Venture Capital Syndication in Australia: Patterns and Implications

Asif Siddiqui

PhD Candidate, Faculty of Economics and Business, The University of Sydney

Abstract

The paper investigates the patterns of organizational collaboration amongst the Australian venture capital firms (VCF) in local technology related venture which has been identified and measured through co-investments or investment syndications. I have used Thomson Reuter's data and industry classification in the research. The paper has been presented in three parts. In part 1, I have studied 1156 rounds of venture capital investments in 367 biotechnologies, medical & health (BMH) industry and information & telecommunication (ICT) industry and derived the co-investment patterns and network using graph theory. The results have been presented as affiliation network graphs. In part 2, I have studied the individual co-investment pints and analysed the characteristics of the participating investors at each co-investment point. The characteristics of the VCFs have been analysed in terms of capital size and degree of specialization in order to analyse the pattern and motivations of co-investments. The analysis suggests that the VCFs tend to gather strategic industry specific resources and finances to support the growth of investee companies. In part 3, we have compared the performances of the ventures receiving investment from single VCF and with those of receiving investment from two or more VCFs. The data shows that the ventures receiving investment from two or more VCFs have higher probability of exiting successfully. While effectiveness of individual co-investment could depend on various issues, it could be argued that the co-investment network has been instrumental in market integration, resource and information mobilization. Hence, the output of the research could be useful for the industry practitioners as well as policy makers in terms of understanding the deals, resources and information flows which could in turn enhance further the better usage of network and other resources in developing the local venture capital market.

A. __Background__

In the current economic atmosphere, financing technological innovation is the key driver of the productivity growth and industrialization. Thus, venture capital has evolved as an essential element of industrialization around the world. In last few decades, many venture capital backed enterprises like Microsoft, Apple, Yahoo and FedEx not only turned into giant corporations, but also changed the way the modern economies function and the businesses are conducted for ever and for better, simply by promoting innovation and technological & adaptation. It is impossible today to think of an industrialized economy without a venture capital market. Australia from early 1980s onwards has initiated to develop a venture capital market with focus on technology entrepreneurship and has come a long way in the last three decades to emerge as a major venture capital hub in this region.

The organizational collaboration and investment syndication is a common and significant element of venture capital markets. As venture capital is often involved in financing high tech and innovative young enterprises, it requires specialized knowledge, management skills as well as other specialized resources. The risk of failure could be high, despite the big promises of success. Hence, institutional network and collaborations are very common among the venture capitalists where various investment and portfolio risk is better taken care of through dissemination of information. Concurrently, such collaborations could bring in diverse specialized resources essential for the development of a young and innovative venture. The structure and the behaviour of the syndicates potentially have strong influences over the life cycle of young enterprises. However, forming and managing syndicates can be fairly complex and therefore despite the potential benefits may discourage syndication. Hence, being able to understand and manage the complexity effectively is a desirable option.

It potentially promotes efficiency in the market in terms of allocating the scarce resources in their best possible usage as well as creating synergy in resource aggregation. The co-investors often form social networks and long term relations through repeat co-investments. The network members get to share information regarding potential deals, references and opinion which could help access to a greater flow of deals, more information and better investment judgements. Once, the deals are shared, the syndicate members can also share the pool of professionals such as lawyers, accountants, investment bankers, financial advisers and distributors to help the new company receive

better management and professional support to grow and therefore create a greater opportunity to divest at a lucrative price on exit.

Organizational collaboration among the venture capitalists through syndication and syndication networking is particularly important for the transitional or developing venture capital markets like Australia as the market could be characterized by lack of capital, expertise and experiences. Investment syndication could help overcome such constraints in a transitional market, in addition to mitigating portfolio and investment risks. Thus, organizational collaboration could also enhance value-added activities in the ventures. In order to explore these ideas I have presented the research in three independent but interconnected and coherent parts. In essence, investment syndication has been defined as co-investment in a venture by two or more venture capital firms at any investment round before exit which has been used as a tangible form and measure of organizational cooperation. The analytical parts are preceded by a discussion on the key characteristics of the Australian market and presentation of relevant data and information which would construct the analytical premise of the paper. The analytical parts are then followed by a discussion on key findings and implications.

B. Australian Venture Capital Market: Characteristics and Data

Lerner and Watson (2008) commended the continuous policy support in Australia since mid 1980s for development of the venture capital market. The first big step was Management & Investment Companies (MIC) program in 1987 whose limitations and lessons led to the birth of Pool Development Fund (PDF) program in 1992. PDFs however largely undermined government initiative to attract investment for young and high technology enterprises. Consequently, the Aus Industry Program in 1994 focused on funding young and high tech companies. The additional programs for the innovative enterprises were stepped up further with the launch of Innovation Investment Fund (IIF) program in 1998 which played significant role in market development (Cumming 2007). Late 1990s onwards the investment and market activities increases significantly which was further substantiated by the 2001 Financial Act. In 2002 again Venture Capital Limited Partnership (VCLP) and Early Stage Venture Capital Limited Partnership (ESVCLP) were introduced as a step toward emulating the US limited partnership structure. While the specific contributions of these programs warrants separate

evaluation, the level of policy support remains evident. In last decade eventually private equity fund raising and investment activities have been accelerated significantly. During the last decade the market in general showed more potential for growth. While in the early years the retail investors and government programs committed significant funds (Golis 2002), in recent years institutional investors as well as foreign investors have taken that prominence. Lately, many venture capital and private equity mangers generated attractive returns for the fund investors attracting further private and institutional investors. Nevertheless, despite the increased fund flows and investment activities, increase in the number of experienced managers and increase in venture capital investment activities has remained moderate which would continue to be a concern here.

In this project I have used Thomson Reuter's data recording venture investment rounds from 1984 to 2009 in Australia which represent almost the entire effective life of venture capital market. Thomson Reuters also provide data to Australian Venture Capital Association Limited (AVCAL) and receives data from Australian Bureau of Statistics (ABS). I have also consulted market evaluation by corporate venture capitalists. Finally, we have consulted and reviewed journal publication especially from private equity media in Australia for data reviews and other information. There have been other publications in academic journals and books which analysed Australian market in depth. With the help of all the data, information and research reports we have compiled this chapter to characterize Australian venture capital market in a very comprehensive way.

The primary focus is Australian VCFs' investments in Australian private companies especially in the seed, start up and early stages. The expansion stage investments have been included under the venture capital investments as it could be considered as development capital, although a conservative definition of the venture capital could rule this out. The companies receiving venture capital investments were then categorized according to the industry. Thomson dataset classifies all companies with three primary industry categories according to the products and services produced. These industries are namely, information and communication technology (ICT), biotechnology, medical & healthcare (BMH) and the other non-high-tech (NHT) industries. Information technology would cover all high-tech computer and communication products such as semiconductor, software and internet product. Bio-technology would include medical, health and life science products. However, a significant amount of venture investments have gone to non high-tech sectors such as

consumer commodities, industry, energy and finance, transport and communications, agriculture and utilities etc. whenever there has been a prospect for rapid growth.

We surprisingly observe in Table-1 that the level of venture capital investment was very low until 1998 and 92% of all the venture investment activities took place in the last decade showing a phenomenal growth. 58.33% of investment then took place in NHT sector. Momentum Funds Management (2005) conducted a market review for the federal government where it suggested that the investment returns and market forces have played a dominant role since 1998 where the new batch of fund managers created by the IIF program played an important role. Finally, I would consider the local venues receiving funds from local VCFs to focus on the Australian market exclusively. In the subsequent analysis NHT sector will also be excluded as venture capital investment typically refers to the investment in the young and growing technology backed enterprises. During 1998-2008, 646 companies received venture capital funding from 126 VCFs as presented in Table-2.

