

# Seeds of Growth: The Challenges of Venture Capital in the Australian Landscape

By

**Adrian C. Lu**

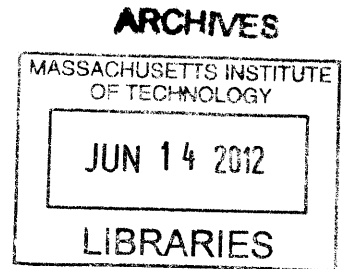
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**Adrian C. Lu**

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## **ABSTRACT**

The Australian venture capital (VC) industry is young and relatively immature compared to the United States. Even though the first Australian VC firm appeared in 1970, the industry remained a niche with low levels of activity until the technology boom of the late 1990s saw many new entrants and larger funds being raised. Unfortunately for the industry, it experienced two major economic downturns just as it was beginning to take shape, hurting industry performance and deterring investors. Since the global financial crisis, investment activity has been on a continuous decline, raising concerns that the industry will continue to decline at worst, or remain on a stagnant path at best, never reaching the critical mass to flourish and achieve a meaningful role in Australia's economic growth.

Although recent economic events have impacted venture capital investing around the world, Australia faces a number of local challenges that have left it struggling while countries like the United States and the United Kingdom now make their recovery. In this study, we investigate the idiosyncratic factors contributing to the challenged state of the Australian VC industry—by looking at its recent history, performance, and participants—in the context of government policies that have been implemented to support it. We identify industry immaturity, poor track record of performance, gaps between research and commercialization, and the structure of institutional investors as key issues facing the industry.

An understanding of the local challenges facing the venture capital industry is vital to addressing them. Based on the challenges identified, we evaluate and recommend potential remedies by taking a holistic view of the entrepreneurial ecosystem and the role of venture capital within it—from the perspective of entrepreneurs, investors, research institutions, and government.

**Thesis Supervisor:** Michael A. Cusumano

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# List of Abbreviations

ABS	Australian Bureau of Statistics
ADCAL	Australian Development Capital Association Limited
ARC	Australian Research Council
ASX	Australian Securities Exchange
ATN	Australian Technology Network
ATO	Australian Taxation Office
AVCAL	Australian Venture Capital and Private Equity Association, Limited
BDM	Business Development Manager
CA	Commercialisation Australia
CalPERS	California Public Employees' Retirement Systems
CIO	Chief Investment Officer
CRC	Cooperative Research Centre
CSHE	Centre for the Study of Higher Education
DEEWR	Department of Education, Employment and Workplace Relations
DEST	Department of Education, Science and Training
DFAT	Department of Foreign Affairs and Trade
ESVCLP	Early Stage Venture Capital Limited Partnership
GDP	Gross domestic product
Go8	Group of Eight
GP	General partner
IIF	Innovation Investment Fund
IP	Intellectual property
IRR	Internal rate of return
LP	Limited partner
MIC	Management and Investment Companies

MRCF	Medical Research Commercialisation Fund
MRRT	Minerals Resource Rent Tax
MUEC	Melbourne University Entrepreneurs Challenge
OECD	Organisation for Economic Co-operation and Development
PDF	Pooled Development Fund
PE	Private equity
PSF	Pre-Seed Fund
R&D	Research and development
SCVP	Southern Cross Venture Partners
SS48	Social Startup 48
TTCF	Trans Tasman Commercialisation Fund
UNDP	United Nations Development Programme
VC	Venture capital
XAO	All Ordinaries index ticker code

# Chapter 1

## Introduction

Venture capital (VC) has been responsible for spawning some of the greatest companies in the world today. Major corporations like Apple and Intel started from humble beginnings to become international powerhouses. In Australia, venture capital has produced success stories like Resmed, Cochlear, Hitwise, and SEEK. Australia has been the home of many great innovations in its history, including the Google Maps platform, polymer bank notes, and the black box flight recorder (Australian Geographic, 2010). Venture capital is seen by many as high risk investing with the lure of astronomic gains, offering the opportunity to be a part of the next game changer while providing an important source of portfolio diversification.

While Australia has evolved into a service economy, it relies a great deal on its production of natural resources for exports and economic growth. The ‘two-speed economy’ is a frequently used term to refer to the contrast between the fast-growing mining states and the more stagnant non-mining states. By bridging the gap between innovation and commercialization, venture capital can play an important role in the future prosperity of Australia as well as diversify the nation’s sources economic wealth.

The Australian venture capital industry is young and relatively immature compared to the United States. Even though the first Australian VC firm appeared in 1970, the industry remained a niche with very low levels of activity until the internet technology boom of the late 1990s saw many new entrants and larger funds being raised. This is often regarded as when the industry

really came to be. Around this time marked the formation of the industry’s national association, the Australian Venture Capital and Private Equity Association, Limited (AVCAL), and in 2002 the Australian Government formally recognized the limited partnership structure governing most venture capital and private equity firms. Unfortunately for the industry, the surge in fund raising and investment activity ended quickly with the technology bust at the beginning of the next decade, and would never return to these heights again.

## 1.1 Objectives

The venture capital industry has been in a constant struggle through its short history. In the past 15 years, there were only two periods when the industry began to pick up and attract investors. Yet both periods were followed by major economic crashes, hurting industry performance and deterring investors. Since the most recent downturn of the global financial crisis, investment activity has been on a continuous decline. Industry players have expressed concern that the industry will continue to decline at worst, or remain on a stagnant path at best, never reaching the critical mass to flourish and achieve a meaningful role in Australia’s economic growth.

However, the recent global economic recession impacted not only the venture capital industry, but also many other industries in Australia—with perhaps the exception of its resources sector, which remained relatively unscathed. Moreover, venture capital activity was dampened in other countries of the world, including the United States. The first objective of this paper is to determine the idiosyncratic factors contributing to the challenged state of the Australian venture capital industry—by looking at its recent history, performance, and participants—in the context of government policies that have been implemented to support it.

An understanding of the local challenges facing the venture capital industry is vital to addressing them. The second objective of this paper is to evaluate and recommend potential remedies to address these challenges, by taking a holistic view of the entrepreneurial ecosystem and the role of venture capital within it—from the perspective of entrepreneurs, investors, research institutions, and government.



## 1.2 Scope

This research excludes private equity investing, or mature and late stage investing, which includes funds focused on buyouts, turnaround/distressed investing, generalist, mezzanine, secondaries, and fund of funds. Our scope covers firms focused on seed state, early stage, and late stage venture capital. Angel investors are discussed, however public data is not available for this investor type. They will be considered as separate to venture capital firms, since they are less formally organized, have different investment approaches, and make much smaller investments.

## 1.3 Overview

**Chapter 2** presents key background information on venture capital and private equity investing, including the fund stage focus, the limited partnership structure, and the life cycle of a VC fund. It also discusses the sources of value for a VC firm that enables it to take the high risk of investing in early stage companies.

**Chapter 3** discusses the importance of a healthy environment of venture capital and entrepreneurship in the Australian economy. It outlines the strengths of the country that make it suitable to support such an environment. The last section of this chapter explains the data collection source and methodology used in this paper.

**Chapter 4** provides a brief history of Australia's venture capital industry and looks at the industry players and the recent investment performance. Key government initiatives to support the industry are presented. The second half of this chapter discusses the unique challenges now facing the industry.

**Chapter 5** begins with an overview of the entrepreneurial ecosystem from the perspective of the VC investor. Proposed remedies to the industry challenges are presented in the context of this ecosystem, by looking at research institutions, entrepreneurs, institutional investors, and government.

**Chapter 6** contains the summary of findings and recommendations.



## Chapter 2

# Background on Venture Capital and Private Equity

Private equity (PE) refers to the asset class consisting of investments in private companies, that is, companies that are not publicly listed and traded. Unlike publicly listed companies, private companies are by comparison highly illiquid and also very opaque, exempt from the scrutiny and regulatory requirements that public companies are subjected to. Private equity is generally associated with high risk investing, stemming in part from the information asymmetries inherent between investors and companies, and various other factors specific to the type of investment, such as a startup company with no proven business, an early stage biotech company yet to pass clinical trials, or a mature stage company under financial distress. For many companies, their unique circumstances mean that private equity is the only source of capital available to them. Private equity firms are willing to make these high risk investments by taking an active management approach and seeking commensurately high returns for the risk and illiquidity borne by investors.

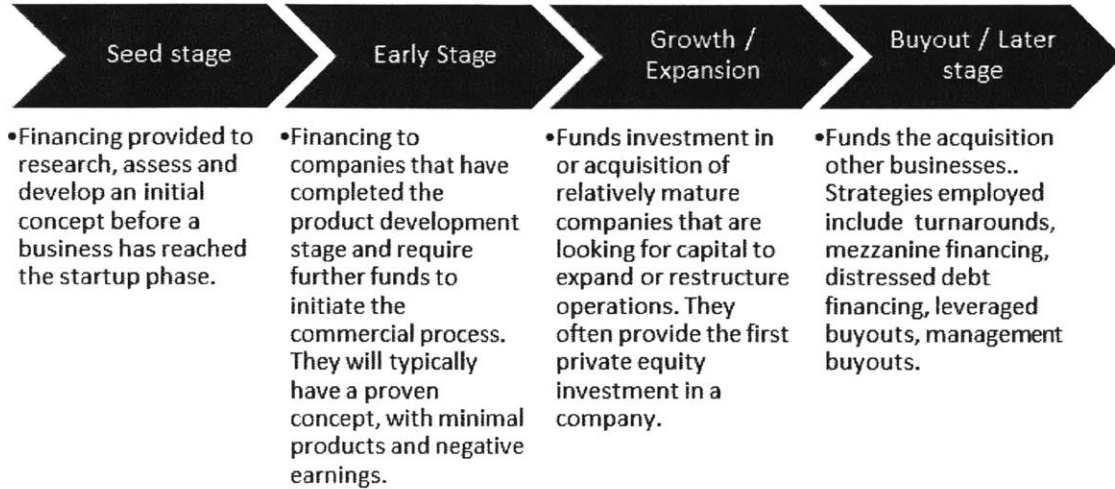


Figure 2.1: Spectrum of private equity investments.

## 2.1 Spectrum of investments

Private equity encompasses a broad spectrum of investing along various stages of a company's life cycle. Venture capital is a sub-category of private equity, investing into the earlier stages of the private equity spectrum—particularly seed and early stage companies—but is typically referred to in a way that implies it is separate to private equity. Hence private equity is typically referred to as investing into growth, expansion, and mature stage companies including buyouts and restructuring deals. This distinction between the terms venture capital and private equity will be maintained in this paper. Figure 2.1 depicts the broad categories in the spectrum, including a short description of each category adapted from the yearbook glossary of the AVCAL. However, it should be noted that in practice there is not always a clear junction between venture capital and private equity. Large VC funds seeking to deploy capital can move further up the spectrum of growth stage companies where they begin to overlap and complete with PE funds.

## 2.2 Partnership structure

Venture capital and private equity funds are structured as limited partnerships. Under this structure, the general partner (GP) of the fund is responsible for the overall decision making

and management of the fund's portfolio companies. The limited partner (LP) is the investor who commits capital to the fund and cedes control of that capital to the GP. In many cases, the GP also contributes capital to the fund as a means of incentive alignment and as a signaling mechanism to its investors. The limited partnership structure allows LPs of the fund to maintain limited liability from the activities of the fund's portfolio companies, so that there is no legal recourse to the investors, since they are not involved with the day-to-day operations of these companies.

Limited partnerships have a limited life time. VC funds normally have a life span of ten years, after which the GP will have fully exited all portfolio investments and returned all capital, including a hurdle rate of return, plus share of profits to its LPs. After this has occurred, the partnership officially dissolves. It is in the GP's best interests to keep its LPs happy and maintain strong relationships so that it can continue to raise capital from them in future funds. Paramount to this is the fund's overall performance relative to a benchmark, measured by its internal rate of return (IRR). A GP whose fund performs exceedingly well can attract capital more easily later and raise potentially larger funds. Conversely, a GP whose fund has a lackluster performance—or worse still, is loss making—faces considerable difficulty attracting capital. It will be shown in Chapter 4 that this has been one of the problems facing the venture capital industry in Australia.

For their services to the LPs, GPs earn management fees and carried interest. Management fees are typically charged at 2% of committed capital. In some instances, the fee might be charged as a percentage of invested capital, which works out cheaper overall for the LPs since the fund takes several years to become fully invested. Carried interest is the GP's share of profits, and is typically 20%. This share is taken after all the original capital plus a predetermined hurdle rate of return has been returned to investors. Clawback mechanisms ensure that LPs have a right to be repaid by GPs in situations where early sharing of profits followed by inadequate subsequent performances results in GPs having exceeded their share of carried interest. The profit sharing arrangement helps to align GP incentives to maximize returns to its LPs. Established top tier firms can charge more than the 2% management fee and 20% carried interest, while a new firm without a track record may charge less than this when trying to attract capital to raise its first

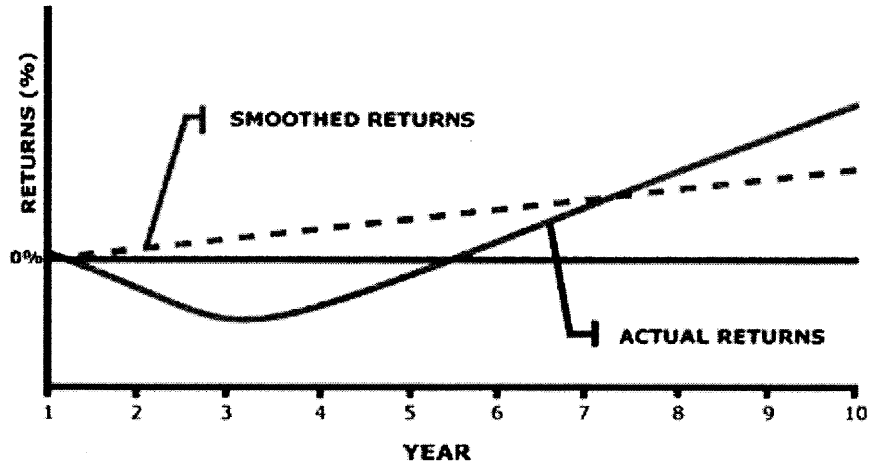


Figure 2.2: J-curve effect of private equity returns. (CalPERS, 2011)

fund. GPs may also charge fees to their portfolio companies, such as transaction and monitoring fees.

### 2.3 Life cycle and returns

At the beginning of a fund's life cycle, GPs first need to raise capital from prospective LPs. An LP agrees to commit a predetermined amount of capital to the fund, known as the committed capital. The entire amount of committed capital is not always paid up front, but is called down by the GP over the investment period. This benefits both the LP, who does not have to part with the entire amount of capital at once, and the GP, who does not want to diminish the fund's IRR performance by holding uninvested capital. Once the fund has raised its target amount of capital, it no longer accepts new capital commitments and the fund is said to be closed.

Venture capital and private equity funds exhibit a characteristic known as the 'J-curve effect', shown in Figure 2.2, in reference to the fund's negative returns in its early years before breaking even, and rapidly increasing once portfolio investments come to bear fruit. The early years of a fund see it actively searching, evaluating, and making investments into companies for its portfolio. During this investing phase, committed capital is called down from the LPs. Once all committed capital has been called down and invested, the fund is said to be fully invested, and this typically happens by the fifth year. LPs are also subject to a lock-up period for the life of the

Sale through merger or acquisition to a strategic buyer.
Publicly listing the company on the stock market. <sup>2</sup>
Sale to another venture capital or private equity fund.
Private placement with institutional investors.
Sale on the secondary market.
Liquidation or write-off.

Table 2.1: Common exit strategies used by VC and PE funds.

fund, meaning they cannot withdraw capital from the fund until that period has expired.

After making its investment in a portfolio company, the GP begins active oversight and management of the company. The type of intervention and degree of influence the GP exerts on the company varies greatly, depending on factors like the VC firm’s strategy, type of investment, and the investee company. In any case, GPs have the opportunity here to deploy value-adding capabilities to ensure their portfolio companies succeed. The goal is to see the equity value of the company increase significantly, so that the GP can harvest that value by exiting the investment and distributing profits to its LPs.

Since the IRR is a key measure of fund performance, the terms on which portfolio companies are bought and sold are paramount to the fund, as is the timing of when those exits occur. GPs must balance between earlier distribution of returns and optimum sale value, and often have several alternatives when seeking to exit an investment.<sup>1</sup> Interestingly, Gompers (1996) showed evidence to support the notion of ‘grandstanding’, the tendency for younger VC firms to exit their investments earlier, in an attempt to establish a reputation and prove their ability to investors as quickly as possible. The cost of grandstanding is that the timing of these early exits are sub-optimal, with underpriced valuations to achieve quick sales.

## 2.4 Value creation

Private equity and venture capital investing can offer a useful source of portfolio diversification to investors. However, David Swensen, CIO of the Yale University endowment and a pioneer of the endowment model of investing with its emphasis on alternative assets, argues that the

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<sup>1</sup>GPs often have the choice of deciding between distributing cash or stock to their LPs. The factors influencing this choice are an important topic, but outside the scope of this paper.

extent of this diversification is limited, due to its fundamental links with the market. With the seemingly generous fee structure, the question is how venture capital and private equity firms create enough value for their LPs to make investing an attractive proposition. Listed below are some of the most important sources of value creation.

- Sourcing of deals and conduct of due diligence on potential companies. Extensive networks can provide a good referral pipeline and proprietary deal flow.<sup>3</sup> These networks could come from the entrepreneurial community, research sector, government, personal contacts, banking and private sectors.
- Competence and ability of the investment management team to garner unique insights into potential investments.
- Capability to add value to portfolio companies through areas such as business strategy, provision of expertise, and mentoring.
- Leverage of investee companies to increase returns to equity. It should be noted that this is only true for certain investment types (typically mature stage companies with stable cash flows and a defensible market position), and is generally insufficient on its own to be the primary source of value creation. Moreover, the recent financial crisis has seen a much lower tolerance and reliance on leverage.
- Alignment of incentives with the entrepreneurs and managers.
- Ongoing management, monitoring, and support of portfolio companies.
- Finding and timing of optimal exit opportunities to harvest returns to LPs.

