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<CN>8.<CT>The role of UK government hybrid venture capital funds in addressing the finance gap facing innovative SMEs in the post-2007 financial crisis era

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<A>INTRODUCTION

It is notable that virtually all of the flourishing venture capital markets globally have been stimulated by government support (Lerner et al., 2005; Lerner, 2009, 2010), with an increasing role for government hybrid venture capital fund (HVCF) programmes since the start of the millennium (Murray, 2007). Here, we apply Lerner's (2010) 'guide posts' for government VC interventions to the experience of three recent UK programmes providing equity finance to small and medium-sized enterprises (SMEs) in the aftermath of the 2007 global financial crisis (GFC).

Lerner (2010) highlights some successful government interventions in addressing equity gaps facing innovative small businesses, notably the United States (US) Small Business Investment Company (SBIC) and Israeli Yozma funds. These demonstrate that HVCFs can establish a community of knowledgeable early stage investors, business support services, entrepreneurs and R&D activity, which in turn build up a momentum of growth and development. It is crucial to provide the right catalyst of government support over time to generate sufficient critical mass of

expertise before undertaking strategic withdrawal of government intervention. We explore five of Lerner's guiding principles in assessing recent UK HVCFs:

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1. Let the market provide direction.
2. Resist the temptation to over-engineer.
3. Recognize the long lead times associated with public venture initiatives.
4. Avoid initiatives that are too large or too small.
5. Understand the importance of global interconnections.

</list>

After briefly describing the three HVCF programmes of interest and outlining the research methodology, we apply Lerner's guiding principles to them, drawing upon demand and supply side research evidence (North et al., 2010; CEEDR, 2012). The conclusion summarizes the dilemmas facing HVCFs and considers their implications for future policy development.

<A>THE EVOLUTION OF UK HVCF PROGRAMMES

The UK government HVCF programme expenditure has increased considerably in recent years, rising from £140.9m between 2000 and 2006 to £750m between 2006 and 2012 (CfEL, 2012). Programmes have evolved, with a greater focus on larger scale, specialist funds with expert private sector led fund management and co-investment, notably in the wake of the National Audit Office (NAO) review recommendations (NAO, 2009). The three HVCF programmes that we focus on here represent £602.5m of government expenditure since 2006 and address different market imperfections in terms of the nature of the finance gap and the kinds of businesses being targeted.

Enterprise Capital Funds

Enterprise Capital Funds (ECFs) are a rolling £440m programme of 16 funds, established since 2006–2007, with a planned 10–12 year individual fund life cycle, addressing the equity gap facing high growth potential SMEs. Government funding is used alongside private sector funds to invest directly into businesses, targeting investments of up to £2m with potential to provide a good commercial return. Here we focus on the first tranche of eight ECFs operating under private sector VC fund management, with funds ranging from £10m to £30m. These ECFs focused on different stages of business development, including seed, early stage and expansion. Some were generalist, covering a broad range of sectors (e.g. Seraphim Capital Fund), while others specialized for example in new media (Dawn Capital Fund) and medical and healthcare investments (Oxford Technology Management Fund), reflecting the areas of fund management expertise.

The Aspire Fund

The Aspire Fund, established in 2008, aimed to increase the number of successful women-led UK businesses, assisting those with high growth potential. It operates on a co-investment model with £12.5m UK government funding matched by private sector funding from a lead investor. Investments have ranged between £200,000 and £2m, including the matched private investment.

The UK Innovation Investment Fund

The UK Innovation Investment Fund (UKIIF), established in 2010, aimed to stimulate private VC investment into intensive R&D sectors. The £150m of UK government funding was matched by a further £180m of public and private funding from two ‘fund of funds’ managed by the Hermes Environmental Innovation Fund and the European Investment Fund’s UK Technologies Fund. UKIIF operates *pari passu* at arms’ length under the scrutiny of the British Business Bank.³ As it is private sector led and can invest in innovative businesses globally, there are no European Union (EU) state aid restrictions on the size of initial or follow on investments. The fund focuses on life sciences, cleantech, digital technology and advanced manufacturing sectors and must invest at least £150m into UK based businesses during its expected 12–15 year life cycle.