Industry	Total Ventures (1984-2008)	Total Ventures (1984-1998)	Total Ventures (1999-2008)
ICT	386	25	361
BMH	183	10	173
Others	528	49	479
Total	1097	84	1013

Table: 1

Number of Venture Investments (1984-2008)

Industry	All Stages		Early & Expansion	
	Number	Percentage	Number	Percentage
ICT	263	33.21%	246	38.08%
BMH	139	17.55%	121	18.73%
Other	390	49.24%	279	43.19%
Total	792	100.00%	646	100.00%

Table: 2

Venture Investments in Australian firm in Australian Companies by Stage

C. Part 1: Syndication Networks

This part has been motivated primarily by the importance of syndication network in venture capital market. Furthermore, the research is also driven by the opportunity to contribute original findings to the venture capital syndication literature. It is not surprising that syndication network has stirred reasonable attention from the academics in the US and in Europe. However, the academic literature is yet to shed light on the venture capital networks in Australia. Thus, it would be an appropriate and timely initiative to study the syndication network in the Australian venture capital market. Investment syndications would often lead to the formation of syndication networks which would gradually connect venture capital investors through current and past co-investments, board representations in the shared portfolio companies in a web of relationship as each venture capitalist would have their individual teams of head hunters, auditors, lawyers, underwriters, investment bankers to support the portfolio companies (Shalman 1990; Hochberg et.al. 2007).

It is commonly perceived that syndication is motivated by investment risk reduction, uncertainty and resource sharing. Bygrave (1987, 1988) in his pioneering works on syndication emphasized that the venture capitalists syndicate to access specialized knowledge and network resources which could add value to the venture. Lockett and Wright (2001), Wright and Lockett (2003), Manigart et al. (2006), De Clarcq and Dimov (2004) among others also supported risk reduction and resource base motivations for syndication. Lerner (1994) emphasized that information sharing and obtaining a valid second opinion from a similar or more experienced venture capitalist in venture selection which could drive syndication. Sharing experience and gathering information to form an informational alliance could be vital in venture selection (Casamatta and Haritchabalet, 2007; Baron and Besanko, 1999). Shane and Cable (2002) also suggest that peer reference in the investor network plays a vital role in venture selection. However, the venture capitalists perhaps syndicate for more than one reason (Cestone, et al. 2006).

Hochberg (2007) emphasized on several benefits of networking especially access to quality deal flows. By inviting others to the syndicates the venture capitalists could expect deal reciprocation in future (Bygrave 1987, Lerner 1994). Syndication network could defuse information which is both sector and location specific across sectors and locations increasing the scope of investments (Stuart and Sorensen, 2001). Syndication network may help venture capitalists add value to the portfolio

companies (Brander 2002) and may facilitate securing an experienced co-investor accessing networks of high profile investment bankers and underwriters at the time of exit. Further, the venture capital network is a driver in market integration and expansion (Kogut 2007). In venture capital markets the investors who are well networked with reputation and experiences would enjoy more influential position where syndication is a tangible starting point.

Academic researchers from different business disciplines such as economics, finance, management and entrepreneurship have also contributed to the syndication network literature which interestingly has brought in a rich methodological diversity. Many of these studies are very insightful in terms of theory economic implications (Bonacich 1987; Shy 1996; Stuart 1998; Kim 1998; Sorensen and Stuart 2001; Shane and Cable 2002; Sing 2005; Ohn et.al. 2006). In consultation with the literature from the diverse streams we have chosen our individual methodological approach for this research. In order to study the key aspects of syndication network in Australia we begin with generating an overview of the syndication networks. Then, we analyse the structure and characteristics of the network. The study of the network structure in the venture capital industry was motivated by and benefited from a few similar researches done in the US (Bygrave, 1987; Sorensen and Stuart, 2001; Kogut and Orsu, 2007). However, the nature of syndication network has also been shaped by the nature of local market characteristics.

Data and methodology:

In the last 10 years, 646 companies received venture capital finance from 126 VCFs where 53 of them are corporate venture windows and affiliates of financial institutions; 62 of them are private equity firms, pension funds, endowment funds, angel and individual investors and 11 VCFs were government programs and incubators. However, in this research we exclude the non high-tech companies as venture capital investment typically refers to the investment in the young and growing technology related enterprises. Syndication has been defined as the co-investment by two or more VCFs in a company at any one point of time and the first venture investor(s) would be considered as the lead investor(s) or initiator. If there are two investors co-investing on the same date during the first round of venture capital finance in a company, both VCFs would be considered as lead investors.

In this part I have utilized a commonly used mathematical discipline called graph theory to analyse the syndication network pattern. Syndication network has been interpreted as graphs where both portfolio companies and the venture capital firms have been treated as the nodes of the graph. I have extensively used the social network theories from Wasserman and Katherine (1987) and methods from Hanneman and Mark (2005). Venture capital investment network has been analysed as an affiliation network. Affiliation networks are 2-mode networks, but have only one set of actors. The second mode in the network is a set of events where the actors participate. The actors are linked through participation in an event which is the units of observation (affiliation variable). The events are not defined on the pairs of actors, but on the subset/group of actors. Thus, each affiliation is defined on a subset. The VCFs have been treated as the *actors* and companies/ ventures where they co-invest would be treated as *events*. The VCFs would therefore form a *tie* or create a *link* if they co-invest/ purchase the securities in the same company. Consequently, the set of VCFs co-investing in a company would form a syndicate.

Thus, in affiliation matrix, the summation of row elements would give the number of co-investment by a VCF and the summation of the elements in the column will give the number of investors in a company. In order to construct the affiliation matrix with the information from the database, we record the company names, industry category, investment dates, company stage at the investment round, investment amount, investor VCF name, VCF found year, VCF size (measured by the capital under management in million US$) and VCF type. The investment details have been organized by company so that the lead investors can be identified. Given the dataset we generate codes for each VCF and company and construct affiliation matrix for BMH and ICT industry separately. It has been expected that, the VCFs specializing in certain industry would probably network with VCFs investing in the same industry, although there are a few generalists investing across industries. Indeed, industry specialization and portfolio diversification within the industry category is common elsewhere in the world as well (Norton, 1993).

In affiliation matrix *A*, an element is defined as:

$$a_{ij} = \begin{cases} 1 & \text{if the actor } i \text{ is affiliated with the event } j \\ 0 & \text{otherwise} \end{cases}$$

I have used the affiliation matrix to generate the *bipartite-affiliation matrices* which provide an overview of the networks in a tabular form. The row/ columns show the ith VCF co-investment number with j^{th} VCF. As, at the diagonal $i=j$, so that the diagonal elements of the matrix shows i^{th} venture capital firm's total number of co-investments indicating the network position. The matrix is symmetric off the diagonal. We generate the affiliation networks as graphs for visualization for each industry. The *graph* is defined on a set of *nodes* representing the VCFs and set of *links* representing the co-investment ties. We also identify the key players with more co-investment ties and generate their *ego-networks*.