The relative importance of each source varies greatly with the stage of investing and the individual firm's unique strengths and capabilities vis-à-vis its competitors. For example, leverage provides little to no value for a VC firm focused on seed stage investments. Moreover, one VC firm's primary source of value may be in its strong networks providing proprietary deal flow, while for another VC firm it could be a highly capable team with strong experiences and backgrounds pertaining to the firm's niche sector focus. It is interesting to note that VC firms

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<sup>3</sup>Proprietary deals are those where the firm has an exclusive opportunity to negotiate and invest without a bidding process.



in particular demonstrate strong persistence in returns, meaning that performance tends to be correlated across time and thus top tier VC firms tend to keep performing well. Top tier firms possess a sustainable competitive advantage with the reputation, track record, expertise, and networks to continually attract the best entrepreneurs and the most desirable and sophisticated investors.



## Chapter 3

# The Importance of Venture Capital in the Australian Economy

### 3.1 The lucky country

Australia is often referred to affectionately by its locals as ‘the lucky country’. It is blessed with an abundance of natural resources that have been a major source of its economic growth and prosperity throughout its relatively short history since its colonialization by the British in 1788. Its local climate made it ideal for farming merino sheep—originally brought in from Spain—and the production of fine wool. From the 1820s, wool production began to play an increasingly important role in economic growth, eventually making Australia the world’s largest exporter of wool. Discovery of gold in 1851 created the gold rush and brought in a surge of immigration, leading gold to replace wool as the country’s most valuable export until the 1870s. Even after the rush, other mineral deposits continued to be discovered, including rich sources of silver, lead, copper, and zinc. Agriculture has also played an important role in growth, with wheat becoming a major export in the early 20th century. (Attard, 2010)

In the years since, Australia has been able to evolve into a service economy. Figure 3.1 shows each industry’s share of economic output in Australia over the past two decades. In the 2011 fiscal year, business and financial services were the two largest sectors by output, followed by

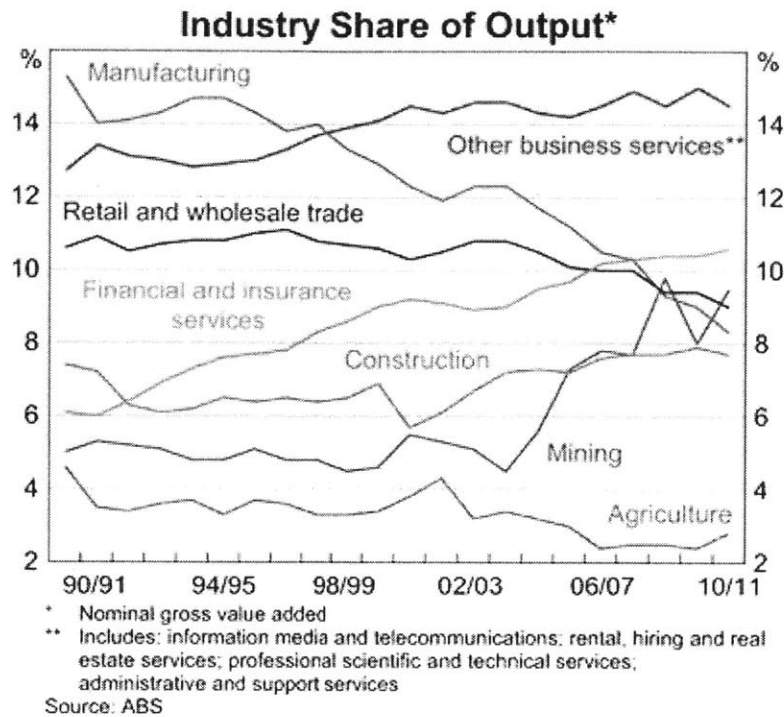


Figure 3.1: Industry share of output in Australia. (RBA, 2012)

the mining sector. The resources sector has continued to play a very significant role in driving Australia's economy, even cushioning it from the effects of the global financial crisis. The mining giant BHP Billiton is the largest listed company on the Australian Securities Exchange (ASX), making up 9.23% of the entire All Ordinaries index alone (S&P, 2012). According to the Department of Foreign Affairs and Trade (DFAT, 2011), resources dominated export activity, constituting eight of the nation's top ten exports. Major exports today include iron ore, coal, gold, crude petroleum, natural gas, wheat, aluminum and copper. Services are the second major export, with education and travel services being the third and fifth major exports respectively, with Australia's geographic proximity making it an attractive education destination for millions of international students in the Asia region. Figure 3.2 shows the top ten export volumes in the 2011 fiscal year.

Ironically, the "lucky country" phrase was first used by author David Horne, in his 1964 book of the same name, as a criticism about the nation, when he wrote:

*Australia is a lucky country, run by second-rate people who share its luck.*

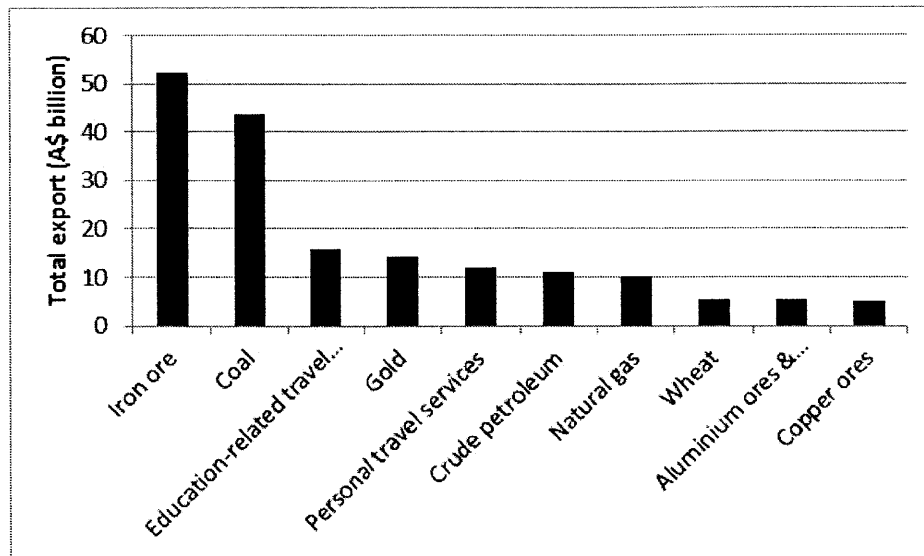


Figure 3.2: Top ten Australian exports by value.

Horne felt that Australia was not a “clever country” like those that had been able to develop through technological and other innovations, showing “less enterprise than almost any other prosperous industrial society”, and was simply a lucky country still able to rely on its abundance of resources as it has done since its colonial beginnings (Australian Government, 2012). This relates to a phenomenon in Australia known as the ‘two-speed economy’, which has been used to refer to the recent boom in the resources sector creating a dual economy, leaving the non-resources sectors stagnant while bearing the costs of higher interest rates, inflation, and exchange rates due to the net positive economic growth. Garton (2008), however, argues that this is not a recent phenomenon and that the nation has long been a two-speed economy, while pointing out that there has been some positive spillover of wealth to other sectors.

### 3.2 The way forward

With the enormous role played by the resources sector in the Australian economy, the importance of capitalizing on innovations and creating new businesses across sectors to secure Australia’s economic future and prosperity is well recognized. A thriving entrepreneurial environment and healthy venture capital industry is key towards achieving this, by allowing innovation to flourish

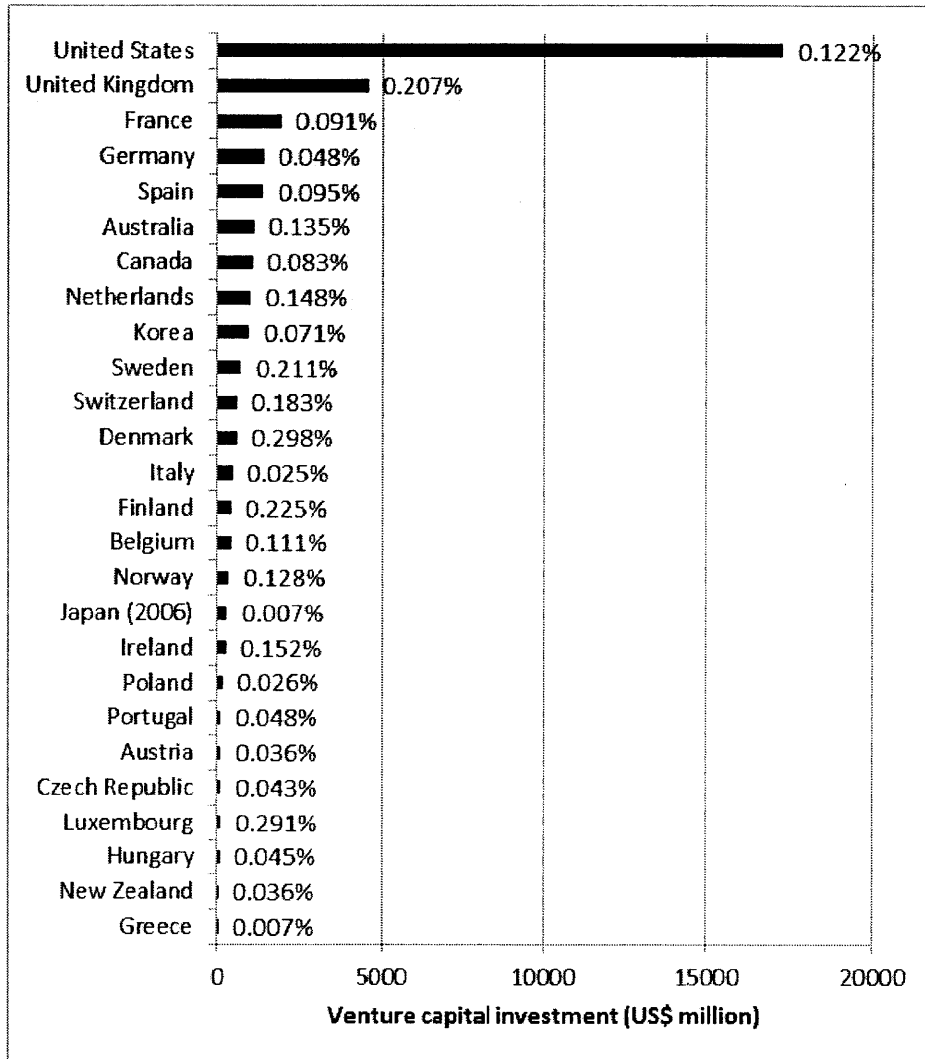


Figure 3.3: Venture capital investments (2008) in OECD nations. Each bar represents the total investment, and the number beside each bar indicates the investment as a percentage of domestic GDP.

and by giving startup businesses access to the expertise and financial resources necessary to grow. Australia possesses many comparative strengths that make it a most favorable environment for this to occur.

- **Well developed** capital markets, institutions, and regulatory and legal frameworks.
- **Political stability.** In a report by the Economist Intelligence Unit (EIU, 2009), Australia was ranked as one of the most politically stable countries in the world, even more so than the US, Singapore, and Germany.
- **Financial stability.** Australia has a AAA sovereign debt rating from the major ratings agencies, and its major commercial banks are amongst the highest rated in the world.
- **World class research capability** in science and technology, with a strong education system. In a study commissioned by the Australian Research Council in 2010, Australia's research was found to be well above world standard in the areas of classical physics, aerospace engineering, environmental technology, and industrial technology. It was also found to be above world standard in the medical science areas of cardiovascular medicine and hematology, immunology, medical physiology, oncology and carcinogenesis. (ARC, 2010)
- **Geographic proximity to Asia** makes it easier to attract talent from these countries, as well as conduct business and trade with some of the fastest growing countries in the world.
- **High quality of life.** The United Nations' Human Development Index ranks Australia as the second highest in the world (UNDP, 2011). The Economist Intelligence Unit's most recent liveability world ranking placed four Australian cities in its top ten, with Melbourne rated as the world's most liveable city (The Economist, 2011).

Although the level of venture capital investing in Australia lags far behind the United States and the United Kingdom in absolute terms, it is generally on par with most developed countries in relative terms. Figure 3.3 shows the most recent data on venture capital investment as a proportion of GDP—also referred to as venture capital intensity—among OECD countries, as

captured by the OECD Science, Technology and Industry Scoreboard 2009 (OECD, 2009). The data shows the US accounting for almost half of global venture capital investments representing 0.122% of its GDP. The UK follows second but by a large margin, with under 13% of global investments representing 0.207% of its GDP. Australia's share of global investment is respectable at just over 3%, about a quarter of the UK's total, and slightly above the average of OECD countries excluding the US. Its venture capital intensity is 0.135%, which is approximately equal to the OECD weighted average of 0.13%, and in fact slightly higher than the US. However, it will be shown in Chapter 4 that ever since 2008, which is when the data in Figure 3.3 was collected, the venture capital industry has suffered disproportionately more in Australia than in the US, due in part to some the local challenges faced in the country.

### **3.3 Benefits of a strong venture capital industry**

The benefits of a well-functioning venture capital industry go hand in hand with that of a thriving entrepreneurial environment. Table 3.1 lists these key benefits. However, for most seed stage and early stage companies without a proven business or revenues, accessing institutional capital such as bank loans is not an option available to them. Venture capital is often the only feasible option and can mean the difference between concept and reality. VC firms are willing to make the high risk investment in the hopes of achieving commensurately high returns by:

1. Having an ability to find and identify the best investment opportunities.
2. Possessing insight into market and earnings potential to achieve a target rate of return.
3. Adding value to increase the likelihood of success by offering guidance and advice, providing networking opportunities, bringing in outside expertise, adding credibility to the company, and finding exit opportunities.

Venture capital thus plays a role beyond being a pure financial intermediary, and has been responsible in turning many startup ventures into some of Australia's most successful corporations, including Pharmaxis, Cochlear and SEEK.



Drive economic growth and diversify industry growth sources.
Creation of new businesses and jobs.
Attract foreign direct investment.
Attract skilled labor from overseas.
Provides a legitimate alternative asset class to institutional investors seeking higher returns and portfolio diversification.
Support scientific leadership in areas like medical science through funding and commercialization. Those startups becoming successful corporations can continue funding their own research and development.

Table 3.1: Benefits of a strong venture capital industry.

### 3.4 Data collection and methodology

Key industry data on venture capital fund raising and investment activity was obtained through the Thomson ONE private equity analytics platform, which incorporates the former VentureXpert database by Thomson Economics. For the purpose of this research, venture capital was defined to cover seed stage, early stage, and later stage VC. It excluded buyouts, turnaround/distressed, generalist, mezzanine, secondaries, and fund of funds. Unfortunately, the data required for historical performance of Australian VC funds was not available through Thomson ONE. Instead we refer to the publicly available industry yearbooks published by AVCAL, which offers indicative data, from which we are able to make some inferences on performance in Chapter 4.

It is challenging to measure the precise level of Australian VC activity from its earliest years. The Australian Bureau of Statistics (ABS) only began its survey of venture capital and private equity in fiscal year 2000, but some of the data was not collected until 2005 (ABS, 2012). The predecessor to AVCAL, the Australian Development Capital Association Limited (ADCAL) was only formed in 1992 and marked the first time the industry became formally organized (AVCAL, 2009). AVCAL itself did not form until 1999, from which point it began publishing its annual yearbook of industry data. This data must be interpreted with care, because until 2003, the term ‘venture capital’ was often used interchangeably to refer to all forms of private equity, including late-stage buyouts.<sup>1</sup> The earliest fund raising captured in Thomson ONE is 1984, although there

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<sup>1</sup>In fact, it was 2008 by the time AVCAL renamed itself from the Australian Venture Capital Association Limited to the Australian Private Equity & Venture Capital Association Limited, though it chose to maintain its

is a complete lapse in reported activity in the years 1990 to 1993 coinciding with the economic recession at the time. This allows us to capture the trend beginning in the 1990s, when venture capital really came to be as an industry, as marked by the formation of AVCAL.

Statistics on Australian research institutions and their commercialization programs were obtained from the Australian Research Council (ARC) and the Department of Education, Science and Training (DEST). Details on major government initiatives were obtained through AusIndustry. The Australian Taxation Office (ATO) provides regulatory specifics on venture capital tax concessions, superannuation taxation rates, employee share schemes, and capital gains taxes—all pertinent to our evaluation of incentives in Chapter 5.

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already well-known acronym.

## Chapter 4

# The Venture Capital Landscape in Australia

### 4.1 A brief history

Venture capital is a relatively young industry in Australia. While the first modern VC firm in the United States was founded in 1946,<sup>1</sup> the first VC firm in Australia was founded in 1970 (Axiss Australia, 2002), when Bill Ferris, an MBA graduate and Baker Scholar from the Harvard Business School, and Joe Strzynski, an economics graduate from the University of Sydney (CHAMP Private Equity, 2012), formed International Venture Corporation. According to AVCAL (2009), however, the global economic downturn as a result of the oil crisis “effectively squashed the industry” in the 1970s. Furthermore, despite having started over four decades ago, venture capital remained a niche for most of that period, and it was not until the internet technology boom of the late 1990s did it take off as an industry, attracting mainstream attention and seeing substantial capital inflows.

The bull market of the 1980s saw venture capital activity begin to increase somewhat. In 1984, the Australian Government launched the Management and Investment Companies (MIC) pro-

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<sup>1</sup>The firm was American Research and Development, an early stage investor in technologies being developed for World War II. It was founded by Karl Compton, an MIT professor, Georges Doirot, an HBS professor, and several Boston business leaders (Lerner et al., 2008).

