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Effects of Venture Capitalists on IPO Firms: A Survey Study

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1 . Introduction

Venture capitalists (hereafter referred to as VCs) are intermediaries who raise capital from institutions investors, or wealthy individuals and make investments in private firms with a high growth potential (Gompers and Lerner, 2002). In addition to capital infusion, VCs also provide active value-adding activities including monitoring, management support and control to portfolio companies (Gorman and Sahlman, 1989; Gompers, 1995; Gompers and Lerner, 2002; Hellman and Puri, 2002 ; Hsu, 2004; Lerner, 1995; Sahlman, 1990; Tian, 2011).

The dominant organizational structure in the VC industry is the limited partnership with VCs acting as the general partners (GPs) and exerting active management, whereas investors are limited partners (LPs) who cannot involve with the fund operations. The limited partnerships have predefined lifetimes, usually ten years with an option to extend the fund for up to three year. VCs must therefore select investee firms, nurture and monitor the portfolio companies ultimately exit from the investments, distribute the investment return to their investors (LPs) within that time. Meanwhile, VCs receive their compensation comprised of management fee and performance-based payment named carried interests. To continue their business, VCs must raise

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money for follow-on funds. Both VCs' compensation and fund-raising ability depend on the reputation for returning profits to investors, and therefore VCs have a strong incentive to add value to portfolio firms.

Given that VC investments have considerable impacts on portfolio firms' growth, it is important to investigate VCs' involvement behaviors as well as the outcomes. However, the survey on this topic is rather limited. This paper reviews the existing literature of VCs' effects on portfolio companies during the IPO process. The purpose of this paper is to provide more comprehensive understanding of investments made by VCs, highlight the main findings in previous studies and further point out some of the open issues.

The rest of this paper is organized as follows. Section 2 investigates value-adding services provided by VCs. Section 3 examines the effects of VC investments on the IPO process and post-IPO performance. Section 4 discusses the relationships between organizational structure and VC investment strategies. Section 5 concludes the study and presents suggestions for future researches.

2 . Venture capital investments and value-adding activities

2.1. Stage financing

The key feature of VC investment is that VCs provide not only capital, but also monitoring, support and control in various aspect of management to portfolio companies. Sahlman (1990) notes that stage financing is one of the most potent monitoring and control mechanism VCs can employ. By staging capital infusion, VCs can periodically revalue the investment and preserve the right to abandon the one whose prospects look dim. Gompers (1995) is the first paper that empirically investigates the stage financing of VC investment. He argues that the stage financing should be related to the expected agency costs, which are increased with declining asset tangibility (measured by ratio of tangible assets to total assets), increasing growth options (measured by market-to-book ratio) and greater asset specificity (measured by R&D ratio). Consistent with the argument, Gompers (1995) finds that the above three ratios affect the stage financing in the form of investment amounts per round, financing duration between rounds and total number of financing rounds.

In a related study, Tian (2011) examines the causes and consequences of stage financing. The findings on the causes of staging financing are as followings: VCs located farther away from portfolio companies tend to use more stage financing (measured by more financing rounds, shorter intervals between rounds, and smaller investment amount in each round) so as to decrease monitoring costs. With respect to the consequences, Tian (2011) finds that more stage financing leads to better investment performance measured by IPO rate and post-IPO performance. These

findings consistent with view that monitoring by VCs and the staging of capital infusions are substitutes.

2.2. Value-adding activities

Apart from staged capital infusion, Gorman and Sahlman (1989) and Sahlman(1990) suggest that VCs can directly involve in the management of portfolio companies as well, typically serving on the investee's board of directors, working on raising additional funds, recruiting management. Lerner (1995) provides the first empirical evidence on such activities of VCs. He documents that VCs' involvement should be more intense when the need for oversight is greater. Consistent with this argument, Lerner (1995) finds that the number of board members who are VCs increases around the time of CEO turnover. He also finds that the distance to portfolio firms is an important determinant of the board representation of VCs; portfolio firms are more likely to have a nearby director.