Structure of Syndicates:

In the ICT industry 57 VCFs have been found syndicating investments where 17 of them also syndicated investment in BMH industry. Thus 70.17% of the VCFs specialize in ICT industry. Out of 34 syndicating VCFs in BMH industry, only 50% apparently specializes in the industry and the others co-invest across industries. Thus, level of specialization seems higher in ICT industry. In the sample out of 121 BMH companies 27.27% companies received syndicated investments and out of 246 ICT companies only 21.14% companies received syndicated investment. 70.17% of the VCFs syndicating investment in ICT sector specialize in the sector whereas the rest syndicated investments in both ICT and BHM sector. The average size of the syndicates in the BMH industry is 2.61 and in ICT industry it is 2.37 which demonstrate that, there is a greater tendency to syndicate investments in the BMH industry. However the duration of syndicates in Australian data is short and the size of syndicates is small. It could therefore be indicative of the overall size and maturity of the venture capital market.
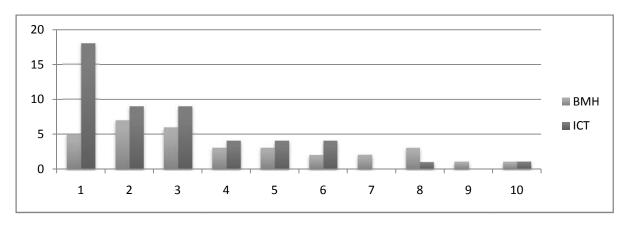

Figure: 1
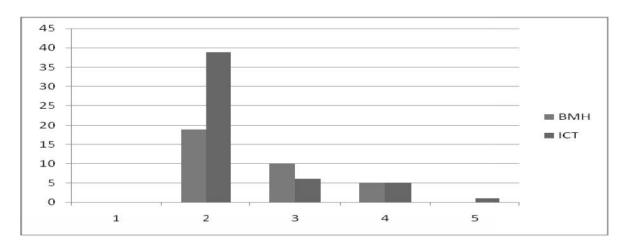**Duration of Syndication (By round)**
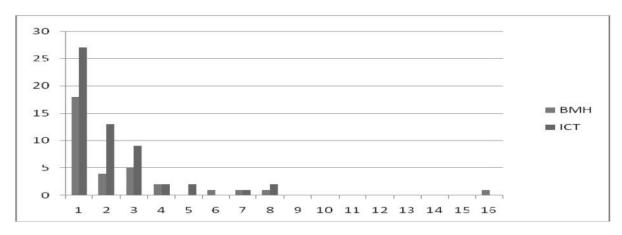
Figure: 2
Number of VCF per Venture

Figure: 3
Number of Syndicate Participation by Firm

In Figure 1 we have displayed the duration of the syndicates by rounds. In most cases only a fewer rounds are syndicated. In ICT sector most syndicates take place for one round, usually at a later stage. This is consistent with the nature of investing VCFs which are larger private equity firms or financial institute affiliates. In BMH sector more syndicates last for 2 to 3 rounds and in both sectors fewer syndicates last more than four rounds. In Figure 2 we show the size of syndicates. Most syndicates in both industries two VCFs average size of syndicates being larger for the BMH industry. In Figure 3 show the degree of networking by the VCFs and we see the most VCFs participated in one syndicate and larger portion of syndicating VCFs have participated in 3 or less syndicates. Only a few VCFs in both industries participated in 4 or more syndicates.

<u>Structure of Syndication Network:</u>

The VCF-company affiliation network has been provided in Figure 4 for the ICT industry where the VCFs have been given as round dots and the companies were given with small rectangular boxes. In the network graphs we can visualize the network concentration as well as direct and indirect ties. The affiliation network graph very clearly shows how the VCFs are connected and which syndicated ventures they are co-investing in. the In Figure 5 we show the VCF-company affiliation network for the BMH industry. As the data was taken exclusively on Australian VCFs investing in local technology related companies which show that most VCFs are based around the south east coast of Australia especially in Brisbane, Sydney and Melbourne, regional variation did not significantly impact the network patterns. The networks also remain largely well connected with only a few fragmentations in both ICT and BMH industries as we can visualize.

<u>Central Players:</u>

The networks of both ICT and BMH industries share a common feature apart from being well connected, as networks concentrate around a few key players who enjoy much higher degree of centrality compared to the other players. We have generated the two graphs showing the networks among the key players in both industries. In Figure 6 and in Figure 7 we show how the central players in BMH and ICT industries are connected with each other in the respective industries. In BMH industry we identified four central players. V15 is an independent private equity firm managing US$ 370 million. It specialized in the BMH and has been in the market since 1996. V25 is a government affiliated program and has been in the market since 1992 as government continues to support the growth of early stage bio-tech ventures since early 1990s supporting and collaborating with other VCFs. V33 is a financial institute affiliate with focus on the BMH sector.

It is relatively new as it has been around since 2004 managing relatively a smaller size of capital. V43 is a university affiliated program with a small size of capital less than US$20 million under management. It has been in the market since 2000 and quickly established itself as central player. Thus, in the BMH industry we see that the key players are independent private equity firms, government and university programs as well as affiliate of financial institutes which shows wider range organizational collaboration in the industry. I have identified the top five key players in the ICT industry where four of them are independent private equity firms and one affiliated with financial

institutes. Unlike the BMH sector, we do not see strong role of university or government programs in this network. V5 is a very large financial institute affiliate managing around US$2 billion and has been in the market since 1987. V8 is also one of the oldest market player since 1984 which mages around US$235 million. V38 and V19 have been in the market since 1996 and 1998 respectively. V29 has been around since 2001 and managed get a central position in the network. The central players in the ICT network are relatively older and larger. It is partially because ICT sector has been the key industry for the venture capital investors as the BMH sector has been developing.

Coherent Subgroups:

The subgroups here have been defined in *pairs* for simplicity when two VCFs syndicate investments in more than once over time. The repetition could be motivated by positive experiences and possibilities of working together in similar ventures. Syndication literature has often looked at the rationale for syndication within a single period framework, whereas some rationale for syndication could be justified better in multi-period set-up. The syndicated portfolio of each VCF can be seen from the affiliation matrix. Many VCFs participating in repeat co-investment in ICT companies also invested in BMH companies, although repeat syndication is relatively less in ICT companies compared to BMH. The pair of VCFs syndicated more than once has been identified in the network. We have summarized the findings in Table 5.4 and 5.5. In BMH sector V15 has two consistent syndication partners namely v34 and v25. V15 is a large size independent private venture capitalist whereas V34 and V25 are relatively small specialized venture capitalists affiliated with university research programs and government support programs. Here, we can very clearly observe a scope for resource exchange and complementation. In ICT industry on the other hand we observe a fewer repeat syndication. Only V202 and V5 have repeated syndication in four portfolio companies. V5 is a financial institute affiliate and the second largest VCF managing close to US$2 billion. V202 is also a financial institute affiliate although very small but with specialization in ICT. In this pair, we could observe that financial industry network could be a key factor for keeping them together where one of them is technically specialized in ICT industry and the other specializing in financial resources. Thus, they could possibly complement inputs efficiently in selecting and managing portfolio companies.
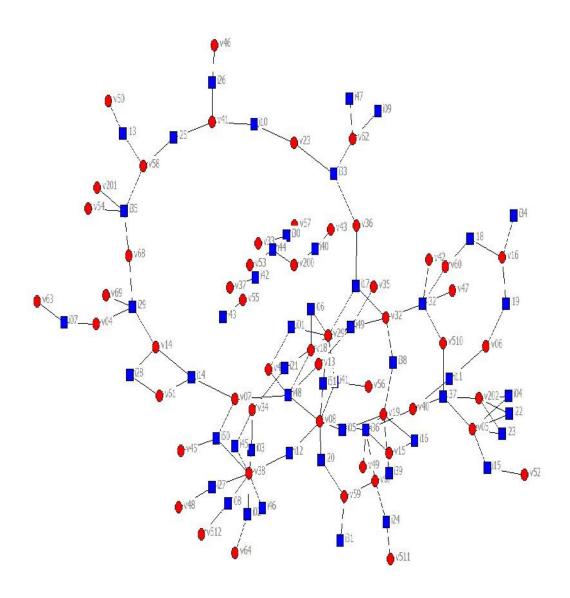
Figure 4
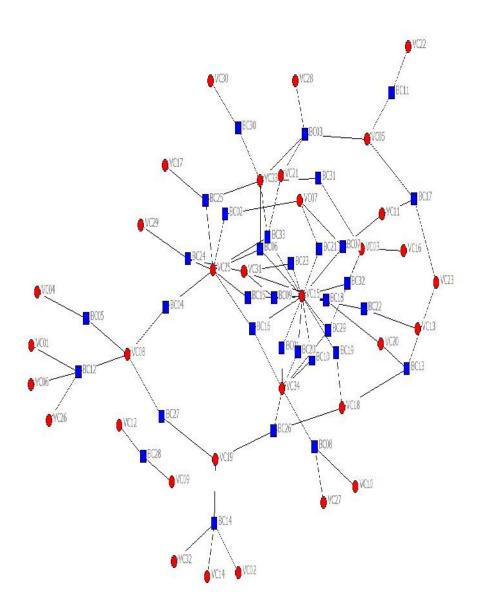**VCF syndication network in ICT industry**

