

An Independent Econometric Analysis of the “Innovation Investment Fund” Programme (IIF) of the Australian Commonwealth Government: Findings and Implications

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An analysis of the firms funded by the IIF programme indicates that the programme is well focused and has provided material and relevant support to a significant number of early-stage enterprises from Australia’s science base. IIF supported portfolio firms are more likely to be early-stage investments, to be in receipt of follow-on finance, and to achieve a successful exit than comparator firms outside the IIF programme. However these supported firms are also more likely to fail than comparator firms in part because the programme focuses on genuinely early-stage and therefore risky firms. The programme has raised substantial finance for young and new knowledge based firms that would not have been available in the absence of this scheme. None the less, the VC funds supported have largely made modest returns which would not by itself attract long term private investment interest in Australia’s high technology entrepreneurs. The IIF Programme while important is unlikely to engender by itself a viable and flourishing VC industry in Australia. Thus, the objectives imposed on the programme are overly ambitious and do not reflect fully the highly challenging environment for early-stage VC investment across the developed world.

I. Introduction: the Aims and Objectives of the Analysis

This independent analysis of the Australian Commonwealth’s Innovation Investment Fund (IIF) programme was conducted by three academics at the University of Exeter Business School, United Kingdom. Using secondary data already collected by the programme’s managers from the supported venture capital (VC) funds and their portfolio companies, this study sought to determine the quantitative impact of the IIF programme on the young, high potential Australian firms in receipt of this ‘risk capital’. Subject to the limitations of available data, the study looks specifically at the types of firms which are selected via the programme; the scale of the support they received; the result of this support on firm performance; and the subsequent outcomes from supported firms to the Australian economy.

This analysis is used to arrive at a set of largely positive but not uncritical conclusions as to the impact to date of the three rounds of investment on the eleven supported VC funds and 102 recipient portfolio firms financed by the IIF programme. These findings are references to the declared objectives set for the IIF programme by DIISR at the time of its inception. This ‘stand-alone’ analysis within the wider IIF evaluation report concludes by looking at the IIF programme and its ambitions in the wider context of international measures to support the financing of entrepreneurial young firms via the vehicle of publicly support, ‘hybrid’ venture capital schemes.

II. Data and Methodology

A ‘matched sample’ analysis is employed in order to compare the consequences of the programme on recipient firms. These portfolio firms, which have been funded by the thirteen supported IIF VC funds across the three rounds of investment of the programme, are compared to an equivalent set of firms which have received venture capital financing from exclusively private sources of capital. The analysis explores the nature of significant differences between the IIF portfolio firms and the matched sample. In this case, the matched firms have received equity finance through exclusively private, venture capital firms (including bank, corporate and foreign investors) or from IIF ‘affiliated funds’. This latter affiliate category is made up of privately financed, VC funds founded and managed by general partnerships which have also been responsible for running an IIF fund.

A total of 102 Australian businesses assisted by the IIF programme between 1997 and 2009 was included in this assessment, alongside 106 businesses funded solely by private sector equity investments, and a further 95 businesses which received equity investments through an IIF affiliate fund . Variables of interest in the comparative analysis included the scale, frequency and stage(s) of investments made; the characteristics of the portfolio firms chosen including age and sector; and the business outcomes (including IPO, acquisition & trade sales and failure).

Firstly, basic sample descriptive statistics which highlight differences between the three sources of equity (risk capital) provision are reported. However, the main results from the evaluation are derived using econometric methods in order to identify and quantify ‘true and robust’ differences in outcomes between firms financed within or outside the IIF programme.

A Caveat: Data Constraints on the Analysis

The most serious limitations on the depth of our quantitative analysis are as a result of the lack of comprehensive ‘time series’ data available from either the participating VC funds or the investee firms which have been in receipt of IIF finance. For example, there are 13 IIF funds in total (9 in Round 1 & 2 and 4 Round 3) in the programme. However, DIIR were only able to provide us with information on 11 funds with data from 2 funds in Round 3 unavailable. The majority of these funds have firms that have not yet exited and which might still produce valuable uplifts to the funds’ individual performance. Further, given the immaturity¹ of the four Round 3 funds’ investment activities, we are not able to make any substantive comment on their performance.

Because of missing data, evaluators of the IIF programme were often obliged to seek accurate and detailed information *after the event*. Such data collection is invariably costly and inefficient. Further, the information obtained is not always reliable. None the less, having given this important caveat, the analyses produced have allowed us to come to largely unequivocal conclusions as to the effectiveness of the IIF programme.

Use of Australian Bureau of Statistics or AVCAL venture capital industry data

After considerable discussion, we have elected to use the AVCAL figures for venture capital investment in this report. These figures are lower in volume and total value than those recorded by the Australian Bureau of Statistics. This is because a number of small VC investors picked up by the ABS data are not members of AVCAL. However, AVCAL figures are separated by stage of investment over a longer period of time than the equivalent ABS figures. In addition, we argue that AVCAL is more likely to have the committed professional VC investors in its membership. We would also expect AVCAL reporting to be more accurate as its members appreciate the need to maintain industry/investor confidence in their reporting. Accordingly, we see the AVCAL figures as being more reliable when it comes to determining long term trends and industry patterns. The cost of this accuracy will be some under-reporting of total investment activity – at least in the short run.

III. Key Findings

This section of the evaluation report, as requested by the DIISR Evaluation team, primarily focuses on the key findings of our analysis as to the effectiveness of the programme as a

¹ Bürgel 2000 showed that it is very unlikely for limited partners to be able to ascertain a VC fund’s final performance until after at least five years of investment activity. Given the increases in the duration of early stage deals (NESTA 2010) this period is likely to increase.

means of assisting the development of high impact, new knowledge-based, innovative young firms in Australia via the provision of early-stage risk capital finance. Before these findings are detailed, the investment activity of the IIF programme and the two comparator investors is given below.

Table 1

Australian Risk Capital Investment by Type of VC Provider

| Statistical Measure | IIF Investment | IIF Affiliate Investment | Private VC Investment |
|---|---------------------|--------------------------|-----------------------|
| <i>Mean</i> | \$2.75m | \$21.47m | \$18.24m |
| <i>Median</i> | \$2.89m | \$11.54m | \$4.03m |
| <i>Min</i> | \$0.2m ² | \$0.06m | \$0.03m |
| <i>Max</i> | \$5.99m | \$143.35m | \$320.05 |
| <i>No.</i> | 102 | 95 | 106 |
| <i>Core Range (25th to 75th percentile)</i> | \$1.83m to 3.6m | \$4.29m to 28.89m | \$0.81m to 17.85m |

As can be seen in Table 1, the IIF investments are significantly smaller than those made by the two comparator investor groups. This is particularly the case for Round 1 of the programme, where IIF investments are on average A\$12.4m smaller than private sector investments (see Table 3 in the quantitative report in the appendix). The IIF programme appears to be tightly focused on those nascent firms which are least likely to be able to access commercial sources of equity because of their small size, commercial immaturity and (as yet) speculative and risky nature. The programme is clearly separated from alternative commercial investment as seen by the relative median and mean investment sizes and ranges between 25th and 75th percentiles. Accordingly, the IIF programme is precisely and properly focused on target firms. It is therefore unlikely to ‘crowd out’ or compete with existing commercial providers of equity finance to small and medium sized enterprises (SMEs).

The remainder of this section within the Evaluation Report identifies the key findings of the analysis. They are then discussed with reference to four ‘objectives’ that underpin the logic of the IIF programme.

² This figure excludes one outlier of an IIF investment of A\$265.

- Overall, the IIF programme as a means of assisting innovative young firms in Australia is shown to be valid and its execution is deemed appropriate. The IIF programme directs risk capital to high potential, young companies seeking early-stage venture capital and which other ‘private’ venture capital finance providers do not service.**

As shown in Table 2, two thirds of IIF investments were made at the *start-up* or *seed*³ phase. This is an investment stage that has increasingly been abandoned by private VC firms. For risk capital investors outside the IIF programme, seed and start-up activities in new knowledge-based firms at the start of their life cycle are most noteworthy for their absence. The majority of private investments are made in larger portfolio companies at a later and more developed stage of their life cycle where risks are both more measurable and more manageable. This is particularly the case for IIF Affiliate funds.