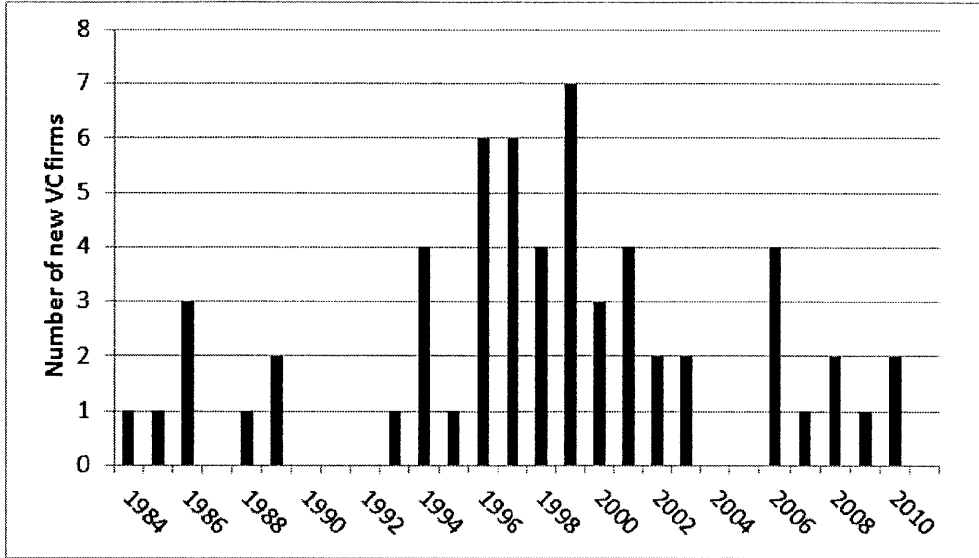


Figure 4.1: Number of VC firms formed by year, 1984-2011.

gram, which licensed 11 VC firms and allowed their limited partners to treat their entire capital investments as tax deductions (Wan, 1988). In 1987, the Australian Securities Exchange was formed after the unification of six separate and autonomous exchanges that resided across the states (ASX Group, 2012), a positive factor in terms of exit opportunities for private equity. However, the global economic recession at the end of this decade once again suppressed investment activity. Figure 4.1 shows the number of VC firms formed by year between 1984 and 2011, based on all firms that raised new funds since 1986.

The market began its recovery in the early 1990s, and the second half of that decade saw an unprecedented surge of activity coinciding with the technology bubble and the wave of optimism as investors around the world jumped on the bandwagon to chase ‘winning’ companies with the promise of double, triple, and even quadruple digit returns. The number of new funds raised each year during this period and the total capital raised are represented by Figure 4.2. Fund raising suddenly peaked at the end of the decade, with A\$547 million raised by 12 funds in 1998. Figure 4.1 captures the number of new VC firms peaking in 1999, which saw seven entrants that year. What the chart does not capture is how many of these firms have since survived, and Section 4.2.1 will look at the industry players still active today.

As Porter (2008) describes in his ubiquitous model of competitive forces shaping strategy, the

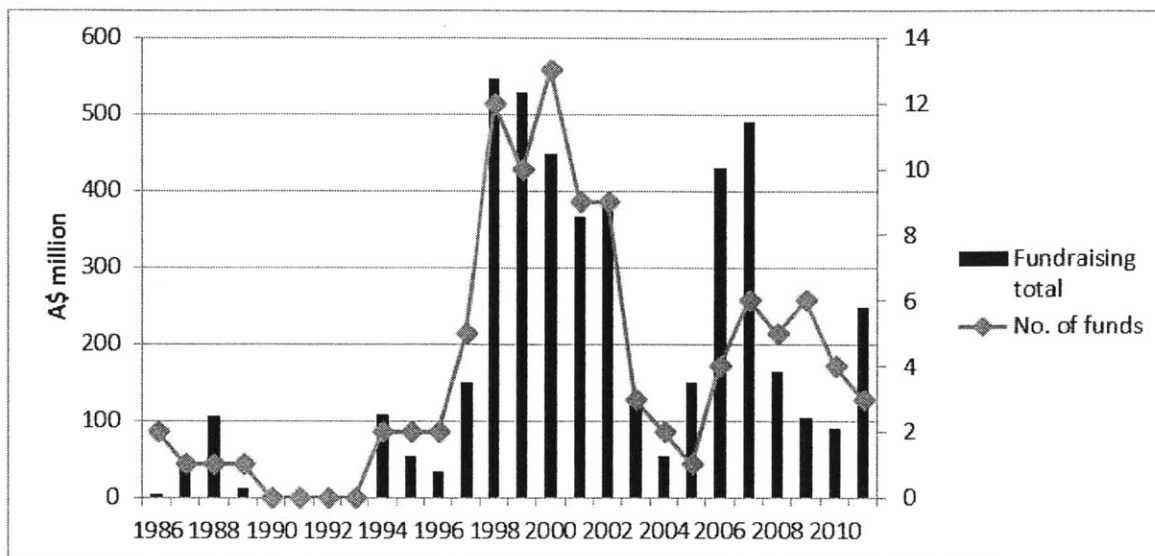


Figure 4.2: New funds raised by fiscal year, 1986-2010.

opportunity to earn excess returns attracts aspiring new entrants which then drives down industry profitability. The sudden influx of new VC players during the bubble crowded the market and created intense competition for the best deals, further bidding up the valuation on companies that were already overvalued, thus diminishing any possible returns. The A\$547 million of capital raised in 1998 was more than three times the amount raised in the previous year, tapering off slowly before plunging after 2002. After the technology bust, fund raising activity remained low again for several years, then rapidly increased during the bull market peak of 2006 and 2007, although it could not reach the heights of the technology bubble. In 2007, fund raising peaked at A\$432 million, only to plunge again the following year with the onset of the global financial crisis. It will be shown in Section 4.2.3 that the industry has been struggling ever since.

The general trend of venture capital fund raising over the past fifteen years has not been unique to Australia. Indeed, the technology bubble of the late 1990s and the global financial crisis in 2008 had significant impact on fund raising around the world, and Australia was simply no exception. Figure 4.3 shows global fund raising activity between 1986 and 2011, in terms of total funds raised and total number of funds raised each year. By far the highest peak of global fund raising occurred in 2000, with A\$154 billion raised by 892 funds around the world, although

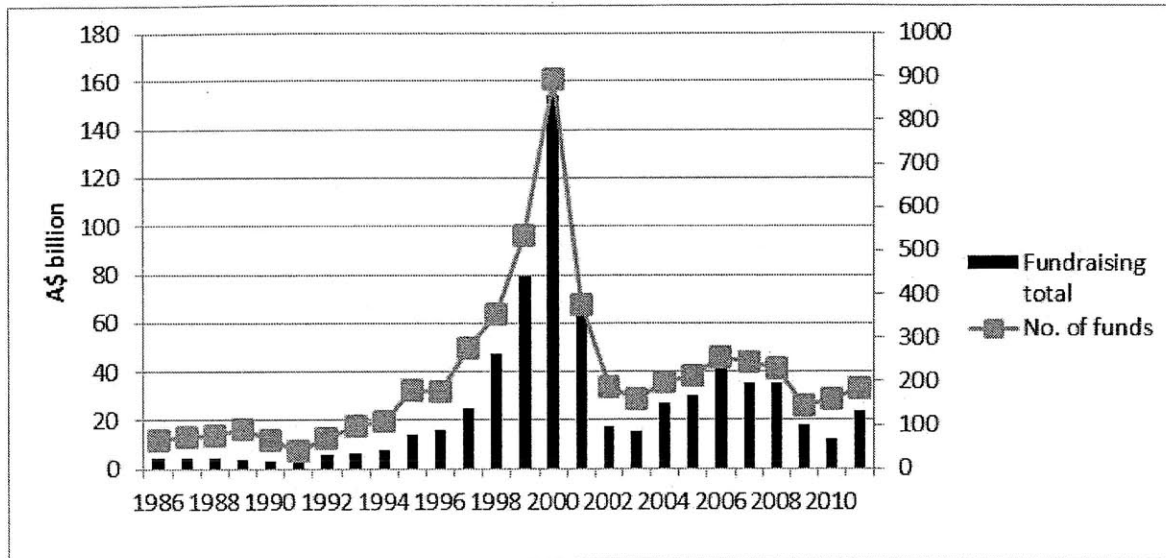


Figure 4.3: Global data for new funds raised by fiscal year, 1986-2010.

only 0.3% of this total was raised by Australian funds. The next peak in 2006 was far from the heights of 2000, with A\$47 billion raised by 256 funds around the world. By this time, however, Australian funds raised 0.9% of this total, a significant increase in relative contribution that was three times its level in 2000. This can also be observed in Figure 4.2, which shows the level of fund raising in Australia just before the financial crisis being comparable to that seen in the late 1990s.

## 4.2 Present state of the venture capital industry

### 4.2.1 Industry players

Based on the combination of VC firm profiles from Thomson ONE and AVCAL's member database, there were found to be 48 firms that manage seed, early, or late stage venture capital funds in Australia. This excludes:

- Standalone in-house commercialization offices of academic research institutions, such as Melbourne Ventures and New South Innovations, which belong to the University of Melbourne and the University of New South Wales, respectively.

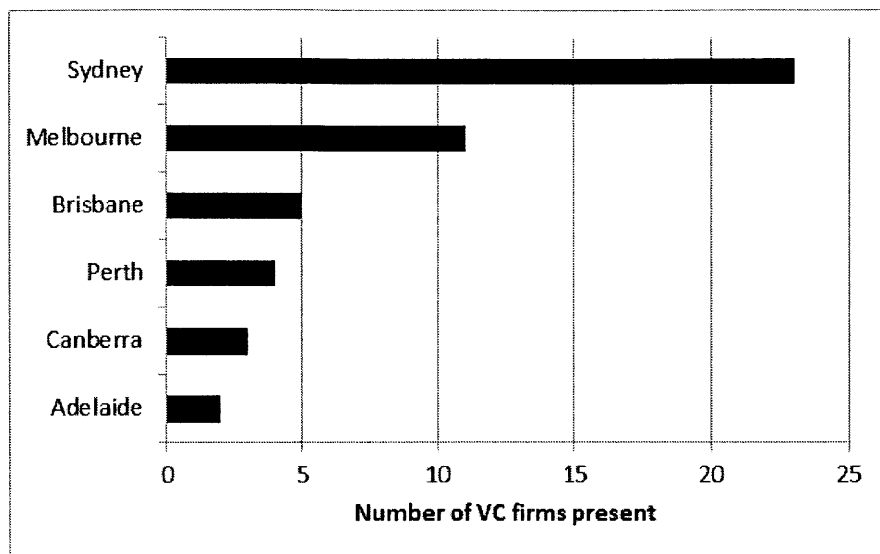


Figure 4.4: Domestic VC firms headquartered by capital city.

- Another 15 firms which are now defunct according to Thomson ONE.

Table 4.1 shows the list of Australian VC firms. However, while still in existence, many of these firms do not appear to be currently active. Therefore, those firms that have not raised any venture capital funds within the past ten years<sup>2</sup> are marked with an asterisk in the table. Within the cohort of active firms stand a handful of the more prestigious and well-reputed firms that have stood the test of time. These include Allen & Buckeridge, CHAMP Private Equity, Southern Cross Ventures, and GBS Venture Partners. In addition, venture firms like Uniseed and UniQuest are the result of collaborative efforts between several research institutions, the Government, and the private sector. Figure 4.4 represents the geographic distribution of VC firms, where it can be seen that Sydney, followed by Melbourne, are the major hubs of activity in the country.<sup>3</sup>

Biotechnology represents the major investment focus of venture capital in Australia, as shown in Figure 4.5, with over A\$1.1 billion of cumulative investment in the sector. Other major investment focuses for venture capital are the computer software, internet, and medical sectors.

<sup>2</sup>Since 2002.

<sup>3</sup>Sydney and Melbourne also happen to be the two largest cities in Australia, with populations of 4.6 million and 4.1 million respectively, out of a total population of 22.8 million (ABS, 2011). Sydney is the nation's financial capital, while Melbourne is the leading hub in medical research.

Accede Capital*	Adventure Capital
African Lion Management	Allen & Buckeridge
Andover Group	ANU Connect Ventures
Australian Capital Ventures	Blue Cove Ventures
Brandon Capital Partners	CHAMP Ventures
Cleantech Ventures	Coates Myer & Co.
Colonial First State Private Equity*	CVC Managers*
DEXUS Property Group	Fairgill Investments*
Farm Plan*	Foundation Capital*
Four Hats Capital*	GBS Venture Partners
Gresham Rabo management	Incite Capital Management*
Innovation Capital Associates	Intersuisse Bioscience Managers
Kestrel Capital*	Latitude Investments*
LinQ Management	Momentum Investment Group*
Neo Technology Ventures*	OneVentures
Playford Capital*	Pollenizer Ventures
Prometheus Equity Partners*	Proto Investment Partners
QIC BioVentures*	RedFire Investments
SciVentures Investments	Septimus Capital Partners*
Southern Cross Venture Partners	Starfish Ventures
Start-up Australia*	Stone Ridge Ventures
Technology Venture Partners*	Terra Rossa Capital
Trans Tasman Commercialisation Fund	Uniquist
Unised	Yuuwa Capital

\* Denotes no funds raised since 2002

Table 4.1: List of domestic VC firms.

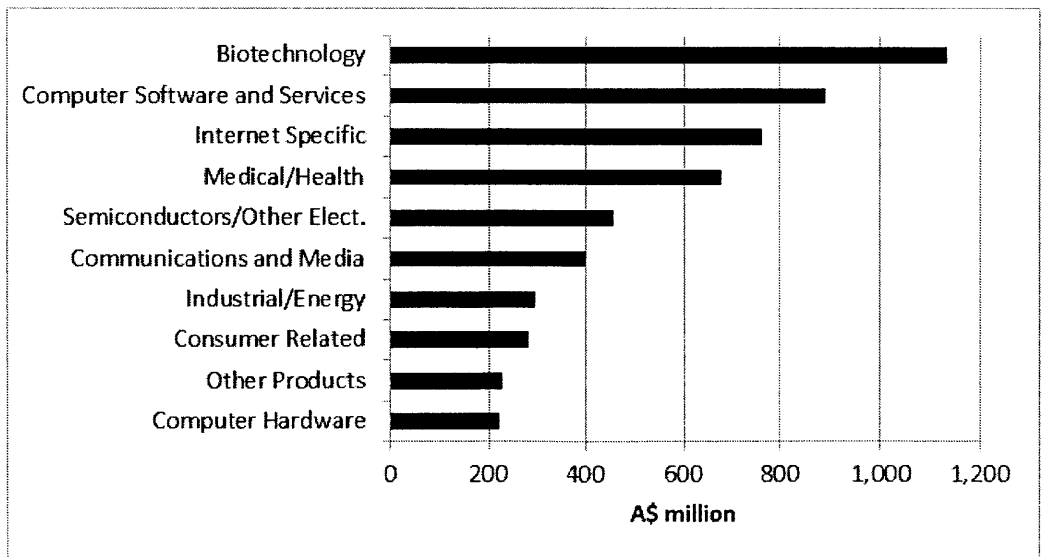


Figure 4.5: Distribution of cumulative venture capital by sector.



A group of investors with significant impact on startup companies but not captured by the data are the angel investors. Angels are a broadly defined class of private investors, ranging from the individual high net worth investor to the somewhat more structured angel investment syndicate such as Melbourne Angels Inc. Many of these angels are not professional investors, but make investments outside of their day jobs, such as family and friends of business owners. Given the broad classification of angel investors and the fact that they do not generally disclose their activities, the amount of capital this group provides in aggregate is unclear. However, Axiss Australia (2002) estimates the amount of angel financing in Australia to be around a quarter of all venture capital available.

Angels do not typically compete head on with VC firms for investments, as their investment ranges are usually less than A\$1 million (Axiss Australia, 2002) and they often provide pre-seed financing, partly by virtue of their lower investment sizes. Since they invest their own capital, angel investors do not face some of the fund raising challenges that VC firms currently face, which will be discussed in Section 4.3. Nonetheless, the angel investment scene has challenges of its own. One angel investor interviewed described the Australian angel community as too fragmented, the result being there are “too many investors chasing too few good deals”.

#### **4.2.2 Industry activity**

The venture capital industry has been in decline in the recent years since the height of the global financial crisis hit in 2008. Levels of recent investment activity are captured in Figure 4.6, which shows total dollars invested and the corresponding number of investee companies, by year. Since the peak of 2007, the amount of invested capital has been steadily decreasing, to a low of A\$190 million in 2011. Interestingly, the chart also shows that the number of companies receiving investments has been on an almost continual decline since the technology bubble.

A comparison between countries indicates that investment activity in Australia has taken a more substantial decline in recent years, relative to several other countries with established venture capital industries. Figure 4.7 shows annual venture capital investments in the United States and Australia over the past five years, beginning in 2007 just prior to the global financial crisis.

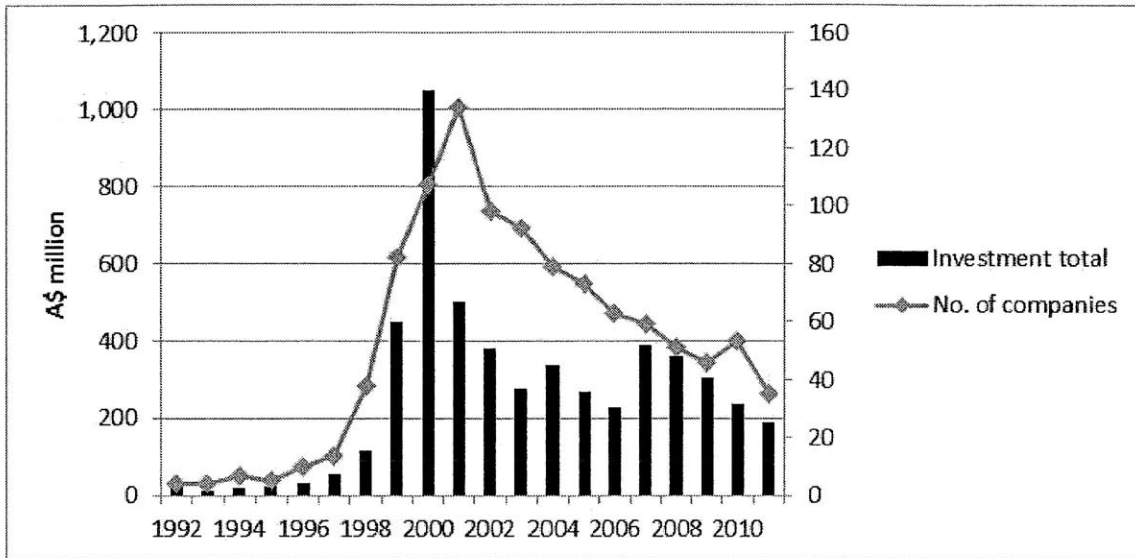


Figure 4.6: Venture capital investment activity, 1992-2011.