Figure: 5

VCF syndication network in BMH industry
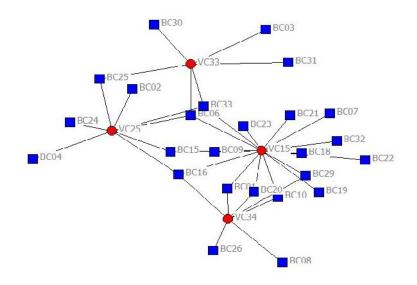
Figure: 6
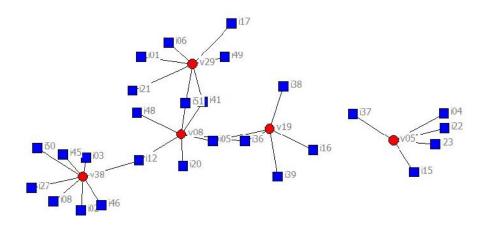
Central Players in the BMH Network

Figure: 7

Central Players in the BMH Network

D. Venture Capital Firm Variation in Syndicates

In the previous part we have studied venture capital syndication network where each node of the network represents a syndicate. In this part we extend our analysis of the nodes where each node represent two or more VCFs who often come with different motives and bring in different resources and expertise to the venture. As venture capital market has been growing worldwide in terms of economic significance attracting a large variety of investors, the funds are being supplied by a wide variety of individual and institutional investors including bank and non-bank financial institutions, pension funds, funds of funds, corporations and corporate affiliates, business incubators, universities and government programs. These investors have varied risk profile, investment horizon, industry and geographic preferences and strategic orientation. The venture capitalists would raise funds from different clusters of homogeneous investors as long as it is consistent with the organizational form, resources and specialization of the venture capital firms. Thus, identifying the fundamental difference among the venture capital firms would be central to the understanding venture finance (Hellmann 2002).

Venture capital literature has often ignored the fact that the venture capital investment vehicles are significantly different and have different roles in the market. This is perhaps due to widespread controversy among the academics about the definition of venture capitalists and venture capital firms. Usually the independent venture capital firms involved in fund raising activities receive significant attention from the researchers while the corporate venture capitalists receive a separate treatment. The corporate venture capitalists are not involved in fund raising and are known as captive venture capitalists. The corporate venture capitalists usually invest in portfolio companies where the investee companies would create some sort of synergy with the core business of the investor (Block and MacMillan 1993; Gompers and Lerner 2000). The organizational and management structure of the corporate venture capitalists as well the challenges and opportunities faced by would be different from the typical independent venture capital firms.

Hellmann (2002) classified the venture capital firms as independent venture capital investors and strategic venture investors. He defined the strategic venture investors as the ones whose asset value is affected by the investment in new ventures. He argues that the strategic investors therefore care about the new ventures' strategic impact on the investors' assets where the success of the new

venture could complement and/or cannibalize investors' assets. He identified corporate venture investors as the strategic investors as achieving synergy with portfolio companies would be important consideration for them. The independent venture inventors on the contrary would only care about financial gains. However, in practice the strategic venture capitalist would like some financial gain whereas the independent venture capitalists' asset value is also affected by the investment made in the portfolio companies. Hence, in a growing venture capital market with overlapping investment activities by all type of venture investors it would be essential to understand how different types of venture capital firms interact. In this part I discuss the differences among the venture capital firms as well as identify the common grounds where they complement each other through co-investments in portfolio companies. I have consequently categorized venture capitalists in terms of investment focus and specializations unlike Hellmann (2002) and Elgano (1995).

I would argue that the venture capital fund managers would organize and structure the funds and firms to maximize the scope of investment activities. Berger *et.al.* (2005) shows how the nature of organization affects the way it conducts the business and chooses actions which it can carry out efficiently. Pichler and Wilhelm (2001) developed a model to show how organizational structure facilitates functions in investment banking syndication. Therefore, I would exploit the information on VCFs' organizational structure and affiliation in the case of captive venture capitalists to gauge the nature of specialization. I would differentiate venture capital firms in terms of specialization and investigate into the key aspects of investment activities by type of VCF which might arise endogenously due to the inherent nature of specialization.

In order to classify the venture capital firms I assume that the VCFs would possess two categories of input namely financial and non-financial in accordance with Lockett and Wright (2001). The financial input is the funds available for investment and non-financial input is specialization, experience and market network necessary for both screening and monitoring an investment. The final objective of any VCF would be financial return, although corporate venture investors would have other strategic objectives to satisfy (Gompers and Lerner 2000; Hellmann 2002) at the same time. Thus I would argue that all VCFs would possess some combination of both inputs although in different proportion to efficiently carry out the investment activates and proceed to classify the VCFs in the following three categories interims of the combination of those two inputs they would possess:

1. Specialized venture investors (SVIs)

2. Financial venture investors (FVIs)

3. Independent venture investors (IVIs)

Specialized Venture Investors (SVIs):

I would define SVI as a VCF with more of non-financial specialized inputs rather than financial inputs in his disposal. In practice it would be impossible to quantify the non-financial inputs. However, it can be suggested that VCFs like corporate venture would have specialized knowledge in their respective industries which would be useful for investment screening and monitoring. The existing corporate resources and networks could eventually enhance the value of the investee company. The initial injection of financial resources may not be very large in that case. In the Australian market we have other similar venture investors like business incubators, university and government hosted venture programs where the focus is technical specialization. Consequently, they would have competitive advantage in identifying investment opportunities in a given industry and particularly at earlier stage investments. Snapping up a good quality venture earlier than the competitors has another advantage as the equity prices would usually be lower for very young enterprises. Thus, specialization can significantly substitute any financial constraints for the SVIs.

Financial Venture Capitalists (FVIs):

The financial institutes, institutional investors along with the pension funds, endowment funds and other investors invest in venture capital. However, there are a large number of banks, investment banks and other financial institutions which sometimes launch captive venture funds. In Australia bank run captive venture investment programs have been operating since the early years and now they have a very dominant presence in with significant market capitalization. Nevertheless, unlike the corporate venturer investors they may not have any strategic objectives. This distinction is very important as the bank run venture capital firms often lack the industry specialization. The investment horizon of bank run venture funds is usually shorter. There is little competitive advantage in terms of identifying profitable venture at early stages and little time to develop them. Nevertheless, as the affiliates of financial institute the availability of funds is often generous. The fund managers are usually investment professionals with expertise in financial market. Hence, the financial venture

investors would manage larger funds with competitive advantage in later stage investment as they might lack in industry/ venture specific knowledge. However, the financial venture capital management teams would often hire industry oriented expertise to be able to compete with others in identifying a good investment opportunity at earlier stage. Hence, in recent years it could be observed that the financial venture capitalists are occasionally investing in seed and early stage ventures.