Table 2
Stage of Investment for IIF Supported Businesses

| Stage of Investment | Number of Firms |
|--------------------------|-----------------|
| <i>Seed and Pre-seed</i> | 22 |
| <i>Start-up</i> | 43 |
| <i>Early-expansion</i> | 38 |
| <i>Total</i> | 103 |

Source: DIISR data

- The earlier that an equity investment is made in the life cycle of a young firm, the higher the probability that follow-on investment rounds from additional investors will also be made to the firm.**

One implication of this finding is that because IIF funds invest at the earlier development stages of a firm they are making the company more attractive for further investment at a later stage. On average, IIF Round 1 and Round 2 funds provide 1.6 and 1.9 more ‘follow-on’ financings than the portfolio companies of private investors. This additional finance will include private sector investors which have the capacity to invest larger amounts in later

³ According to AVCAL, seed stage is defined as “financing provided to research, assess and develop an initial concept before a business has reached the start-up phase”.

rounds than IIF fund managers. To this extent, acting as one of the earliest stages of a ‘finance escalator’, the IIF program is providing a stock of investment opportunities for private funds in the venture capital sector. The positioning of the IIF investment as start-up and early-stage finance within the cycle is thus enabling the subsequent allocation of private sector capital to the best and most promising companies. This additional finance is in excess of that able to be provided alone by investors in the IIF funds. At its best, young companies in receipt of early-stage finance from competent IIF fund managers receive a ‘certification effect’ which acts as a positive market signal to other follow-on investors.

3. Non-Australian investors do not appear to support very early-stage investments in Australian companies.

Start-up and early-stage VC investment in nascent businesses of possibly high potential but very considerable uncertainty and risk are increasingly unattractive to the majority of private sector investors. Foreign investors face even greater information asymmetries than domestic investors. Accordingly, they are likely to manage risk by investing larger sums of money in later stage investments where a trading history and track record are available. Large foreign institutional investors are very unlikely to provide alternative and substitute resources to the Australian government. The primary responsibility for nurturing nascent Australian firms will invariably remain with the Commonwealth. There are only likely to be minor exceptions to this rule. One such example would be where overseas technology investors take speculative positions in highly attractive, young Australian firms in order to secure an option on valuable ideas or intellectual property.

4. **The highly skewed distribution of returns to Australian young firms funded by early-stage VC funds replicates the dominant pattern of ‘very high risk and very little reward’ experienced by many such investors in the majority of advanced market economies. Less than 7% (7 enterprises) of the portfolio firms receiving IIF finance have achieved an Internal Rate of Return performance of greater than 30%. For those firms with positive IRRs, and excluding one extreme outlier, two firms contribute more than 90% of the total value added that had been created by the programme. However, the economic and social value of the IIF programme to the state is not fully captured in simple investment return metric such as Internal Rate of Return (IRR).**

A small number of IIF funded companies – and as a result IIF funds – have provided very high returns to their investors. Similarly, and for the opposite reason of poor investee firm performance, a slightly larger number of funds have produced extremely poor returns. DIISR data of June 2009 show that nearly 30% of the investee firms lost all of the monies invested in them (i.e. achieving an IRR of -100%). Seventy percent of all IIF investments earned negative returns. Of the one third of firms which recorded positive returns, only seven firms receiving IIF finance made significant return on capital of more than 30%⁴. Briefly summarised, the majority of IIF portfolio firm investments resulted in negative returns.

Table 3

Distribution of Returns (IRRs) of IIF Portfolio Firms

| | Whole Sample | Outlier (Looksmart) removed | (minus100%) IRR removed | Overall Performance after removing Looksmart and (minus100%) IRR removed |
|-------------------------|---------------------|------------------------------------|--------------------------------|---|
| <i>100th percentile</i> | 1865.36% | 59.65% | 1865.36% | 59.65% |
| <i>90th percentile</i> | 20.70% | 16.66% | 29.90% | 26.04% |
| <i>80th percentile</i> | 1.64% | 1.36% | 6.80% | 4.99% |
| <i>70th percentile</i> | -2.23% | -2.35% | 1.36% | 1.19% |

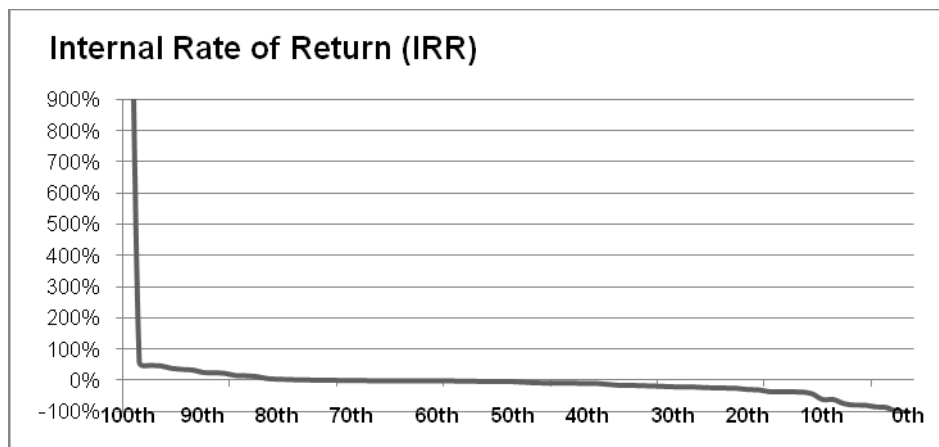
⁴ This includes LookSmart Ltd, which has an IRR of 1865%.

| | | | | |
|-----------------|----------|----------|----------|----------|
| 60th percentile | -8.36% | -8.67% | -0.92% | -0.94% |
| 50th percentile | -20.00% | -20.05% | -6.38% | -6.68% |
| 40th percentile | -36.00% | -38.17% | -10.60% | -11.76% |
| 30th percentile | -99.71% | -99.88% | -19.32% | -19.55% |
| 20th percentile | -100.00% | -100.00% | -27.15% | -27.84% |
| 10th percentile | -100.00% | -100.00% | -59.91% | -59.93% |
| 0th percentile | -100.00% | -100.00% | -100.00% | -100.00% |

As seen in Figure 1a and b, the distribution of investment returns to Australian IIF portfolio firms is of a similar shape to that typically produced from US fund performance data.⁵ The situation of a small minority of early-stage investee companies and VC funds being highly successful - thereby making the asset class unattractive to all but the most informed and/or risk tolerant of institutional investors - is not unique to Australia but is a generic characteristic of VC investment.

Figure 1.a

Distribution of Returns to Australian Portfolio Firms Funded by the IIF Programme (with the outlier)

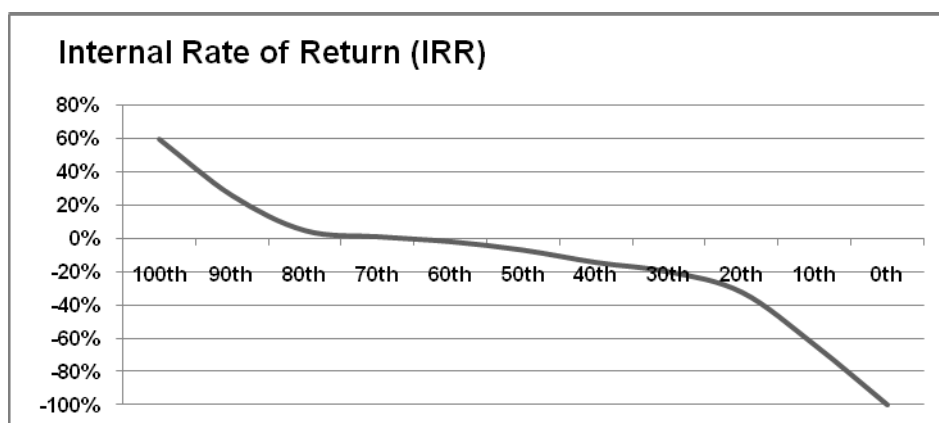


Source: IIF Investee Firm Returns from Inception to 30 June 2009

⁵ These in turn are also very similar to the skewed pattern of return for European early-stage VC funds

Figure 1.b

Distribution of Returns to Australian Portfolio Firms Funded by the IIF Programme (outlier removed)



5. IIF investments are heavily concentrated on ‘new knowledge’ industry sectors

IIF investments were significantly more highly concentrated in the biotechnology, and internet sectors when compared to the investments of commercial (non-IIF) providers. Table 4 summarises the distribution of sectors for investee companies by each of the three categories of investor (IIF, IIF-Affiliated, Non-IIF). The essential difference between the comparators is the greater immaturity of the portfolio firms within the IIF funds. This focus on knowledge based industries from which most high impact new firms will arise in developed economies is generally consistent with national priorities as identified in *Powering Ideas*, the Australian government’s innovation agenda (DIISR, 2009). It also represents a target group that is most likely to be excluded from the investment portfolios of larger and later stage, commercial VC/PE funds.

