels and VCs. Chemmanur and Chen (2006) assume that VCs add value but angels don't. Their model explains why entrepreneurs sometimes first obtain angel financing before switching to VC. By contrast, Schwienbacher (2009) assume that both angels and VCs can add value, but that only VCs have enough money to refinance a deal. Under his set-up angels endogenously provide more value-adding effort, because of the need to attract outside capital at the later stage.

The literature on VCs is much larger than that on angel investors. Most relevant to this paper is the part of the literature that compares different types of VCs, such as corporate VCs, bank VCs and also government-supported VCs. Da Rin, Hellmann and Puri (2013) provide a comprehensive survey of that literature.

The remainder of this paper is structured as follows. Section 2 discusses data sources and variable definitions. Section 3 examines the dynamic financing patterns across different investor types. Section 4 examines the relationship between financing patterns and company performance. It is followed by a brief conclusion.

2. DATA AND VARIABLES.

2.1. The BC Venture Capital Program

The BC provincial government administers a Venture Capital Program (henceforth, the VCP) that is based on a 30% tax credit for BC investors investing in BC entrepreneurial companies. The VCP was first established in 1985 under the Small Business Venture Capital Act of British Columbia. By the end of our sample period in 2009, the VCP program has four segments. The first two segments consist of what we will henceforth call *retail funds*. Retail funds have obtained a special license to raise money from the general public. Individual investors receive a 30% credit for investments into retail funds, up to some limit ($10K in 2009). The main eligibility criterion is that the investors are BC residents. The retail funds then have an obligation to invest these funds within a certain time. There were two types of retail funds in BC. The first was a part of the labour-sponsored venture capital program which involved sharing of the tax credit between the federal and provincial governments. The second was a very similarly structured program that was purely funded by the provincial government.

The third and fourth segments of the VCP primarily target angel investors. The third segment of the VCP program consists of tax credits for investments in funds which do not have a license to gather funds from the general public. These funds are called *VCCs*, for Venture Capital Corporations, as the program requires them to be structured as corporations.[8] VCCs can only raise money from BC-based "eligible investors". For individual investors this means they need to satisfy some qualified investor criterion (based on wealth, earnings, or "sophistication"), or else demonstrate to have a prior acquaintance with the VCC fund managers (either based on a family relationship or professional contacts.)

[8] Readers familiar with the VCP may note that the provincially funded retail funds are also structured as VCCs, albeit with the additional rights to raising funds from retail investors.

The fourth segment of the program was introduced in 2003 and is called the EBC program. It consists of tax credits for direct investments of BC-based eligible investors into entrepreneurial companies called EBCs (Eligible Business Corporations). This program is administratively much simpler for angels than the VCC program since it does not require them to set up an investment vehicle. Indeed, the EBC program was intended to reach out to a wider set of angels, including those for whom the volume of tax credits was too small to warrant the effort and costs of setting up a VCC. Eligible investors, including angels, can simply claim the 30% tax credit on the basis of an investment in an EBC. Under the VCC and EBC segments of the VCP, individual investors can claim tax credits for investments up to $200K.

There are several requirements on the companies under the VCP. In other to qualify to receive investments under any of the segments of the VCP, companies must be BC-based businesses (together with affiliated companies) at the moment of registration under the program, have no more than 100 employees, pay at least 75% of the wages and salaries to BC employees, and operate in an eligible industry.[9]

2.2. Data sources

The data for this paper comes from a variety of sources. Our primary source is the Government of British Columbia, who administers the VCP program described above. What makes the VCP unique, and useful for our analysis, is that it applies to investments by both angel investors and venture capitalists. Sandler (2004) shows that the bulk of the North-American public policy initiatives target formal venture capital, rather than the angel segment of the market.

Our dataset contains detailed investment data related to the tax credits claimed under the program. The BC Government also requests detailed company information at the moment the companies register under the program. During registration companies provide data on their balance sheets, profit-and-loss accounts, and the number of employees at the moment of registration. For about half of the companies we also have their business plans. In many cases companies continue to file these documents on an annual basis thereafter. For example, companies who successfully attract risk capital after registering for the program are required to submit so-called annual returns that contain some financial information (mainly revenues and assets), as well as employment figures.

For a substantial subset of our companies we also have their share registries. These documents are particularly important for our analysis, since they contain the complete history of companies' shareholders, dating back to the date of incorporation, and listing the precise dates of when

[9] Further information on the program can be found in Hellmann and Schure (2010), Lerner et al. (2012), and on the provincial government's website at http://www.jti.gov.bc.ca/ICP/VCP/.

shareholders obtained their shares. As a consequence our data contains not only the investments made with tax-credits, but also those made without tax-credits.

We augmented the VCP data using several additional data sources. First, we consulted several sources to classify investors into types. Investors do not only include angels and venture capitalists, but also other financial parties, corporations, and smaller groups such as universities, charitable organizations, etc. Secondly, we gathered additional data about the companies in the VCP dataset. We are interested in how companies evolve and perform after their initial registration with the program. The BC Government data includes some information due to the fact that the VCP requires companies to file an annual report. However, we collected performance indicators other than those provided by the BC Government. The additional data sources we consulted are: the BC company registry; the (Canadian) Federal company registry ("Corporations Canada"); Capital IQ; ThomsonOne (VentureXpert, SDC Global New Issues and SDC Mergers and Acquisitions); Bureau Van Dijk (i.e. a data provider that collects private company data – for Canada, the main source of the Bureau Van Dijk data comes from Dunn and Bradstreet); SEDAR, which contains the record of filings with the Canadian Securities Administrators of public companies and investment funds; and the Internet (using mostly Google searches and an internet archive called the Wayback Machine (http://archive.org/web).

2.3. The company dataset

We have information of companies that registered under the VCP in the period Jan 1995 to March 2009. Our dataset consists of 469 companies, although we are not always observe all relevant variables for all of them.

Panel A of Table 1 reports several descriptive statistics of the companies in our sample. At the time of their first financing the average company is 2.4 years old. We then observe companies' financing history for an average of 3.8 years after this moment, so they are on average 6.2 years old by the time of the last financing round we observe. We then continue to observe the companies until they experience an exit (IPO or acquisition), or fail, or reach the end of the sample period while still alive. The company is on average 10.2 years old by the time we observe them last.[10]

For the majority of the companies in our sample, we observe their location through the VCP data (from either the business plans, the registration application, and/or annual filings). We use internet searches to find the location of the remaining companies. As shown in Panel A of Table 1, our companies are concentrated in and around Vancouver – 73% of them are located in the

[10] We are not always able to observe all financing rounds up to exit, as companies may stop reporting them after a while. For the investment analysis we stop our sample at the time of the last observed financing round. For the performance analysis, however, we use the entire sample until the time of exit.

Greater Vancouver Regional District (GVRD).[11] The two smaller hubs for innovative activities are Victoria (the Capital Region District of BC), and, in the East of BC, the adjacent areas of the Okanagan and the Thompson River Valley.

We classify companies into industries by manually matching the company's business activity to an industry classification for innovative companies loosely based on NAICS codes. For most of the companies in our sample, we obtain their business activities from the business plans and registration applications. We use the internet search for the remaining companies. As shown in Panel A of Table 1, most of the VCP companies are active in the software industry or hi-tech manufacturing. Together these two industries account for almost half of the companies in our sample. When taken together, high-tech companies account for almost 78% of the companies in our data. The other 22% of the companies are mainly focusing on tourism or non-high-tech manufacturing, mainly for exports. These industries are eligible because they are also deemed to further the main objective of the VCP program, namely to "enhance and diversify the BC economy".

Following companies up to exit or the end of 2012, we learn about their final status through a number of data sources. We use SDC Mergers and Acquisitions, SEDAR, CapitalIQ, LexisNexis and internet searches to check whether companies were involved in IPOs or acquisitions. We use the BC and Canadian corporate registries to check for the status of the remaining companies. The corporate registries are quite reliable as companies are required to submit documentation annually. As of December 2012, 64% of the companies in our dataset are still active; 13% of the companies have exited through either an IPO or an acquisition; and the remaining 23% have failed.

The US is widely recognized as the most developed venture capital market. Obtaining funding from a US venture capitalist is often seen as a signal of company quality and associated with greater prestige. As shown in Panel A of Table 1, about 10% of our sample companies ever secured funding from a US venture capitalist.

We also collect data on company's revenue and number of employees. These figures are available at registration and often also in the company's annual filings, which usually include annual reports. Collecting data from financial statements involved a labour-intensive manual process of scanning and transcribing paper documents into electronic format, and creating some standardization. We report annual revenues for all quarters for which a financial statement applies.[12] Financial statements are typically not available for all years. We obtain revenues for

[11] For simplicity we also include in our GVRD definition nine companies that were located in the "Lower Mainland", which is the valley extending inland from Vancouver.

[12] For example, if the financial year starts in July, the first two quarters use the annual revenues from the previous financial year, and the last two quarter use the annual revenues from the following financial year. If the financial year starts within a quarter, we always go to the closest date.

5,424 company-quarters, representing 334 distinct companies. Collecting employment is even more difficult, because they are not reported in financial statements. We therefore rely on administrative filings, hand-collected survey data and BVD (see Hellmann and Schure (2009) for details). We obtain employment data for 3,414 company-quarters, representing 275 distinct companies.[13]

2.4. The investor dataset

Central to our main hypothesis is the classification of investors into distinct types. In total we observe 13,101 investment transactions, made by 7,603 unique investors in 469 companies. We adopted a two-step approach to classify this population of investors. First, we separated the investors into two groups: humans and vehicles. Human investors are identified by their first and last name. "Vehicle investors" are the remaining ones. To ensure that no human investor is wrongly classified as vehicle investor, we checked on all vehicle investors to see whether there was any corporate designation such as "Ltd.", "Corp.", etc. in the name.