Independent Venture Investors (IVIs):

Private equity firms actively involved in raising capital to invest in the in the young (seed/ start-up) companies are typically known as the independent venture investors. Organizational and operating structure of the independent venture investors would differ from those of the captive venture capitalists (Gompers and Lerners 2000). Traditionally, independent venture capitalists are referred to as venture capitalists where the fund managers are actively involved in fund raising. The life of independent venture funds is consistent with the investment strategies as it would allow the fund managers to identify the opportunities, monitor and add value to the ventures and exit in a profitable manner. The management team of the independent fund managers like those of SVIs are often specialized in certain technology and/or region. Hence, they are capable of screening the lucrative ventures at earlier stages. Concurrently, IVIs would have expertise in financial and capital market as they are actively involved in fund management. The dual expertise in specific industries and finance might give them competitive niche in the market above the rest. In recent years, however, the private equity fund size has increased significantly along with the allocation of funds per venture. Thus, IVIs could frequently behave like the FVIs investing frequently in later stages in order to generate quick return.

Firm Variation Statistics:

The data here includes venture capital investments activities by 126 Australian VCFs investing in 364 Australian technologies related ventures which consist of 1157 rounds of finance from 1984 to 2008. Thomson Reuter's data has detail information on the investment dates and amount. I have identified the VCF type based on the corporate information and affiliation. It complements the VCF classification provided by the dataset.

VCF Type	Total Ventures		Seed & Early Stage	Expansion Stage	
Specialized	77	65	84.42%	12	15.58%
Independent	195	102	52.31%	93	47.69%
Financial	92	31	33.70%	61	66.30%
All	364	198	54.40%	166	45.60%

Table: 3

VCF Type and Venture Stage

VCF Type	MIN $ Million	MAX $ Million	Mean Size (SD)
Strategic	0.6	151.8	23.1 (39.2)
Independent	0.6	476.6	121.3 (116.2)
Financial	0.5	1952.9	341.8 (567.1)

Table: 4

VCF Type and Size

Industry	Strategic	Independent	Financial
ICT (N=241)	59.74%	71.28%	60.87%
BMH (N=123)	40.26%	28.72%	39.13%

Table: 5

Venture Capital Firms Type and Industry

VCF Type	Degree of Syndication
Specialized (N=77)	19.48
Independent (N=195)	23.59
Financial (N=92)	23.91

Table: 6

VCF Type and Degree of Syndication

IVIs are the most active players in the market as expected investing in 66.3% of the total ventures. The FVIs are the second most active category in Australian market investing in 45% of the ventures. However, the SVIs are the least active players as we can observe in Table 3. I have summarized the size of capital under management by each type of VCF in Table 4 where we can observe that the FVIs manage the larger funds followed by the IVIs. The average fund size managed by the SVIs is significantly smaller compared with the other two types of VCFs. We have then 241 ventures from ICT sector and 123 from BMH sector where all VCF types tend to invest more in the

ICT compared to the BMH as shown in Table 5. We observe that ICT sector in Australia has higher fund flows compared to BMH where a significant numbers of VCFs invest in both industries.

All types of venture capital firms are involved in investment syndication although the motivation could be different for different VCF type. In our data only 19.48% of the specialized venture investors' ventures are syndicated as shown Table 6. The FVIs demonstrates higher degree of syndication as they manage larger venture funds and capable of diversifying the portfolio. It is less likely that the SVIs would invite other SVIs to syndicate as their role in the syndicate could be conflicting. Given the average size of the capital constraints, it is possible that the SVIs would face liquidity constraints as the venture matures. Matured ventures could obtain debt from the market with relative ease and liquidity constraints may not lead to syndication as often. Thus, the specialized VCFs have lowest degree of syndication which is consistent with the prediction of Casamatta and Haritchabalet (2007). However, while syndicating investment the SVIs are often in a position to communicate better with the IVIs as we observe in the data which also very consistent with prediction of Hellmann (2002). In the late sections we formally analyse and test some investment behaviour and syndication which could arise endogenously given the nature of specialization by different VCF type.

Theories and Hypotheses:

We argue the VCFs would specialize in accordance with the financial and non-financial resources they possess. The investment strategies would be chosen to take advantage of the VCFs' organizational capital (Black and Lynch 2005). Managerial attributes of the venture fund managers and market network would explain the heterogeneity of venture investments in market (Gort et.al. 2005). The information generated and gather during the operation would also contribute to the size and expansion of production possibility set of the firm (Prescott and Aisscher 1980). In the earlier section we have classified the venture capital firms' in terms of specialization which come from the nature and magnitude of the various inputs such as size of capital under management, venture/ industry specific knowledge, market network, information and managerial attributes. Measuring such organizational capital and degree of specialization has never been easy (Black and Lynch 2005) although they have significant impacts on the firms' investment strategies and often reflected in the stock prices. Nevertheless, VCFs' risk profile and specialization is frequently captured in the organizational structure and investment activities (Norton and Tenenbaum 1993; Berger et.al. 2005).

The SVIs specialize rather in non-financial resources with advantage in identifying investment opportunities in a given industry particularly at earlier stage. In our data the mean size of specialized VCFs is only $ 23.1 million. On the other hand the FVIs would have more access to financial resources, given their affiliation with financial institutions. Thus, in line with the organizational capital literature one could expect that the SVIs would be more prone to invest in the venture at its early stage of development where as the FVIs would prefer it in the expansion stage.

H1: SVIs are likely to invest at earlier stage of a venture's development

H2:FVIs are likely to invest at expansion stage of a venture's development.

Consequently, venture capital syndication could be motivated by the access to complementary resources when different venture capitalists possess different specialized inputs necessary for a venture's development. Pfeffer and Salancik's (1978) propose the resource exchange model which suggest that the reason for organizations to cooperate with each other lies in gathering and transmitting information as well as in obtaining mutual commitments and support. Bygrave (1988) uses the resource exchange model to explain venture capital syndication. As different types VCFs would possess different specialized resources syndication could be motivated by resource sharing. For example, the SVIs could face liquidity constraints or network limitations in the capital market syndication with an IVI or a FVI could help a SVI overcome the limitations. On the contrary, it would be unlikely that a strategic venture capitalist would invite another strategic venture investor to syndicate investment. Similarly, financial venture investors are less likely to invite other financial venture investors to syndicate.

H3: When SVIs initiate venture syndication, they are less likely to invite another strategic VC to syndicate

H4: When FVIs initiate venture syndication, they are less likely to invite another financial VC to syndicate

Model 1 & 2:

In model 1 I have specified the dependent variable as the VCF type. The independent variables are venture stage and industry. Different VCFs would specialize in different combination of specialized inputs and which would be reflected in the investments as the VCFs would observe the

stage and industry before making an investment. We would like to estimate the probability of a VCF being a SVI when the investment takes place in a seed or start up stage of a venture in a given industry. As discussed in the earlier sections, we are interested in validating the claim that the SVIs are more likely to invest in earlier stages of a venture's development. The dependent variable would be a dichotomous variable which equals to 1 if VCF type of at least one venture investor in the first round of external investment is SVI and 0 otherwise. The independent variable 'stage' would equal to 1 if the stage of the venture's development is 'seed/start-up' in the first round of venture capital investment and 0 otherwise. We expect the co-efficient to be positive for this variable as we argue that the probability of a SVI investing in earlier stage would be higher. We then use 1 as a proxy for BMH industry and 0 for ICT. However, we do not expect any significant impact of this variable as the investment pattern of SVIs investing in earlier stage could prevail more or less in both industries.