This chart is plotted on a logarithmic scale given the orders of magnitude difference between the two countries. During this time frame, investment activity in the US declined significantly in 2008 and 2009, but has been climbing slowly since, with total investments in 2011 at about two-thirds of 2007 levels. In contrast, investment activity in Australia has been on a continuous decline every year since 2007, and by 2011 it had fallen by half.

Figure 4.8 makes the same comparison of investment activity over the past five years with the United Kingdom, China, and Ireland. In the UK, investments declined every year until 2010, but in 2011 it shot up dramatically, recovering to 90% of 2007 investment levels. The experience in China has been more unique. While venture capital investing has decreased in other countries, it has increased significantly in China, with total investing in 2011 being 2.7 times that of 2007. On the other hand, the level of investment decline in Ireland has been similar to Australia—with the exception of a surge of activity in 2010, total investments in 2011 was half the level of 2007.

While Figures 4.7 and 4.8 compare total investments in absolute terms, Figure 4.9 charts the trend of total investments per capita.<sup>4</sup> The relative results are similar to the previous comparisons, with per capita investment showing signs of recovery in the US and the UK, but on a

<sup>4</sup>Investment normalized by each country's population in 2010 as reported by the World Bank.

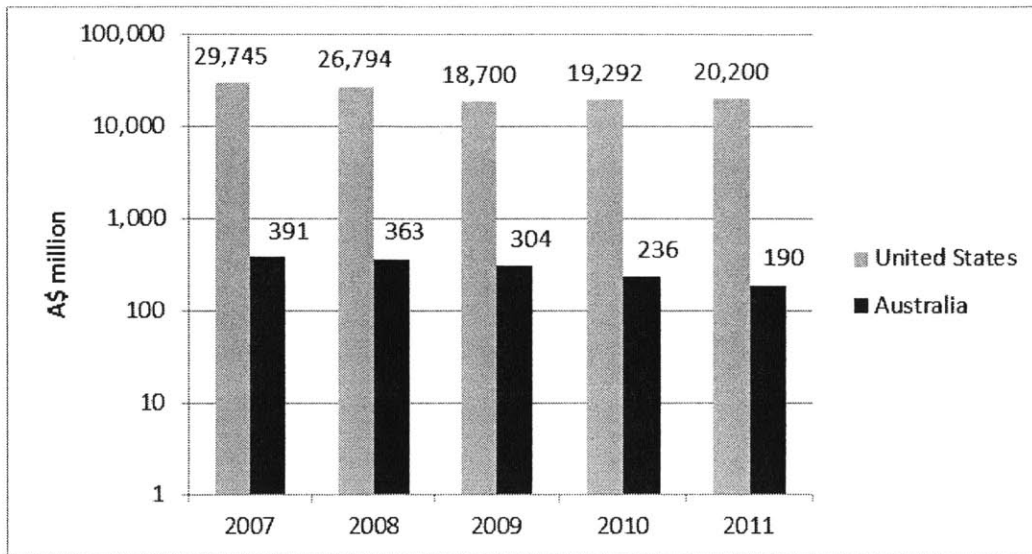


Figure 4.7: Total VC investments in the US and Australia, 2007-2011.

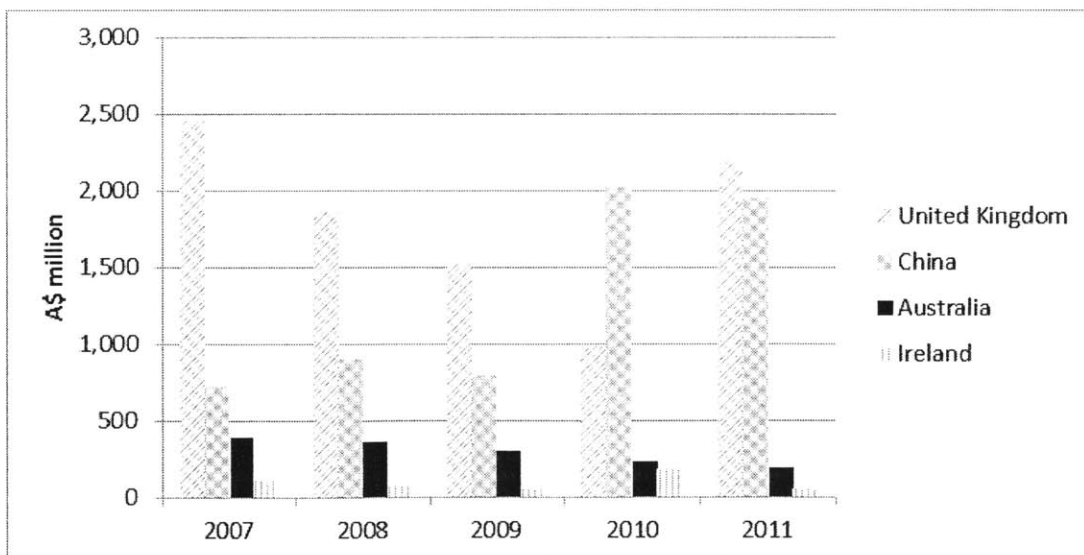


Figure 4.8: Total VC investments in selected countries, 2007-2011.

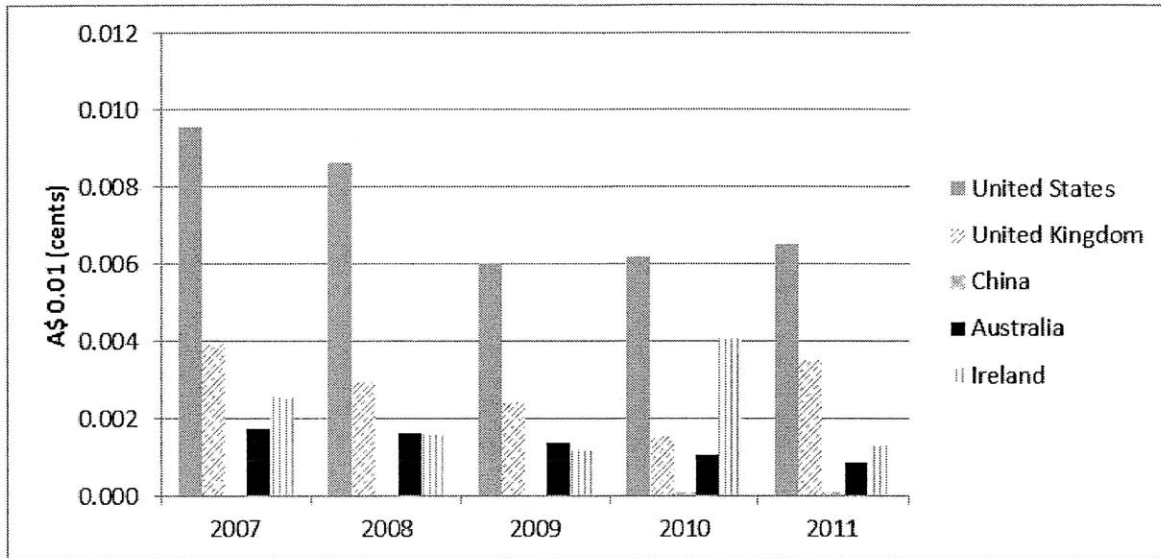


Figure 4.9: Investment per capita in selected countries, 2007-2011.

steady decline in Australia. Not surprisingly, per capita investment in the US is significantly higher than other countries and more than five times that of Australia. Levels of per capita investment in Ireland have generally been at least as much as Australia if not higher, whereas in China the enormous population makes its per capita investment too small to be meaningful on this chart. Finally, Figure 4.10 shows the most recent levels of VC investment per capita across a range of countries as at 2011. Although the level of investment in Australia is respectable relative to other developed countries—such as Germany, Singapore, and New Zealand—it still lags significantly behind countries like Israel, Canada, and Hong Kong.

VC firms in Australia have been struggling to raise new funds, as well as having difficulty exiting existing funds, and investment activity has been depressed. One VC investor captured the feeling when he remarked that it is “extremely difficult, if not impossible, to raise funds” in the current environment. Figure 4.2 showed the number of new funds raised decreasing over the past three years, to three funds in 2011. Total funds raised in 2011 experienced a spike to A\$249 million, however this was predominantly the impact of just one firm, Southern Cross Venture Partners (SCVP), with their 2011 vintage Renewable Energy Fund of A\$200 million.

AVCAL (2011) reports lower figures in 2011 than those obtained through Thomson ONE. It claims that only A\$120 million was raised in 2011 and that this was the lowest level of fund

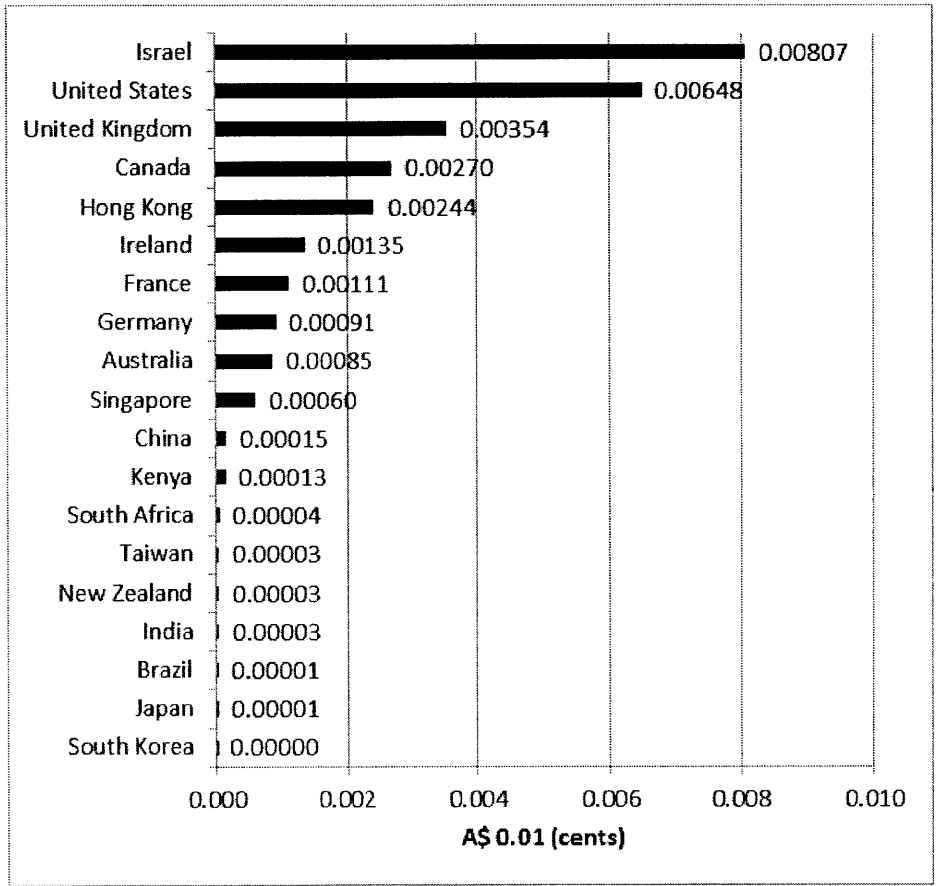


Figure 4.10: Investment per capita in selected countries as at 2011.

raising since the technology bust, representing four years of consecutive decline. Differences in reported figures may be largely attributed to different interpretations of the fiscal year, where AVCAL defines 2011 as the Australian fiscal year beginning in July 1, 2010 and ending on June 30, 2011. Nonetheless, AVCAL also reports that only three firms were able to raise new capital in 2011. Furthermore, the Australian Government was responsible for propping up this fund raising by being the major investor, contributing half of all capital raised, including A\$100 million to the SCVP Renewable Energy Fund. These contributions were made through the Government's Innovation Investment Fund (IIF) program, which requires each dollar of government investment to be matched by a dollar of private investment. This program, along with other government initiatives, will be discussed further in Section 4.2.4. Government support has clearly played an essential role in sustaining the industry recently, without which it would likely have dwindled significantly.

### 4.2.3 Industry performance

Each year, AVCAL releases its annual benchmark index, showing the data on pooled returns to private equity and venture capital in Australia. Unfortunately, after 2008 the association ceased disclosing the benchmark index specifically for venture capital and only shares the information with member VC firms. There are a couple of possible reasons why the information has since been withheld. Firstly, 2008 coincided with the global financial crisis, after which it is likely that many investee companies in VC portfolios suffered, resulting in poor overall performance. Since venture capital and private equity performance figures are self-reported, many GPs may choose not to release their results. For the few companies that do share their performance, the sample size may be too small obscure their identities in the aggregate figures. Secondly, and related to the first, poor results are not helpful in advocating an industry. Despite this, it is still possible to achieve an understanding of the general performance of venture capital investments in Australia by looking at the indicative data leading up to 2008. However, we note that the AVCAL recently began a strategic partnership with Cambridge Associates to obtain industry performance data, and so performance figures captured by their new database could be markedly different.

<i>Stage</i>	<i>Avg</i>	<i>Pooled</i>	<i>Upper</i>	<i>Median</i>	<i>Lower</i>
Venture Capital	-5.4	-1.4	3.3	-0.6	-14.8
Private Equity	5.8	9.9	14.4	5.4	-2.5

Table 4.2: Cumulative annualized IRR since inception.

Table 4.2 shows the cumulative performance since inception of both venture capital and private equity as of June 30, 2008, as reported by AVCAL that year (AVCAL, 2008). Venture capital yielded overall negative IRRs in aggregate, with a pooled return of  $-1.4\%$  and average return of  $-5.4\%$ . The worst performing quartile of funds had a cumulative IRR of  $-14.8\%$  while the best performing quartile managed to achieve a positive return of  $3.3\%$ . Swensen (2008) suggests that for alternative assets like venture capital, it is only worthwhile investing in the top quartile of fund managers. The question is whether the positive return of  $3.3\%$  in 2008 was indeed a good rate of return.

To benchmark the performance of venture capital, we make a comparison against the All Ordinaries index (symbol XAO). The All Ordinaries is a market-capitalization weighted index of the 500 largest companies listed on the ASX, and is a commonly used benchmark for both index and active fund managers. Table 4.3 shows the overall VC fund horizon returns across one, three, five, and ten years as reported by AVCAL in 2008, and compares this to the compounded annual returns one would have achieved by investing in a passive portfolio indexed to the All Ordinaries.

The data show that VC returns fell far short of stock market returns at the three, five, and ten year horizons. A passive ten year investment in the All Ordinaries index would have earned a compounded annual return of  $7.1\%$  instead of a loss-making  $-1.4\%$  in venture capital. At the one year horizon, VC returns appear to exceed stock market returns. However, a couple of key factors need to be considered in interpreting this difference.

- The reported VC return should incorporate an adjustment for the risk and illiquidity of investing in venture capital. Cochrane (2005) points out that discount rates applied to VC investments range from  $35\%$  to  $50\%$ , which suggests a risk premium of at least  $30\%$  over the market. Also, Damodaran (2005) finds that the historical illiquidity discount for venture capital is around  $4\%$ .

<i>Asset class</i>	<i>1 Yr</i>	<i>3 Yr</i>	<i>5 Yr</i>	<i>10 Yr</i>
Venture Capital	-0.6	2.7	3.9	-1.4
All Ordinaries	-15.3	8.1	12.1	7.1

Table 4.3: Comparison of VC performance against public stocks.

- A one year horizon IRR is not particularly meaningful for a VC fund, which normally has a life of ten years. The one year IRR would vary enormously depending on the stage of the fund's life cycle. Also, as discussed by Hardyman et al. (2011), since the assets are private and illiquid, they are infrequently marked to market value and even then only under certain conditions.

The general underperformance can also be observed when comparing the cumulative performance of top quartile VC funds, at 3.3%, against investing passively in the stock market. Investing in the All Ordinaries at a time horizon beginning in 1986, the inception year used by AVCAL for its calculations, would have produced a compounded annual return of 7.25%, more than double top quartile VC returns even before adjusting for risk and illiquidity. This does not suggest that *all* VC funds have been underperforming. It is most likely that within this top quartile stood a select few VC funds achieving superior performance. For example, in 2011, GBS Ventures reported that its 1998 vintage life science venture capital fund exceeded top quartile performance metrics, relative even to its peers in the United States (GBS, 2011), although the actual return was not disclosed.

While AVCAL stopped revealing specific performance data for venture capital after 2008, we can reasonably hypothesize that it is likely the cumulative returns to 2011 still underperform stock benchmarks, based on the following deduction. With a ten year horizon return of -1.4%, overall fund performance in years 2009 to 2011 would need to exceed 25.7% to at least match the absolute return of the All Ordinaries index for the 13 year period from 1998 to 2011, before accounting for added risk and illiquidity. It is unlikely that such a sudden and drastic increase would have occurred after the frenzy of capital withdrawals and flight to quality caused by the global financial crisis. The results also suggest why AVCAL might choose to pool the data in aggregate with private equity fund performance given the much stronger performance of PE<sup>5</sup> as

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<sup>5</sup>While later-stage private equity performance is outside the scope of this research, we note that a pooled IRR for VC and PE would greatly dampen any influence of VC performance in the aggregated data since the total



shown in Table 4.2.

#### **4.2.4 Government support**

To the credit of the Australian Government, a number of programs to support the venture capital industry have been implemented in the years following the Government's launch of the MIC program in 1984. Since that time, programs like MIC have been updated and replaced, and other additional programs have been introduced. The Government initiatives currently active are presented here.

##### **Pooled Development Funds**

This program allows VC funds to register with the Government as a Pooled Development Fund (PDF). Registered PDFs and their shareholders are entitled to tax benefits including a reduced taxation rate of 15% on income and gains derived from equity investments, as well as tax exemption on income and gains derived from PDF shares. One of the criteria for PDF eligibility is that the total assets of each company invested must not exceed A\$50 million. The program is no longer accepting registrations from new funds but companies seeking funding are still eligible to receive funding from existing PDFs.