In the second stage we performed several name-based matches with other data sources to classify the human and vehicle investors into several categories. With respect to the human investors, it is important to distinguish angels from company founders, their families, and key employees. To do this, we matched the human investors in the share registry with the list of founders identified in the company's business plan, its annual returns, and other available documents and websites. We also identify non-founding managers and other key employees using the above sources. We furthermore assume investors are key employees if we observe they acquire shares at a deeply discounted price (10% or less of the maximum share price other investors pay in the same round). Finally we score investors as family members of founders if they invest in the same company and share the same last name as founders. Our method cannot identify those family relationships where family members have different last names. Moreover, our methodology does not allow us to identify founders' friends, as there is no objective criterion for separating those out from angel investors. By the end of the procedure we have separated human investors into "angel investors" on the one hand, and founders, family and key employees (henceforth "founders") on the other. Note, however, that we only worked with the share purchases of "founders" made at "regular value" – that is we removed from our data all share purchases at deeply discounted values.

For some of the analysis we further subdivide the angel investor category into three types. We first distinguish between those angels who throughout our entire database invest in only one

[13] Note that our regression analysis will use lagged dependent variables. This requires consecutive years of revenues and employees, further reducing our sample sizes.

company (although possibly over multiple rounds) versus those who invest in more than one company. We call them “Angel Single” and Angel Multiple” respectively. Investing only once suggests that an individual has limited interest in angel investing *per se*, and may have made the one investment because of a personal connection or other idiosyncratic reasons. However, investing more than once suggests that the individual is somewhat more committed to being an angel investor. As a third subcategory we isolate all angel funds. Those are defined as investment vehicles that are owned by more than one angel.

There are over 2,200 vehicle investors in our dataset. We first matched our list of vehicles with the list of Venture Capital Corporations (VCCs) described in Section 2.1. We then separated out VC funds. We first identify an investor as a VC using name-based matching with Capital IQ and ThomsonOne (VentureXpert). Beyond that we classify an investor as a VC if a web search reveals that (a) they declare themselves to be a VC firm, or (b) the fund is managed by a team of investment professionals. We identified a total of 54 VC firms in our dataset. Some of our analysis further subdivides VCs into “Private VCs” and “Government VCs”. Following Brander, Du and Hellmann (2013), we include in the Government VCs category not only those VC firms that are directly owned by the government, but also those that directly benefit from government support, most notably all of the retail VCs described in section 2.1.

Some angel investors use vehicles for investments. All of the non-retail VCCs in the VCP program are owned by angel investors, so we classify them as such. In addition we identify several corporations and trusts that clearly bear the names of individuals or families. We search the BC and Federal company registries and internet searches to verify that names represent individuals and not operational entities, adopting a conservative approach, only declaring them as angel if we can positively identify them as such. This approach emphasizes the correct identification of angel investors. We are unlikely to misclassify financial or corporate entities as angel vehicles, although we are likely to misclassify some angel vehicles as financial or corporate entities. The remaining vehicles are either classified as financial or corporate investors. The category of financial investors includes financial institutions that are not VCs (e.g., banks), as well as an assortment of investment vehicles (e.g., real estate funds, pension funds). The category of corporate investors spans a wide range of corporations, including manufacturing and professional service firms.

In order to carefully examine investment dynamics we structure our data as a quarterly panel. Within a quarter we aggregate all investment amounts into a single round. However, in practice companies sometimes raise a round over a span of time that either crosses across two quarter boundaries, or that exceeds the length of a quarter. We adopt the following pragmatic rules regarding financing rounds and timing of these rounds. A series of investments is considered to be a single round in case that an investment takes place within ninety days of a previous

investment. The date of the round is then the quarter in which the first investment within the sequence took place.

Panels B of Table 1 provide some descriptive statistics concerning investment round and investor types. The first column of Panel B reveals that a financing round took place in 30% of the company-quarters in our data. This implies that our companies raise money during the time we observe them slightly more often than once a year. Moreover, angel financing seems to be the most common source of financing for the companies in sample. Angels were active during 21% of all company-quarters, as opposed to 10% for VCs and other investors. The second column shows average round amounts, conditional on observing an investment in a given quarter. The average VC investment round is much larger ($1.75M) than the average angel investment round ($256K) or the average investment from other investors ($192K).This is consistent with the general belief that venture capitalist tends to invest in larger deal than angel investors. Panels C of Table 1 provides further descriptive statics that focus on the cumulative amount of funding, as measured at the time of the last company round. 85% of our sample companies obtain at least some funding from angels, 38% from VCs, and 56% from other investors. However, companies obtain six times as much funding from VCs than from angel investors.

3. DYNAMIC FUNDING PATTERNS.

3.1: Preliminary considerations

In this section we examine the dynamic funding patterns of entrepreneurial companies. Our main focus is how past investor choices affect companies' current investor choice. This question requires us to start our analysis at the first funding round, and then follow companies forward in time. As a preliminary step it is therefore useful to briefly discuss the determinants of the initial choice of investor type.

Table 2 reports the results from OLS regressions about the initial choice of investor type. The dependent variable is the amount of funding received from angel investors (column 1), VCs (column 2) and other investors (column 3).[14] Table 2 shows that the coefficients for company age at the time of first funding are statistically insignificant in columns 1-3. In terms of geographic location, we find that companies located in the rest of BC obtain less VC funding. Most interesting, there appears to be significant industry specialization, especially between angels and VCs. The omitted category is software. Relative to that, angels are found to be more active in Cleantech, High-tech Manufacturing and the "Other industries" category (which includes a wide variety of industries, including agriculture, forestry, fishing, mining, as well as

[14] In Table 1 we report investment amounts in million Canadian dollars. Starting with Table 2 all amounts variables are based on the natural logarithm of one dollar plus the investment amount in Canadian dollars. The addition of one dollar allows us keep in the data all quarters where no invest round occurred.

an assortment of other low technology industries). VCs are more likely to invest in Biotech, but less likely to invest in Cleantech, Tourism and the "Other industries" category. Not shown in Table 2 are calendar time fixed effects, namely a complete set of dummies for each quarter within the sample period. Columns 1-3 of Table 2 focus on the initial funding across investor types. Columns 4-6 repeat the same regression using the final amount of funding received across the three types. The results are fairly similar, although several coefficients that were insignificant in columns 1-3 are now significant in columns 4-6.

3.2: Empirical specification

We now turn to the dynamics of investor choices. We consider a quarterly panel where we follow our sample companies from their first to their last investment. Our main regressions model, used in Table 3, is as follows:

$$J_{kt} = \alpha + \beta_k I_{k,t-1} + \beta_c X_c + \beta_{ct} X_{ct} + \eta_t + \varepsilon_{ct}$$

The dependent variable is J_{kt}, which is the amount of funding that a company obtains from investor type k in period t. Columns 1-3 of Table 3 consider angel investors, VCs and other investors. Column 4 also considers the total amount of funding from any of these investor types.

The most important independent variables are $I_{k,t-1}$, which measure the cumulative amount of funding that a company received from investors of type k, up to time t-1. Note that throughout the paper we call the amount of funding received in quarter t the "current" amount, and the cumulative amount of funding received up to quarter t-1 the "prior" amount.

In terms of additional controls, X_c is the set of variables that measure all time-invariant company characteristics, namely company age at the time of the first round, industry or location. We report those controls in Table 3, but for brevity will omit them in all subsequent Tables.

X_{ct} is a set of variables that measure all time-variant company characteristics. These include the time since the first round (measured non-parametrically with a complete set of dummies for each quarter, starting the counter with the quarter when the first round occurs), and the time since the last round (measured non-parametrically with a complete set of dummies for each quarter, restarting the counter every time that new round occurs). This very detailed set of non-parametric controls is meant to capture independent time-varying factors, allowing us to focus specifically on the relationships between prior and current funding choices.[15] All our regression models use these controls, but for brevity's sake they remain unreported.

[15] Note that our specification implicitly takes care of company age, since we control for both the age at the time of first round, and a clock for time since the first round. Using a clock for company age, instead of a clock for the time since the first round, yields very similar results.

η_t is a set of calendar time fixed effect (measured non-parametrically with a complete set of dummies for each calendar quarter), which controls for any seasonal effects, any business cycles effects, or indeed any other calendar time effects. All our regression models use these controls, but for brevity's sake they remain unreported.

ε_{ct} is the standard error term. Throughout the paper we use robust standard errors (which in a panel model is the same as clustering by company). We only use OLS panel regressions, but not any non-linear models such as Probit of Logit regressions. This is because the large number of fixed effects in our specifications creates an incidental parameter problem (see Angrist and Pischke, 2009). Note also that our regression model does not consist of one single equation, but of a collection of k equations. At the highest level of aggregation we can consider the case of k=3, comparing angels, venture capitalists and other investors. Below we also consider alternative specifications with higher values of k, that allow for the disaggregation of investor categories.

We naturally recognize the possibility that unobserved heterogeneity create a correlation between the error term and the dependent variable, what is commonly referred to as an endogeneity problem. In section 3.3 we first report the results without any endogeneity correction. Section 3.4 then explicitly focuses on issues of unobserved heterogeneity.

3.3: Results from the base model

Table 3 shows the results from the estimation of our base model. The most important results concern the relationships between investor types. We first note that the coefficients on the main diagonal, i.e. the effect of prior financing by type k on current financing by type k, is always positive and strongly significant at the 1% level. This suggests strong consistency over time, where a company that already received funding from one type of investor is likely to receive further funding from that same investor type.