Hellmann and Puri (2002) examine the role of VCs in the professionalization of portfolio firms. Empirical results show that receiving venture capital is related to a variety of organizational milestones, such as the formulation of human resource policies, introduction of stock option plans and the hiring of a vice president of marketing and sales. These findings clearly indicate that VCs play roles over and beyond those of traditional financial intermediaries.

In addition, Hsu (2004) provides indirect but convincing evidence for VCs' role in adding value to investee firms. Reputable VCs could provide more value-adding services to start-ups. Consequently, financing offers made by VCs with high reputation measured by the industry deal experience and network resources are more likely to be accepted, and reputable VCs provide low valuations for start-ups' shares.

Bottazzi et al. (2008) investigate the determinants as well as the consequences of value-adding activities by VCs. They find that VCs with prior business experience (as entrepreneurs, managers or consultants) are more active in helping portfolio firms in recruiting managers and directors, raising the following fund and interacting more frequently with their portfolio firms. They further show that VC activism is positively related to the success of portfolio companies, which is measured by IPO rate. Nahata (2008) shows similar results that firms that receive investment from more experienced VCs are more likely to exit through IPO and access public markets more quickly.

3 . Venture capital investments and IPO performance

Section 2 provides clear evidence that VCs play an important role in monitoring and nurturing portfolio firms, which fuels researchers' interests in the effect of VCs in the process of going

public and long-term performance of their investee firms. One set of researches examine the influence of VC on the IPO timing of portfolio companies.

3.1. *IPO timing*

Lerner (1994) finds that VCs are able to time the market successfully; VC-backed companies are more likely go public when equity valuations are high and employ private financing when the values are low. In like manner, Ball et al. (2011) show that VC-backed IPOs incline to go public in the period when the demand for growth capital is high.

A related study by Gompers (1996) indicates that young VCs tend to make portfolio companies go public at an earlier stage than older VCs in order to increase reputation and fundraising ability (grandstanding hypothesis). Wang et al. (2003) and Hibara and Mathew (2004) present evidence for grandstanding hypothesis for Singapore VCs and Japanese VCs, respectively.

3.2. *IPO and post-IPO performance*

There also exist a large number of studies that pay attention on the role of VC backing at IPO and after the IPO. Barry et al. (1990) suggest that VC provide intensive monitoring and certification services to portfolio firms during the IPO process. They show that VCs take concentrated equity positions of portfolio firms, and maintain it after the IPO; VCs also serve as board of directors and continue to do so for more than one year after the IPO; further, the value of monitoring and certification by VCs appears to be recognized by the capital market through lower underpricing for IPOs with better monitoring and certification. On basis of Barry et al. (1990), Megginson and Weiss (1991) compare VC-backed IPOs and non-VC-backed IPOs and find that the underpricing of VC-backed IPO is lower than that of non-VC-backed IPOs. This result is consistent with the monitoring and certification hypothesis, in line with Jain and Kini (1995).

In contrast, Hamao et al. (2000) point out that in Japan, the underpricing of VC-backed IPOs is not lower than that of non-VC-backed IPOs. Tykvova and Walz (2007) and Chahine and Filatotchev (2008) find that there is no significant difference between VC- and non-VC-backed IPOs in German and France, respectively.

Furthermore, Lee and Wahal (2004) show that the underpricing of VC-backed IPOs tends to be higher than that of non-VC-backed IPOs after controlling for the endogeneity of VC funding.

With respect to post-IPO performance, Jain and Kini (1995) show that VC-backed IPOs have a higher operating performance than non-VC-backed IPOs over a three year period following the IPOs. Similar result has been observed by Brav and Gompers (1997). However, Rindermann (2004) that analyses IPOs on Europe's new stock markets (German, British and France) only presents weak evidence supporting the positive effects of VCs on long-term performance of portfolio firms. In line with Rindermann (2004), Tykvova and Walz (2007) show that in German,

VC-backed IPOs have only marginally better long-term performance than that of non-VC-backed IPOs.