Model 1

Dependent variable: VCF type being SVI

Independent variables	Coefficient	Z-Value
Stage (Start up & Seed)	1.129792	7.01***
Industry	.0168161	0.10
Constant	-1.293539	-10.74

Model 2

Dependent variable: VCF type being FVI

Independent variables	Coefficient	Z-Value
Stage (Expansion)	.7235326	4.82***
Industry	.3157164	2.03
Constant	-1.148243	-8.82

Number of observations: 364

*Log likelihood Ratio (Model 1): 53.10****

*Log likelihood Ratio (Model 2): 25.51****

****Significant at 1%, **Significant at 5% and *Significant at 10%*

Table 7

Probit Model of Venture Stage Choice by VCF Types

The motivation as well as the structure of model 2 would be same as model 1. However, now the dependent variable VC type would be equal to 1 if VCF type of at least one venture investor in the first round of external investment in a venture is FVI and 0 otherwise. The independent variable

'stage' would equal to 1 if the stage of the venture's development is 'expansion' in the first round of venture capital investment and 0 otherwise. We expect the co-efficient to be positive for this variable as we argue that the probability of a FVI investing in expansion stage would be higher. We then use 1 as a proxy for BMH industry and 0 for ICT. Again we do not expect any significant impact of this variable on the dependent variable as the investment pattern of FVIs investing in expansion stage could prevail more or less in both industries.

I have suggested that the SVIs are more likely to invest in a venture at the earlier stages of its development because of the nature of specialization and resources. The results from model 1 show that our claim is valid and highly significant. I would argue that the specialization of the VCF in identifying an investment opportunity is the key factor in determining which type of investors would invest in early stage. Although, the amount of fund needed in buying the equities at early stages is smaller, it may not significantly influence the investment decision. Similarly, I have claimed that the FVIs are more likely to invest in the later stages of a venture's development as they have competitive advantage in obtaining adequate finances for buying equities at later stage. The results obtained from the test suggest that the claim is valid and highly significant. Meanwhile, the SVIs and the FVIs are likely to demonstrate the same investment patterns in both BMH and ICT industry. I have summarized the results from model 1 and 2 in Table 7.

Model 3 & 4:

SVIs would have strategic advantage in screening a venture at earlier stage of development given the nature and level of venture and industry specific specialization. Thus, I have claimed that the SVIs are less likely to invite a similar investor for syndication. In order to validate the claim as outlined in hypothesis 3, I use the probit model of the structure described above. The follower VCF could observe the lead VCF type while making the investment decision. In this probit model I take the follower VCF type as a dependent variable and the lead VCF type as the key independent variable. We would like to estimate the probability of a follower VCF being SVI given the lead VCF is a similar investor. I have considered the subset of syndicated ventures where one could separate the lead investors from the followers. We have VCF type is equal to 1 if it is a SVI and 0 otherwise. The variable enters on the both side of the model. However, the right hand side value of the variable is a lagged endogenous and could be considered as an exogenous variable. We argue that the type of

follower VCF in the next period would be determined by the type of lead VCF type investing initially where the probability of follower VCF type being same as the lead VCF type would be lower. Thus, we expect the coefficient to be negative.

The motivation and structure of model 4 is same as model 3. However, VCF type in question now is VFI. We have VCF type is equal to 1 if it is a FVI and 0 otherwise and again we expect the coefficient to be negative as we estimate the probability of a follower VCF type being FVI given the lead VCF type is similar. In both models we use 1 as a proxy for ICT industry and 0 for BMH, although we expect similar invitation pattern to syndication could prevail in both industries.

Model 3

Dependent variable: Follower VCF type (SVI)

Independent variables	Coefficient	Z-Value
Lead VCF Type	-1.248079	-2.16**
Industry	.8312191	1.91
Constant	-.8710493	-2.41

Model 4

Dependent variable: Follower VCF type (FVI)

Independent variables	Coefficient	Z-Value
Lead VCF Type	-.7982208	-1.72*
Industry	1.472968	2.62
Constant	-1.534484	-3.15

Number of observations:52

Log likelihood Ratio (Model 3): 9.15***

Log likelihood Ratio (Model 4): 10.21***

**Significant at 5% and *Significant at 10%

Table 8

Probit Model of Follower VCF Choice by Lead VCF

Further, I have suggested that the SVIs are less likely to co-invest with similar VCFs. SVIs would specialize in identifying the investment opportu2ities at early stage and sharing information with competitors could be costly. Furthermore, similar VCFs would be able to provide similar resources to the portfolio companies, missing out the complementary resources. Thus, the SVIs would be better of syndicating with the other type of VCFs such as the IVIs. Therefore, when initiating syndication the SVIs are less likely to invite other SVIs. We developed model 3 to verify the claim and the results from

the regression validate the claim with appropriate significance. In model 4 similarly we verify that the FVIs are less likely to invite other FVIs. The results are in line with the expectation and we have presented the results in Table 8.

However, there is a circumstantial variation between this and the previous claim as in model 3. The variation is subtle but important. The FVIs often invest in later stages as we have verified by testing model 2. In later stage investments, the level of uncertainty would be negligible but not nil which might induce the investors to syndicate investments. Further, as the price of equities would be higher in later stages, the FVIs would have competitive advantage in such interments. Hence, FVIs in some cases may end up co-investing with similar VCFs in later stage ventures. Thus, although the results in model 3 and 4 are in line with expectation, the level of significance is lower for the key variable 'Lead VCF Type' in model 4 as opposed to the previous one.

E. Implications of Syndication

Syndication and syndication networks have several benefits for both venture capitalists and the entrepreneurs. Syndication network enhances information flow and facilitates market integrations where VCFs could provide access to wider range of deal and other network resources. Concurrently, the entrepreneurs could have access to wider range of financing options and diverse resources from the syndicating VCFs. However, syndicated investments often come with higher agency cost. Thus it is not very simple to evaluate how syndication affects the entrepreneurial performance. Eventually, the performance of the syndicated ventures not only matter to the entrepreneurs but also to the VCFs with a larger portfolio of syndicated ventures. There are both tangible and intangible benefits of syndication all of which may not be measured. One way of measuring the benefits of networking could be done by comparing the fund performances of the venture capitalists with various numbers of syndicated ventures in portfolio. Hochberg *et.al.* (2007) have found that well networked venture capitalists do better than their peers in the market using the US data between 1980 and 2003. Reputation can further enhance the network position of the venture capitalists as they are likely to invite to co-invest by others investors in future ventures (Lerner 1994; Gompers 1995).

The syndicate members could pool resources to provide financial and managerial supports, facilitate market extension and provide access to capital market networks during divestment.

However, the managerial complexity and agency cost could be a performance deterrent for the syncopated ventures. Brander *et. al.* (2002) suggested two contrasting hypotheses. According to the 'selection hypothesis' the syndicated ventures are expected perform worse than the rest where according to the 'value added hypothesis' the syndicated ventures are expected to better compared to the rest. In order to verify the claims from 584 venture capital exit between 1992 and 1998 in Canada and found that the syndicated ventures would enjoy significantly higher rate of returns compared to the stand alone investments.

<u>Performance Measures:</u>

In the context of the above this literature and the previous sections where I have demonstrated the characteristics and patterns of syndication and networks, it would after all be imperative to compare the performances of the syndicated and stand alone ventures in terms of ability to obtain venture finance, survival duration, investment growth and successful exits. This approach is different from those of Hochberg (2007) and Brander (2002).