Next we note strong substitutes effects between angels and VCs. If a company has received prior VC funding, it raises significantly less angel funding, and vice-versa. The result that companies with more VC funding receiving less angel funding is probably not very surprising. VCs have deep pockets, so that adding angel money to VC-backed companies may not be so important. However, the results that more angel funding leads to less VC funding is far from obvious, and suggests a substitutes, not a complements relationship. Below we will delve deeper into the possible reasons for this effect. It is also interesting to note that the negative coefficient for prior VC amounts on current angel amounts (-0.0843) is more than twice as large as the negative coefficient for prior angel amounts on current VC amounts (-0.0378). This intuitive finding suggesting that the negative substitutes effect from VCs to angels is stronger than the negative substitutes effect from angels to VCs, is consistent with the a stepping stone logic where angel

financing comes ahead of venture capital in the sequence of investors that finance entrepreneurial companies.

Table 3 also shows that obtaining funding from other investor does not seem to significantly affect angel or VC funding. However, we do find a negative effect of VC funding on subsequent funding from other investors, which is again consistent with the notion that VCs have deep pockets. Column 4 provides further evidence for such a 'deep pocket' effect. Looking at the total amount of funding (aggregated over the three types), we find that prior VC funding is associated with more subsequent funding, whereas the effects of prior funding from angels or other investors is statistically insignificant. Finally note that the company control variables behave broadly similar to our findings from Table 2.

The analysis of Table 3 considers investment amounts for all quarters. This includes quarters where a financing round occurs, as well as quarters where no financing round occurs. Table 4 provides a decomposition of the effects from Table 3, where we distinguish between the probability of having a financing round, and the amount of funding conditional on having a financing round. Panel A of Table 4 estimates the probability of obtaining any funding from investor type k in period t, as measured by a set of dummy variables for each type. Panel B of Table 4 estimates the amount of funding from investor type k in period t, conditional on observing some investment in period t. The sample in Panel A (6,815 company-quarter observations) represents the set of potential financing rounds, whereas the sample in Panel B (1,719 company-quarter observations) represents the set of realized financing rounds. The independent variables are the same as in Table 3.

Table 4 shows that the two central findings from Table 3 apply equally to the probability of obtaining funding, as well as the amount of funding conditional on obtaining funding. Specifically we find that the coefficients on the main diagonal all remain positive and statistically highly significant in both specifications. Moreover, the substitutes effects between angels and VCs also continue to hold in both specifications. This suggests that having prior angel financing predicts both a lower probability of obtaining VC, and a lower amount of VC in case of funding; same for the effect of VC on angels.

3.4: Differences in investment requirements

A natural question to ask is whether the substitutes patterns identified so far can be explained by different investment requirements. We saw in Panel B of Table 1 that VCs typically invest larger round amounts than angels. One might argue that companies that needed less investment in the past choose angel financing; to the extent that these companies continue to need less, they are also less likely to want VC funding. As a consequence one might empirically observe a substitutes pattern that is largely driven by financing needs. To examine whether investment needs can account for the observed pattern in the data, we first include the round amount as a

control to the model of Panel B from Table 4 – this is the most natural model to use since it conditions on a positive round amount. In unreported regressions we find that the round amount control itself is highly significant, as expected. More important, the coefficients for the substitutes effects between angels and VCs are hardly affected at all, suggesting that controlling for round amount cannot explain away the substitutes result.

To further investigate the effects of round sizes, we then ask whether the substitutes effect differs between smaller versus larger rounds. We divide our sample at the median round size, which is $250K, and estimate the effect of prior investors types separately for larger and smaller deals. Again we include round size as a direct control. The results are shown in Table 6. We find that the effects on the main diagonal, as well as the substitutes effects between angels and VCs, all continue to apply. All coefficients remaining highly significant at the 1% level, both for large and for small deals. This reaffirms that investment needs cannot explain our main results.

Table 5 also allows us to compare the strength of substitutes effects between large versus small deals. The lower part of Table 5 tabulates the results from a series of t-tests of whether the coefficients differ between large versus small deals. For the effect of having prior VC funding on the amount of angel funding, we find that the coefficient is significantly more negative for large deals than for small deals. As for the effect of having prior angel funding on the amount of VC funding, we find that the coefficient is less negative for large deals than for small deals. However, the difference between coefficients turns out to be relatively small, and remains statistically insignificant. These results suggest that while round sizes cannot explain the main substitutes effects, they may still influence the strength of substitutes effects, especially for the effect of prior VC funding on angel funding.[16]

3.5: Unobserved heterogeneity

We may naturally ask whether the results so far are driven by unobserved heterogeneity. Should we think of the substitutes effect as arising from investor characteristics, such as an incompatibility of investment styles, as discussed in the introduction? Or does the substitutes effect arise from unobserved company characteristics, where certain types of companies lend themselves to only one type of financing? We believe that selection and treatment are economically important phenomena, and that it is worthwhile to attempt separating them to obtain a deeper understanding of the economic forces at work. In this section we explore two methods of controlling for unobserved heterogeneity. First we use company fixed effects that control for all time-invariant unobserved company characteristics. Second, we look at an

[16] Table 5 also suggests some interesting differences in the substitutes patterns with other investors. In particular, there seems to be a strong two-way substitutes effect between angels and other investors for smaller deals. For larger deals, however, having other investors helps with obtaining angel financing.

instrumental variable specification that controls for potential time-varying unobserved heterogeneity.

Table 6 reports the results from re-estimating the models from Table 3 with company fixed effects. Our first important finding is that the strong positive coefficients on the main diagonal disappear. The coefficients for angels and VCs are insignificant, the coefficient for other investors is even negative. This suggests that unobserved company characteristics account for the strong correlation between prior and subsequent funding within the same investor type. Put differently, company characteristic can explain why companies continue to obtain angel financing if they already have some prior angel financing; same for venture capital.[17]

Our second important finding is that unobserved company heterogeneity does not seem to account for the substitutes effects between angels and VCs. Both substitutes effects continue to be statistically significant. The effect of prior angel financing on subsequent VC funding has a slightly lower P value of 7.1%. However, the point coefficient actually increases in the fixed effect regression, suggesting that the loss of statistical significance is attributable to an increase in standard errors, something that is quite common in fixed effect regressions.

Our second approach to control for the endogeneity is to use instrumental variables. We are looking for some exogenous shifts in the availability of alternative financing types. Our research context naturally suggests such an instrument, namely variation in the tax credit program for angels and VCs in British Columbia. In an ideal scenario the government would have changed the rate at which tax credits are given, unfortunately for us the rate remained fixed throughout. However, over the year the provincial government shifted substantial amount of tax credits across different programs and industries. We therefore focus on the variation over time in the availability of tax credits across these different program categories.

As described in section 2.1, the BC tax credit program consists of the four main segments. For the purpose of this analysis it makes sense to combine the first two segments into one budget for retail venture capital corporations, we will use the abbreviation VCC. The third focuses on angel funds, and we will use the abbreviation AFD. The fourth focuses on individual angel investors, and we will use the original program abbreviation EBC. For each of the three relevant program categories, VCC, AFD and EBC, we obtain the annual amount of tax credits actually disbursed. The provincial government also has some industry preference in the allocation of tax credits. For example, new media and cleantech were favored in certain years. We therefore measure the tax credits used within each program for a company's own industry.

In our regressions we want to instrument the prior cumulative amount of funding obtained from a particular investor type. For that we use a weighted average of our tax credits measure. As

[17] In the case of other investors, it even suggests that once a company has obtained such funding it is less likely to obtain additional such funding.

weights we use the company's investment amounts, to reflect the fact that what matters for the company is the availability of tax credits at the time that the company was actually raising funds.

Conceptually our instrument has strengths and weaknesses. Our instrument has clear theoretical foundations, since differential access to tax credits should clearly have a direct effect on the amount of funding provided by the alternative investor types. Empirically we benefit from the fact that the BC tax credit involves considerable variation in the *relative* availability of angel versus VC financing. One possible concern might be that the variation in program sizes is not entirely random. Indeed, budget changes are likely to be driven by local political considerations. However, what matters for econometric identification is merely that the variation in budget changes is independent of expectations about future financing plans of the companies. Since the budget changes are mostly reacting to the present and past political concerns, we submit that such a forward-driven logic would seem highly unlikely.

One potential weakness of our approach is that we rely on the amount of tax credit actually used by market participants. This measure is jointly determined by the amount of tax credit offered under program as well as amount that investors ask for based on their investment decisions. Our measure may therefore incorporate not only the supply shock that can be directly traced back to the tax credit policy, but also a supply shock for the broader availability of each type of financing. However, since the seminal work of Berger et al. (2005), measures of market availability are commonly used as instruments in the corporate finance literature. This means that even if our measure captures two types supply shocks, both of them are suitable for identifying exogenous changes in the availability of investments across the different types of investors.

To get an idea of the strength of our instrument, Panel A of Table 7 reports a typical first-stage regression.[18] We find that more tax credits in the RVC program are associated with significantly more VC and significantly less angel funding. More tax credits in the AFD or EBC program, on the other hand, are associated with significantly higher angel investments. The effect of these two programs on VC is negative but insignificant. Moreover, the amount invested by other investors does not seem to be affected by any of the three programs. Overall these results are highly intuitive and provide a solid basis for identification. One minor weakness is that because the other investors are not really affected by the tax program, our tax credits measures have no explanatory for them. However, because these other investors are not the focus of our analysis here we do not think that this is a major concern.