Table 4

Sector Distribution of IIF, IIF Affiliated and Non-IIF Firms

| Sectors | IIF Firm (102 Observations) % of Firms in the Sector | IIF Affiliated Firm (96 Observations) % of Firms in the Sector | Non-IIF Firm (106 Observations) % of Firms in the Sector | Sum of Firms in the Sector |
|--------------------------|---|---|---|-------------------------------------|
| <i>Biotechnology</i> | 35.3% | 16.8% | 10.4% | 63 |
| <i>Industrial/Energy</i> | 8.8% | 11.6% | 4.7% | 25 |
| <i>Internet</i> | 21.6% | 9.5% | 17.0% | 49 |

| Sectors | IIF Firm | IIF Affiliated Firm | Non-IIF Firm | Sum of Firms in the Sector |
|----------------|--------------------------|--------------------------|--------------------------|----------------------------|
| | (102 Observations) | (96 Observations) | (106 Observations) | |
| | % of Firms in the Sector | % of Firms in the Sector | % of Firms in the Sector | |
| <i>ITT</i> | 20.6% | 22.1% | 38.7% | 83 |
| <i>Medical</i> | 4.9% | 18.9% | 14.2% | 38 |
| <i>% Total</i> | 91.2% | 78.9% | 85.0% | |

- 6. Given the performance of the existing VC funds and their portfolio companies over the three rounds of fund raising to date, the maximum return required to achieve a cost neutral investment portfolio would be \$3.64m per surviving portfolio business. This represents a target return on the total IIF investments made to all investee firms of +33.4% over the total investment period since 1997.**

Given the gross return of the first two rounds of IIF funding at 131% of initial investment, the breakeven threshold for the total IIF programme is extremely modest with a capital multiple of broadly one and a third of the original finance invested required for the surviving firms. Importantly, this raw calculation on 2009 data excludes spill-over benefits associated with job creation, taxation, etc. Previous scheme evaluations suggest that these additional benefits can be substantial and generally increase over time. It also ignores costs associated with IIF administration. However, this result, if investment performances could broadly be maintained for future funds, would suggest a lower cost for government to provide such funds than sourcing equivalent risk capital from the commercial markets. To date, three of the nine funds in IIF rounds 1 and 2 have earned net positive returns with IRRs of 45, 7 and 4%. (note: These figures are working estimates after the payment of the annual management fees and a 20% carry on positive funds.) The remaining six funds from Rounds 1 & 2 have at present negative returns although a number of divestments are yet to be made. Unless such exits from the fund generate substantial value thereby taking the net IRR of the funds into percentage returns above the mid-teens, these funds and their management are unlikely to command any future investor interest.⁶

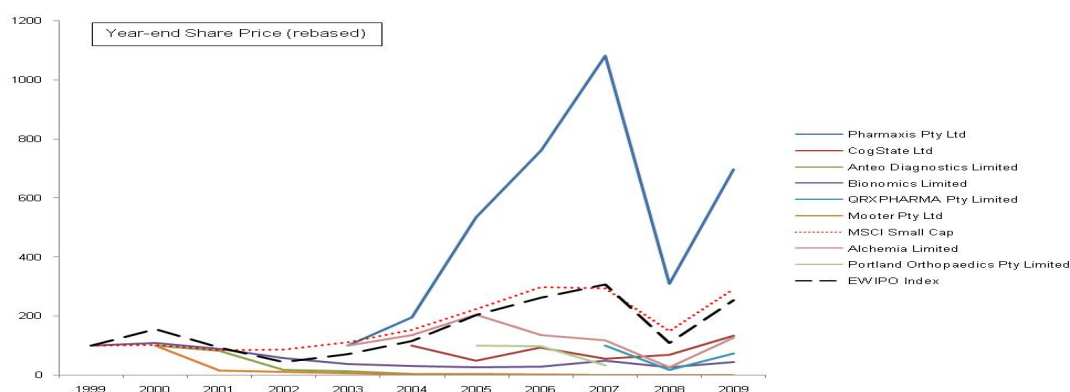
⁶ This calculation excludes the four funds raised in 2008 in Round 3, and which are deemed to be too immature to be assessed in terms of investment performance.

7. IIF companies perform just as well as other small companies quoted on the Australian Stock Market.

The nine IIF financed companies that had completed an initial public offering (IPO) and on which we have data⁷ were tracked on a yearly basis against the MSCI small cap index for all Australian stocks. IIF financed companies appeared on the very limited information available to be little different in their post IPO behaviour to an index of publicly listed small firms. In general and with the noted exception of Pharmaxis, IIF firms under-performed the market index. Figure 2 demonstrates the time-series returns of the 9 IPO companies from the IIF programme using an equal weighted return index of these companies against the MSCI small cap index.

Figure 2

Year End Share Price of Nine of the 17 IIF Firms that have Achieved an IPO (see footnote 7)



IV. Assessing the Results against the Four IIF Programmes Objectives

In order to add greater insight and relevance to the results, the following discussion is structured around the four objectives of the IIF programme, namely:

By addressing capital and management constraints, to encourage the development of new companies which are commercialising Australian research and development;

To develop fund managers with experience in the early-stage, venture capital industry;

To establish in the medium term a "revolving" or self funding program; and

To develop a self-sustaining Australian early-stage, venture capital industry.

⁷ 17 firms from the IIF programme exited via an IPO. However we have only been able to get data on IPO share prices (given by DIISR) and share price information from IPO on nine such companies.

The matched sample nature of our analysis is primarily focused on quantifying how effectively the IIF programme meets Objective 1. However, we are able to make informed comments from an international perspective on each of the other three objectives of the programme. Further elaboration and comment is made in the full report which is appended to the DIISR Evaluation Report.

Objective 1: By addressing capital and management constraints, to encourage the development of new companies which are commercialising research and development

As noted, we are able to answer this particular objective with more quantitative authority. Our comparative analysis centred on 102 businesses assisted by the IIF programme between 1997 and 2009. We can summarise our key results as follows:

When compared to firms receiving investment from non-IIF or IIF affiliate investors, the recipient IIF firms are more likely to:

- be capital constrained young businesses prior to the receipt of IIF finance
- have a higher probability of subsequent access to follow-on finance after IIF finance
- be representative of innovative and knowledge-based sectors
- exit when successful via an IPO.

Thus, we are able to show that the IIF programme has addressed a key constraint in the risk capital financing of high potential young enterprises in Australia. Through the existence of the programme, a number of firms have been able to attract substantial start-up and follow-on financing for their continued growth. This opportunity would have been much more limited in the absence of the programme.

Our results show clearly (and at statistically significant levels) that the IIF programme was more likely to provide initial and follow-on funding to capital constrained businesses than the available private sector equity providers operating in Australia. On average, IIF funds provide 1.6× more funding rounds than private sector investors. This public provision of risk capital has helped to create the first stages of a credible ‘funding escalator’⁸ and has allowed supported businesses further access to growth capital in order to smooth their transition from start-up and early-stage development. The IIF programme has targeted young enterprises in knowledge-based sectors from the Australian economy.

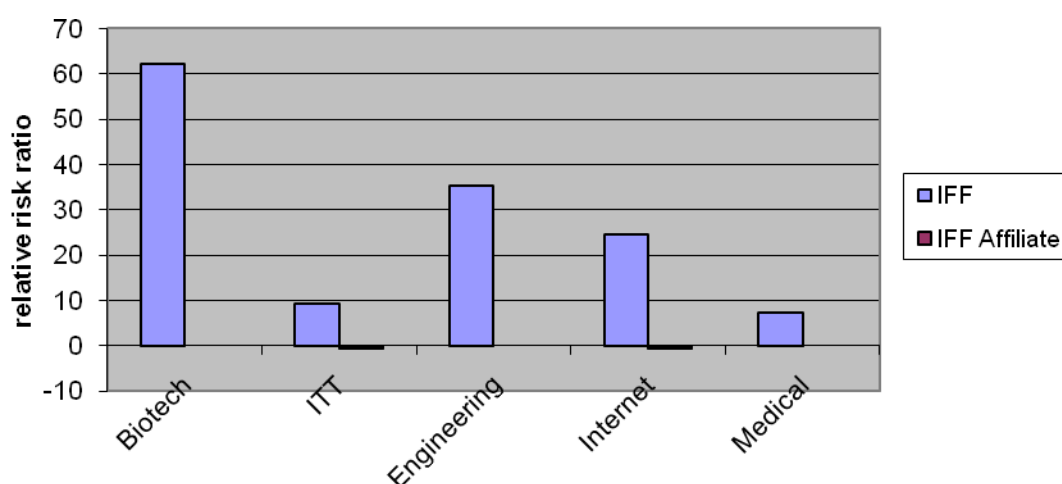
⁸ A ‘funding escalator’ describes an environment where appropriate forms of finance are available to nascent businesses at the various stages of their growth with public support being usually restricted to the earlier stages of enterprise growth.

'New knowledge' Sector Focus of IIF Investments

As figure 3 clearly shows, the IIF programme is strongly focused on new knowledge and technology based areas of investment. Biotechnology is the preferred activity.

Figure 3

Relative Sectors' Attractiveness of IIF Investment



Note: From authors' regression results. Only statistically significant risk ratios are shown.