<A>METHODOLOGY

Demand side evidence comes from 32 surveyed business recipients of the three HVCF programmes. Supply side evidence comes from interviews with 16 fund managers who dealt with applications for the government funds and 22 finance industry experts.

Business Manager Interviews

The owner-managers of 32 successful business applicants to the three HVCF programmes were interviewed face-to-face or by telephone, with purposive selection to provide sector and UK-wide

coverage. These represented one third of the programmes' funded businesses (32/94) at the time of the survey, with initial ECF and Aspire interviews undertaken in February 2010 and UKIIF interviews undertaken in February 2012 (Table 8.1). Survey questions included business characteristics, external financing requirements and knowledge, degree of success in obtaining external finance, terms and conditions, and the impact and additionality experienced and forecast from the funding received. Further follow up telephone interviews took place with 24 of the recipient businesses in May 2013 to assess development since the initial funding.

<INSERT TABLE 8.1 ABOUT HERE>

The surveyed businesses fitted each programme's target profile, being typically young, early stage businesses established since 2000. Over two thirds of recipients were pre-trading at the time of interview, undertaking R&D and developing prototypes or in the initial stages of launching products and services. Most, including all 16 UKIIF businesses, were undertaking market leading activities, developing leading edge software and medical technologies, and demonstrating global market leading export aspirations. Equity finance was perceived as the only viable option for raising finance due to a lack of financial assets, insufficient trading record, and owners' unwillingness to secure/guarantee debt finance against private property. The amount of equity sought by the 12 interviewed ECF recipients ranged from £300,000 to £3m (median £750,000), the four Aspire recipients sought between £500,000 and £2m, while the 16 UKIIF recipients sought between £75,000 and £10.4m (median £2.4m), demonstrating demand for early stage R&D equity finance at beyond the EU state aid cap of £2m.⁴

The majority of businesses were small when funded. ECF and Aspire recipients had a mean of 10 employees (median 5.5). UKIIF recipients had a mean size of 35 employees (median 8) and included three established medium sized businesses undertaking new innovative product development cycles, including a recycling company diversifying into bio fuel production and a lightweight plastics manufacturer, both with over 150 employees.

Fund Provider Interviews

Face-to-face interviews were undertaken with eight UKIIF⁵ and eight ECF fund managers, providing insights into their structure and operation, the type and range of applications, decision-making criteria, the effectiveness of their investments and assessment of whether funds were addressing an equity gap. These represented all of the programmes' operational funds at the time of survey (Table 8.2).

<INSERT TABLE 8.2 ABOUT HERE>

To enrich our understanding of the new and early stage VC market, interviews were also conducted with 22 expert informants. These comprised the British Venture Capital Association (BVCA), European Venture Capital Association (EVCA), three private VCs, two other public sector VCs, three mezzanine fund managers, six business angels, three bankers, one grant fund and two specialist support providers for technology based small firms (TBSFs).

We now consider the rationale for the UK HVCF programmes, before discussing our research evidence against five of Lerner's guiding principles.

<A>ARE HVCF PROGRAMME INTERVENTIONS JUSTIFIED IN THE UK?

Supply side Market Failure

Although less than 2 per cent of UK SMEs seek equity finance,⁶ it is vital for many innovative and growth orientated enterprises who play a key role in developing new industries, thereby generating economic growth and jobs (Bank of England 1996, 2001; Siegel et al., 2003). These businesses exhibit higher levels of risk due to a lack of physical assets to provide collateral for debt finance and may also lack revenue streams needed to service loan repayments (Reynolds et al., 2000; Mason and Harrison, 2003). Recent evidence (Fraser, 2009; Cowling et al., 2012; North et al., 2013) also suggests that SME demand for equity finance has increased as bank credit rationing and moral hazard aversion have accentuated in the aftermath of the GFC.