Panel B shows the results of the second stage regressions. Similar to Table 6 we find that the main diagonal is no longer significant, suggesting again that the effects of within-type persistence are largely driven by selection effects. Moreover, we now find that the effect of prior VC financing in angel financing becomes insignificant, suggesting that unobserved time-varying

[18] We report the first-stage regression for the estimation of the current angel amounts, but the results are very similar for the regression for VC amounts and other amounts.

heterogeneity can explain this negative relationship. Intuitively, companies that have raised more venture capital have reached a stage at which angel financing becomes less desirable, and an exogenous increase in VC does not further decrease their probability of obtaining angel financing. However, Panel B of Table 7 suggests that the effect of prior angel financing on obtaining VC financing is causal. Specifically it shows that an exogenous increase in prior angel financing reduces the amount of subsequent VC financing. This suggests that angel financing actually stirs companies away from venture capital financing. This can be thought of as a treatment effect.

Overall we find that there are clear selection effects, especially in terms of the persistence effect within type. However, the substitution effect that angel-backed companies receive less venture capital appears to be causal, both in the fixed effect and in the instrumental variable specification.

3.6: Decomposing investor types

We now turn to a decomposition of our investor types. Our main interest is to understand whether the substitutes effects between angels and VCs apply uniformly across angel types. In section 2 we already discussed a decomposition of angel investors into three types: those that invest in only one company, those that invest in multiple companies, and those that invest together in an angel fund. We interpret investing in multiple companies and investing as an angel fund as a sign of investor commitment to angel investing.

Theoretically there can be opposing predictions about the effects of those three types. On the one hand one may conjecture that more committed angels are a stronger substitute to VCs than less committed angels, because committed angels are more willing and able to fund companies on their own. On the other hand, venture capitalists may find it easier to work with committed angels, suggesting there would be stronger substitutes effect for ‘single company’ angels.

Table 8 shows the results for decomposing angels. We find strongly positive coefficients on the main diagonal, suggesting that the positive effects of already having a certain type of investor also continue to apply within the angel decomposition. The most interesting results concern differences in the substitutes effects. Comparing the coefficients for prior VC funding in columns 1, 2, and 3, we note that the coefficients are negative and significant at the 1% level. However, the coefficient in column 1 is almost two times as large as the coefficient in column 3 and about five times as large as the coefficient in column 2. This suggests a stronger substitutes effect for less committed angels. Furthermore, in column 4 we see that the effect of having prior funding from ‘single company’ angels has a negative and highly significant effect on obtaining VC funding, whilst the effects of prior funding from ‘multiple company’ angels and from ‘angel fund’ are insignificant. Moreover, the differences between the coefficients on ‘multiple company’ angels and ‘angel funds’, and the coefficient on ‘single company’ angel are significant

at the 1% level. This suggests that VC funding is less forthcoming only in the presence of 'single company' angels, but not in the presence of 'multiple company' investors or 'angel fund'. Overall, these results suggest stronger substitutes effects for less committed angels.

Table 9 further decomposes the remaining investor categories. As discussed in section 2, VCs can be subdivided into two groups, namely private VCs and government-supported VC. We also subdivide the other investors category into corporate investors, financial investors, and founders. Table 9 reports a large number of results, here we only discuss the most important ones.

First, we note in columns 4 and 5 that the effect of prior angel funding is very similar to that observed in Table 8. Specifically we find that having prior funding from 'single company' angels is associated with less VC, both for private and government VCs. However, prior funding from 'multiple company' angels and 'angel funds' do not impact subsequent VC funding, neither for private nor government VCs.

Second, we note both private and government VC reduce the likelihood of obtaining angel funding. In columns 1 - 3 we find that all the coefficients for prior funding from government VCs and private VCs are negative, with 4 out of 6 being statistically significant.

Third, we find complementarities between the two types of VCs, although with an interesting asymmetry. Having prior private VC funding seems to facilitate subsequent government VC funding, with a positive coefficient that is significant at the 1% level. However, for the reverse effect (i.e., the effect of prior government VC funding on subsequent private VC funding) the coefficient remains insignificant. This suggests an asymmetry where government VC follows private VC, but not the other way round. This effect seems to suggest a hierarchy amongst VCs.. Finally note that Table 9 contains a large number of coefficients concerning the breakdown of the 'other investors' category. However, with most of the coefficients being insignificant, no clear pattern of results emerges.

Overall we note that the results from Tables 3 - 9 suggest a clear pattern of substitutes effects between angels and VCs. The effects do not appear to be driven by unobserved company heterogeneity or differences in deal sizes. However, the effects are more pronounced for angel investors that only invest in a 'single company', than those who invest in multiple companies.

4. THE RELATIONSHIP BETWEEN INVESTOR TYPE AND COMPANY PERFORMANCE.

In this section we consider the relationship between the financing patterns and company performance. Our first question concerns the relationship between investor choices and performance. The main issue is whether obtaining funding from different investors translates into different company outcomes. Our second question concerns interactions between angels and

VCs. In technical terms we basically ask whether the outcome function has a supermodular or submodular structure.[19]

For our empirical estimation we consider a quarterly panel of our sample companies and estimate the following regression model:

$$Y_{kt} = \alpha + \beta_k I_{k,t-1} + \beta_M M_{k,t-1} + \beta_c X_c + \beta_{ct} X_{ct} + \eta_t + \varepsilon_{ct}$$

where the variables are the same as in section 3, with the additions of Y_t and $M_{k,t-1}$. Y_t is performance of company in period t. We consider a total of five measures, discussed in section 2. $M_{k,t-1}$ is a characterization of interaction effects between the indicator variables $I_{k,t-1}$. In principle there are be many potential interaction effects, and many ways of measuring them. We focus on the following ones: In Table 12-13 we consider an interaction between angels and VCs that consists of the product of prior angel and prior VC investment amounts. In Table 15 we consider three interaction effects using the same measurement approach, one for VCs with 'single company' angels, one with 'multiple company' angels and one with angel funds.

Table 10 reports the results from the regressions without interaction effects. We find that VC funding is associated with a higher exit rate, a higher chance of obtaining US venture capital, higher revenues and higher employment. The only outcome regression where VC is insignificant is the probability of death. These results are consistent with prior research on venture capital (see Da Rin, Hellmann and Puri 2013). Prior angel funding is found to have no significant effect on three out of five outcome regressions. Not surprisingly, it has a negative coefficient in the USVC regression. Maybe more interesting, we find a positive relationship between angel investment and the number of employees. The coefficients for the 'other investors' category are mostly insignificant, except for a lower death rate and higher USVC rate.

Table 10 only establishes correlation, to examine causation we return to the tax credit instruments of section 3.5. Table 11 reports the results of the second stage instrumental variable regressions. We find that almost none of the coefficients are significant, suggesting that the results from Table 10 are largely driven by unobservable selection effects.[20] Put differently, an exogenous increase in angel financing or venture capital does not seem to create by itself superior performance.

Table 12 adds the interaction effect to examine potential super/submodularity of the outcome function. The results indicate the presence of negative interaction effects, i.e., a submodular

[19] To make this concrete, consider the following simple specification. Let Y be measure of company performance, and consider two potential inputs, called a ∈ {0,1} for angel investments and v ∈ {0,1}for venture capital investments. A supermodular (submodular) production function satisfied the following condition: Y(a=1,v=1) – Y(a=0,v=1) > (<) Y(a=1,v=0) – Y(a=0,v=0).

[20] The coefficient for angel financing is negative and marginally significant in the Exit regression. However, the difference between the Angel and VC coefficient remains insignificant.

production function.[21] The coefficients for exit and USVC are statically significant, the others remain insignificant. This evidence is suggestive albeit certainly not conclusive of the notion that combining angels and VCs is associated with lower performance outcomes.

Again we examine whether this association is causal or not by using the tax credit instruments. To instrument the interaction terms we use the interaction of the two angel-oriented programs (AFD and EBC) with the VC-oriented program (RVC). [22] Table 13 reports the result. Similar to Table 11 we find that all the main coefficients are insignificant. This suggests that again that selection effect appear to be driving the results of Table 12.

We also redo the decomposition angel types. Table 14 consider the model without interactions. The main insight is that 'single company' angels are associated with lower performance outcomes. The coefficient for prior investments from 'single company' angels is lower than the one from 'multiple company' angels in four out of five regression, with statistical significance in the exit regression. Interestingly, we find that having prior financing from 'angel funds' results in higher revenue and employment but also higher probability of going out of business. Table 15 finally considers the interaction effect for the three angel types with VCs. The interaction term of 'multiple company' angels and VCs is never statistically significant. The interaction term of 'single company' angels and VCs is negative and statistically significant in the exit regression. However, the (unreported) t-test for the difference between these two interaction terms is not statistically significant.[23] The interaction term with 'angel fund' also remains insignificant throughout.

Overall we would say that there is suggestive but not conclusive evidence that 'single company' angels experience lower performance outcomes. They also seem to experience more negative interaction effect with VCs than 'multiple company' angels.

5. CONCLUSION

This paper considers the dynamic interaction between different types of investors in entrepreneurial companies, focusing in particular on the interactions between angels and VCs. Using detailed data from British Columbia, Canada, we find considerable support for the hypothesis that angels and VCs are substitutes. Companies that obtain venture capital funding are

[21] Death is a negative outcome. A positive coefficient suggests more death, which can be interpreted as a negative interaction effect.

[22] For a useful discussion of how unobserved heterogeneity may affect the estimation of interaction effects, see also Athey and Stern (1998) and Cassiman and Veuglers (2006).

[23] In unreported regression we also added an interaction effect between 'single company' and 'multiple company' angels to the regressions of Table 12, but found that this interaction effect is almost always insignificant.

less likely to obtain subsequent angel funding. Maybe more surprising, the converse is also true, in that companies with prior angel investments are less likely to subsequently obtain venture capital funding. The results seems robust to unobserved heterogeneity across companies, and cannot be explained by differences in investment round size. However, the substitutes effects appear to be stronger for less committed angels that only invest in single company, rather than more committed angels that invest in multiple companies, or invest together in an angel fund. Venture capital backed companies appear to achieve better outcomes, in terms of exits, revenue growth or employment growth. Combining angel and venture capital investors is also associated with lower exits. These performance effects appear to be driven by selection effects.