##### **Early Stage Venture Capital Limited Partnership**

The Early Stage Venture Capital Limited Partnership (ESVCLP) is a newer program that replaces the PDF program for new funds seeking to register with the Government for favorable tax treatment. It was introduced in 2002 with the aim of stimulating early-stage investments. A VC fund registered as an ESVCLP is not treated as a taxing point and its investors are exempt from taxation on income and capital gains. One of the criteria for ESVCLP eligibility is that the VC fund must have committed capital of no less than A\$10 million and not exceeding A\$100 million. Like the PDF program, total assets of companies invested must be less than A\$50

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level of PE investment is much larger.

million. Adventure Capital is one of the newer VC partnerships based in Melbourne registered as an ESVCLP.

### **Innovation Investment Fund**

Through the IIF, the Australian Government invests capital directly into VC funds with a focus on early-stage companies commercializing research and development. One of the main requirements is that the IIF investment be matched one-to-one with privately sourced capital. As long as IIF criteria are met, the Government allows VC managers to retain all decision-making power, and requires just a 10% share of profits after all capital plus interest<sup>6</sup> has been returned to investors, leaving the remaining 90% to be shared amongst private LPs and GPs.

According to AusIndustry, the division responsible for the IIF, the program has licensed 16 VC firms and invested in over 100 companies since its inception in 1998 with A\$644 million in committed capital. Round 3 of the IIF began 2007 and is now investing its fourth and final tranche. As this final round comes to an end, concerns have been expressed amongst players about the future of the industry, with Woodthorpe (2012) commenting, “(w)orryingly, there is no appetite from the Government to extend (the IIF) in any form... leaving the massive taxpayer funded expenditure into R&D without any adequate commercialisation mechanism.”

### **Pre-Seed Fund**

Like the IIF, the Pre-Seed Fund (PSF) offered capital commitments from the Government, but with a focus on commercialization of public sector research from universities and national research agencies. Only four VC firms<sup>7</sup> were selected to invest for the PSF when it launched in 2002. Of the A\$100 million of capital in the PSF, the Government provided A\$72.7 million. The fund is now closed and no longer accepting applications.

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<sup>6</sup>The hurdle rate stipulated by the IIF is the 10 year bond rate.

<sup>7</sup>The four firms were Allen & Buckeridge, GBS Venture Partners, SciVentures, and StarFish Ventures.

## **Commercialisation Australia**

Commercialisation Australia (CA) is an assistance program offering a variety of funding components directly entrepreneurs and researchers to assist with commercialization efforts. Funds are provided for a variety of purposes including training, experienced executive hires, proof of concept, and early-stage commercialization. With the exception of training, funding is usually provided at a ratio of 50% contribution by the Government. The program also offers the assistance of business mentors to provide advice and networking opportunities. Although this does not relate directly to VC fund raising, it is listed here as having the potential to increase the opportunity set available to VC firms. On the other hand, it could also help new companies to get off the ground without the need for venture capital, which carries its own benefits.

## **Venture capital tax concession**

The venture capital tax concession was implemented through the Australian Taxation Office (ATO) to encourage foreign direct investment in venture capital. It offers tax exemptions from capital gains made on venture capital investments by foreign investors, including foreign pension funds and VC fund-of-funds, from certain countries. This concession was not originally designed to offer exemptions to Australian residents, but was extended in 2002 to allow exemptions to the partners of the ESVCLP program discussed earlier.

## **Research and Development Tax Incentive**

Jointly administered by AusIndustry and the ATO, the Research and Development (R&D) Tax Incentive offers generous tax offsets for R&D activities and expenses to eligible R&D entities. According to AusIndustry (2011), the incentive provides:

- A 45% refundable tax offset to eligible entities with a turnover of less than A\$20 million annually, provided they are not controlled by income tax exempt entities.
- A 40% non-refundable tax offset for all other eligible entities, with unused non-refundable offset amounts permitted to be carried forward to future income years.

Unlike those government initiatives aimed at supporting commercialization or direct venture capital investments, the aim of this program is to incentivize companies to engage in R&D that they might not otherwise have conducted.

### **State government support**

Whilst the major support programs are offered by the Federal Government, several smaller and more localized initiatives are also offered at the individual state level. As an example, the Government of Western Australia created its Innovation Centre, located in Technology Park beside the main campus of Curtin University, with the purpose of providing a range of advisory services and infrastructure to assist local companies with commercialization efforts. Another example is the support of the state governments of Victoria and South Australia, in conjunction with the New Zealand Government and the Auckland City Council, in the Trans Tasman Commercialisation Fund (TTCF). The TTCF is a A\$30 million fund, sponsored by pension fund AustralianSuper, that aims to commercialize technology research and development from its member universities in Australia and New Zealand.<sup>8</sup>

#### **4.2.5 Research in Australian universities**

Australia possesses a strong research capability that is competitive on a world scale. In a study commissioned by the Australian Research Council in 2010, Australia's research was found to be "well above world standard" in the areas of classical physics, aerospace engineering, environmental technology, and industrial technology. It was also found to be "above world standard" in the medical science areas of cardiovascular medicine and hematology, immunology, medical physiology, oncology and carcinogenesis (ARC, 2010). Figure 4.11 compares the research intensity among several nations, presented in a report by the OECD (2011). Each country on the chart is represented by a bubble, where the size of the bubble corresponds to R&D volume in US dollars. The horizontal axis represents R&D expenditure as a percentage of GDP, and the vertical axis represents the number of researchers per thousand persons employed. Australia's

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<sup>8</sup>Current member universities are The University of Adelaide (SA), Flinders University (VIC), University of South Australia (SA), Monash University (VIC), and The University of Auckland (NZ).

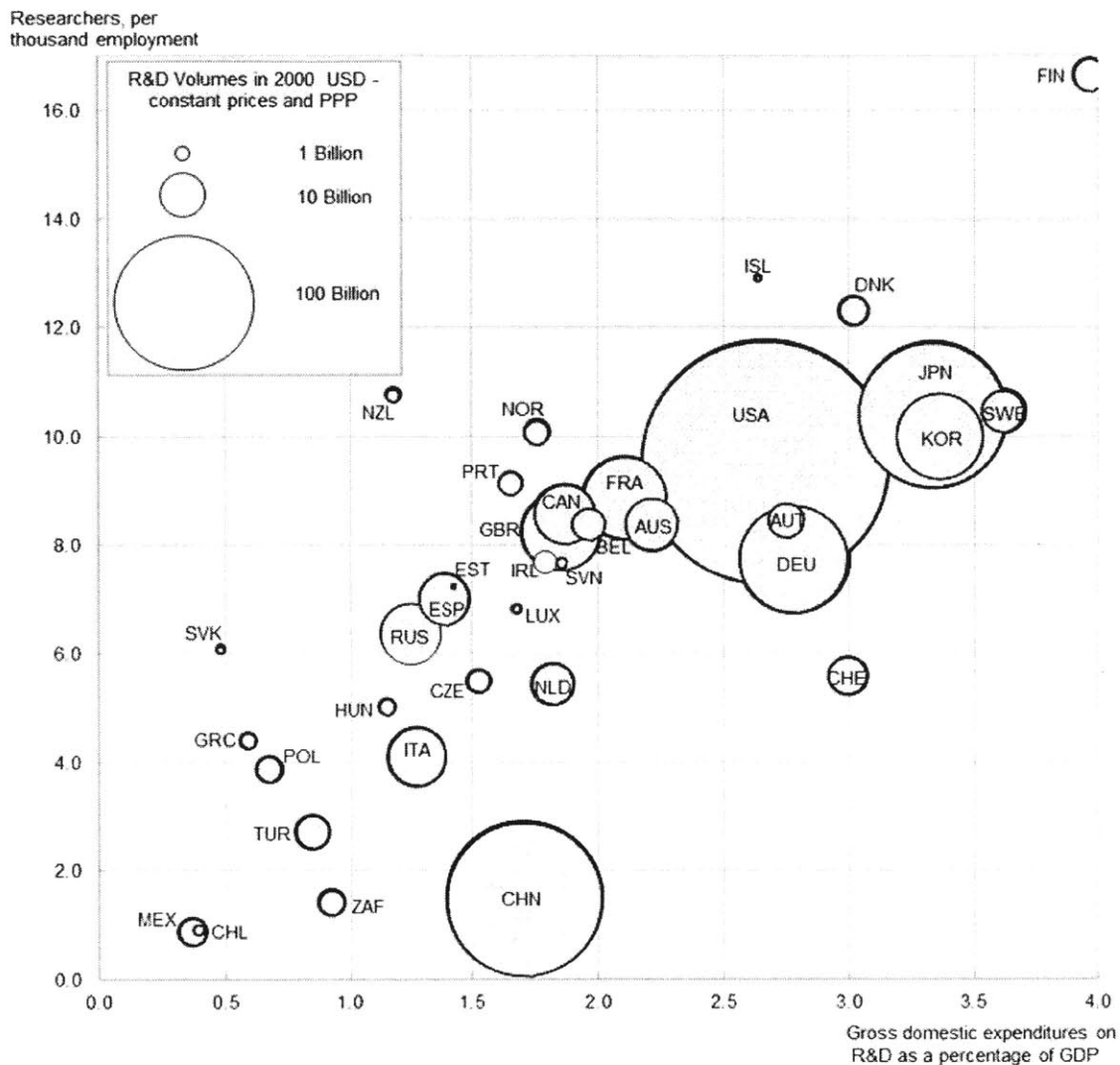


Figure 4.11: R&D in OECD and non-OECD economies. (OECD, 2011)

research intensity can be seen to be on par with, or better than, most developed nations in terms of both expenditure and researchers employed, although it lags behind several countries including Finland, Japan, Sweden, Korea, Israel, and the United States.

The Group of Eight (Go8) and the Australian Technology Network (ATN) represent two groups of the most research-intensive universities that are critical to the nation's intellectual output and entrepreneurial ecosystem.<sup>9</sup> Tables 4.4 and 4.5 list the universities in each group, and Figure 4.12 shows the geographic distribution of these universities by state. The distribution pattern is

<sup>9</sup>Refer to Chapter 5 for a more in-depth discussion of the entrepreneurial ecosystem.

<i>The Group of Eight</i>
Australian National University
University of Adelaide
University of Melbourne
Monash University
University of New South Wales
University of Queensland
University of Sydney
University of Western Australia

Table 4.4: Member universities of the Group of Eight.

<i>Australian Technology Network</i>
Curtin University of Technology
Queensland University of Technology
RMIT University
University of South Australia
University of Technology Sydney

Table 4.5: Member universities of the Australian Technology Network.

similar that of the geographic distribution of Australian VC firms as shown in Figure 4.4, with Sydney and Melbourne containing the largest concentration of both research institutions and VC firms. Figure 4.13 shows the distribution of university research spending by state<sup>10</sup> in 2009 following this trend also.

The research-intensive Australian universities recognize the importance of creating an entrepreneurial environment and providing the resources to commercialize research outcomes, and achieve this in several ways:

1. University incubators and innovation hubs—such as ThincLab at the University of Adelaide, Macquarie Technology Business Incubator at Macquarie University, and Technology Park at Curtin University—act as a junction for collaboration between the private and public sector with the universities for the commercial application of research, and are within close geographic proximity to their respective universities to maintain easy access to research labs and academics.
2. Events like the Melbourne University Entrepreneurs Challenge, ZEN eChallenge at the

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<sup>10</sup>Note that Sydney and Melbourne are the capital cities of New South Wales and Melbourne, respectively, which account for over half the university research spending in Australia.

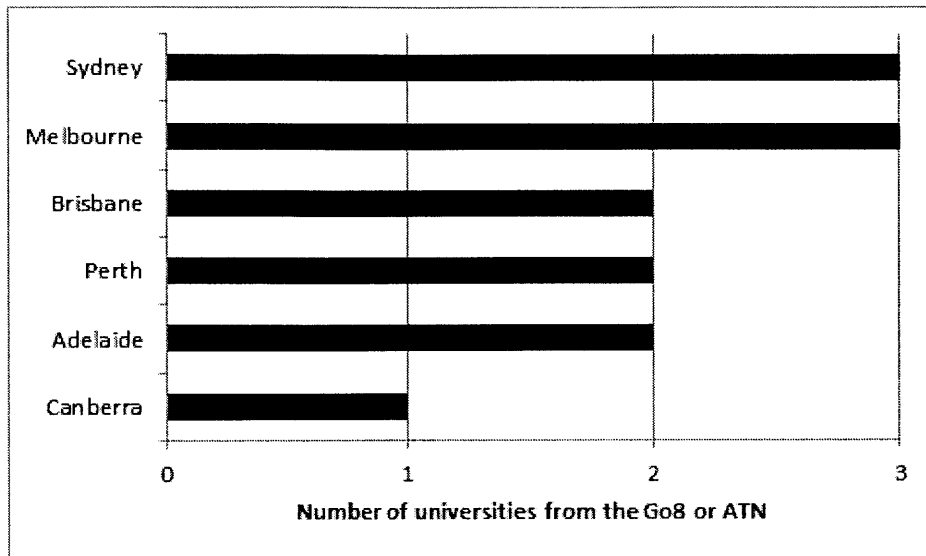


Figure 4.12: Geographic distribution of universities from the Go8 and ATN.

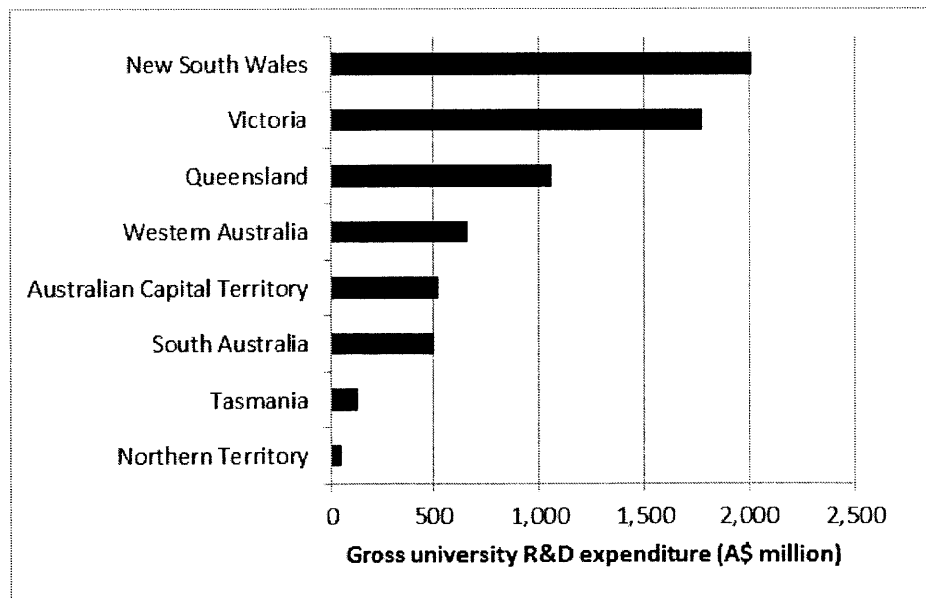


Figure 4.13: Gross university R&D expenditure in fiscal 2009 by state (ABS, 2010).

University of Adelaide, and the RMIT Business Plan Competition create buzz with both students and researchers about the myriad of possibilities around new business ideas, and promote the overall entrepreneurial environment.

3. Programs in innovation and entrepreneurship are now being offered by many universities. These help to raise awareness and build competency in managing innovations, which are valuable to both research institutions and businesses. Examples of such programs include the Master of Technology and Innovation Management at the University of Queensland, and the Master of Commerce in Strategy and Innovation at the University of Sydney.
4. Several universities possess entities dedicated to the commercialization of in-house research. These include Melbourne Ventures by the University of Melbourne and New South Innovations by the University of New South Wales. Many of these entities have also formed joint ventures with each other, each contributing a share of funding along with the Australian Government and private sector investors, to jointly commercialize research outcomes. The TTCF, Uniseed<sup>11</sup>, and UniQuest<sup>12</sup> are examples of the major joint venture groups.

However, despite the emphasis on research and the value placed on innovation, Australian universities still face difficulties in achieving commercial outcomes due to a gap between research and commercialization. Some of the issues contributing to this gap are incentive misalignments within the institutions and, in some cases, an insufficient level of financial and professional resources for researchers. This will be further discussed in Section 4.3.3, and ways to address this issue will be presented in Chapter 5.

### 4.3 Industry challenges

As presented in Section 4.2, venture capital firms in Australia have struggled to raise funds since the height of the global financial crisis, with both fund raising and investment activity on the decline over the past four years. Recent fund raising has been buoyed primarily by IIF support, but this program is now nearing the end of its life cycle. The Government itself acknowledged

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<sup>11</sup>Member universities are the Universities of Melbourne, Queensland, and New South Wales.

<sup>12</sup>Member universities include the Universities of Queensland, Wollongong, and Tasmania.



that “the IIF, as currently structured, may not be as effective during a time of global recession and highly restricted access to venture capital.” (House of Representatives, 2010)

The risk to the industry is that its downward trend will continue, continuing to make capital even harder to raise and causing the industry to become anemic, widening the gap between innovation and commercialization. Moreover, VC funds need to meet a minimum fund size in order to earn sufficient enough management fees to sustain its GPs and operating costs. The difficult fund raising environment means some VC firms will struggle to survive.

As shown in Section 4.2.2 the decline is not unique to Australia. Global economic challenges have impacted the industry in other countries of the world. However, the global economic climate can only explain part of this decline—Australia continued to experience positive economic growth throughout the crisis, buoyed by the strong demand for resources from its trading partners, and yet investment activity has continued to fall while in countries like the US and the UK it has been making its recovery. There exists a host of causes to the difficult fund raising and investment environment that are specific to Australia. Our objective is to understand those causes in order to facilitate specific recommendations that will address them and reverse this trend.

#### **4.3.1 Unfavorable track record of returns**

It is widely known and discussed in research such as Goetzmann & Peles (1995) that investors tend to select their investments based on past performance, preferring to invest in fund managers, asset classes, or stocks that have recently performed well, despite the fact that past results are not a guarantee of future performance. One explanation for this is that investors are rational but have limited alternative information to rely upon to predict expected outcomes.

Another explanation is the effect of two particular human biases on investors known as the representative heuristic and the availability heuristic (Mitchell & Utkus, 2003). The representative heuristic is the tendency for people to impose some explanatory structure around random data. The availability heuristic is the tendency for people to rely on information that is most readily available when making difficult decisions. Both biases can lead investors to rely on performance

data when making investment decisions.