At the sector level, and ranked in order of investment timing, biotechnology businesses typically receive external VC investment first followed by businesses in the industrial energy sector, the medical sector, ITT, and internet. Table 5 illustrates this ranking as measured by the time from establishment to the first investment in the firm. In terms of investments from 3 different kinds of investors (IIF, IIF Affiliated and non-IIF), it is found that IIF funds only invest earlier than their private sector counterparts in the ITT and Industrial/Energy sectors.

Table 5

Stage Focus of Australian VC Investments by Industrial Sectors

| Months from Firm Founding to First Investment | | | |
|---|-------------|-----------------------|-----------------|
| All Firms* | IIF Firms** | IIF Affiliate Firms** | Non-IIF Firms** |
| | | | |

| | | | | |
|-------------------------------|-----|-----|-----|-----|
| <i>Biotechnology</i> | 5.6 | 3.6 | 1.7 | 1.4 |
| <i>Industrial/Energy</i> | 5.8 | 4.3 | 8.0 | 3.0 |
| <i>Medical</i> | 6.1 | 4.8 | 2.2 | 4.6 |
| <i>ITT</i> | 6.3 | 0.7 | 2.6 | 4.0 |
| <i>Internet</i> | 6.5 | 7.5 | 4.8 | 2.0 |
| <i>Number of Observations</i> | 193 | 75 | 55 | 63 |

**Source: evaluation regression results for all investee firms.*

*** Taken from descriptive results for comparison.*

These results indicate that the IIF programme addresses and helps to reduce a market gap(s)⁹ at the pre-start (seed), start-up and early growth phases of investment where private sector equity investors are much less willing to operate. Given the relatively high risk profile and the limited tangible assets of such young knowledge based firms, this is a finance shortfall that cannot easily be addressed by senior bank debt. It is also commonly outside the range of family and friends as ‘informal investors’. In addition to the IIF programme focusing VC managers on eligible areas of investment, the scheme uses public dollars to leverage the returns to the general and limited partners of the IIF supported VC fund. By lowering the risk/reward ratios of the investments made by the fund to the limited partners (other than government), the programme encourages greater private sector activity in younger and more uncertain ventures.

As such, the IIF programme is shown to be well targeted and to add value to a difficult investment environment which has been recently termed ‘a thin market’ in the UK (Nightingale et al, 2009). The near absence of purely commercial, private investors with substantial private funds under management and a long term commitment to this early-stage VC market means that there is no evidence that public finance has ‘crowded out’ private initiatives in Australia. This conclusion is supported by the fact that the general partners of IIF-affiliate funds also predominantly invest in larger deals and later stage businesses when not managing public supported funds.

Exit Opportunities and Routes

⁹ Researchers are increasingly coming to talk about multiple rather than a single finance gap. The specific nature of the sector will also influence the scale and timing of the firms’ funding requirements.

Exit performance is another important criterion to assess the entrepreneurial firm performance and the success of its venture capital financiers. Table 6 compares the exit routes for IIF, IIF affiliated and non-IIF private invested firms within our sample data. It can be seen that significantly more IIF invested firms exit via an IPO than for firms financed by other equity providers. An IPO is generally regarded as the best exit outcome for VC investors. However, on the other hand, the percentage of liquidation exits (i.e. failures) is also significantly higher for IIF invested firms. This ‘double edged’ outcome of both greater opportunity and greater risk faced by high potential young firms further supports the logic of government intervention to improve the risk/reward balance for investors.

Table 6

Comparison of Exit Routes for IIF, IIF Affiliated and Non-IIF Firms (as a % of all portfolio firms in each category)

| | (1) IIF firms | (2) IIF affiliated firms | (3) Non-IIF firms |
|---------------------------------------|-------------------|-----------------------------|----------------------|
| | Mean (% of firms) | Mean (% of firms) | Mean (% of firms) |
| <i>Acquisition</i> | 2.0% | 12.6% | 16.0% |
| <i>IPO</i> | 16.7% | 6.3% | 6.6% |
| <i>Liquidation</i> | 24.5% | 4.2% | 9.4% |
| <i>Non-Exited Firms still trading</i> | 56.8% | 76.9% | 68.0% |

Objective 2: To develop fund managers with experience in the early-stage, venture capital industry

The IIF programme has been responsible for the raising of a total amount of A\$528 million of which the Commonwealth government has provided A\$300 million. The co-financing nature of the programme has therefore attracted a further A\$228 million of additional finance from private investors (limited partners)¹⁰. These monies were allocated to the thirteen¹¹ IIF VC funds that have participated via the three consecutive financing rounds of the programme. It

¹⁰ The figure is the maximum amount that can be raised. The total capital committed up till 2009 (Round 3, Tranche 2) is AUD484 million.

¹¹ 9 funds from Round 1 and 2 and 2 funds each for tranches 1 and 2 in Round 3.

is our opinion that, if Australia is a similar investment environment to Europe and North America, very little of this total sum of finance would have been raised from private investors without the IIF programme initiative. It is also likely that the funds raised in the absence of the IIF programme would have been strongly oriented to larger and more established portfolio companies. Accordingly, the advent of the IIF programme has allowed a cadre of professional, early-stage VC fund managers to be created and to operate within an Australian context. While these managers are unlikely to have the depth of skills or experience of the best of their US or European peers, the IIF initiative has produced a material improvement in the innovation finance infrastructure in Australia.

The International Environment for Early-stage Venture Capital

Since the severe contraction in the capital market's interest in technology focused, early-stage VC investment post the first quarter year 2000, there has been a substantial and protracted, long run decline in commitments among institutional investors to allocating finance for venture capital as an 'alternative asset class'. This trend is widespread and has resulted in a major reduction of interest across the developed world¹². An antipathy to a commitment to 'classic' early-stage venture capital by a majority of institutional investors continues to this day with investment in Brazil, Russia, India and China (aka 'BRIC') countries or 'clean tech' companies being the only serious exceptions.

This reaction has occurred in large part because of the very poor and highly uncertain returns that such investment activity has generated. As a direct consequence, the venture capital industry has largely metamorphosed into a Private Equity/Management Buy-Out activity. This 'investment drift' is a near universal phenomenon in advanced Western economies. The following Figure 4 illustrates the changing share of VC investments as a percentage of total PE/VC investments for US, UK and Australia. (The upturn in the US trend since 2008 reflects both a recent decline in PE activity and the simultaneous burgeoning of 'clean tech' investment activities by VC investors keen to be at the forefront of the next technology wave¹³).

This persistent pattern of a modest commitment to early-stage investment by Australian investors is more evident when looking at the annual investment activity in the early-stage market (Figure 5). As reported by AVCAL, both the amount of investment and the number of

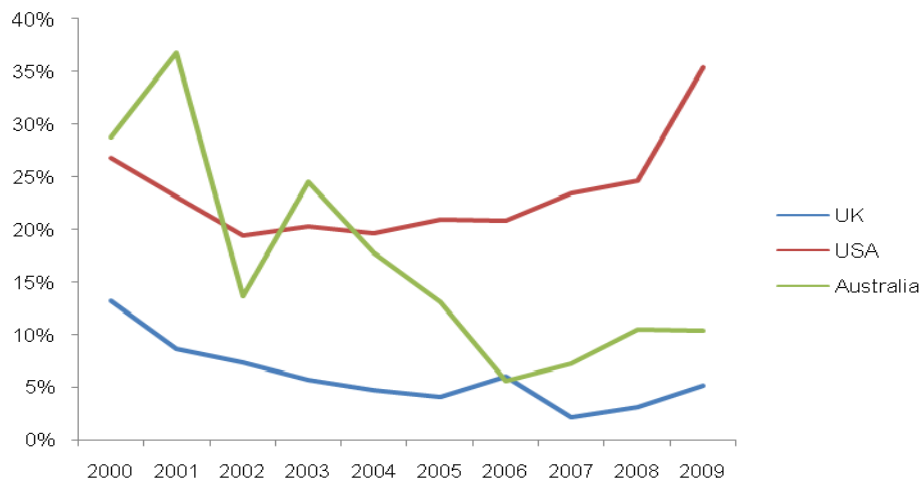
¹² See Pierrakis (2010) for a ten year review of UK venture capital investment after the Dotcom Crash.

¹³ According to the MoneyTree Report by PricewaterhouseCoopers and the National Venture Capital Association, total clean tech investments in the USA has increased by more than 10 times from \$0.4 billion 2004 to over \$4 billion in 2008

investee companies have seen either declining or static trends. It is important to note that the temporary increases in Australian early-stage investments (around 2000/01 and 2006/07) are broadly coincident with the commencement of IIF rounds 1, 2 and 3 which started in 1999/2000, 2000/01, 2006/07, respectively.