The equity gap in the UK has long been recognized (Macmillan, 1931; HM Treasury, 2003), particularly for seed and early stage VC, with this market failure constraining innovation. The boundaries of the equity gap have increased over time; estimated at up to £0.5m in 1999, it is now on some estimates put at upwards of £5m, particularly for the longer investment horizon R&D intensive sectors (SQW Consulting, 2009; Rowlands, 2009). This is due mainly to information asymmetries between investors and young SMEs (Hughes, 2009) where information is not transparent and assets are knowledge based (Hsu, 2004). These businesses present high risk technological, market and managerial uncertainties and in seed and early stage investment invariably require intensive managerial and consulting VC input to generate returns (MacMillan et al., 1989; Murray, 1999). The history of small specialist early stage European VC funds is characterized by low returns, failed funds (Murray, 2007) and established VCs retreating to safer later stage investments (Pierrakis and Mason, 2008; Harrison et al., 2010).

Lerner (2010) recognizes the importance of VC exit markets in attracting private investment. The UK has experienced a breakdown in the risk funding escalator (Mason et al., 2010, North et al., 2013) enabling innovative firms to reach a sufficient stage of market traction for a trade sale or initial public offering (IPO). The retreat of private VCs has increased pressure on business angel syndicates

and HVCFs to follow-on fund, lengthening timescales to exit to around seven years (Pierrakis, 2010; CfEL, 2013) and creating a funding gap for early stage businesses. Consequently, the equity gap now exists for projects that are too large for business angel syndicates to fund but below the level for most private VC investors, estimated at between £0.5m and £5m (Mason and Baldock, 2014).

Against this context there has been a growth in UK HVCFs, with public backed funds increasing from 20 per cent of early stage funding in 2000 to 68 per cent by 2008 (Pierrakis, 2010). Proportionally, government HVCF funding is even greater in real terms, as BVCA (2013; Figure 8.1) evidence demonstrates that apart from the twin peaks of the dotcom bubble (2000) and pre GFC (2006) boom, UK annual VC investment for 2010–2012 was similar at £340m to 1999. This suggests a growing need for UK HVCFs, without which the early stage VC market would be in a perilous state.

<INSERT FIGURE 8.1 ABOUT HERE>

Demand-side Deficiencies

Oakey (2007) highlights the importance of being ‘investor ready’, with Mason and Kwok (2010) citing the key role of entrepreneurial support schemes offering training and experience in assessing and accessing external finance, particularly for equity finance. Few SME managers, except the small number of serial entrepreneurs, have the know-how to successfully apply for early stage VC (Gompers et al., 2010). The National Endowment for Science, Technology and the Arts (NESTA) (2009) found poor quality in much of the UK VC deal-flow, resulting in investors’ difficulties in finding sufficient numbers of high growth potential firms. Mason and Harrison (2003) have, therefore, implied that the equity gap may be as much to do with demand-side deficiencies as supply side failures.

This view is supported by our exploration of the ‘*applications funnel*’. Interviewed fund managers typically received 500 annual applications per fund, with many rejected immediately for failing to meet basic criteria, only 10 per cent receiving interviews, and less than 2 per cent receiving funding. Fund managers rejected many early in the process because the businesses were not investment ready, underestimated their financial needs, or had a poor understanding of the requirements of investors.

More recent UKIIF fund manager interviews indicated that, despite recent improvements in application quality, they remained variable and that demand for equity finance was increasing as bank finance had become more difficult and expensive to obtain. They also stressed the importance of knowing the entrepreneurs before committing funds, requiring intensive work in selecting and managing small portfolios of investee businesses. The overall view from the equity investment specialists was that investors have become more cautious and stringent in their due diligence and negotiations, with greater attention to overcoming information asymmetries during the pre-deal completion stage.