Our analysis suggests several avenues for future research. One important issue would be to obtain a deeper understanding of the reasons behind the observed substitutes pattern. Do angels and VCs have different networks? Do they have incompatible governance systems? Or are disagreements about valuations driving the substitutes result. Also, while we exploit a unique opportunity to obtained detailed data on BC angels, it would be interesting to see to what extent the results continue to hold in other environments. For example, does the substitutes result also hold in the most advanced entrepreneurial ecosystems, such as Silicon Valley? And what about significantly less developed ecosystems?

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Table 1: Descriptive Statistics

Panel A: Company Descriptive Statistics

This table provides some descriptive statistics at the company level. All variables are defined in Table A1 in the Appendix.

Variable	No. of companies	Mean	Standard Deviation
Age at time of first financing	469	2.4035	3.6490
Age at time of last financing	469	6.2052	4.6677
Age at time of exit/end of sample	469	10.2495	5.8062
Vancouver	469	0.7292	0.4448
Victoria	469	0.0746	0.2631
Okanagan / Thompson	469	0.0512	0.2206
Rest of BC	469	0.1450	0.3525
Software	469	0.2814	0.4502
Biotech	469	0.1215	0.3271
Cleantech	469	0.0533	0.2249
IT & Telecom	469	0.0704	0.2560
High-tech Manufacturing	469	0.1791	0.3838
High-tech Services	469	0.0597	0.2372
Tourism	469	0.0768	0.2665
Other Industries	469	0.1578	0.3649
Exit	469	0.1301	0.3367
Death	469	0.2260	0.4187
USVC	469	0.0991	0.2990
Revenues	334	3.6956	12.2425
Employees	275	16.9755	22.4588

Table 1: Descriptive Statistics (continued)

Panel B: Investor Descriptive Statistics - Current Investment

This table provides some descriptive statistics about investor involvement in company-quarters (aka "investment rounds". All variables are defined in Table A1 in the Appendix.

Panel (# company-quarters)	Full panel (n = 7248)	Round sample (n = 2188)
Investor category	Fraction of rounds	Per-round amounts
Any Investor	30.04%	$1,529,528
Angel	20.85%	$256,041
VC	9.51%	$1,081,698
Other	10.38%	$191,789
Angel Single	14.46%	$131,948
Angel Multiple	5.04%	$27,512
Angel fund	8.29%	$96,579
VC Private	4.41%	$594,698
VC Government	7.84%	$468,999
Corporate Investor	6.08%	$114,289
Financial Investor	2.30%	$39,739
Founders	6.43%	$37,763

Table 1: Descriptive Statistics (continued)

Panel C: Investor Descriptive Statistics - Cumulative Investments.

This table provides some descriptive statistics about cumulative investments amounts. All variables are defined in Table A1 in the Appendix.

Investor category	Percentage of companies (after last financing round)	Amounts per company (after last financing round)
Any Investor	100.00%	$7,135,624
Angel	84.65%	$1,194,493
VC	37.53%	$5,046,385
Other	55.86%	$894,746
Angel Single	65.67%	$615,573
Angel Multiple	36.89%	$128,353
Angel fund	47.33%	$450,566
VC Private	26.65%	$2,774,414
VC Government	31.98%	$2,271,971
Corporate Investor	40.51%	$533,184
Financial Investor	23.88%	$185,391
Founders	37.74%	$176,171

Table 2: Company Characteristics and Investor Types.

This table reports results from panel OLS regressions. The unit of analysis is the company. The dependent variables are the investment amounts of Angel, VC and Other investors in the first quarter (for columns 1-3) and across all rounds (for columns 4-6). The main independent variables are company age at first round, industry dummies and region dummies. The unreported control variables are non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	First Round			All Rounds		
	1	2	3	4	5	6
	Angel	VC	Other	Angel	VC	Other
Age at First Round	-0.0258	0.122	0.0137	-0.0685	0.182*	-0.0144
	(0.0895)	(0.102)	(0.0715)	(0.0834)	(0.107)	(0.0911)
Victoria	0.184	-0.429	0.837	-0.624	0.668	-0.299
	(1.315)	(1.341)	(1.038)	(1.302)	(1.654)	(1.248)
Okanagan Thomson	0.642	1.368	1.644	-0.386	0.0977	1.687
	(1.167)	(1.347)	(1.654)	(1.341)	(1.479)	(1.764)
Rest of BC	0.500	-1.884**	0.151	1.339*	-4.053***	0.284
	(0.897)	(0.790)	(0.833)	(0.748)	(1.002)	(1.043)
Biotech	-0.829	2.072*	-0.651	-0.742	3.839***	-0.695
	(1.100)	(1.239)	(1.172)	(1.045)	(1.431)	(1.296)
Cleantech	1.867	-2.931***	0.370	1.156	-1.632	-2.325
	(1.201)	(1.119)	(1.525)	(0.930)	(1.565)	(1.725)
IT & Telecom	-1.376	0.116	-1.329	-0.612	0.886	-1.364
	(1.444)	(1.471)	(1.207)	(1.340)	(1.709)	(1.550)
High-tech Manufacturing	1.580*	-0.369	-0.494	1.285	-0.796	-1.513
	(0.917)	(1.064)	(0.940)	(0.905)	(1.197)	(1.086)
High-tech Services	1.246	-2.724*	-2.120	1.265	-3.878**	-4.296***
	(1.313)	(1.412)	(1.465)	(1.360)	(1.762)	(1.657)
Tourism	0.539	-4.070***	-1.096	2.162**	-5.512***	-3.166**
	(1.410)	(0.969)	(1.267)	(1.095)	(1.123)	(1.511)
Other industry	2.115**	-2.137**	-3.102***	2.661***	-3.953***	-4.179***
	(0.993)	(1.010)	(0.942)	(0.920)	(1.171)	(1.124)
Controls	YES	YES	YES	YES	YES	YES
Observations	469	469	469	469	469	469
Number of Companies	469	469	469	469	469	469
R-squared	0.232	0.238	0.285	0.198	0.396	0.292

Table 3: The Effect of Prior Investor Choices on Current Investor Choices.

This table reports results from panel OLS regression. The unit of analysis is company-quarter. The dependent variables are the current investment amounts for Angel, VC, Other and All investors. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. Further reported independent variables are age at first round, region dummies, and industry dummies. The unreported control variables are non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current Investment Amounts			
Prior Cumulative	1	2	3	4
Investment Amounts	Angel	VC	Other	All
Angel	0.106***	-0.0366***	-0.0107	0.0185
	(0.0119)	(0.0119)	(0.0103)	(0.0164)
VC	-0.0808***	0.159***	-0.0203**	0.0308**
	(0.0106)	(0.00931)	(0.00895)	(0.0135)
Other	0.00958	0.000417	0.1000***	0.0160
	(0.00993)	(0.00876)	(0.00785)	(0.0118)
Age at First Round	-0.0151	0.0160	-0.0128	0.00668
	(0.0188)	(0.0134)	(0.0139)	(0.0233)
Victoria	0.262	0.0859	0.133	0.156
	(0.228)	(0.147)	(0.132)	(0.233)
Okanagan Thomson	0.735***	0.0167	0.330	0.941***
	(0.281)	(0.229)	(0.325)	(0.332)
Rest of BC	0.212	-0.306***	-0.163	-0.126
	(0.260)	(0.110)	(0.167)	(0.254)
Biotech	0.0366	-0.279	0.115	-0.286
	(0.206)	(0.223)	(0.191)	(0.263)
Cleantech	-0.227	0.0403	-0.420	-0.582
	(0.427)	(0.213)	(0.260)	(0.368)
IT & Telecom	-0.0943	0.144	-0.127	-0.106
	(0.259)	(0.309)	(0.194)	(0.395)
High-tech Manufacturing	0.0322	-0.00212	0.155	-0.0371
	(0.221)	(0.168)	(0.167)	(0.257)
High-tech Services	-0.176	-0.355**	-0.175	-0.413
	(0.295)	(0.157)	(0.250)	(0.330)
Tourism	-0.0276	-0.377**	-0.101	-0.0944
	(0.322)	(0.160)	(0.247)	(0.315)
Other industry	0.106	-0.202	-0.173	0.0447
	(0.233)	(0.149)	(0.160)	(0.249)
Controls	YES	YES	YES	YES
Observations	6,815	6,815	6,815	6,815
Number of companies	469	469	469	469

Table 4: Decomposing Current Investor Choices.

Panel A: The effect of prior investor choices on whether or not a round occurs

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The dependent variables are dummy variables for the presence of Angel, VC and Other investors in the current quarter. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Dummy variable for whether investment made			
Prior Cumulative	1	2	3	4
Investment Amount	Angel	VC	Other	Any Investment
Angel	0.00694***	-0.00221***	-0.000985	0.00110
	(0.000848)	(0.000719)	(0.000732)	(0.00105)
VC	-0.00644***	0.00981***	-0.00201***	5.99e-05
	(0.000771)	(0.000569)	(0.000639)	(0.000893)
Other	0.000449	-5.63e-05	0.00716***	0.000702
	(0.000724)	(0.000540)	(0.000561)	(0.000802)
Controls	YES	YES	YES	YES
Observations	6,815	6,815	6,815	6,815
Number of companies	469	469	469	469

Table 4 (continued): Decomposing Current Investor Choices.