Figure 4

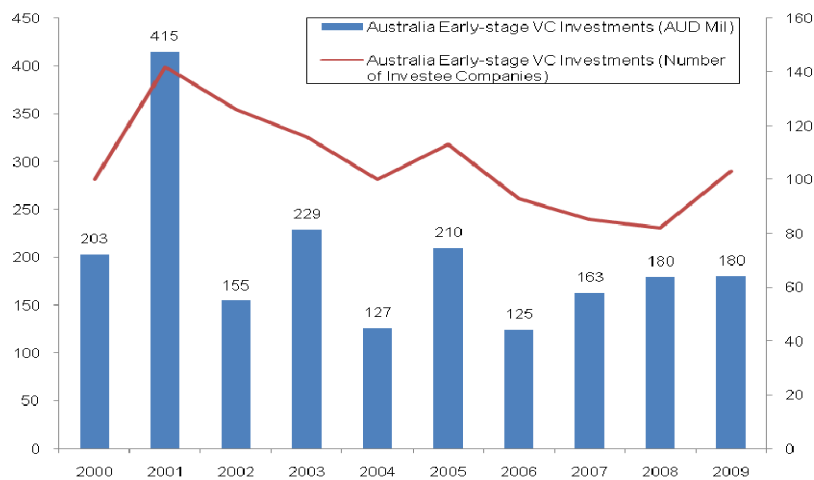
Share of Venture Capital Investments as a Percentage of Total PE/VC Investments for US, UK and Australia



Source: NVCA, BVCA and AVCAL

Figure 5

Venture Capital Investments in Australia



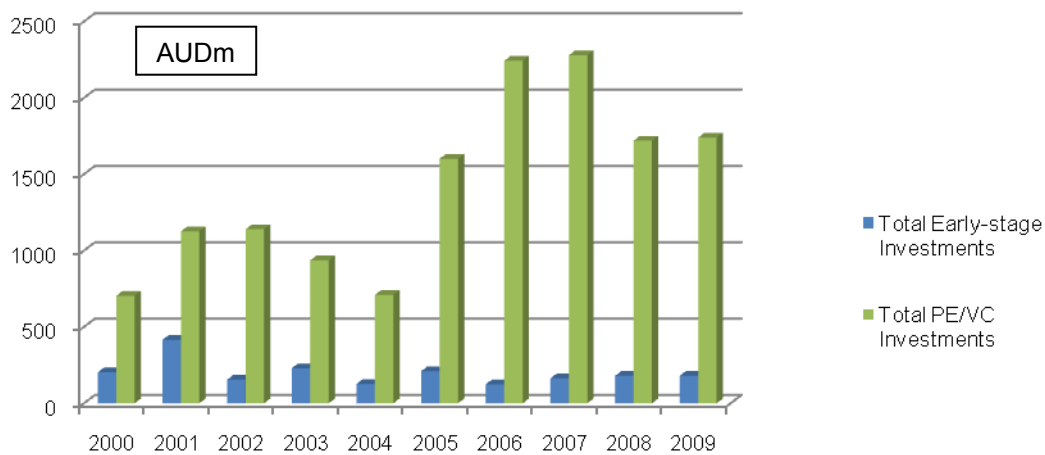
Source: AVCAL (2009), Australian Private Equity and Venture Capital Activity Report / Thompson Venture Economics ©

The decision to use AVCAL data (see our comment on data usage in Section II above) immediately impacts on the presentation of VC activity in Australia. Figure 5 only includes data from VC funds which are members of AVCAL, and thus represents a subset of the total number of VC funds in Australia. Consequently, the values illustrated in Figure 5 are lower than the values derived from the ABS data which include a larger sample size of Australian VCs.

One consequence of the unattractiveness of venture capital returns is that the number of specialist early-stage VC funds prepared to undertake the highly speculative first stages of investment including seed capital, start-up and early development finance has continued to remain limited. Figure 6 presents the annual Australian total private equity and venture capital (PE/VC) investments since financial year 2000 accompanied with the amount invested in seed, start-up and early-stage firms. The modest proportion of investments in early-stage firms indicates that Australian PE/VC investors have also tilted strongly towards a preference for later-stage investee companies. The current global economic crisis is likely to further exacerbate this trend as investors seek greater security for large amounts of private savings.

Figure 6

Annual Australian Private Equity and Venture Capital Investments



Source: AVCAL (2009), Australian Private Equity and Venture Capital Activity Report / Thompson Venture Economics ©

Government's Response to an Insufficient Supply of Venture Capital

Given private investors' reservations, government policy makers in several developed economies have *perforce* been obliged to intervene in order to ensure the continued supply of

early-stage VC finance to innovative young firms. They have done so via the creation of wholly government financed VC funds or, more commonly in recent years, the creation of ‘hybrid’ VC funds based on the Small Business Investment Company model of ‘equity enhancement’. The IIF is an important and early example of this hybrid model of public and private co-financing.

The key attribute of this hybrid structure is that government *co-invests* as a ‘special’ LP in a limited liability VC partnership which is run by a professional management team. Critically, the general partners are incentivised to make commercial returns. As a special LP, and usually the largest single investor in the fund, the government can choose to use its financial leverage to the direct benefit of other investors in the fund rather than maximising its own financial returns. Government can also craft ‘asymmetric’ return distributions to further incentivise the general and limited partners at the cost of the returns received by the state. Hybrid, early-stage VC programmes are now widespread in most advanced Western economies.

It is our view that without the advent of the IIF programme in 1997, and in particular recognising the relative isolation of the Australian capital markets from the international, institutional investment communities of North America, Asia and Europe, the likelihood of Australia being able to maintain a number of operational, early-stage VC funds would have been much reduced. The percentage of new funds raised that are committed by foreign investors in the United Kingdom was 40% in 2009 (and 25% in 2008)¹⁴ whilst the equivalent Australian 2008 figure is only 8% (AVCAL 2008). The relatively small deal flow of enterprises of genuinely, world class potential arising from the Australian economy including its universities and research laboratories - when compared to the scale of R&D investment committed by the world’s major economies - further compounds the problem of reaching a minimum viable size of national VC investment activity in order to attract international investors.

Supporting Successful Incumbent Fund Managers or New Fund Managers?

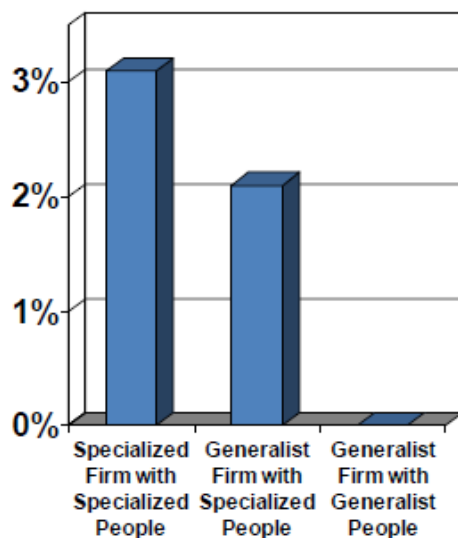
In these circumstances, the direct intervention of the Commonwealth government via the IIF programme has, in our opinion, had an important positive stimulus in providing opportunities to train professional management teams (general partnerships) in early-stage VC fund activity. We are less confident that the public practice of allocating additional programme

¹⁴ BVCA Private Equity and Venture Capital Report on Investment Activity 2009

funds to new management teams was the wisest commercial decision despite important issues of fairness in the distribution of public funds. International research evidence strongly suggests that an elite cadre of highly experienced fund managers provides the majority of investment fund successes in the VC industry. This is an activity where the quality of management (and the entrepreneurial opportunity) is hugely more important than the volume of activity. The following Figure 7 illustrates the specific case for the U.S. by comparing the fund performance between top quartile and median performance fund managers.¹⁵ That the IIF programme decided to focus on training additional management teams via the allocation of further rounds of programme finance to new and untested teams (i.e. general partnerships) has been widely debated. Our own view is that the securing of a small cadre of professionally successful VC general partnerships to which additional public funds are allocated would have increased the chances of creating in Australia a small number of internationally competitive, professional equity investors specialising in early-stage investment. It would also have given institutional investors greater confidence.

Figure 7

Experienced VC managers are more likely to succeed: Difference in deal success rates (Generalist Firm with Generalist People as the Benchmark)



Source: Gompers, Kovner, Lerner and Scharfstein (2008)

¹⁵ The value of experience is also seen in the trend for later funds raised by the same management team to perform better as experience and tacit knowledge are accumulated and applied by the resident investment team.

Objectives 3 & 4: To establish in the medium term a "revolving" or self funding program; and to develop a self-sustaining Australian early-stage, venture capital industry.

We have included these two objectives together as essentially the achievement of Objective 3 is a necessary condition for the realisation of Objective 4. Our conclusions here should be seen as indicative rather than proven. We were not able to gain the detailed cash flow data from the start of an individual fund's life that would have been necessary to determine in detail the overall individual and collective investment performance of the IIF funds.