In Section 4.2.3, it was shown that VC returns have fared rather poorly over the years. The undesirable impact of this poor performance is its deterrence to potential new investors from wanting to invest, and its deterrence to existing investors who have experienced bad returns from wanting to participate in the future rounds of fund raising. With the exception of perhaps the very few top VC firms, the inferior returns to venture capital in Australia suggests it will continue to be hard to attract new capital and raises the difficulties for VC firms trying to raise follow-on funds and convince investors to participate.

As earlier indicated by the trend of fund raising and investment in Figures 4.2 and 4.6 respectively, the highest amount of fund raising and investment in Australian venture capital history occurred at the peak of the technology bubble. The implication of this is that an enormous amount of capital was invested at a time when companies were most overvalued, right before the ensuing crash saw the worth of the very same companies tumble. Excessive valuations would lead to a poor overall IRR observed in the following years, in both funds that have since closed, as well as in current funds that began during the bubble.

Further exacerbating the problem is the difficulty GPs now face in exiting their investments and ending their funds. As explained in Chapter 2, the expected life cycle of a closed-end VC fund is ten years to harvest all returns. If the fund cannot be fully exited in that time frame, the GP may have the option to extend this, depending on the terms of contract with the LPs. In Australia, it is not unusual for GPs to have the option to extend the fund for an additional two years at a time, up to a maximum of four years. However, GPs prefer to avoid the need to exercise this option due to the significant costs that it imposes. Firstly, extending a fund reduces its IRR by taking longer to harvest the returns, giving the firm a poorer track record when it tries to raise its next fund. Secondly, it imposes reputational costs on the firm by signaling the firm's inability to exit its investments in a timely enough fashion.

One of the potential reasons GPs are currently struggling to fully exit their funds is that they still contain sub-optimal portfolio companies, invested in during the internet bubble, that are difficult to sell. Other possible causes are the weak IPO market (AVCAL, 2011) and the general

slowdown in economic activity making it difficult for companies to find strategic buyers.

Unfortunately for the industry, the fact that the second surge in fund raising activity occurred in the lead up to the global financial crisis means the general underperformance of venture capital returns as a whole may continue for several more years to come. As one VC manager described, in the short history since venture capital really began to take off in the late 1990s, the industry experienced two crashes, each occurring just as investors began to regain confidence, and “leaving them with permanent scars ever since”.

### 4.3.2 Institutional investors

The major institutional investors in Australia include superannuation funds, life insurance offices, and public unit trusts. Superannuation funds (also known as ‘super funds’) are the Australian pension funds, the behemoths of the investment management landscape, controlling A\$1.2 trillion out of the country’s A\$1.7 trillion investment fund asset pool in 2009 (AusTrade, 2010). These funds are therefore an extremely important source of capital to fund managers in Australia. Yet while the superannuation funds control enormous amounts of capital, the concern amongst VC managers is that “virtual(ly) none of this money is flowing to venture capital” (Thomson, 2011). This does not to imply that superannuation funds have contributed nothing to venture capital – the TTCF’s backing by AustralianSuper and Uniseed’s backing by Westscheme are examples of such investments – but that the level of investment has been too little.

The House of Representatives (2007) Standing Committee on Economics, Finance and Public Administration stated in its report:

*The reason for the limited involvement of superannuation funds in venture capital is not clear. It may just be that the returns offered by venture capital are inadequate, or it may be that superannuation fund managers are being unduly ‘conservative’ in their investment practices.*

While the Government does not claim to have the exact answer why superannuation funds are not attracted to venture capital, the inadequate returns offered by the industry, which we demonstrated in Section 4.2.3, is indeed a legitimate explanation why investors would choose

to avoid it and one that has been cited by VC managers. There is also the behavioral aspect of gatekeepers<sup>13</sup> and investment managers in the institutional funds who might choose to avoid the reputational risk of making a recommendation to invest in a high risk asset class with a poor track record, only to have it continue to underperform. However, we argue that the Government's suggestion that superannuation funds are being conservative in their approach is a less plausible explanation, based on the enormous size of these funds. This argument also applies to other major institutional investors.

Figure 4.2 shows that A\$249 million of venture capital funds were raised in 2011, of which half was provided by the Government. Had this entire funding been provided by superannuation funds, it would have represented only 0.021% of the industry's total assets. Even if this funding was provided exclusively by a single superannuation fund such as State Super, one of the largest funds with over \$30 billion in assets under management (State Super, 2012), it would have represented a mere 0.83% of the fund's total assets under management. It is therefore unlikely that superannuation funds are being conservative and avoiding the riskiness of venture capital investing when the impact of such a minute allocation to their portfolios is essentially negligible.

The real problem is that the large disparity between a venture capital allocation and the size of a superannuation fund creates a disincentive for the fund manager. Before an investment decision can be made, considerable effort is expended including a review of the opportunity set, triage, due diligence, modeling and evaluation, and approvals. Once the investment is made, it needs to be monitored, reviewed, and reported on a regular basis. Rationally, fund managers would choose to avoid this amount of effort on an asset class with such a tiny proportion of total fund size that its impact would not be meaningful. As Katherine Woodthorpe from AVCAL once stated, "the bigger the superannuation funds get, the harder it is to write a small cheque. Even the ones that want to invest in VC find it hard to do so." (Thomson, 2011)

The wide disparity between fund sizes stem from structural roots and it continues to grow. Firstly, by nature of investing in very early stage companies, venture capital investment sizes are relatively small and typically only in the order of several million dollars, unlike its private

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<sup>13</sup>Gatekeepers are the investment advisors to the fund. They can be in-house or externally hired consultants.

equity counterpart. Secondly, on the other side of the equation, superannuation funds continue to grow in part through the Government's mandate of compulsory contribution of 9% of employee income. Moreover, this contribution is likely to increase to 12% by the year 2020 if a currently proposed law to increase compulsory contributions is passed agreed by Parliament (ATO, 2012). As this gap widens, we might expect to see some VC firms try to move into late stage investments and compete with their PE counterparts to attract institutional capital, but at the risk of lacking the core competencies to be successful in this space.

### **4.3.3 Research and commercialization gap**

In 2005, the Department of Education, Science and Training commissioned a survey on the incentives for commercialization of research in Australian universities (DEST, 2005). The key findings of this survey was that one third of the universities offered "inadequate support and incentives to their researchers to get involved in the commercialisation of their research outcomes". The reasons for this include:

1. Administrative and organizational problems.
2. Inadequate financing and human resources provided by the universities. Some researchers had to use their own money to the fund initial cost of intellectual property (IP) protection, even though the university still shared in the upside of a successful venture.
3. A "lack of trust of university administrations to deliver agreed incentives and effectively implement promotion protocols that were supposed to recognise commercialisation performance".

Whilst the research and commercialization gap does not pertain directly to the fund raising problem facing VC firms, it has important implications to the turnaround and success of the industry. The ability to better tap into the wealth of innovative ideas at research institutions and successfully create proofs of concept, business plans, and prototypes, would increase the opportunity set and deal flow available for venture capital funds, as well as making them more attractive to investors.

#### 4.3.4 Industry experience

Since the venture capital industry only really began to emerge in the late 1990s, followed by a great slowdown in activity thereafter, some VC managers have suggested that, outside the top tier firms, there are not enough people who have developed the breadth and depth of capability to be successful in managing VC investments. This leads to poor investment outcomes which scare away capital further. The poor investment outcomes and lack of funding also result in missed opportunities for people to become successful entrepreneurs—and it is often the seasoned and successful entrepreneurs who become the best VC managers. A lagging industry makes it difficult for firms to attract and retain top talent.

The shortage of experience can also turn away Australian entrepreneurs looking for an edge from VC investors beyond simple funding. As an example, when Australian software company Atlassian decided to seek venture capital funding in 2010, it chose Accel Partners, a US venture capital firm headquartered in Silicon Valley. According to an interview with ZDNet, the co-founders liked Accel Partners' experience in taking companies public in the US and the more favorable valuation it offered. But they also did not consider going to Australian VCs, feeling that “it would be very difficult” with a company of Atlassian's size, and that Accel Partners' level of expertise “is something that (Australia) just can't match down here.” (LeMay, 2010)

Another complaint cited in relation to the relative immaturity of the industry is the lack of understanding about the venture capital model amongst some investors and decision-makers, some of whom expect too high a return for the level of risk taken, and others who prefer steer away from it completely as a result. In either case, Swensen (2008) explains that any investor who does not take reasonable due diligence in VC fund manager selection or simply gives money to a fund-of-funds to make the decisions (and charge more fees) is setting up for failure.

#### 4.3.5 Maintaining critical mass for survival

Venture capital firms need to raise minimum fund sizes,<sup>14</sup> depending on the size of their operation, in order to earn enough management fees to sustain their partners, managers, and operating

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<sup>14</sup>One of the VC managers interviewed suggested that a fund needs to be at least A\$65 million to A\$85 million.

costs. The difficult fund raising environment has made it harder to achieve this threshold level of capital. Moreover, while the percentage of fees charged by GPs in Australia are similar to that of the United States, these management fees are typically charged on invested capital instead of committed capital (The Senate, 2010), meaning that GPs earn less overall. Finally, with the exception of the top VC firms, the general underperformance of venture capital has left negotiating leverage in the hands of LPs, some who are now demanding management fees cease after the first seven years instead of the standard ten years, leaving those funds needing to extend their lives at grave risk.





## Chapter 5

# Addressing the Industry Challenges

### 5.1 A healthy ecosystem of venture capital

A thriving venture capital industry helps to create a virtuous cycle of growth and success. A commonly discussed topic in startup circles is the importance of the entrepreneurial ecosystem. Venture capital fits within this ecosystem as an intermediary, facilitating the growth of the company by providing finance, expertise, and guidance to investee companies. Figure 5.1 shows one good representation of such an ecosystem, adapted from a report commissioned by the World Economic Forum on entrepreneurship education.

A healthy and functioning ecosystem is indeed vital to the survival of venture capital, but this ecosystem is normally looked at from the perspective of the entrepreneur. To consider ways to drive venture capital in the economy, we take a venture capital-centric view of the ecosystem. This is represented in Figure 5.2, which shows the conditional flow of interaction between players in the ecosystem needed to drive the growth and success of venture capital.

In spite of the fact that Australia is not alone in the current macroeconomic environment, which sees depressed levels venture capital activity around the world, it faces other unique challenges of its own. In Chapter 4, we presented how the combination of a lack of funding and inadequate

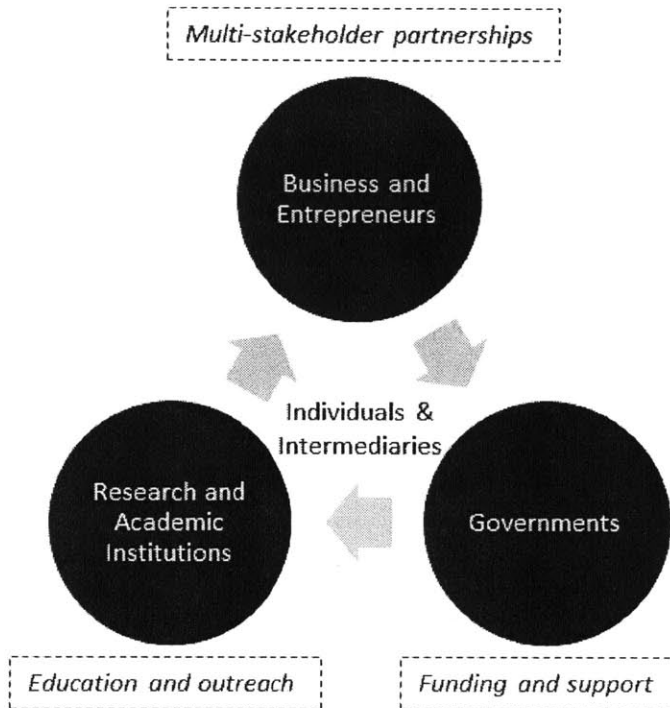


Figure 5.1: Entrepreneurial ecosystem, adapted from Volkman et al. (2009).

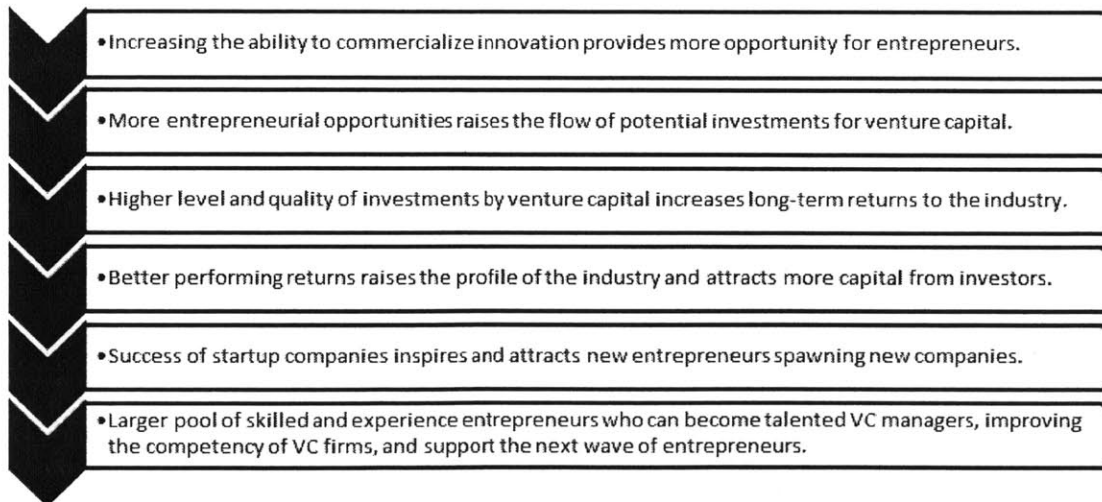


Figure 5.2: Venture capital-centric view of the entrepreneurial ecosystem.

investment returns has plagued the industry, and identified in Section 4.2.3 the major challenges to turning the situation around. For the remainder of this chapter, we look at how its venture capital ecosystem is impeded by those challenges, and the ways in which those challenges can be addressed.

## 5.2 Bridging the research and commercialization gap

Through their survey of Australian universities on the commercialization of research, the Department of Education, Science and Training (DEST, 2005) found that one third of universities lacked adequate support and incentive mechanisms to help their researchers commercialize their work. The key reasons behind this were presented in Section 4.3.3. The report also identified a list of best practices for universities to incentivize commercialization, summarized below.

1. **Strategy and resources.** Implement a well-developed and consistent commercialization strategy and ensure it is recognized and understood by staff.
2. **Execution.** Set up the procedures, financing, and support mechanisms to facilitate all stages of business development from IP licensing to commercial deal-making.
3. **Financial incentives.** Allow researchers to have greater participation in the upside of commercialization, including revenue sharing (beyond IP licensing royalties) and equity sharing.

The challenge is for universities to effectively turn these high-level best practices into actionable steps and measurable outcomes. In addition, the report found that “almost all the universities had difficulty in making available adequate finance and human resources” to achieve these best practices. The Pre-Seed Fund is an example of one way in which the Government has helped to address this problem, however that fund has since closed. Additional government support should be brought in to address the resource gap at universities. Section 5.5 will present recommended government support actions.

The objective of the best practices laid out by the DEST was to define how a university can better incentivize its staff to achieve greater commercialization outcomes within the framework

of the university's administrative structure. While the alignment of incentives is very important, it is not the only area through which the research and commercialization gap can be bridged. Following are several recommendations on other ways the problem can be tackled.

### **5.2.1 Creative globalization**

In an article on the venture capital crisis, Cusumano (2009) argued for “creative globalization”, adding that smaller countries are “usually overlooked by international VC firms, either because of their size or isolation”. This idea has been supported by VC managers in Australia who believe that in some areas, research institutions lack the critical mass to be competitive on the world stage. Establishing research collaborations with universities in other small countries, such as New Zealand and Taiwan, would accrue benefits to all parties. These benefits include:

- Pooling of intellectual capital to increase competitiveness and drive innovation.
- Combining support and financial resources to achieve minimum scale for best practice in the commercialization of research.
- International mobility for researchers to obtain more skills and experience.
- Gain recognition from the wider international community including VC firms.
- Attract top researchers from other countries.

### **5.2.2 Increase industry collaboration**

The Cooperative Research Centres (CRC) program is a government initiative aimed at promoting partnerships between public research institutions and “end users” of the research outcomes. These end users can come from the private, public, or community sector, but must be Australian. According to the CRC Australia website,<sup>1</sup> there are currently 44 CRCs in operation.

CRCs are a way in which the Government is helping to facilitate research outcomes that have real applications. However, research institutions need not rely exclusively on winning CRC grants in order to collaborate with the private sector. Firstly, focusing exclusively on CRCs

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<sup>1</sup><http://www.crc.gov.au/>

misses the opportunity to collaborate with foreign private companies since they are ineligible from forming CRCs. Secondly, many companies, including Australian firms like CSL Limited, possess the scale and resources to fund their own research partnerships.

Raising the intensity of collaboration with the private sector helps researchers become more attentive to market needs in developing new innovations. The best practices described earlier are important here to provide aligned incentives to researchers, who may be juggling this research with core academic and teaching activities. In return, private companies can provide the resources, business development skills, and competitive know-how to help commercialize those innovations.

### **5.2.3 Training and skills development**

One of DEST's recommended best practices is to provide adequate resources to facilitate business development. A resource offered by some Australian universities is the service of a business development manager (BDM), who may be employed in-house or contracted externally. Although the BDM can serve a useful role, it would be valuable to provide researchers with the training to develop their commercialization knowledge and skills. Part of this can be gained through the experience of industry collaboration, but this should be supplemented by formal programs covering areas such as business development and intellectual property.

Researchers with the appropriate training can have a better understanding of the challenges and pitfalls associated with commercialization, be more aware of the market applicability of their research, have better interaction with external parties such as lawyers and venture capital investors, and be more confident and motivated to pursue the commercialization of their research. To that end, several educational institutions now offer specific programs like the Graduate Certificate in Commercialisation at the Melbourne Business School.