Panel B: The effect of prior investor choices on round amounts (conditional on a round occurring)

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The sample is conditioned on having a positive investment amount in a quarter. The dependent variables are the investment amount of Angel, VC and Other investors. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. Unreported control variables are industry, region, company age at first round, company age at time of investment, time since last investment, calendar time, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current investment amount (conditional on there being a round investment)			
Prior Cumulative	1	2	3	4
Investment Amount	Angel	VC	Other	Total
Angel	0.392***	-0.194***	-0.0891**	0.00753
	(0.0346)	(0.0307)	(0.0352)	(0.0148)
VC	-0.294***	0.574***	-0.101***	0.103***
	(0.0304)	(0.0308)	(0.0297)	(0.0118)
Other	0.0129	-0.0422**	0.339***	0.00615
	(0.0229)	(0.0212)	(0.0285)	(0.00919)
Controls	YES	YES	YES	YES
Observations	1,719	1,719	1,719	1,719
Number of companies	469	469	469	469

Table 5: Current Investor Choices by Deal Sizes

This table reports results from panel OLS regressions. The unit of analysis is company-quarter and the sample is conditioned on a positive investment round in the quarter. The dependent variables are the current investment amounts for Angel, VC, Other and All investors. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors, as well as the total current investment amount. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. Chi-square values at one degree of freedom are reported in the parentheses for all hypothesis testing. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current investment amount.		
Prior Cumulative	1	2	3
Investment Amount	Angel	VC	Other
Angel (Large Deals)	0.347***	-0.172***	-0.0791*
	(0.0404)	(0.0304)	(0.0413)
VC (Large Deals)	-0.421***	0.499***	-0.263***
	(0.0311)	(0.0287)	(0.0321)
Other (Large Deals)	0.0806***	-0.0925***	0.349***
	(0.0295)	(0.0262)	(0.0372)
Angel (Small Deals)	0.382***	-0.226***	-0.176***
	(0.0418)	(0.0447)	(0.0416)
VC (Small Deals)	-0.257***	0.384***	-0.144***
	(0.0339)	(0.0332)	(0.0343)
Other (Small Deals)	-0.0778***	-0.00473	0.249***
	(0.0273)	(0.0235)	(0.0299)
Total Current Investment Amount	0.426***	1.246***	1.082***
	(0.0794)	(0.110)	(0.105)
Controls	YES	YES	YES
Angel (Large vs. Small Deals)	-0.035	0.054	0.097**
	(0.52)	(1.17)	(4.04)
VC (Large vs. Small Deals)	-0.164***	0.115***	-0.119***
	(38.55)	(23.18)	(14.77)
Other (Large vs. Small Deals)	0.158***	-0.088***	0.100***
	(18.82)	(6.99)	(7.49)
Observations	1,719	1,719	1,719
Number of companies	469	469	469

Table 6: Current Investor Choices with Company Fixed Effect Regressions.

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The dependent variables are the current investment amounts for Angel, VC, Other and All investors. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. The unreported control variables are company, industry, region, company age at first round, company age at time of investment, time since last investment, calendar time, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current investment amount.			
Prior Cumulative	1	2	3	4
Investment Amount	Angel	VC	Other	Total
Angel	-0.0372	-0.0409*	-0.0552*	-0.0673
	(0.0457)	(0.0209)	(0.0306)	(0.0523)
VC	-0.110***	0.0163	-0.0400*	-0.0660*
	(0.0276)	(0.0235)	(0.0225)	(0.0347)
Other	-0.00655	-0.000309	-0.0890***	-0.00561
	(0.0304)	(0.0239)	(0.0254)	(0.0400)
Controls	YES	YES	YES	YES
Observations	6,815	6,815	6,815	6,815
Number of companies	469	469	469	469
R-squared	0.101	0.074	0.048	0.113

Table 7 Panel A: First Stage Instrumental Variables.

This table reports results from a first stage instrumental variable regressions (where current investment amounts for Angel was the second stage dependent variable). The unit of analysis is company-quarter. The main dependent variables in the first stage are the prior cumulative investments amounts of Angel, VC, and Other investors. The instrumental variables are the amount of tax credits issues to companies under the EBC, RVCC and AVCC program. The unreported control variables are company, industry, region, company age at first round, company age at time of investment, time since last investment, calendar time, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Prior cumulative investment amount.		
	1	2	3
	Angel	VC	Other
Tax credits-RVC	-0.0383***	0.0873***	-0.0066
	(0.0093)	(0.0113)	(0.0102)
Tax credits-AFD	0.1657***	-0.0166	-0.0091
	(0.0148)	(0.0180)	(0.0162)
Tax credits-EBC	0.0437***	-0.0002	0.0068
	(0.0078)	(0.0096)	(0.0082)
Controls	YES	YES	YES
Observations	6,815	6,815	6,815
Number of companies	469	469	469

Table 7 Panel B: Current Investor Choices: Second Stage Instrumental Variables.

This table reports results from a second stage instrumental variable regressions. The unit of analysis is company-quarter. The dependent variables are the current investment amounts for Angel, VC, Other and All investors. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. The instruments are described in Panel A. The unreported control variables are company, industry, region, company age at first round, company age at time of investment, time since last investment, calendar time, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current investment amount.			
Prior Cumulative	1	2	3	4
Investment Amount	Angel	VC	Other	Total
Angel-IV	0.104	-0.158*	-0.165	-0.0873
	(0.117)	(0.0941)	(0.137)	(0.157)
VC-IV	0.231	0.0934	0.00216	0.220
	(0.180)	(0.144)	(0.219)	(0.224)
Other-IV	-0.596	-0.448	-1.253	0.618
	(1.282)	(0.810)	(1.010)	(2.494)
Controls	YES	YES	YES	YES
Observations	6,815	6,815	6,815	6,815
Number of companies	469	469	469	469

Table 8: Decomposing Angel Investors.

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The dependent variables are the current investment amounts for Angel-Single, Angel-Multiple, Angel-Fund, VC, Other and All investors. The main independent variables are the prior cumulative investments amounts of Angel-Single, Angel-Multiple, Angel-Fund VC, and Other investors. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. Chi-square values at one degree of freedom are reported in the parentheses for all hypothesis testing. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current investment amount.				
Prior Cumulative	1	2	3	4	5
Investment Amount	Angel - Single	Angel - Multiple	Angel - Fund	VC	Other
Angel - Single	0.116***	0.0179**	-0.0193**	-0.0334***	0.00991
	(0.0121)	(0.00761)	(0.00864)	(0.00890)	(0.00970)
Angel - Multiple	-0.0203	0.0411***	-0.0131	0.00131	0.00773
	(0.0148)	(0.0106)	(0.00991)	(0.00917)	(0.0122)
Angel - Fund	-0.0504***	-0.00894	0.125***	-0.0122	-0.0171**
	(0.00838)	(0.00600)	(0.00869)	(0.00755)	(0.00731)
VC	-0.0623***	-0.0173***	-0.0337***	0.163***	-0.0133*
	(0.00878)	(0.00576)	(0.00719)	(0.00842)	(0.00783)
Other	0.0170*	0.00256	-0.000909	0.00733	0.0942***
	(0.00909)	(0.00634)	(0.00722)	(0.00909)	(0.00868)
Controls	YES	YES		YES	YES
Angel (Single vs. Multiple)	0.136***	-0.023	-0.006	-0.035***	0.002
	(36.47)	(2.17)	(0.17)	(6.67)	(0.01)
Angel (Single vs. Fund)	0.166***	0.027***	-0.144***	-0.021**	0.027***
	(158.51)	(9.73)	(128.33)	(5.85)	(7.78)
Angel (Multiple vs. Fund)	0.030	0.050***	-0.138***	0.013	0.025
	(2.34)	(14.41)	(89.60)	(1.24)	(2.46)
Observations	6,815	6,815	6,815	6,815	6,815
Number of companies	469	469	469	469	469

Table 9: Decomposing all Investor Categories

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The dependent variables are the current investment amounts for all investor categories. The main independent variables are the prior cumulative investments amounts for all investor categories. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. Chi-square values at one degree of freedom are reported in the parentheses for all hypothesis testing. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	DV: Current investment amount.							
Prior Cumulative Investment Amount	1 Angel - Single	2 Angel - Multiple	3 Angel - Fund	4 Private VC	5 Gov. VC	6 Corp. Investor	7 Financial Investor	8 Founders
Angel - Single	0.111***	0.0165**	-0.0201**	-0.0237***	-0.0253***	-0.00337	0.00112	-0.00661
	(0.0123)	(0.00782)	(0.00897)	(0.00810)	(0.00914)	(0.00758)	(0.00404)	(0.00745)
Angel - Multiple	-0.0218	0.0415***	-0.0161	0.00703	-0.000518	-0.00769	0.00397	-0.000807
	(0.0145)	(0.0106)	(0.0101)	(0.00707)	(0.00841)	(0.00975)	(0.00552)	(0.00933)
Angel - Fund	-0.0491***	-0.00683	0.124***	-0.00616	-0.00905	-0.00757	-0.00657*	-0.0124**
	(0.00846)	(0.00611)	(0.00885)	(0.00606)	(0.00744)	(0.00596)	(0.00351)	(0.00483)
Private VC	-0.0128	-0.0145**	-0.0180**	0.0814***	0.0354***	0.00921	-0.00404	-0.00368
	(0.00936)	(0.00682)	(0.00835)	(0.0109)	(0.0134)	(0.00792)	(0.00485)	(0.00543)
Government VC	-0.0556***	-0.00687	-0.0278***	0.00636	0.137***	-0.0120*	0.000853	-0.0182***
	(0.00829)	(0.00625)	(0.00736)	(0.00870)	(0.0114)	(0.00694)	(0.00421)	(0.00485)
Corporate Investor	0.00916	-0.00485	0.00952	0.0102	0.000358	0.0731***	0.00498	0.0116
	(0.0104)	(0.00738)	(0.00708)	(0.00772)	(0.00887)	(0.00816)	(0.00417)	(0.00739)
Financial Investor	-0.0132	-0.00818	0.00276	-0.00104	-0.000590	0.00747	0.0179***	-0.00417
	(0.0140)	(0.00984)	(0.0107)	(0.00885)	(0.0114)	(0.0111)	(0.00635)	(0.00936)
Founders	0.0317***	0.0168**	-0.00865	0.00812	-0.00497	0.0288***	0.0120***	0.0847***
	(0.0118)	(0.00824)	(0.00855)	(0.00606)	(0.00821)	(0.00894)	(0.00449)	(0.00838)
Controls	YES	YES	YES	YES	YES	YES	YES	YES