Accordingly, our figures on fund performance remain informed estimates.

10 Year Fixed Term Funds are the VC Industry Norm

To gain investors' approval, a revolving or 'evergreen' fund requires a consistent level of success as measured by the risk adjusted, annualised returns to its investors (limited partners). Such funds¹⁶ are a rarity in the VC industry where a 10 year closed-end fund structure is the industry norm. Rotating funds are more likely to be achieved in practice via a record of substantial investment success that encourages the existing limited partners to continue to support the further sequential fund raisings of the original management team. While such commitment by loyal investors is widely evident in the private equity market, it is only the most consistently successful VC fund managers that have been able to secure comparable loyalty from their limited partners over multiple funds raisings. Unsuccessful, first time general partnerships are rarely given the chance to raise a second fund by their investors. Exemplars from the USA, such as Sequoia Capital, Draper Fisher Jurvetson, ARCH Venture Partners and Atlas Venture Ltd., represent the upper quartile of elite VC funds and manage collectively billions of LPs' dollars. These over-subscribed VC firms are generally closed to new LPs.

The creation of a revolving or self-funding (i.e. profitable or, at a minimum, cost neutral) programme is the goal of any public intervention designed to act as a catalyst and provide short/medium term incentives. However, the reality is that there is negligible evidence of this being the case in any country that has supported a public or hybrid VC programme^{17 18}. The

¹⁶ Such VC funds were most operated by bank subsidiaries in the UK. They were not specialist, early-stage VC funds.

¹⁷ Perhaps the nearest example is 3i plc which was originally started in the UK in 1945. However, 3i was never primarily an early-stage investor in risk capital for knowledge-based or new technology young firms. Indeed, its later focus of investment activity on new technology based firms in the 1990s were eventually wound up as a result of the relatively poor investment performance of this activity compared to its development capital and

drift from early-stage VC to development capital and increasingly PE activity (e.g. management buy-outs) is a trend that appears inevitable given both the historically higher returns¹⁹, the velocity with which PE investments can be made and then successfully exited, and the considerably larger sums of institutional finance including leveraged debt that can be invested in later-stage deals. What government can do through properly targeted support is to ameliorate the worse societal consequences of this drift by ensuring that the most proficient VC firms and innovative entrepreneurs continue to have access to VC finance and professional investor guidance.

Government will Continue to Remain an Intrinsic Part of the Early-stage VC Industry

Thus, it is our view that the goal of eventual early-stage VC programme sustainability without material and continued government financial involvement is not easily tenable in Australia just as it has not been achievable in any major economy in the developed world (including very large parts of the USA). If we assume that institutional and other professional investors will be looking at fund returns around or in excess of 15-20% per annum, it is not likely that the IIF programme is, or will become, attractive to investors generally. Non-domestic, institutional investors are particularly unlikely to be easily attracted.

However, having made this point, it is fair also to note again that the IIF programme will only require an added value of 33.4% to the presently surviving portfolio businesses to ensure that the programme is cost neutral. Given that an IIF fund would be expected to last a 10 year period if it is run as a private VC fund, this represents an annualised compound growth of portfolio value of 2.9%. While recognising that these figures do not include the running costs of the scheme, such a modest return to reach a gross investment breakeven is impressive. However, such a level of value-added would provide insufficient returns to a VC fund or its private investors. Further, it cannot be assumed that future VC fund performance in the IIF programme will mirror past performance.

Thus, we are obliged to conclude that the goal of a self sustaining and privately financed, early-stage VC activity based on the present scale and performance of the IIF programme is very unlikely to be realised. In the absence of such a goal, it is probable that government will

private equity activities. 3i was eventually privatised in 1994 and is now an international, private equity business.

¹⁸ The Israeli Yosma scheme may also be cited. Government was able to exit eight of the ten supported funds when private investors elected to buy-out the government's interests (Avnimelech et al, 2004). However, the timing of this programme both in its inception and exit was highly fortuitous.

¹⁹ Some top quartile VC funds in the USA have consistently outperformed PE funds but the opposite is consistently true in Europe and elsewhere.

be required to continue to be a major supporter and funder of innovative young companies via hybrid forms of VC activity and other funding initiatives if it wishes to harvest the returns from public financed R&D and other research based activities.

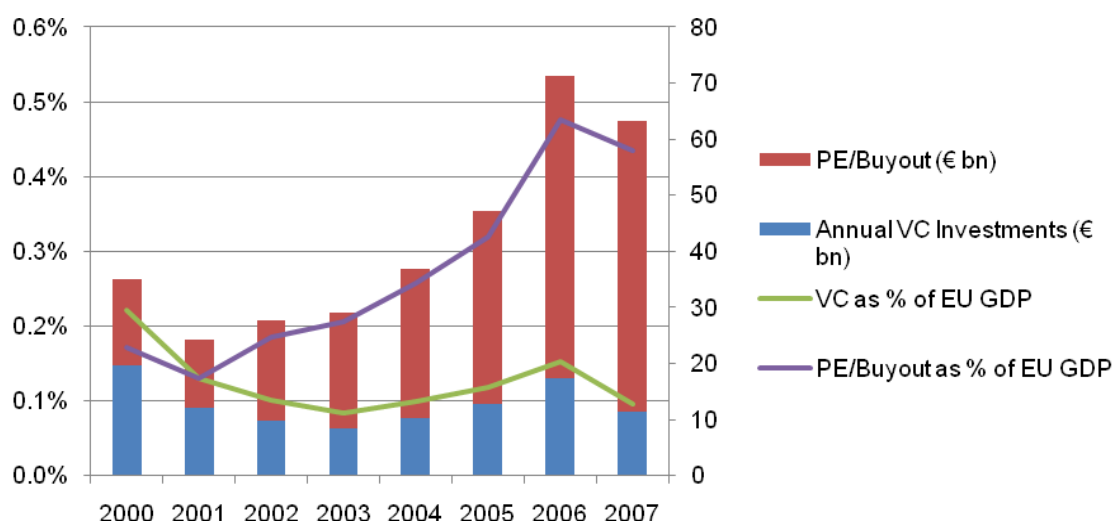
V. Some Further Observations on the Specific Environment and Other Challenges Facing Early-stage Venture Capital Activity in Australia

Government will always be obliged to support its own Venture Capital Industry

It is proper that policy objectives are ambitious and far reaching. IIF builds on a series of Australian Commonwealth public programmes that have sought to nurture and support high quality young enterprises in challenging areas of new knowledge stemming from the national science and technology base. Yet, ambition has invariably to be tempered with realism if such policy programmes and their goals are to remain both credible and achievable. Investing in early-stage ventures via VC finance is one of the most challenging areas of enterprise and innovation policy regardless of government ideology, economic development, prior experience or the stage of the economic cycle. If we are to look at which countries have a robust and successful early-stage VC industry that can continue to operate without substantial government support, we are forced to suggest that such a Utopia does not exist anywhere in the world. The USA has viable and world class VC activity in perhaps four states. It is a domestic industry that has, and continues to be, massively supported by public investment in R&D, education, science and defence. Likewise, and for very similar reasons, Israel's VC industry can better be seen as the off-shoring of R&D and start-up investment from East and West Coast USA. The UK has increasingly become the centre of an international PE (and especially an MBO) industry. Its modest commitment to early-stage VC is now dwarfed by later stage activity (see Figure 8). For most of Northern Europe including the UK, the VC industry remains heavily subsidised both directly using hybrid or fully state owned VC funds and indirectly via measures including public R&D spend and personal and corporate tax incentives.

Figure 8

EU Venture Capital and Private Equity Investment as % of GDP



Source: EVCA/PEREP_Analytics, Eurostat

Why persist with such a difficult activity: because an innovative and entrepreneurial nation has little choice.

The continuous public commitment to a notably fragile industry can primarily be explained by the importance given to innovation and its financing in advanced economies. Professional risk capital investors are an important element of an advanced enterprise environment. Thus, the ambition to create a sustainable VC industry in Australia needs to be referenced to a realistic comparison of the practice and (often modest) policy driven successes of a majority of advanced Western economies. It would not be too much of an exaggeration to state that no one country has yet found an early-stage risk capital model that is robust in terms of its longevity and ability to service the needs of both investors and investee companies without substantial and sustained public co-financing. That countries willingly continue to finance such activity is a reflection on the importance accorded to stimulating innovation and entrepreneurial activity within the domestic economy.