On the other hand, Hamao et al. (2000) find that long-term performance of VC-backed IPOs is not better than that of IPOs without VC investments in Japan, as well as Chahine and Filatotchev (2008) in France.

3.3. *Earnings management*

Recent studies examine whether VC investments affect portfolio firms' accounting quality around the IPO. Morsfield and Tan (2006) suggest that VCs play monitoring and certifying role on quality of portfolio firms, and thus inhibit income-increasing earnings management. They find that the pre-IPO abnormal accruals are lower in VC-backed IPOs than non-VC-backed IPOs. Hochberg (2012) also provides evidence for the monitoring and certification effect of VCs with empirical result that VC-backed IPOs exhibits relatively lower earnings management.

In contrast, Lee and Masulis (2011) do not find evidence that VCs as a group significantly restrain earnings management by IPO issues, only more reputable VCs are associated with lower pre-IPO earnings management. In like vein, Wongsunwai (2012) shows that reputable VCs play a role in constraining earnings management surrounding IPO lockups.

Overall, previous studies that focus on the effects of VC investments in the IPO process and post-IPO performance show mixed results, which partially because they have treated VCs as a homogeneous group of investors. Indeed, VCs differ in organizational structures. In the following section, we investigate how structure differences affect VC investments.

4 . Organizational structures and strategic investments

As mentioned above, the independent limited partnership (IVCs henceforth) is the dominant organizational structure in the US VC industry, of which the only goal is financial return. In parallel, there exists VCs with alternative organizational structures, termed capital- or affiliated VCs, which account for a substantial portion of investments, especially outside the US. The main types of affiliated-VCs are subsidiaries of large corporations (CVCs), banks (BVCs) and securities firms (SFVCs). The organizational structures play an important role because they will affect VCs' investment strategies that have a considerable impact on venture firms' growth.

4.1. *Corporate venture capitalists*

A number of studies examine the investments by CVCs, of which Hellmann (2002) develops the first explicit model. The central idea of his model is that unlike IVCs who seek purely financial returns, CVCs have additional objective of achieving strategic benefits that arise from synergies

with the core business of their parent companies, and therefore the investment behaviors by CVCs would differ from that of IVCs as well. The model assumes that a start-up make a choice between IVCs and CVCs. The start-up's choice is depends on VC's value-adding services motivated by its investment objectives. When the start-up is a complement to CVC parent firm, the CVC will be chosen because it has stronger incentive than IVCs to provide value-adding activities. If, on the contrary, start-up is a potential competitor, the start-up will be wary of CVC investment and prefer the IVC. In addition, Hellmann (2002) also indicates that CVCs are willing to offer a higher valuation for start-up's shares than IVCs to pursue strategic objectives.

Masulis and Nahata (2009) examine the model of Hellmann (2002). They find that start-ups receive investments from both complementary and competitive CVCs, insiders of start-ups are willing to accept lower board representation when complementary CVCs are involved, whereas they require higher board representation in the presence of competitive CVCs. Given the fact that in early stage start-ups products and services are not clearly defined, which could undercut the strategic benefit available to parent firms, CVCs are less likely to be lead investors in early stage compared to IVCs. Furthermore, Masulis and Nahata (2009) show evidence that the price CVCs paid to buy start-up shares is significant higher than that of IVCs. These results are consistent with Hellmann (2002).

In like manner, Gompers and Lerner (2000) investigate the effects of organizational structure on VCs' investment strategies in an IPO setting. They also find that CVCs pay higher price for portfolio firms than IVCs do, which is consistent with Masulis and Nahata (2009). Additionally, they show that CVC-backed companies appear to be as successful (measured by the probability of start-up firms go public rate) as IVC-backed companies. This is particularly true for investments in which there is strategic overlap between CVC parents and the start-ups. Similarly, Ivanov and Xie (2010) find that CVCs add value to start-ups only when the start-ups have a strategic fit with the parent companies of CVCs, as a result, those start-ups obtain higher valuations at the IPO.