Table 9 (continued): Equality Test of the Coefficients								
Angel (Single vs. Multiple)	0.133***	-0.025	-0.004	-0.031**	-0.025*	0.004	-0.003	-0.006
	(39.02)	(2.59)	(0.07)	(6.47)	(3.83)	(0.09)	(0.13)	(0.18)
Angel (Single vs. Fund)	0.160***	0.023***	-0.144***	-0.017**	-0.016*	0.004	0.008*	0.006
	(139.89)	(6.74)	(125.16)	(6.38)	(3.54)	(0.34)	(3.75)	(0.64)
Single vs. Private VC	0.124***	0.031***	-0.002	-0.105***	-0.061***	-0.013	0.005	-0.003
	(84.84)	(9.76)	(0.04)	(57.00)	(15.28)	(1.40)	(0.76)	(0.12)
Single vs. Government VC	0.167***	0.023***	0.008	-0.030***	-0.162***	0.009	0.000	0.012*
	(176.69)	(7.80)	(0.80)	(12.76)	(129.96)	(1.08)	(0.00)	(3.04)
Angel (Multiple vs. Fund)	0.027	0.048***	-0.140***	0.013	0.008	-0.000	0.010	0.012
	(1.99)	(13.58)	(93.87)	(1.55)	(0.58)	(0.00)	(2.40)	(1.02)
Angel Multiple vs. Private VC	-0.009	0.056***	0.002	-0.074***	-0.036**	-0.017	0.008	0.003
	(0.26)	(20.10)	(0.02)	(33.91)	(5.44)	(1.90)	(1.32)	(0.08)
Angel Multiple vs. Government VC	0.034*	0.048***	0.012	0.000	-0.137***	0.004	0.003	0.017
	(3.78)	(13.57)	(0.90)	(0.00)	(94.51)	(0.12)	(0.20)	(2.41)
Angel fund vs. Private VC	-0.036***	0.008	0.142***	-0.088***	-0.044***	-0.017	-0.002	-0.009
	(8.71)	(0.75)	(113.79)	(43.82)	(7.29)	(2.44)	(0.17)	(1.64)
Angel fund vs. Government VC	0.006	0.000	0.152***	-0.012	-0.146***	0.004	-0.007*	0.006
	(0.46)	(0.00)	(168.29)	(2.04)	(150.86)	(0.45)	(3.63)	(1.15)
Private VC vs. Government VC	0.043***	-0.008	0.010	0.075***	-0.102***	0.021*	-0.005	0.014*
	(9.43)	(0.48)	(0.61)	(19.30)	(20.29)	(2.93)	(0.40)	(3.22)
Observations	6,815	6,815	6,815	6,815	6,815	6,815	6,815	6,815
Number of companies	469	469	469	469	469	469	469	469

Table 10: The Relationship between Investor Choices and Company Outcomes.

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The dependent variables are the Exit, Death and USVC dummies (which are also scaled by a factor of 1000 to obtain easily readable coefficients), as well as revenues and employees. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. Chi-square values at one degree of freedom are reported in the parentheses for all hypothesis testing. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Prior Cumulative	1	2	3	4	5
Investment Amount	Exit	Death	USVC	Revenue	Employees
Angel	-0.246	-0.00499	-0.311*	-0.0369	0.0211*
	(0.187)	(0.137)	(0.185)	(0.0277)	(0.0114)
VC	0.509***	-0.0484	0.393***	0.0544**	0.0176**
	(0.121)	(0.106)	(0.133)	(0.0241)	(0.00736)
Other	0.0292	-0.221**	0.291*	0.00138	-0.00585
	(0.123)	(0.102)	(0.150)	(0.0275)	(0.0118)
Revenues - one year lagged				0.0567	
				(0.0433)	
Employees - one year lagged					0.214***
					(0.0558)
Controls	YES	YES	YES	YES	YES
Angel vs. VC	-0.755***	0.043	-0.704***	-0.091**	0.003
	(16.45)	(0.09)	(8.32)	(6.53)	(0.09)
Observations	14,719	14,719	13,930	4,083	2,339
Number of companies	469	469	463	302	202

Table 11: Investor Choices and Company Outcomes Using Instrumental Variables

This table reports second stage regressions of an instrumental variable regression. The unit of analysis is company-quarter. The dependent variables are the Exit, Death and USVC dummies (which are also scaled by a factor of 1000 to obtain easily readable coefficients), as well as revenues and employees. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors. They are instrumented by the tax credit instruments for the VCC, AFD and EBC program. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. Chi-square values at one degree of freedom are reported in the parentheses for all hypothesis testing. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Prior Cumulative	1	2	3	4	5
Investment Amount	Exit	Death	USVC	Revenue	Employees
Angel- IV	-2.827*	1.112	0.511	-0.0269	-1.174
	(1.641)	(1.605)	(4.394)	(0.233)	(1.592)
VC- IV	0.0102	0.837	-0.821	0.293	-0.146
	(5.275)	(5.160)	(2.685)	(0.324)	(0.239)
Other- IV	26.98	-1.379	-1.654	1.211	1.545
	(17.89)	(17.50)	(41.29)	(1.038)	(1.908)
Revenues - one year lagged				-0.0390**	
				(0.0189)	
Employees - one year lagged					0.255*
					(0.145)
Controls	YES	YES	YES	YES	YES
Angel vs. VC	-2.833	0.275	1.332	0.320	-1.028
	(0.31)	(0.00)	(0.09)	(0.38)	(0.50)
Observations	14,719	14,719	13,930	4,083	2,339
Number of companies	469	469	463	302	202

Table 12: Outcomes with Interaction Effects between Angels and VCs

This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The unit of analysis is company-quarter. The dependent variables are the Exit, Death and USVC dummies (which are also scaled by a factor of 1000 to obtain easily readable coefficients), as well as revenues and employees. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors, as well as the interaction term between angel and VC investors. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Prior Cumulative	1	2	3	4	5
Investment Amount	Exit	Death	USVC	Revenue	Employee
Angel * VC	-0.0384**	0.00535	-0.0535***	-0.00410	-0.00198
	(0.0150)	(0.0155)	(0.0187)	(0.00321)	(0.00132)
Angel	-0.400*	0.0121	-0.658**	-0.0587*	0.00669
	(0.235)	(0.147)	(0.290)	(0.0330)	(0.0139)
VC	0.394***	-0.0317	0.244*	0.0476*	0.0157**
	(0.134)	(0.116)	(0.133)	(0.0256)	(0.00774)
Other	0.0633	-0.226**	0.348**	0.00352	-0.00218
	(0.126)	(0.104)	(0.156)	(0.0273)	(0.0124)
Revenues - one year lagged				0.0572	
				(0.0435)	
Employees - one year lagged					0.211***
					(0.0558)
Controls	YES	YES	YES	YES	YES
Observations	14,719	14,719	13,930	4,083	2,339
Number of companies	469	469	463	302	202

Table 13: Outcomes with Interaction Effects: Instrumental Variable Regression

This table reports second stage regressions of an instrumental variable regression. The unit of analysis is company-quarter. The dependent variables are the Exit, Death and USVC dummies (which are also scaled by a factor of 1000 to obtain easily readable coefficients), as well as revenues and employees. The main independent variables are the prior cumulative investments amounts of Angel, VC, and Other investors, as well as the interaction term between angel and VC investors. They are instrumented by the tax credit instruments for the VCC, AFD and EBC program, as well as the interaction terms of VCC with AFD and VCC with EBC. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Prior Cumulative	1	2	3	4	5
Investment Amount	Exit	Death	USVC	Revenue	Employee
Angel * VC - IV	0.242	0.349	-0.0357	-0.0409	-0.0940
	(0.409)	(0.516)	(0.264)	(0.0321)	(0.0844)
Angel- IV	1.229	6.965	-0.663	-0.234	-1.098
	(6.431)	(8.113)	(5.105)	(0.294)	(0.820)
VC- IV	2.516	4.453	-0.978	-0.213	-0.0979
	(3.633)	(4.586)	(2.428)	(0.388)	(0.0896)
Other- IV	15.38	-18.12	4.305	-0.0765	-0.431
	(11.46)	(14.47)	(14.59)	(0.586)	(1.302)
Revenues - one year lagged				-0.00168	
				(0.0166)	
Employees - one year lagged					0.225**
					(0.109)
Controls	YES	YES	YES	YES	YES
Observations	14,719	14,719	13,930	4,083	2,339
Number of companies	469	469	463	302	202

Table 14: Company Outcomes: Decomposing Angel Investors.