Venture Capital and Jobs

References to venture capital outcomes, particularly in the USA, note the very substantial size of the most successful companies that have been financed with venture capital. Four of the twenty companies that have the highest market capitalization in the US – Microsoft, Apple, Google and Cisco – have each received venture capital in their formative early years

(Kaplan & Lerner, 2009). As Shane (2008) observes “In 2000 the 2,180 public companies that received VC backing between 1972 and 2000 comprised 20% of all public companies, 11% of sales, 13% of profits, 6% of employees, and have a value in excess of \$2.7 trillion, one third of the market value of all public companies.” But Shane is talking here about activities of a continental scale VC industry with over 50 years of history. Even the most exceptional companies very rarely have work forces numbered in their thousands within the first ten years of their existence. Indeed, fast growth companies in the USA were found to have an average age of 25 years (Acs et al, 2008). Early-stage VC activity should be seen as a *generational* infrastructure investment with its greatest employment benefits and other spillover effects likely to be harvested possibly decades later. In short, if a government wished to create a large number of high quality jobs quickly, investment in VC and the science base would not be a particularly effective response.

Referencing the Size, Structure and Operation of Australian Hybrid VC Funds

Venture capital is one area where national programmes have been widely copied and modified as policy makers from several countries have sought to learn from other governments’ programme experiences. The IIF was based on the Small Business Investment Companies (SBIC) programme devised in 1958 by the Small Business Administration in the USA. In turn, the UK’s Enterprise Capital Funds’ architects learned from US, European and Australian experience circa 2003. It is therefore legitimate to compare hybrid schemes between countries when they are based on risk capital investments directly from VC funds to portfolio companies and where the government and private funds are allocated by commercially incentivised, professional VC agents.

Thus, a number of national public schemes are immediately relevant to the IIF programme including, for example, the UK’s Enterprise Capital Funds (ECFs) and Regional Venture Capital Funds (RVCFs), the Dutch TechnoPartners Fund, the Israeli Yosma programme and German High-tech Gründerfonds. Thus, the question becomes how should the operation of the IIF programme be seen in the light of these or other programmes which are each seeking to achieve the same broad policy goals? In answering this question, we can look at the sectors supported, the addition of any geographic conditions of investment, the maximum level of finance per investee firm, and/or the remuneration and incentives given to the general partnership and the VC fund’s limited partners other than government. Reference is made in the full report in the Appendix to a range of data sources comparing the operating rules of a number of publicly supported programmes broadly comparable to the IIF. However, it can be

summarised by saying that the IIF exhibits no operational or structural characteristics than are exceptionally different from the programmes cited. The limitations on the maximum investment per portfolio company, the constraint of fee income to between 2.5-3% per annum, an industry standard carry of 20% of net capital gain and the sharing between government and other LPs in the ratio of 10:90 after the original investment has been returned, all appear pragmatic, reasonable and in confirmation with international practice, as illustrated in Table 7²⁰.

Table 7

Operating Structure of Exemplified Hybrid VC Funds

| Programme Name | Size of the Fund | Deal Size | Public / Private Share | Share of Profit | Management Fees | Carried Interest |
|--|--|---|---|---|--|--|
| Innovation Investment Fund | AUD528 Mil, spread evenly between 13 IIF funds | Average size AUD2.75 Mil | Up to 2:1 (Round 1 and 2) or 1:1 (Round 3) | 10:90 between Government and private LPs | Round 1: 3% Round 2 & 3: 2.5% to 2.8% | 20% or market standard |
| Pre-Seed Fund (PSF) | AUD104.1 Mil for 4 funds. No upper limit for fund size. | Up to AUD1 Mil with extension up to AUD 500,000. | Up to 3:1 | Government: capital + interest; further amounts share between private LPs/GPs | 3% to 3.5% | Market standard |
| New Zealand Venture Investment Fund | NZD323 Mil committed (NZD220 Mil invested) in 6 funds. Maximum fund size: NZD25 Mil. | NZD2 Mil and must not exceed the percentage limit for public investments. | On average 1:2, the maximum match is 1:1 and minimum 1:5. | 50:50 | Between 2-3% | – |
| Regional Venture Capital Funds | GBP250 Mil in 9 regional funds. | Up GBP660,000. | Up to 1:1 | Cap on public return | – | – |
| Enterprise Capital Fund | Funds total size GBP250 Mil in 10 ECFs No upper limit for a single fund. | Up to GBP2 Mil. | Up to 2:1 | Public return capped at 4.5% (the current government loan rate) | As specified in applicant's bid, market standard | As specified in applicant's bid, market standard |
| KfW Venture Capital Programme | – | Up to EUR5 Mil | Up to 1:1 | Loan guarantee | – | – |

²⁰ A more detailed investigation of the fund characteristics of selected public schemes can be found in the appended Report.

| | | | | | | |
|-----------------------------------|---|--------------------------------|---|---|---|---|
| High-tech Gründerfonds | EUR272 Mil budget, total investment EUR65 Mil. | Up to EUR1 Mil | Public investment currently at 88% | Distribution to public and private LPs pro rata | – | – |
| Technostarters | EUR 150 Mil in 22 funds. | EUR 100.000 to EUR 2.5 Mil. | Up to 1:1 | 20:80 between Government and private LPs | – | – |

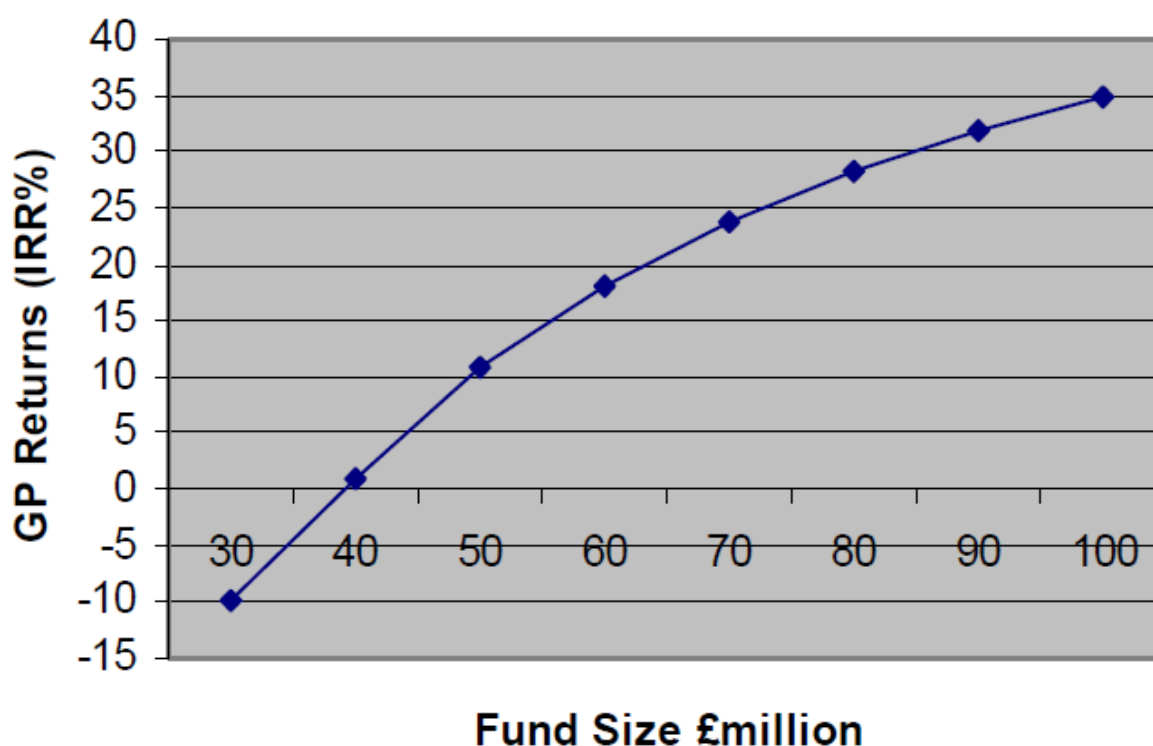
The Scale of Government Intervention

Outside a few elite US and European private VC funds investing in venture capital across all development stages from seed to IPO (Dimov and Murray, 2008), VC funds are of a scale smaller when measured by finances under management than equivalent PE funds. Specialist, early-stage funds, which are often created or supported with public finance, are more likely to be measured in tens of millions rather than hundreds of millions of dollars. The small scale of such funds presents an immediate and major problem for the operational efficacy of such entities. Firstly, venture capital activity requires significant start up and fixed costs. The establishment of a senior management team and the related support and governance skills of investment analysis and technical due diligence are substantial fixed costs which need to be fully financed by the annual operating charges of the fund. Small funds of less than US \$50 million are rarely in a position to be able to afford the quality of managerial expertise that is a necessary component of any successful VC fund. In addition, a small level of finances under management also means that the fund itself is constrained in the number of deals that can be financed as well as the number of rounds of subsequent financing that can be allocated to any one investee firm.