4.2. Bank-affiliated venture capitalists

While CVCs have attracted great attention, there is relatively little work study the investment of BVCs no matter that banks play an important role in the VC market outside the US (Mayer et al., 2005).

Hellmann (2002) points out that as with CVCs, BVCs invest in start-ups to pursue strategic benefits; BVCs invest in start-ups for the sake of increasing parent banks' lending opportunities. On this basis, one could expect that the investments by BVCs differ from that of IVCs. Wang et al. (2002) examine the differences in investment behavior between IVCs and BVCs. They find that IVCs are more likely to invest in high-tech and early-stage companies that have great

potential to gain higher return. In contrast, BVCs that invest in potential customers of parents banks tend to invest in low-tech, late-stage companies, thus reducing the risk. Mayer et al. (2005) and Hellmann et al. (2008) present similar evidence that BVCs have market preference of low risk companies. In addition, Hellmann et al. (2008) show evidence that BVCs have a tendency to invest in companies that operate in industries with higher leverage levels. Specially, they find that banks are more likely to provide loan to companies that receive investments from their subsidiaries BVCs. These results findings support the view that BVCs make investment decisions that are congruent with the strategic objectives of their parent banks.

4.3. Securities firms-affiliated venture capitalists

In addition to CVCs and BVCs, there exist a significant portion of affiliated-VCs that are subsidiaries of securities firms. Especially in Japan, SFVCs are the most numerous. Firms that receive investment from SFVCs are usually underwritten by the VCs' parent companies in the process of going public. Gompers and Lerner (1998) and Hamao et al. (2000) suggest that this situation would generate conflicts of interest, and underwriters will set a high offering price to increase their fee revenues. As a result, those IPOs are likely to associate with poor long-term performance. In a recent study, Hoberg and Seyhun (2009) show evidence that lead underwriters and VCs collaborate at the expense of other investors. In this case, VCs accept higher underpricing to the benefit of underwriters. In exchange, the lead underwriters provide VCs with long-term marketing support and favorable analyst revisions, and allow them exit at high prices. In addition, Arikawa and Imadeddine (2010) present similar result that underpricing is more severe when the VC is a subsidiary of the lead underwriter. However, this result differs from the study by Hamao et al. (2000) and they argue that an equity investment in IPO firms by VC affiliated with underwriter improves the alignment between the underwriter and the IPO firm, and thus increases the offer price.

In contrast, Chahine and Filatotchev (2008) assume that affiliated with lead underwriters could enhance effective screening, certification and monitoring role of VCs, thus helps to improve IPO performance. They show that IPOs in which VCs are affiliated to lead underwriters experience lower underpricing than both non-affiliated VC-backed IPOs and non-VC-backed IPOs. Similarly, affiliated VC-backed IPOs exhibit higher earnings surprise and better long-term performance compared to other IPOs.

The above studies show evidence that organizational structure have important impact on VCs' investment strategies. Affiliated-VCs with additional strategic objectives behave in different ways from IVCs that purely seek financial return.

5 . Conclusion and suggestions

This paper reviews literature of venture capitalists' effects on portfolio companies during the IPO process. Venture capitalists are active investors that provide not only capital, but also add value to portfolio companies through monitoring, management support and control, however, the effects of venture capitalists involvement on IPO firms remain ambiguous. The organizational structures of venture capitalists play a determinant role on their investment strategies. Venture capitalists with strategic objectives have different impacts on portfolio companies. Overall, existing literature so far has managed to shed some light on venture capitalists' investment behaviors and their effects on portfolio firms during the IPO process. However, there still exists incomplete in several ways. For instance, work on affiliated venture capitalists, which account for a substantial portion outside the US and play in a different way from traditional venture capitalists, is limited, and even little is known about how value-adding activities by venture capitalists differ across countries.

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