Having considered the rationale for government intervention to address gaps in equity finance, we now consider the recent evolution of UK HVCFs over the last decade against five of Lerner’s (2010) guiding principles, starting with two that he particularly emphasizes.

<A>‘LET THE MARKET PROVIDE DIRECTION’ AND ‘RESIST THE TEMPTATION TO OVER-ENGINEER’

During the past decade UK programmes have evolved along the lines of Lerner’s principles, letting the market lead and resisting the temptation to micro manage funds. UK public officials are now far less involved in the management of funds than they were with some of the original publicly funded venture capital funds (Murray, 2007), even to the extent with UKIIF of wanting entrepreneurs to

perceive them as entirely private funds. Recent UK HVCF programmes enshrine co-investment and ‘fund of funds’ principles, requiring minimal programme direction and setting broad fund aims such as sector, location and private matching fund requirements. Private sector managers make the investment decisions and assist in the management of their portfolio companies. In the case of UKIIF, private sector fund managers also lead the umbrella fund of funds, inviting competition from private VCs to run the specialist underlying funds. The British Business Bank provides light touch government monitoring, including early, mid-term and end of programme reviews which could lead to strategic operational changes.

Have UK Funds Become too Private Sector Led?

The private sector-led format of recent UK HVCFs, notably UKIIF, raises questions as to whether they have become too market-led, chasing high performance and returns at the expense of assisting more marginal, but fundable cases (Rigos, 2011). Lerner (2010) states that public supported funds should not compete with private funds, yet our evidence suggests that they do once they are perceived by entrepreneurs to be private funds competing on equal terms to other private funds. For Lerner (2010) and Clarysse et al. (2009), the imperative is that government funds stimulate private VC activity and establish VC markets and then withdraw, rather than continue to compete and crowd out.

ECF, Aspire and UKIIF aim to balance generating commercial returns for investors with achieving wider economic objectives. Since the funds aim to demonstrate to private investors that early stage growth potential businesses can yield attractive returns, commercial investment decisions are devolved to private VC fund managers to ensure that investment decisions utilize rigorous commercial criteria. At the same time, by providing equity funding to innovative, high growth potential businesses that are struggling to raise sufficient funds from other sources, HVCFs aim to contribute to the UK’s economic growth and job creation. This assumes that the government’s wider

economic goals can be achieved by first achieving the private fund managers' commercial objectives (Murray and Lingelbach, 2009).

Lerner also argues that HVCFs should not finance 'substandard firms' that cannot raise private capital. Defining 'substandard' is challenging because of the diverse range of investment propositions that fund managers are confronted with and the often subtle distinctions between them. For example, Oakey's (2003) model of funding viability and declining risk identifies 'immediately fundable' projects (hypothetically 10–20 per cent), a critical area of 'probably fundable' (hypothetically 10 per cent), 'probably un-fundable' (30 per cent) and 'clearly un-fundable' (50 per cent). He argues that from an economic development perspective public supported funds should be focusing on the 'probably fundable' only marginally more risky firms and developing them to a point where they would attract private sector VC.

Rigos (2011) argues that HVCFs addressing early stage equity gaps are assisting more risky and marginal business propositions and, therefore, should be expected to perform less well than their private VC counterparts operating at later stages. However, our surveyed UKIIF private fund managers' view strongly favoured delivering for their investors. These managers reported that it had been tough fund raising, particularly in 2009–2010, and that while the government funds were helpful, their main aim was to maintain a 'strong brand' and deliver high performance for their investors of 'at least two times investment return within eight years', with one respondent highlighting that 'we will out-perform other VCs, operating in the top quartile'.

It would seem that recent HVCF evolution has shifted towards greater emphasis on the 'immediately', rather than 'probably fundable' applicants. This suggests the existence of a potentially important proportion of early stage ventures which may struggle to get private funding but which could be successful with the right support. Arguably, these are what HVCFs should focus upon, rather than the best applications that are likely to obtain private funding anyway, in order to reduce the risk of crowding out private investors (Leleux and Surlemont, 2003).