The resource exchange model suggests that the reason for organizations to cooperate with each other lies in gathering and transmitting information as well as in obtaining mutual commitments and support (Pfeffer and Salancik, 1978) which could explain venture capital syndication (Bygrave, 1988). Similarly, Brander's (2002) value added hypothesis suggests that a lead investor would seek co-investment in a venture in order to add value. Casamatta and Haritchabalet (2007) have modelled the venture screening with information aggregation which could potentially identify a good quality projects. Thus, the selection hypothesis complemented by resource exchange model suggests that the syndicated ventures could be as good as the other selected ventures. However, in addition the syndicated ventures would enjoy the wider pool of resources aggregated by the syndicate. Hence, syndicated ventures are more likely to succeed. Syndication could take place in first or any subsequent financing round where in first round syndication investment risk can be mitigated. However, a venture would receive a subsequent round of finance by investors only if it can meet the initial performance milestone. Thus one can expect that the good quality ventures survive longer in the market and continue to obtain finances. As the surviving ventures grow, the equity values would increase and the subsequent round of investments are likely to get bigger requiring larger expansion

finances. Thus capital absorption would be higher for the potentially successful ventures and the investors are unlikely to increase finance for potentially failing ventures.

H1: The syndicated ventures are more likely to exit successfully than the standalone ventures.

H2: The ventures which survive longer and obtain finances are likely to be the ones to exit successfully.

H3: When the investment growth is higher in a venture it is more likely to exit successfully.

Finally, I have defined a venture's success in terms of exit options availed. VCFs are more likely to take the best ventures to public market not only for higher profit but also for reputation (Gompers 1996). The other successful and profitable exit options include divestment in private market through mergers and acquisition (M&A) or leveraged buy outs (LBOs). The failure can be observed in going bankrupt or defunct. In order to test and validate the above hypotheses I have constructed a probit model. I have used venture's success as the dependent variable which is equal to 1 if the venture is divested successfully and 0 if failed. First independent variable is 'syndication' which equal to 1 if the venture is syndicated at any stage and 0 otherwise. We expect the coefficient of this variable to be positive and significant.

However, there are other variables which along with syndication could contribute to the probability of a ventures success. On the demand side there is a pool of entrepreneurs who would look for potential venture funds. On the supply side, the venture capitalists are always vigilant about available quality ventures. In Australian market apparently the VCFs are less keen about the early stage investments with lower risk appetite. As a result, the ventures which are relatively mature and capable of providing more tangible signal about the quality could secure venture capital investment. Thus, we consider a venture's maturity at the time of first venture investment as a measure of quality. In our data, we take the duration between the company found date and the first venture capital investment round date as a measure of venture quality and expect that this duration would be longer for the good quality ventures which are eventually more likely to exit successfully. We call this variable 'venture quality' and we can expect the co-efficient of the variable to be positive.

The VCFs would continue to invest in the companies which are growing and meeting interim milestones set by the investors. Thus, viable and quality ventures would obtain financing for longer

period. In order to capture this issue I use the duration between first and last round of venture investments and we call it 'survival duration'. We expect that the longer the duration of investment higher is the probability of success. Hence, the co-efficient of this variable is expected to be positive.

The ventures which are growing relatively quicker would require growing capital injection. In lower quality ventures on the other hand the venture capitalist would not be keen injecting funds. I would measure the rate of venture investment growth between first and final round for the divested ventures and expect that the venture with higher investment growth are likely to exit successfully. I would call the variable 'investment growth' and expect the co-efficient to be positive. Given the minuscule exit history of the Australian market it would be hard to obtain a large dataset to test the model. However, it would be adequate as far as we are concerned about Australian market.

Dependent Variable: Probability of Ventures' Success		
Independent variables	Coefficient	'z' Value
Syndication	1.29571	2.11**
Venture Quality	.0003122	1.91*
Survival Duration	.000737	1.70*
Investment Growth	.0488155	1.95*
Constant	-2.007134	-2.42

Number of observation: 61

*Log Likelihood Ratio:25.95***

**Significant at 5% level and **Significant at 10% level

Table: 9

Syndication and Ventures' Success

The regression results have been presented in Table 9 which suggests that the syndication would increase the probability of success significantly. In addition, venture's quality at the time of selection would increase the probability of success. The ventures which survive longer and attract larger finance are also likely to exit successfully subsequently. However, the variables are not correlated as not all good quality ventures would be syndicated or all long surviving ventures would attract larger investment in subsequent rounds.

F. Conclusion:

In this research paper, I intend to contribute to the academia, industry as well as to public policy. For academia, to the best of my knowledge this is the first initiative to generate a macro level scenario of the venture capital co-investment network in technology related enterprises in Australia which depicts the range and pattern of organizational collaboration among the VCFs especially in promoting technology entrepreneurship. It also provides a micro level understanding of the syndicate structures and co-investment behaviour. In the second section I have initiated an important step toward understanding the VCF variation as there are different investors in the market bringing in different resources and specialization. In venture capital literature, recourse based theory has often been used to explain the motivations for syndication, although there have not been adequate empirical verification due to the complexity of the empirical investigation. In this section, I have initiated an intuitive and simple verification of the theory using the data and market information where I have generated a new classification of VCFs to demonstrate investment strategies of various venture investors and how it leads to co-investment and collaboration. Finally, it is important to understand if syndication or organizational collaboration through co-investments makes any impacts on the lifecycle and performance of the venture and/or on the returns of the syndicating VCFs. Once again given the literature I have demonstrated the impacts of syndication on the lifecycle, investment growth and successful exit of the ventures. It is found that in both BMH and ICT sector syndicated ventures are less likely to fail and more likely to exit successfully.

In the industry, we all recognize that network resources are important for venture investments, monitoring and successful divestments. Visualization of the syndication network could provide a simple and clear understanding of the existing VCF network structure where a salient picture could speck hundreds of words. A better understanding of the network structure could be instrumental in identifying and availing some of the key network resources which industry practitioners would loosely usually search through professional networking. Industry practitioners would certainly try to identify and obtain co-investors who could add further value to a portfolio company. The data also suggests that the syndicated ventures could perform better which could be explained by the information and resource aggregation by the syndicates in selecting and managing a syndicated venture. It however important to observe that less than 30% of the technology related ventures are not syndicated. Thus,

it can be worth mentioning that management of co-investments could be complicated. Further, a VCF may not be willing to co-investment which would require sharing the profit. Thus, co-investments or syndication could be prescriptive as long as it adds value to each participating VCF.

For policy makers, the research has several implications as in Australia the government is not only a provider of legal and institutional support to the venture capital industry but also a participate in the market as an investor. Thus, government could further investigate into the network structures and identify the network resources to further promote the organizational collaborations to overcome financial, strategic and human resource constraints faced by this transitional market. It is worth mention that there are other formal and informal network activities to complement co-investments and organizational collaboration in the venture capital market. For example, Australian Venture Capital Association Limited (AVCAL) is a formal forum which organized various activities, seminars and conferences for the members to gather and disseminate information. Private Equity Media produces articles and analysis with recent information.

While this research takes the initial step toward understanding co-investment networks, identifying network resources and the implications of organizational collaboration in Australian venture capital market, it is far from being comprehensive and accomplished. Thus future studies could help us understand and exploit the potential advantages of organizational collaboration, market development and integration.

References:

Australian Bureau of Statistics (2004-2009) 'Venture Capital Surveys'

Australian Venture Capital Association Limited (1999-2009) 'The Year Books'

Baron, D.P. and Besanko, D. (1999) 'Informational Alliance' Review of Economic Studies*, Vol.(66):743-768*

Baum, J.A.C. and Calabrese, T. and Silverman, B. (2000) 'Don't Go It Alone: Alliance Network Composition and Start-ups' Performance in Canadian Biotechnology', Strategic Management Journal, Special Issue 21(3): 267 – 294.