Figure 9 below shows the results of a simulation of the influence of fund size on the computed returns to the general partners in a generic, early-stage VC fund. It is clear that a small fund is highly unattractive to the key management team regardless of the returns to limited partners. Lerner et al (forthcoming 2011) has also shown that fund scale also becomes important when a general partnership is successful. Faced with an increasing queue of investors that wish to invest in the GP's next fund, investment managers are vulnerable to straying beyond the optimal fund sizes where that have shown a competitive advantage. Subsequent and larger funds are likely to start to demonstrate declining returns beyond a critical size of US\$200 -500 million – a sort of ‘winner’s curse’. (It should be noted that these fund sizes are several times bigger than the great majority of VC funds outside of the USA.)

Figure 9

Venture Capital Returns and Optimal Fund Size



Source: revised from Murray and Marriott, (1998)

Public support of hybrid VC funds addresses in part the first problem of funds that are too small and undiversified to be effective in the highly risky early-stage market. The effect of equity enhancement contingent on the participation of a large ‘special’ LP from the public sector increases the resources and income of the fund and thereby increases the chances that high quality managers can be recruited and can in turn demonstrate their industry investment skills.

The question as to the minimum viable size of an early-stage fund is hotly debated. It in part depends on a range of operational factors. Any estimation will first need to determine the industry sector focus, the range of funding stages in which the VC wishes to participate and the strategies for specialisation and/or diversification adopted by the general partnership managing the fund. As a general working rule, the more likely a VC fund has the capacity and resources to engage in a portfolio of over 20-30 investee firms and remain fully active in each stage of investing until a profitable exit is achieved for the most successful portfolio companies, the more likely the fund is to be commercially successful.

In this context, the IIF funds ranging from a size of AUD 30 to 50 million are likely to be sub-optimal in that, *ceteris paribus*, fund management operating costs are likely to consume a significant part of any capital gain created by the fund. Such a fund size is also likely to be limited in the number of follow-on rounds it can complete. This does not mean that such funds cannot make a positive net return on investors' finance. Rather, it suggests such a goal is considerably more difficult for a small fund than for a larger fund given equal opportunities and quality of deal flow.

Government Finance may be necessary but it is not sufficient

Policy makers seek to engineer environments that are conducive to the successful development of a national VC industry and thus the effective support and accelerated growth of the most exceptional new businesses spinning out from the nation's science base. Thus, policy makers have to address not only the supply of risk capital but also the demand for such services from 'investment-ready' young enterprises. A viable VC industry requires both a large number of skilled as well as experienced entrepreneurs able and willing to exploit a continuous supply of intellectual property that is internationally competitive. A viable early-stage VC industry is therefore also conditional on the mobilisation of R&D resources and a consequent stream of IP outcomes of exceptional quality and international potential. In addition, incentives have to be in place that will encourage the producers of IP (scientists and technologists) and the exploiters of IP (entrepreneurs) as well as VC intermediaries and investors to be prepared to make the onerous and uncertain commitments to commercialisation and new enterprise development. The congruence of these conditions, often term 'simultaneity' (Gilson 2003) is not easily achieved. It is no coincidence that the VC clusters of Silicon Valley and Route 128 are centred among concentrations of some of the largest and most outstanding universities and industrial research laboratories in the world supported by deep and long established entrepreneurial infrastructures of legal and accounting firms, head hunters, IP attorneys etc. also of comparable excellence and exceptional commercial experience. This benign environment further includes informed industry customers and suppliers demanding and providing similarly meritocratic products and services allocated via highly contested markets for finance, resources (including information) and human talent. Thus, economic scale, scientific excellence and decades of cumulative professional experience of the highest merit also appear to be necessary conditions for sustained VC industry performance. Given these benchmarks, it is unrealistic to expect a single, government supported, supply-side VC programme to be anything other

than one contributor to an entrepreneurial and innovation eco-system of considerable sophistication and complexity.

The demand-side is also important

Now many developed countries have become aware of the demand-side problems within the VC markets and have established ‘investment readiness’ and other new enterprise support programmes to address such deficiencies. Australia has the COMET and Commercialisation Australia programmes. The UK has also launched several projects to support the improved training of entrepreneurs in a series of investment readiness pilot schemes. Similarly, the European Commission’s DG Enterprise has launched the *Ready for Equity!* initiative at the European level. Such programmes should be seen as complementary initiatives aimed at creating an efficient market for early-stage risk capital. The provision of finance without rigorously addressing the quality of the entrepreneurial and innovative opportunities seeking support is to guarantee that investment returns will be compromised. Indeed, many observers would consider the quality of the opportunity and the skills of the entrepreneurial team are the core issues or constraints to be addressed if investors’ finance is to be forthcoming. This report’s authors would concur with this view.

Final Comments on the IIF Programme

The IIF programme is an important and valuable building block in Australia entrepreneurial and innovation infrastructure. Our analyses shows that the IIF is also an effective and reasonably successful policy instrument if measured by firm level, performance terms that are both realistic and relevant. However, it would be unwise to assume that this single policy in isolation can realise fully the four programme objective outlined above. The IIF can sensibly be seen as a part of Australia’s policy arsenal but it only remains one element of the necessary entrepreneurial and innovation policy structures.

This argument means that it would be wrong to see the IIF programme in the short run completing its objectives and being retired. *The development of a flourishing national VC industry is a commitment measured in decades.* If Australia is comparable to the US, Canada, the UK, Germany, Sweden etc., the IIF (and complementary and/or successor programmes) will need to remain a long term vehicle for public support. Over time, it is more likely to be augmented by additional programmes that also support other facets of entrepreneurial and innovation activity. Here, the continuing policy trajectory of the UK or other Northern European countries in their increased portfolio of publicly supported VC and related

enterprise finance programmes provides an interesting and possibly relevant set of examples to Australia.

A long-term commitment also means the establishment of an effective funding escalator to improve access to sources of multiple funding rounds for young firms as they grow. A healthy and active VC market is not only about 'survival'. More importantly, it is about 'success' measured both in the quality of the entrepreneurial firms supported and the attractiveness of returns to investors. Separate policies and programmes that focus exclusively on a single 'funding gap' with the assistance of public money can be counter-productive by creating artificial barriers between successive rounds of funding. Further, such individual schemes do not take into consideration that there may often be multiple gaps in finance that need to be addressed holistically if the best firms are to have access to the available resources for growth.

In understanding and evaluating the IIF, this analysis suggests that the degree of learning by both public and private participants as to how hybrid VC programmes can best be structured and operated effectively should be incorporated as a legitimate outcome of the programme. This learning must necessarily be international in scope. The retention and development of policymaking knowledge and competence will be important if Australia is to continue to support the market for early-stage entrepreneurial and innovation activity in key areas of new scientific and business knowledge.

References

- Acs, Z. J., Parsons, W. and Tracy, S. 2008. *High-Impact Firms: Gazelles Revisited* Paper for the Small Business Administration, Corporate Research Board, LLC, Washington, DC 20037.
- Avnimelech, G., Kenney, M. And Teubal, M. 2004. *Building venture capital industries: Understanding the U.S. and Israeli experiences*, UCAIS Berkeley Roundtable on the International Economy, UC Berkeley, Working Paper Series No. 1059
- Bürgel, O. 2000. *Private Equity- the new Asset Class*. BVCA, London.
- Dimov, D. and Murray, G. C. 2007. 'An examination of the determinants of the incidence and scale of seed capital investment activity by venture capital firms 1962-2002', *Small Business Economics* 30(2): 127-152.
- Gilson, R. J. 2003. 'Engineering a venture capital market Lessons from the American Experience', *Stamford Law Review* 55 (4): 1067-1103
- Gompers, P., Kovner, A., Lerner, J. and Scharfstein, D. 2008. *Performance Persistence in Entrepreneurship*, Working Paper, Cambridge MA: Harvard Business School.
- Jääskeläinen, M., Maula, M. And Murray, G. C. 2007. 'Performance of Incentive Structures in Publicly and Privately Funded 'Hybrid' Venture Capital Funds.' *Research Policy* 36 (7): 929.
- Kaplan, S. N. and Lerner, J. 2009. *It Ain't Broke: The Past, Present, and Future of Venture Capital*. Preliminary draft paper, December.
- Murray, G. C. and Marriott, R. 1998. 'Why has the investment performance of technology-specialist, European venture capital funds been so poor?' *Research Policy*, 1998, 27, pp. 947-76.
- Nightingale, P, Cowling, M, Dannreuther, C, Hopkins, M, Mason, C, Murray, GC, Siepel, J, Tidd, J. 2009. *From Funding Gaps to Thin Markets: the UK Support for Early Stage Venture Capital in the 21st Century*. London, BVCA and NESTA.
- Pierrakis, Y. 2010. *Venture Capital: Now and after the Dotcom Crash*. Research Report, July, London: NESTA.

Shane, S. 2008. *Illusions of entrepreneurship: the costly myths that entrepreneurs, investors and policy makers live by*. New Haven: Yale University Press.