Finance and Project Additionality

Our surveyed HVCF recipients exhibited only moderate levels of financial additionality. More than two-thirds (69 per cent) of ECF and Aspire recipients believed they could have raised the required finance from elsewhere, while two-thirds of UKIIF recipients believed that they definitely would have raised alternative finance. However, many thought that alternative funding would have been more difficult to arrange and involve ceding greater equity share, particularly if it involved a business angel syndicate. Notably, several ECF and most UKIIF recipients mentioned other VC funds taking an interest, although they doubted that the terms and VC fit with their business would be as good. UKIIF recipients presented particularly strong business plans and managerial expertise, with globally innovative concepts and being fully prepared to cede ownership share for the business growth rewards that equity finance can deliver. These findings, therefore, also suggest that these latest HVCF programmes are supporting Oakey's (2003) 'immediately fundable' rather than more marginal 'probably fundable' businesses, particularly with UKIIF's dominant private sector ethos investing in only the very best projects in commercial terms.

<INSERT TABLES 8.3 AND 8.4 ABOUT HERE>

Higher levels of project additionality were recorded (Table 8.3). Over two-thirds (69 per cent) of ECF and Aspire recipients indicated that their project would have been adversely affected in the absence of government funding; 31 per cent being slowed or reduced in scale and 38 per cent claiming inability to proceed in any format. Despite 15 out of 16 UKIIF recipients potentially being able to proceed without the funding, three quarters of projects were likely to have been scaled down or slowed down (Table 8.4). A crucial point was that UKIIF VC managers 'really understand the business and take a hands-on approach to driving the business forward.' While other funding might have been available, UKIIF VC managers were considered far less constraining on business development plans than business angels or corporate investors. Consequently, additionality arises

mainly from the management of the HVCFs being better suited to the needs and investment timescales of recipient businesses.

<A>'RECOGNIZE THE LONG LEAD TIMES ASSOCIATED WITH PUBLIC VENTURE INITIATIVES'

Lerner (2010) emphasizes addressing the long investment horizon requirements for some types of innovative SMEs and the need to play the long game, despite the pressure from politicians for quick results. There can be a mismatch between the time required to demonstrate investment performance, with failed investments more likely to be realized before investment successes, and the time given to HVCFs to provide evidence of success (Murray and Lingelbach, 2009).

Recent UK TBSF financing research found that while expected investment returns on IT and electronics R&D were typically within three years, bio/life sciences could take considerably longer (up to ten years in some cases) (North et al., 2013). A recent European VC study also found that the time taken for investments to mature via trade sale or IPO exits is typically taking longer than before the 2007 financial crisis (Axelson and Martinovic, 2012). In the UK this may be due to finance escalator failures to ensure a continuous flow of external finance during the R&D funding rounds (Mason et al., 2010; Gill, 2010). Not only is this problem compounded by the inability of some HVCFs to make follow-on investments (Rigos, 2011), but our research also found examples of delays due to the greater demands of later stage investors and technical hurdles to get trading approvals.

Our fund manager interviews found that lengthening investment horizons apply to the more recent HVCF programmes. Fund managers commented; 'investments are taking longer to mature as

exits are taking place further up the development cycle', and that 'client business managers are almost always over optimistic in their expectations'. In practice it takes between 18 months and three years for the benefits of investment to start to become evident, but often five years or more before the firm reaches profitability. Fund managers emphasized the need to spread investments and had little expectation of significant returns within the first five to seven years of the fund, with pareto principles applying; 'the key to the level of returns is how well the top 20–30 per cent perform'.