Berger, A.N. and Miller, N.H. and Peterson, M.A. and Rajan, R.G. and Stein, J.C.(2005) 'Does Function Follow Organizational Form? Evidence from the Lending Practices of the Large and Small Banks" Journal of Financial Economics, Vol. (75):237-269

Black, S.E. and Lynch, L.M. (2005) 'Measuring Organizational Capital in the New Economy' in Corrado, C. *et. al.* (edited) 'Measuring Capital in the New Economy' University of Chicago Press, pp: 205-228

Borgatti, S.P. and Everett, M.G. and Freeman, L.C. (2002) "UCINET for Windows: Software for Social Network Analysis' Analytic Technologies, Harvard, MA

Bonacich, P. (1987) 'Power and Centrality: A Family of Measures' American Journal of Sociology, Vol. 92(5):1170-1182

Brander, A.J. and Amit, R. and Antweiler, W. (2002) "Venture Capital Syndication: Improved Venture Selection Vs. Value-Added Hypothesis" Journal of Economics and Management Strategy, Vol. 11(3):423-425

Block, Z and MacMillan, I (1993) 'Corporate Venturing' Harvard Business School Press, Boston MA

Bygrave, W.D. (1987) "Syndicated Investments by Venture Capital Firms: A Networking Perspective" Journal of Business Venturing Vol. 2:139-154

Bygrave,W.D. (1988) 'The Structure of the Investment Networks of the Venture Capital Firms: A Networking Perspective' Journal of Business Venturing Vol. (3):137-157

Casamatta, C. and Haritchabalet, C. (2007) "Experience, Screening and Syndication in Venture Capital Investments" Journal of Financial Intermediation, Vol. (16):368-398

Cestone, G. and Lerner, J. and White, L. (2006) 'The Design of Syndicates in Venture Capital' BBVA Foundation Working Paper

Cumming, D.J. (2007) 'Government Policy towards Entrepreneurial Finance: Innovation Investment Funds' Journal of Business Venturing, Vol.22: 193-235

De Clerq,D. and Dimov,D. (2004) 'Explaining Venture Capital Firms' Syndication Behavior: A Longitudinal Study' Venture Capital, Vol.6(4):243-256

Dessein, W. (2005) "Information and Control in Venture Alliances" The Journal of Finance, Vol. LX (5):2513-2549

Elango, B., Fried, V.H., Hisrich, R.D., Poloncheck, A (1995) 'How Venture Capital Firms Differ' Journal of Business Venturing 10: 157-179

Flemming, G. (2004) 'Venture Capital Returns in Australia' Venture Capital, Vol.6(1):23-45

Fried, V.H. and Hisrich, R.D. (1991) 'Venture Capital Firms: Commonalities and Differences' Management Research News, Vol. 14(3):17-33

Golis, C.C. (2002) 'Enterprise and Venture Capital: A Business Builder's and Investors' Handbook' Allen & Unwin, Australia

Gompers, P.A. (1996) 'Grand Standing in the Venture Capital Industry' Journal of Financial Economics, Vol.(42):133-156

Gomper, P.A. and Lerner, J. (2004) 'Venture Capital Cycle' MIT Press, Cambridge, MA

Gorman, M. and Sahlamn, W.A. (1989) 'What Do Venture Capitalists Do?' Journal of Business Venturing, Vol. (4): 231-248

Gort, M. and Grabowski, H. and McGuckin, R. (2006) 'Organizational Capital and the Choice between Specialization and Diversification' Managerial and Decision Economics, Vol. (1):2 - 10

Gupta, A.K. and Sapienza, H.J. (1992) 'Determinants Of Venture Capital Firms' Preferences Regarding the Industry Diversity and the Geographic Scope of Their Investments' Journal Of Business Venturing, Vol. (7):347-362

Hanneman, R.A. and Mark, R. (2005) 'Introduction to Social Network Methods' University of California, Riverside (Published in digital form at http://faculty.ucr.edu/~hanneman/)

Hellmann,T. (2002) 'A Theory of Strategic Venture Investing" Journal of Financial Economics, Vol.(64): 285-314

Hochberg, Y.V. and Lyungqvist, A. and Lu, Y. (2007) 'Whom You Know Matters: Venture Capital Networks and Investment Performance' Journal of Finance, Vol. LXII (1):251-301

Kogut, B. and Urso, P. (2007) 'Emergent Properties of a New Financial Market: American Venture Capital Syndication, 1960-2005' Management Science, Vol. 53(7):1181-1198

Lerner, J. (1994) 'The Syndication of Venture Capital Investments' Financial Management, Vol.23(3):16-27

Lerner, J. and Watson, B. (2008) 'The Public Venture Capital Challenge: The Australian Case' Venture Capital, Vol. 10(1):1-20

Lockett, A. and Wright, M. (2001) 'The Syndication of Venture Capital Investments' International Journal of management Science, Vol.29:375-390

Manigart, S. *et.al* (2006) 'Venture capitalists' Decision to Syndicate' Entrepreneurship Theory & Practice, Vol.(March):131-153

Momentum Funds Management (2005) 'Australia Venture Capital Industry Review' A Federal Government Report

Norton, E. and Tenenbaum, B.H. (1993) 'Specialization versus Diversification as a Venture Capital Investment Strategy' Journal of Business Venturing, Vol.(8): 431-442

Parker, S.C. (2008) 'The economics of formal business networks' Journal of Business Venturing, Vol.23: 627-640

Pfeffer, J. and Salancick, G.R. (1978) 'The External Control of Organizations: A Resource Dependence Perspective' Harper & Row: New York, NY.

Pichler,P. and Wilhelm,W. (2001) 'A Theory of Syndicate: Form Follow Functions' Journal of Finance, Vol. LVI(6):2237-2264

Prescott, E.C. and Visscher, M. (1980) 'Organization Capital' Journal of Political Economy, Vol.88(3): 446-461

PricewaterhouseCoopers (2006) 'Economic Impact of Private Equity and Venture Capital in Australia' www.avcal.cmom.au

Sahlman, W.A. (1990) 'The Structure and Governance of Venture capital Organizations' Journal of Financial Economics, Vol.27: 473-521

Shane, S. and Cable, D. (2002) 'Network Ties, Reputation and the Financing of New Ventures" Management Science, Vol.48(3):364-381

Shy, O. (1996) 'Technology Revolutions in the Presence of Network Externalities' International Journal of Industrial Organization, Vol.(14):785-800

Singh, J. (2005) 'Collaborative Network as Determinants of Knowledge Diffusion Patterns' Management Science, Vol.51(5):756-770

Sorenson, O. and Stuart, T.E. (2001) 'Syndication Networks and The Spatial Distribution of Venture Capital Investments" American Journal of Sociology, Vol.106(6):1546-88.

Stuart, T.E. (1998) 'Network Positions and Propensities to Collaborate: An Investigation of Strategic Alliance Formation in a High-Technology Industry' Administrative Science Quarterly Vol.43(3):668– 698.

Stuart, T.E. and Hong, H. and Hybels, R.C. (1999) 'Inter-organizational Endorsements and the Performance of Entrepreneurial Ventures' Administrative Science Quarterly, Vol. 44: 315-349

Thomson Reuters (2008) 'The Australian Private Equity & Venture Capital Association Limited: Yearbook 2008' at www.avcal.com.au

Tykvova,T. (2007) 'Who chooses whom? Syndication, Skills and Reputation' Review of Financial Economics, Vol.16(1), 5-28.

Wasserman, S. and Katherine, F. (1997) 'Social Network Analysis: Methods and Applications' Cambridge University Press, NY

Wright, M. and Lockett, A. (2003) 'The Structure and Management of Alliances: Syndication in Venture Capital Industry' Journal of Management Studies Vol.40(8):2072-2102

Wan, V. (1989) 'Financing High Technology: The Australian Venture Capital Market' Technovation, Vol.(9):337-355