### **5.2.4 Innovative partnership structures**

Brandon Capital Partners' Medical Research Commercialisation Fund (MRCF) is a good example of an innovative structure devised by a VC firm. Established in 2007, this life sciences fund

runs exclusively for its members, all of whom are medical research institutes owning intellectual property they are seeking to commercialize. Member institutes of the fund benefit from the pooling of technology and resources to achieve enough scale for commercialization, while Brandon Capital provides advice and support with its highly specialized team of partners including medical doctors and doctorates in the life sciences. Another unique attribute of the MRCF is that it is set up as an evergreen fund, meaning it has no deadline for closure, making it suitable for the pre-seed nature of the investments and the lengthy durations associated with medical trials.

### **5.3 Raising the level of capital investment**

A healthy flow of innovation and an ability to turn those ideas into startup businesses increases the quality and the volume of deal flow available to VC firms. This does not necessarily guarantee better returns to venture capital, as other factors such as the intensity of competition for those deals, competency level of VC managers, and general market conditions all affect overall returns to the industry. However, all things being equal, a healthy deal flow is necessary for good returns, and more investors will be attracted to invest their money by virtue of those improved returns. This is why a strong ecosystem is the organic remedy to the fund raising problem.

Deal flow and good returns alone are not sufficient to solve the fund raising difficulties in Australia. In Chapter 4, one of the major challenges presented is the lack of involvement from superannuation funds. Even if VC returns are sufficiently attractive, it is simply not practical for these funds to participate in venture capital as the investible size would represent an almost negligible proportion of the fund's total portfolio, and its overall impact to the fund's performance would not be meaningful. Given the scale of these funds, the effort-to-reward ratio of managing the additional asset class does not make it worthwhile.

A government policy mandating minimum investments into venture capital by superannuation funds would be a certain way to ensure participation. It would also solve the risk aversion problem of the investment advisors and gatekeepers of the superannuation funds, who are now able to focus on manager selection due diligence instead of worrying about the recently poor

track record of the asset class. However, a mandate also presents these risks:

- The danger of creating excessive artificial demand for venture capital investments, crowding out the industry and resulting in overvalued companies as well as investments in bad companies, as VC firms desperately seek to invest all their committed capital. In a recent interview, Katherine Woodthorpe of AVCAL suggested a 0.1% allocation of total assets (Thomson, 2011). This would represent an enormous \$1.2 billion of capital, more than twice the capital raised at the height of the technology bubble. A careful and thorough evaluation of the investment environment and capital deployment strategy would need to be considered.
- Since venture capital would be such a miniscule part of the total portfolio, there may be little regard given to its performance and the quality of investments. This is why it would be important to ensure sufficient commitment to investment performance, including evaluations against benchmark returns.
- The Government could be criticized for forcing superannuation funds to violate their fiduciary responsibility to members, by mandating investment into an asset class with a track record of inadequate returns, which appears to be against the best interests of investors.

A potential way to remedy this problem is not by mandating minimum investments, but for the superannuation funds to establish a single joint entity with the purpose of managing and investing a pool of combined capital from each fund. Each superannuation fund can decide how much to contribute to this pool, and profits from the investment vehicle are distributed according to each fund's share of committed capital. Tax exemptions on gains and income should be granted<sup>2</sup> to the entity by giving it flow-through tax treatment, similar to the ESVCLP described in Section 4.2.4, to offset the impact of 'interfering' with superannuation investment decisions. The entity should not be restricted to making domestic investments. The would achieve the following:

- Avoids venture capital flooding the market by having a single entity manage the level of commitments without forcing superannuation funds to invest more than necessary.

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<sup>2</sup>In superannuation funds, income is generally taxed at 15% and gains exceeding 12 months are taxed at 10% (Money Smart, 2012).

- The entity would be focused exclusively on venture capital investments without being distracted by the other activities (and assets) of a diversified fund. It would also employ specialists with expert knowledge of venture capital, instead than generalists.
- The ability to make offshore investments increases the investible size, achieves diversification, and allows the superannuation funds to commit larger pools of capital.

As important as they are, superannuation funds do not have to be the primary source of capital for VC funds. GPs can draw from a variety of investor types, including corporate investors, endowments, and high net-worth individuals. As the industry evolves, GPs will come up with more creative ways to attract capital. Brandon Capital Partners' MRCF fund is one example of this. Whereas the MRCF is set up as an evergreen fund, other VC firms have come up with 'quick execution' business models to address the illiquidity concerns of investors. One strategy used to achieve this has been rapid investment of committed capital to become fully invested in three years instead of the standard five years. Another strategy incorporates tailored convertible instruments to achieve rapid exits when necessary.

Finally, the opportunity to attract capital from foreign investors cannot be ignored, as exemplified by Atlassian's US\$60 million fund raising from Silicon Valley based Accel Partners in 2010 (Thomson, 2011). The Government has helped to facilitate international investment with its venture capital tax concession for foreign residents. However, tax concessions alone will not attract foreign capital if there are no good investment opportunities. A vibrant and successful entrepreneurial community is important to achieve this, and this is discussed next.

## 5.4 Fostering entrepreneurial community

Bridging the research and commercialization gap increases the investment opportunity set for VC firms. However, innovative ideas can come from anywhere and not necessarily out of research institutions. Building a strong entrepreneurial community to inspire and support the next generation of entrepreneurs is important for a thriving ecosystem. It also has the added benefit of providing the talent for the next generation of capable VC managers.



Events like SydStart and Melbourne University Entrepreneurs Challenge (MUEC) bring aspiring entrepreneurs together and offer a breeding ground for ideas and exchange, all while raising the profile of entrepreneurship through publicity. New events with niche focus like Social Startup 48 (SS48), aimed exclusively at social entrepreneurship, demonstrate the growth of this young but evolving event scene. VC firms should play an active role in fostering the growth of this scene through ways including, but not limited to, sponsorship, expert panels, and mentorship. This greater involvement would reap several rewards:

- Supports a vibrant entrepreneurial community.
- Keeps the VC manager attuned to the dynamic startup scene.
- Provides mutually beneficial network opportunities for VCs and entrepreneurs.
- Raises the profile of the Australian venture capital in the eyes of entrepreneurs, which could be the difference between companies choosing foreign VC partners over Australian ones due to a perceived lack of capability (as was the case with Atlassian).
- Opens pipeline of potential deal flow for the VC manager.

One concern shared by VC managers is the lack of business acumen with many young entrepreneurs who, understandably, may be starting their first business. These events provide an opportunity to provide workshops for aspiring entrepreneurs to develop essential skills. A recent example of this is the Business Development Plan workshop that was offered at the 2012 National Angel Investor Conference in Melbourne.

In 2011, the Department of Education, Employment and Workplace Relations (DEEWR) commissioned a study by the Centre for the Study of Higher Education (CSHE) at the University of Melbourne into attitudes of academic staff at higher education institutions (Bexley et al., 2011). It found that 28.3% of academics “have either a long-term or a short-term intention to move to an academic position in another country”, with the main reason being “dissatisfaction with income and with job security”. Addressing this problem is outside the scope of this research, but a worrying implication of the finding is the risk of ‘brain drain’, where the intellectual talent and sources of future innovation are leaving the country, rather than feeding into the local

entrepreneurial community.

## 5.5 Government support

In the book, *Boulevard of Broken Dreams*, Lerner (2009) examines the effectiveness and common mistakes of public policies aimed at supporting entrepreneurs and venture capitalists by governments around the world, and offers guidance towards devising effective policies and avoiding common mistakes. Most importantly, he finds that government intervention can play a key role in stimulating the entrepreneurial ecosystem—which has indeed been true in hubs like Silicon Valley and Tel Aviv—provided the policies are well-conceived from a good understanding of the entrepreneurial process and in the context of the specific country environment, rather than simply imitating other countries with cookie cutter policies which often lead to failure. In this section, we recommend specific actions the Australian Government can take to support the growth and success of venture capital, against the backdrop of those programs that have already been implemented.

### 5.5.1 Take a global view of venture capital

Even if the primary motivation of supporting entrepreneurship and venture capital in the country is to drive the nation's future economic growth and prosperity, the Government needs to take a more global perspective with its programs. It is understandable that the Government would want to ensure that the economic benefits derived from publicly supported initiatives be retained in Australia, but placing barriers that are too artificially restrictive can end up limiting the potential upside or, at worst, being counterproductive.

The CRC initiative, which promotes partnerships between public research institutions and “end users” of the research outcomes, is an example of such a program. By requiring that end users be an Australian entity, this program denies homegrown innovations the opportunity to tackle the problems of potential customers abroad in the wider global market. It can be argued that solving problems for local end users can have global implications, but this does not take away from the

fact that Australian innovators are restricted to focusing on a small domestic subset of potential challenges. We recommend that this program be expanded to allow research institutions to collaborate with an international community of end users. The public successes of such ventures would also serve to promote Australian research institutions with a global audience.

The ESVCLP program offers favorable tax treatment to licensed funds and their limited partners. To prevent this program being exploited by foreign firms, a condition was set that required at least 50% of the invested firm's staff and assets to be located in Australia (AusIndustry, 2012). Lerner (2009) discovered that this hampered the investee companies of the early funds, as they were unable to "expand their software development activities in India or their manufacturing operations in China without putting the venture funds' tax status in danger". Today, this condition only needs to be satisfied for at least 12 months after the time of investment for at least 80% of the fund's committed capital. However, the condition can still be an impedance to firms looking to roll out rapidly or seeking a first mover competitive advantage. For a one or two person startup that needs to hire even a small team of software engineers abroad, this condition is easy to violate. Therefore, it makes sense to relax this restriction by eliminating the staff and assets ratio in favor of ensuring majority ownership by an Australian entity.

By taking more tailored steps to commit to an international focus on entrepreneurship and venture capital, the Government demonstrates a global ambition that attracts both investors and corporations from abroad. Cusumano (2005) examines Ireland as a country that has aggressively pursued this through its Enterprise Ireland organization, with an international office network in over 30 locations around the world promoting the growth and development of Irish enterprises. From a broader policy perspective, a key area for the Australian Government to consider is immigration law to address the skills shortage problem. For example, the most recent skills shortage report released by the DEEWR showed that only 40% of vacancies in the engineering profession were filled in 2011 (DEEWR, 2011). Aside from specific skills shortages, facilitating the inflow of talented labor is a key element in supporting local enterprises and adding to the pool of intellectual capital.

### 5.5.2 Tax considerations

The introduction of the ESVCLP in 2002 and the corresponding venture capital tax concession was an important recognition of the venture capital partnership structure in Australia by allowing the flow-through tax treatment of these funds. Despite these well-intentioned policies, there remain aspects of these tax treatments that can be improved for local venture capital. In fact, recent events involving taxation laws have created an uncertain environment that has negatively impacted the industry.

The venture capital tax concession was created with the intention of attracting foreign capital. It was introduced in 1999 to provide exemptions on ‘venture capital equity’ by specific foreign pension funds, though this was extended in 2002 to provide exemptions to overseas residents and fund of funds (ATO, 2012). The ESVCLP tax concession was later incorporated to allow Australian residents to benefit from the exemptions. In its report *Entrepreneurship and Growth: Tax Issues*, the OECD (2002) described this form of taxation as a back-end incentive. The alternative form of taxation is the front-end incentive, which is an immediate up-front tax subsidy for the investor. The Australian venture capital tax concession does not offer up-front subsidies and thus avoids the misalignment of front-end incentives, which the OECD argues “can cause behaviour motivated primarily by tax shelter considerations”. This misalignment occurs because investors stand to make considerable gains through tax subsidies regardless of the performance or quality of their investments.

The Australian venture capital tax concession, as a back-end incentive, has limitations of its own as it does not encourage risk taking. The OECD (2002) finds that since this type of incentive “rewards only winners or successful investments”, it may “motivate fewer venture investments overall” since “realising gains is riskier for the investor”. Stewart (2005) makes the important point that since this tax concession only has value if it can be exercised on profitable investments, it attracts capital towards later stage private equity investments, and away from seed and early-stage investments which by their very nature are typically unprofitable to begin with.

In addition, Lerner (2009) argues that tax policies need to incentivize the entrepreneur to take the risk of starting a business (the demand side of venture capital) and not just on attracting

investors on the supply side, pointing out the lack of evidence to suggest that supply side policies have any great impact on sophisticated institutional investors. In support of stimulating risk taking by entrepreneurs through tax policy, Gompers and Lerner (1998) find empirical evidence to support Poterba (1989) that lower capital gains taxes attract entrepreneurs to start businesses, since entrepreneurs gain primarily from the appreciation of equity in their companies rather than through wages or salaries. Thus tax policies, aimed at stimulating entrepreneurs, indirectly increase the flow of venture capital by increasing the pool of startup businesses.

Unfortunately, Australian tax policies covering small business entity concessions offer little relief to startup entrepreneurs. For example, a full capital gains tax exemption is only possible for assets that have been held for at least 15 years, an unrealistic requirement for startups. Failing to satisfy this criteria, the small business may be eligible for a 50% reduction in capital gains tax for a subclass of assets if other criteria are satisfied (ATO, 2011). These tax policies need to be amended to offer more incentive to entrepreneurs to undertake high risk startup ventures, by giving full capital gains exemptions to eligible startups, or allowing entrepreneurs to carry their operating losses forward so that future income can be offset by past losses.

Another issue with taxation policies is the uncertain investment environment it has created in recent years. In 2009, the Government caused controversy (Thomson, 2009) when it introduced changes to its rules governing employee share schemes (ESS). The changes require employees to pay taxes up-front on shares received from their company if it deems those shares to have been issued at a discount (ATO, 2010). While the motivating factor behind this policy is to target corporate executives that engineer share schemes to avoid taxes, it has the undesired effect of taking down entrepreneurs and startup employees as casualties, who rely primarily on equity ownership and appreciation as a major incentive. It also deters angel investors, who make the initial high risk investment in startups in exchange for share ownership while receiving little other incentives. Conditions of exception should be made to exclude employees of developing stage companies.

Other controversial incidents have been the Government's dispute with US private equity firm TPG over an interpretation of tax treatment to profits earned through its sale of national department store Myer (Dealbook, 2010), and the Minerals Resource Rent Tax (MRRT) proposed

by the Labour Government (Packham and Massola, 2012). Until they are resolved, taxation issues like these can impact the venture capital industry indirectly by creating an uncertain environment that deters foreign investment. Additionally, the same foreign investors in private equity who hold back or withdraw capital from Australia could have been potential investors in venture capital, resulting in missed investment opportunities for the industry. It is important that the Government maintains clarity and transparency around its regulations to avoid creating such a climate of uncertainty.

### **5.5.3 Managing publicly funded investment pools**

As discussed in Chapter 4, the IIF is now investing the last tranche of its final round, and the Government has not shown any desire to extend the program or introduce a new publicly funded venture capital investment pool, a situation which has worried industry players. Government funds like the IIF can play a helpful role in stimulating venture capital activity provided they are well conceived and designed. One of the positive aspects of the IIF is that it allows the VC manager to make all investment decisions, thus leaving the decision making power in the hands of the private investors who are better suited to make those calls.

The IIF, or a similar public investment pool, should continue to play a part in the struggling venture capital industry in Australia. This does not mean it should continue exactly in its current form. Indeed, there are areas in which the fund can be reformed to better achieve its objective of stimulating investment activity. An area of reform would be to improve the process by which recipient VC managers are selected and their investment performance managed. Implementing policies to ensure that VC managers have an incentive to achieve good investment outcomes, beyond earning management fees, can be a powerful way to align incentives if combined with mechanisms to monitor portfolio performance on a regular basis. In doing so, the Government should provide an appropriate level of training to public servants to build their competency and understanding of venture capital investing, in order to adequately carry out their duties.

#### 5.5.4 Supporting the ecosystem

Governments at both the state and federal level do have the ability to stimulate entrepreneurship and venture capital through public initiatives. Programs like Commercialisation Australia, the Trans Tasman Commercialisation Fund, and the WA Innovation Centre offer examples of the Australian Government's commitment to supporting business and innovation in the country. Like any program, it is important that the Government measure the success of these programs' outcomes and iterate accordingly. Moreover, programs should not simply be replicated from elsewhere, but should be considered in the context of the local environment. For example, Cusumano (2009) points out that while incubators often do poorly, they may be helpful in some markets where the supply of venture funding is limited.

Lerner (2009) highlights Australia's Building on Information Technology Strengths (BITS) program as an example of a government program supporting entrepreneurship with sub-optimal outcomes. The BITS program, which was introduced in 1999, led to the establishment of 11 incubators around Australia supporting small businesses in the IT sector. However, it was later found that "at the typical incubator, most of funding went to the incubator managers themselves, in order to compensate them for management advice and other services to the entrepreneurial firms" and startups were "actually limited in their ability to shop for the best service providers" and "forced by the incubators to use the in-house counsel". On the other hand, those incubators that had the most successful firms, such as InQbator and BlueFire, provided the bulk of funding to their startup companies and "were more willing than the others to allow incubatees to obtain professional services from elsewhere". This experience illustrates the importance of carefully aligned incentives and a focus on outcomes.

With the right focus on outcomes, there are numerous ways the Government can continue to support the entrepreneurial ecosystem, including offering resources to help research institutions achieve best practices in commercialization, introducing entrepreneurship into the education system, and attracting private sector investment into the establishment of research centers. Challenge.gov is an example of an innovative online platform introduced by the US Government in 2010 that relies on crowd sourcing to solve public sector challenges. While its effectiveness

remains to be seen, it serves to remind us that even policy makers need to embrace innovation in order to successfully drive innovation in this fast changing world.



## Chapter 6

# Conclusion

Australia possesses many attributes that make it favorable to a thriving entrepreneurial environment and healthy venture capital industry, including well developed capital markets, strong regulatory and legal frameworks, and world class research institutions. However, as a relatively young industry, venture capital has not yet been able demonstrate its true potential. Since the industry first took shape in the late 1990s, it experienced two major crashes just when large amounts of capital were beginning to flow in. This created two major problems for its investors. Firstly, since most of the venture capital investments were made during the bubbles, performance of the funds suffered—even to this day—with many funds still holding investments made during the technology bubble or investments made just prior to the global financial crisis. Secondly, during market recessions there is a flight to quality as investors withdraw capital from risky assets to transfer them to safe assets, such as government bonds. However, the long term commitment to VC funds means that investors would have been unable to withdraw any capital when they needed it most, as they were subject to a lock-up period, thus leading to potential liquidity shortages. Sophisticated investors understand and are prepared for this constraint, but for a young industry it is likely this was still a major issue for many investors. The overall effect of both these problems was to scar current investors and deter future investors.