This table reports results from panel OLS regression. The unit of analysis is company-quarter. The dependent variables are the Exit, Death and USVC dummies (which are also scaled by a factor of 1000 to obtain easily readable coefficients), as well as revenues and employees. The main independent variables are the prior cumulative investments amounts of Angel-Single, Angel-Multiple, Angel-Fund, VC, and Other investors. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. Chi-square values at one degree of freedom are reported in the parentheses for all hypothesis testing. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Prior Cumulative	1	2	3	4	5
Investment Amount	Exit	Death	USVC	Revenue	Employee
Angel - Single	-0.329**	-0.0509	-0.204	-0.0245	0.0126
	(0.140)	(0.141)	(0.132)	(0.0314)	(0.0106)
Angel - Multiple	0.0501	-0.120	-0.190**	-0.00682	-0.00501
	(0.0996)	(0.119)	(0.0956)	(0.0251)	(0.00729)
Angel - Fund	-0.0931	0.217**	-0.0623	0.0378*	0.0268**
	(0.105)	(0.102)	(0.108)	(0.0217)	(0.0130)
VC	0.496***	-0.0632	0.439***	0.0509**	0.0119
	(0.113)	(0.112)	(0.148)	(0.0243)	(0.00794)
Other	0.102	-0.189*	0.361**	0.00139	-0.00854
	(0.129)	(0.107)	(0.162)	(0.0276)	(0.0125)
Revenues - one year lagged				0.0585	
				(0.0431)	
Employees - one year lagged					0.212***
					(0.0560)
Controls	YES	YES	YES	YES	YES
Angel (Single vs. Multiple)	-0.379**	0.069	-0.014	-0.0177	0.018
	(4.62)	(0.10)	(0.01)	(0.13)	(1.34)
Angel (Single vs. Fund)	-0.236*	-0.268	-0.142	-0.062	-0.014
	(2.73)	(2.46)	(1.05)	(2.18)	(0.63)
Angel - Single vs. VC	-0.825***	0.012	-0.643***	-0.075**	0.000
	(23.49)	(0.01)	(10.29)	(4.38)	(0.00)
Angel (Multiple vs. Fund)	0.143	-0.337**	-0.128	-0.045	-0.032**
	(0.98)	(4.02)	(0.85)	(1.43)	(4.43)
Angel - Multiple vs. VC	-0.446***	-0.057	-0.629***	-0.058	-0.017
	(9.43)	(0.11)	(9.32)	(2.57)	(2.34)
Angel - Fund vs. VC	-0.589***	0.280*	-0.501**	-0.013	0.015
	(13.58)	(3.04)	(6.11)	(0.15)	(0.69)
Observations	14,719	14,719	13,930	4,083	2,339
Number of companies	469	469	463	302	202

Table 15: Company Outcomes with Interaction Effects: Decomposing Angel Investors.
This table reports results from panel OLS regressions. The unit of analysis is company-quarter. The dependent variables are the Exit, Death and USVC dummies (which are also scaled by a factor of 1000 to obtain easily readable coefficients), as well as revenues and employees. The main independent variables are the prior cumulative investments amounts of Angel-Single, Angel-Multiple, Angel-Fund, VC, and Other investors, as well as the interaction terms between Angel-Single and VC investors, between Angel-Multiple and VC investors, and between Angel-Fund and VC investors. The unreported control variables are company age at first round, industry dummies, region dummies, non-parametric clocks for calendar time and the time since the last investment, as well as the constant. All variables are defined in Table A1 in the Appendix. All investment amounts are in natural logarithm. Robust standard errors are reported in the parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Prior Cumulative	1	2	3	4	5
Investment Amount	Exit	Death	USVC	Revenue	Employee
Angel - Single * VC	-0.0478***	0.00615	-0.0131	0.000465	-0.000461
	(0.0173)	(0.0179)	(0.0215)	(0.00256)	(0.00109)
Angel - Multiple * VC	0.0152	-0.00228	-0.0238	-0.000256	0.000296
	(0.0177)	(0.0172)	(0.0254)	(0.00261)	(0.000972)
Angel - Fund * VC	-0.000343	-0.0105	-0.0117	-0.00429	-0.000266
	(0.0159)	(0.0129)	(0.0154)	(0.00294)	(0.000916)
Angel - Single	-0.813***	0.0538	-0.256	-0.00529	0.00748
	(0.271)	(0.253)	(0.347)	(0.0363)	(0.0177)
Angel - Multiple	0.285	-0.151	-0.472	-0.0101	-0.000739
	(0.284)	(0.245)	(0.399)	(0.0364)	(0.0143)
Angel - Fund	0.0248	0.0968	-0.114	-0.0103	0.0235**
	(0.256)	(0.170)	(0.234)	(0.0400)	(0.0113)
VC	0.290	-0.128	0.0271	0.0226	0.0109
	(0.193)	(0.174)	(0.199)	(0.0346)	(0.0127)
Other	0.121	-0.191*	0.392**	-0.000151	-0.00784
	(0.129)	(0.108)	(0.165)	(0.0274)	(0.0131)
Revenues - one year lagged				0.0581	
				(0.0435)	
Employees - one year lagged					0.211***
					(0.0566)
Controls	YES	YES	YES	YES	YES
Observations	14,719	14,719	13,930	4,083	2,339
Number of companies	469	469	463	302	202

Table A1: Variable definitions

Investor categories

All investment amounts are in natural logarithm of one dollar plus the investment amount.

Variable	Description
(a) Investor categories	
ANGEL	an angel investor
ANGEL-SINGLE	an angel investor who invests in only one company.
ANGEL-MULTIPLE	an angel investor who invests in more than one companies.
ANGEL-FUND	A set of angel investor who invests through a fund vehicle.
VC	an venture capital firm
PRIVATE VC	a private venture capital firm.
GOVERNMENT VC	a government venture capital firm, including all retail VCCs
CORPORATE INVESTOR	an operational corporation that invests
FINANCIAL INVESTOR	a financial institution or other entity that invests
FOUNDERS	shareholders who are either founders, family of founders, or employees of the company

Dependent variables.

All investment amounts are in natural logarithm of one plus investment amounts.

Variable	Description
(a) Investor choices	
FIRST ROUND	investment amount made by alternative categories of investor at time of first financing. The relevant categories are defined in the investor categories section of this table.
LAST ROUND	investment amount made by alternative categories of investor at time of last financing. The relevant categories are defined in the investor categories section of this table.
CURRENT	investment amount made by alternative categories of investor in a given financing round. The relevant categories are defined in the investor categories section of this table.
TOTAL - CURRENT	investment amount made by all investors in a given financing round.
DUMMY - CURRENT	dummy variables that takes on a value of 1 if a company received financing from one of the following categories of investor in a given financing round. The relevant categories are defined in the investor categories section of this table.

Table A1 (continued)

(b) Outcomes	
EXIT	dummy variable that takes on a value of 1 if the company has been exited by December 2012 via an IPO or acquisition; 0 otherwise. The data is obtained from the SDC Global News Issue, SDC Merger, SEDAR, and from web searches
DEATH	dummy variable that takes on a value of 1 if by December 2012 the company has gone out of business; 0 otherwise. The data is obtained from BC Registry, and from web search.
USVC	dummy variable that takes on a value of 1 if a company received an investment from a US venture capitalists in a given financing round.
REVENUE	natural logarithm of the company's revenues in dollars plus 1 dollar.
EMPLOYEES	natural logarithm of the number of employees plus 1.

Independent variables.

All investment amounts are in natural logarithm of one plus investment amounts.

Variable	Description
(a) Investments	
PRIOR	cumulative investment amount made by alternative categories of investor prior to a given quarter. The relevant categories are defined in the investor categories section of this table.
(b) Interaction terms	
Investor k (LARGE DEALS)	interaction term between Investor k - PRIOR and LARGE. LARGE is a dummy variable that takes on a value of 1 if a deal has an investment amount greater than the median investment amount; 0 otherwise. k stands for the investor categories defined above.
Investor k (SMALL DEALS)	interaction term between Investor k - PRIOR and SMALL. SMALL is a dummy variable that takes on a value of 1 if a deal has an investment amount less than or equal to the median investment amount; 0 otherwise. k stands for the investor categories defined above.
ANGEL * VC	interaction term between ANGEL PRIOR and VC PRIOR.
ANGEL – (S/M/F) * VC	interaction term between prior stock of ANGEL– SINGLE, ANGEL– MULTIPLE or ANGEL - FUND, and VC – PRIOR

Table A1 (continued)	
(c) Company characteristics	
REVENUES - ONE YEAR LAGGED	natural logarithm of one plus the previous year (4 quarters) revenue.
EMPLOYEES - ONE YEAR LAGGED	natural logarithm of one plus the previous year (4 quarters) number of employees.
INDUSTRY	set of mutually exclusive dummy variables that takes on a value of 1 if the company is reported to operate in one of the following industries; 0 otherwise. Our data gives the following options: Biotech; Cleantech; IT & Telecom; Hi-tech Manufacturing; Hi-tech Services; Tourism; Non Hi-tech Industry; Other industry.
LOCATIONS	set of mutually exclusive dummy variables that takes on a value of 1 if the company is reported to operate in one of the following locations; 0 otherwise. Our data gives the following options: Vancouver (GVRD); Victoria (CRD); Okanagan/Thomson V.; Rest of BC.
(d) Control variables	
AGE AT TIME OF FIRST FINANCING	natural logarithm of the company's age measured at time of first financing plus 0.25 (in years).
AGE AT TIME OF FINANCING	natural logarithm of the company's age measured at current round plus 0.25 (in years).
AGE AT TIME OF LAST FINANCING	natural logarithm of the company's age at time of last financing plus 0.25 (in years).
AGE AT TIME OF EXIT	natural logarithm of the company's age at the time of exit plus 0.25 (in years).
TIME SINCE LAST FINANCING	number of quarters since last financing.
COMPANY FIXED EFFECTS	set of 469 dummy variables, one for each company.