## **The curse of youth**

While a large part of the inadequate returns in the industry can be attributed to the intense competition and overvaluations at the fund raising and investment peaks, the industry immaturity is another contributor. Successful VC firms are more than simply financial intermediaries. If they were, there would be no need for them as banks could take the role as pure capital providers. To be successful in their trade, VC firms possess value added capabilities and strategies to manage the risks and information asymmetries inherent in private investing. This is drawn from a variety of sources, including deal sourcing, due diligence, networks, guidance and support, and a highly qualified team of managers. The sudden availability of capital during the technology bubble attracted an influx of new entrants eager to capture some of this value. A good example of this is the now defunct Macquarie Technology Ventures (MTV). Founded in 1998, it raised its \$30 million fund in 1999.<sup>1</sup> MTV had no venture capital roots. Instead, it was a small group within the investment banking division of Macquarie Bank's Asset and Infrastructure group, a group that financed \$20 billion of assets in 2001 (Macquarie Bank, 2001). A good VC practice cannot be created overnight, and the earlier dormancy of the industry meant that there were few experienced VC managers. As a result, new entrants raised VC funds without the experience and skills necessary to succeed, hurting both the performance and the reputation of the industry.

## **Recommendations**

A holistic approach of promoting the venture capital ecosystem is the only way for the industry to overcome its challenges. This includes driving a thriving entrepreneurial community and fixing the incentives at research institutions, while improving the accessibility to the resources needed for commercialization outcomes. A greater willingness from institutional investors to invest in venture capital is important to provide for and sustain a long term growth of the industry. However, the structure of this investor group makes this more difficult, as superannuation funds control enormous amounts of capital. Mandating minimum investments would

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<sup>1</sup>Source: Thomson ONE

not make sense as it would flood the market with capital as well as increase competition for the few top performing VC funds. A jointly established separate entity to manage a pool of capital contributed by the superannuation funds, at their discretion, is a potential way to resolve this issue without mandating contributions. However, the industry would do better not to rest its hopes on institutional investors, and place greater emphasis on building and harnessing relationships with other potential LPs including high net-worth and foreign investors. Finally, while the Australian Government has made several positive efforts to support the industry, there are a number of policy areas it needs to address. This includes allowing greater collaboration with the international community, introducing tax policies that favor entrepreneurs rather than just back-end incentives, renewing publicly funded investment pools but with a greater focus on management and performance, and supporting the entrepreneurial ecosystem through education. Given the industry state, the government has a critical role to play in stimulating and reviving it. Fixing the venture capital ecosystem creates a virtuous cycle of improvement that becomes self-sustaining, increasing the deal flow for investments, attracting new capital, improving the quality and talent of managers, and raising the profile of the industry.



# Bibliography

- ASX Group, 2012. "History." <http://www.asxgroup.com.au/history.htm>, accessed March 2012.
- Attard, B. "The Economic History of Australia from 1788: An Introduction." *Economic History Association*, February 4, 2010. <http://eh.net/encyclopedia/article/attard.australia>, accessed March 2012.
- AusIndustry, 2011. "R&D Tax Incentive." <http://www.ausindustry.gov.au/programs/innovation-rd/RD-TaxIncentive/Pages/default.aspx>, accessed May 2012.
- AusIndustry, 2012. "Early Stage Venture Capital Limited Partnerships - Customer Information Guide." (PDF file), downloaded from <http://www.ausindustry.gov.au/programs/venture-capital/esvclp/Documents/ESVCLP-CustomerInfoGuide.pdf>, accessed March 2012.
- Australian Bureau of Statistics, 2010. "8112.0 - Research and Experimental Development, All Sector Summary, Australia, 2008-09." <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/8112.0Main+Features12008-09>, accessed March 2012.
- Australian Bureau of Statistics, 2011. "3235.0 - Population by Age and Sex, Regions of Australia, 2010." <http://www.abs.gov.au/ausstats/abs@.nsf/mf/3235.0>, accessed March 2012.
- Australian Bureau of Statistics, 2012. "5678.0 - Venture Capital and Later Stage Private Equity, Australia, 2010-11." <http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/5678.0Main%20Features12010-11>, accessed March 2012.
- Australian Geographic. "World Changing Aussie Inventions." *Australian Geographic*, June 18, 2010. <http://www.australiangeographic.com.au/journal/world-changing-aussie-inventions.htm>, accessed April 2012.
- Australian Government, 2012. "The Lucky Country." <http://australia.gov.au/about-australia/australian-story/lucky-country>, accessed March 2012.
- Australian Research Council, 2010. "Excellence in Research for Australia 2010 - National Report". (PDF file), downloaded from [http://www.arc.gov.au/era/era\\_2010/outcomes\\_2010.htm](http://www.arc.gov.au/era/era_2010/outcomes_2010.htm), accessed March 2012.

- Australian Taxation Office, 2012. "Employee share schemes (ESS)." <http://www.ato.gov.au/businesses/pathway.aspx?sid=42&ms=businesses&pc=001/003/120/004/002&menuid=49313&mp=001>, accessed March 2012.
- Australian Taxation Office, 2011. "Capital gains tax (CGT) concessions." <http://www.ato.gov.au/businesses/content.aspx?menuid=0&doc=/content/00106318.htm&page=1&H1>, accessed March 2012.
- Australian Taxation Office, 2012. "Venture capital tax concession." <http://www.ato.gov.au/pathway.aspx?sid=42&ms=businesses&pc=001/003/118&mnu=0>, accessed March 2012.
- Australian Taxation Office, 2012. "Key superannuation rates and thresholds." <http://www.ato.gov.au/super/content.aspx?menuid=0&doc=/content/60489.htm&page=19&H19> accessed March 2012.
- Australian Trade Commission, 2010. "Investment Management Industry in Australia." (PDF file), downloaded from <http://www.austrade.gov.au/ArticleDocuments/2792/Investment-Management-Industry-in-Australia.pdf.aspx>, accessed March 2012.
- Australian Venture Capital & Private Equity Association Limited, 2008. "Yearbook 2008: Industry Statistics for the year ended June 30, 2008." (PDF file), downloaded from <http://www.avcal.com.au/documents/item/168>, accessed March 2012.
- Australian Venture Capital & Private Equity Association Limited, 2009. "Value Capital: The Evolution of Venture Capital and Private Equity in Australia." (PDF file), downloaded from <http://www.avcal.com.au/documents/item/148>, accessed March 2012.
- Australian Venture Capital & Private Equity Association Limited, 2011. "2011 Yearbook: Australian Private Equity and Venture Capital Activity Report - November 2011." (PDF file), downloaded from <http://www.avcal.com.au/documents/item/66>, accessed March 2012.
- Axiss Australia, 2002. "The Australian Venture Capital Industry: Development and Trends." (PDF file), downloaded from [www.altassets.com/pdfs/Axiss\\_Australia.pdf](http://www.altassets.com/pdfs/Axiss_Australia.pdf) accessed March 2012.
- Bexley, E., James, R., and Arkoudis, S. "The Australian academic profession in transition." (Report) Centre for the Study of Higher Education, September 2011. [http://www.cshe.unimelb.edu.au/people/bexley\\_docs/The\\_Academic\\_Profession\\_in\\_Transition\\_Sept2011.pdf](http://www.cshe.unimelb.edu.au/people/bexley_docs/The_Academic_Profession_in_Transition_Sept2011.pdf), accessed March 2012.
- CalPERS, 2011. "Understanding Private Equity Performance." <http://www.calpers.ca.gov/index.jsp?bc=/investments/assets/equities/aim/private-equity-review/understanding.xml>, accessed March 2012.
- CHAMP Private Equity. "Investment Team." [www.champequity.com.au/investment-team/w1/i1001463/](http://www.champequity.com.au/investment-team/w1/i1001463/), accessed March 2012.
- Cochrane, J.H. "The Risk and Return of Venture Capital." (Paper) Graduate School of Business, University of Chicago, March 19, 2004. <http://faculty.chicagobooth.edu/john.cochrane/research/papers/venture.pdf>, accessed March 2012.

- Cusumano, M. "Software in Ireland: A Balance of Entrepreneurship and... Lifestyle Management?" *Communications of the ACM* 48, no. 10 (October 2005): 25-27.
- Cusumano, M. "Dealing with the Venture Capital Crisis." *Communications of the ACM* 52, no. 20 (October 2009): 25-27.
- Damodaran, A. "Marketability and Value: Measuring the Illiquidity Discount." (Paper) Stern School of Business, New York University, July 2005.  
<http://people.stern.nyu.edu/adamodar/pdfiles/papers/liquidity.pdf>, accessed March 2012.
- Dealbook. "Schwarzman Sees Buyout 'Chill' in Australia." *The New York Times*, February 2, 2010. <http://dealbook.nytimes.com/2010/02/02/schwarzman-says-australia-faces-private-equity-chill/>, accessed March 2012.
- Department of Education, Employment and Workplace Relations, 2011. "Skill Shortages - Summary." (PDF online), downloaded from <http://www.deewr.gov.au/Employment/LMI/SkillShortages/Documents/SkillShortagesSummary2011.pdf>, accessed March 2012.
- Department of Education, Science and Training, 2005. "Evaluation of incentives for commercialisation of research in Australian universities" (PDF online), downloaded from [http://www.dest.gov.au/NR/rdonlyres/47EA81AF-6271-40E9-813F-66F82AD85F2A/4470/incentives\\_commercialisation1.pdf](http://www.dest.gov.au/NR/rdonlyres/47EA81AF-6271-40E9-813F-66F82AD85F2A/4470/incentives_commercialisation1.pdf), accessed March 2012.
- Department of Foreign Affairs and Trade, 2011. "Australia's top 25 exports, goods & services" (PDF online), downloaded from [http://www.dfat.gov.au/publications/tgs/FY2011\\_goods\\_services\\_%20top\\_25\\_exports.pdf](http://www.dfat.gov.au/publications/tgs/FY2011_goods_services_%20top_25_exports.pdf), accessed March 2012.
- The Economist. "Melbourne Storm." *The Economist*, August 30, 2011.  
<http://www.economist.com/node/21528162>, accessed March 2012.
- Economist Intelligence Unit. "Manning the Barricades." (PDF online), downloaded from [http://graphics.eiu.com/specialReport/manning\\_the\\_barricades.pdf](http://graphics.eiu.com/specialReport/manning_the_barricades.pdf), accessed March 2012.
- Garton, P. "The resources boom and the two-speed economy." *The Treasury, Economic Roundup*, Issue 3 (2008).  
<http://www.arpc.treasury.gov.au/documents/1421/HTML/docshell.asp?URL=02%20The%20resources%20boom%20and%20the%20two%20speed%20economy.htm>, accessed March 2012.
- GBS Venture Partners. "GBS Ventures completes healthcare fund with global first quartile performance." GBS Venture Partners press release, October 17, 2011.  
<http://www.gbsventures.com.au/news-and-events/gbs-ventures-completes-healthcare-fund-with-global-first-quartile-performance>, accessed March 2012.
- Goetzmann, W.N., and Peles, N. "Cognitive Dissonance and Mutual Fund Investors." *The Journal of Financial Research* 20 (1995): 145-158.
- Gompers, P.A., "Grandstanding in the venture capital industry." *Journal of Financial Economics*, 42 (1996): 133-156.

- Gompers, P.A. and Lerner, J. "What Drives Venture Capital Fundraising?" HBS Working Paper No. 99-079, 1996, <http://www.hbs.edu/research/facpubs/workingpapers/papers2/9899/99-079.pdf>, accessed March 2012.
- Hardymon, F., Lerner, J., and Leamon, A. "Between a Rock and a Hard Place: Valuation and Distribution in Private Equity." HBS No. 9-803-161. Boston: Harvard Business School Publishing, 2011.
- Horne, D. *The Lucky Country*. Melbourne: Penguin Group Australia, 2009.
- House of Representatives Standing Committee on Economics, Finance and Public Administration, 2007. "Australian manufacturing: today and tomorrow." (PDF file), downloaded from [http://www.aph.gov.au/Parliamentary\\_Business/Committees/House\\_of\\_Representatives\\_Committees?url=/efpa/manufacturing/report/fullreport.pdf](http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=/efpa/manufacturing/report/fullreport.pdf), accessed March 2012.
- House of Representatives Standing Committee on Economics, Finance and Public Administration, 2010. "Australian manufacturing: today and tomorrow - Government Response." (PDF file), downloaded from [http://www.aph.gov.au/Parliamentary\\_Business/Committees/House\\_of\\_Representatives\\_Committees?url=economics/government%20responses/manufacturing%20govt%20response.pdf](http://www.aph.gov.au/Parliamentary_Business/Committees/House_of_Representatives_Committees?url=economics/government%20responses/manufacturing%20govt%20response.pdf), accessed March 2012.
- LeMay, R. "Atlassian scores US\$60m in venture capital." *ZDNet*, July 15, 2010. <http://www.zdnet.com.au/atlassian-scores-us60m-in-venture-capital-339304552.htm>, accessed March 2012.
- Lerner, J. *Boulevard of Broken Dreams*. New Jersey: Princeton University Press, 2009.
- Lerner, J., Hardymon, F., and Leamon, A. *Venture Capital and Private Equity: A Casebook*. 4th ed. New Jersey: John Wiley & Sons, Inc., 2008.
- Macquarie Bank. "2001 Annual Review, Asset and Infrastructure Group." [http://www.macquarie.com.au/aboutus/investor\\_information/ar2001/ass\\_inf\\_group.htm](http://www.macquarie.com.au/aboutus/investor_information/ar2001/ass_inf_group.htm), accessed April 2012.
- Mitchell, O., and Utkus, S. "Lessons from Behavioral Finance for Retirement Plan Design." Pension Research Council Working Paper No. PRC-WP 2003-6.
- Money Smart. "Tax & super." <https://www.moneysmart.gov.au/superannuation-and-retirement/how-super-works/tax-and-super> accessed March 2012.
- Organisation for Economic Co-operation and Development, 2002. "Entrepreneurship and Growth: Tax Issues." (PDF file), downloaded from <http://www.oecd.org/dataoecd/10/19/2079715.pdf>, accessed March 2012.
- Organisation for Economic Co-operation and Development, 2009. "OECD Science, Technology and Industry Scoreboard 2009." [http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2009\\_sti\\_scoreboard-2009-en](http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard-2009_sti_scoreboard-2009-en), accessed April 2012.



- Organisation for Economic Co-operation and Development, 2011. "OECD Science, Technology and Industry Scoreboard 2011." [http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard\\_20725345](http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard_20725345), accessed April 2012.
- Packham, B. and Massola, J. "Resource tax plan would be a hammer blow to confidence, says Minerals Council." *The Australian*, March 30, 2012. <http://www.theaustralian.com.au/national-affairs/resource-tax-plan-would-be-a-hammer-blow-to-confidence-says-minerals-council/story-fn59niix-1226314416902>, accessed April 2012.
- Porter, M. "The Five Competitive Forces That Shape Strategy." *Harvard Business Review* January 2008, Reprint R0801E.
- Poterba, J. "Venture Capital and Capital Gains Taxation." in: *Tax Policy and the Economy*. Cambridge: MIT Press, L.H. Summers, ed. 1988, pp.47-68.
- Reserve Bank of Australia. "Graphs on the Australian Economy and Financial Markets." <http://www.rba.gov.au/chart-pack/index.html>, accessed March 2012.
- The Senate, Standing Committee on Economics, 2010. "Private Equity Investment in Australia." (PDF file), downloaded from National Library of Australia website. <http://trove.nla.gov.au/work/8215385>, accessed March 2012.
- Standard and Poors. "S&P ASX All Ordinaries." <http://www.standardandpoors.com/indices/sp-asx-all-ordinaries/en/us/?indexId=spaustaordaudto--p-au--->, accessed March 2012.
- State Super. "About the Fund: General Information." [http://www.statesuper.nsw.gov.au/about\\_generalinfo.htm](http://www.statesuper.nsw.gov.au/about_generalinfo.htm), accessed March 2012.
- Stewart, M. "Venture Capital Taxation in Australia and New Zealand." Intellectual Property Research Institute of Australia Working Paper No. 02/05, 2005. <http://www.ipria.org/publications/wp/2005/IPRIAWP02.2005.pdf>, accessed March 2012.
- Swensen, D.F., *Pioneering Portfolio Management*. Revised ed. New York: Free Press, 2009.
- Thomson, J. "Unions, venture capitalists join fight against employee share scheme crack-down." *Smart Company*, May 20, 2009. <http://www.smartcompany.com.au/managing-people/032875-20090520-unions-venture-capitalists-join-fight-against-employee-share-scheme-crackdown.html>, accessed March 2012.
- Thomson, J. "Superannuation pool hits \$1.23 trillion – but where is the cash for venture capital?" *Smart Company*, January 20, 2011. <http://www.smartcompany.com.au/superannuation/20110120-superannuation-pool-hits-1-23-trillion-but-where-is-the-cash-for-venture-capital.html>, accessed March 2012.
- United Nations Development Programme. "Australia Country Profile: Human Development Indicators." <http://hdrstats.undp.org/en/countries/profiles/AUS.html>, accessed March 2012.
- Wan, V., "Development of the Venture Capital Market in Australia." University of Wollongong School of Accounting & Finance Working Paper No. 7, 1988. <http://ro.uow.edu.au/acfinwp/141/> accessed March 2012.

Woodthorpe, K. "Venture Capital Vital To Our Nation's Hi-Tech Survival." *Corporate LiveWire*, January 20, 2012. <http://www.corporatelivewire.com/top-story.html?id=177>, accessed March 2012.

Volkman, C., Wilson, K.E., Marriotti, S., Rabuzzi, D., Vyakarnam, S., and Sepulveda, A, 2009. "Educating the Next Wave of Entrepreneurs." (PDF file), downloaded from World Economic Forum website. [https://members.weforum.org/pdf/GEI/2009/Entrepreneurship\\_Education\\_Report.pdf](https://members.weforum.org/pdf/GEI/2009/Entrepreneurship_Education_Report.pdf), accessed March 2012.