Actual and Likely Impact on Business Performance

The surveyed 32 recipient businesses managers expected the return on investment to take several years, typically presenting more optimistic growth forecasts than their fund managers. Our first round interviews were conducted within 12 months of receiving HVCF funding, when two thirds of recipients were still at the pre-trading stage. Funding was mainly used for R&D, IP, prototyping and patenting. For those already trading, improved sales and profitability were typically judged as at least 50 per cent attributable to the funding, but in one-fifth of cases growth had been slower than expected because of poorer market conditions than anticipated.

A follow-up survey in May 2013 sought clearer assessment of recipients' progress and funding impacts. This revealed three business closures, five trade sale exits and five still pre-trading. Although trade sales may include failing businesses strategically acquired at low valuations, particularly in recessionary times (Baldock et al., 2013), the indications were that these represented at least double the original investment. The follow-up survey in May 2013 demonstrated the beginnings of the expected growth trend from these potentially high growth businesses (Table 8.5). For 14 UKIIF businesses (excluding two trade sales), two years after their first round funding, annual median sales had reached £1.5m, with median employment increasing more than threefold to 35

employees. In the case of ten ECF/Aspire businesses (excluding three trade sales and three business failures) four years after initial funding, annual median sales had reached £380,000 with median employment increasing six fold to 26 employees. The re-surveyed businesses also forecast further exponential growth over the next year, with median annual sales turnover for UKIIF businesses doubling and more than trebling for ECF/Aspire businesses.

<INSERT TABLE 8.5 ABOUT HERE>

However, aggregate growth performance shields a trend of underperformance which underscores the fund managers' concerns. Focusing on the 24 re-surveyed businesses, Table 8.6 exhibits a trend of worsening performance over time, with three-fifths of ECF/Aspire respondents indicating that they were behind schedule four years after initial funding and projecting a median time to exit of 6.5 years, 1.5 years beyond original forecasts. Contributory factors included delays in technical development, regulatory compliance, lack of customer acceptance, poorly performing markets and lack of follow-on finance.

This investment horizon elongation (Table 8.6) supports Lerner's view that HVCFs need to be flexible/adaptable to changing circumstances. Some re-surveyed business managers voiced concerns that the 10–12 year ECF life cycle might require an earlier exit than ideal, creating uncertainty and a sub-optimal value trade sale or IPO. Other evidence (Baldock et al., 2013) found that the IPO exit route had become more difficult since the onset of the GFC, adversely affecting the development momentum of some innovative SMEs. Trade sales were the preferred exit route for most surveyed businesses (Table 8.6).

<INSERT TABLE 8.6 ABOUT HERE>

<A>'AVOID INITIATIVES THAT ARE TOO LARGE OR TOO SMALL'

Lerner (2010) contends that HVCFs require sufficient funding and scale for sustainability. Rigos (2011) recommends an ideal UK fund size of £50m operating over a ten year life cycle with global funds (e.g. UKIIF) requiring at least £150m. Similarly, the Technopolis (2011) review of funding models for stimulating innovative new companies in Europe recommends that HVCFs should be large (>€50m), never regionally focused (as this constrains deal flow and the benefits of specialization) and properly aligned to realistic commercial incentives. The UK government's shift from regional to national, and even to pan national HVCFs, illustrates this more recent focus on scale and size.

Lerner is also clear that programmes must not be too large, or extend beyond their required life range, having sufficient scale and size to establish a sustainable VC ecosystem, enabling future government withdrawal. He points to the success of Israel's Yozma funds in encouraging high levels of foreign co-investment and achieving fund cycle completion and privatization within ten years, suggesting that once the mechanisms are demonstrably in place government can withdraw (Clarysse et al., 2009). Essentially, balance in the scale and size of HVCFs is required. They must not be so large as to crowd out existing private VC activities nor outlast their period of usefulness.

Funding Leverage

Scaling up HVCFs requires leveraging of matching private sector investment, achieved either through partnership and co-investment funding, or within the underlying fund's finance raising activities. UKIIF demonstrates the fund of funds model's scaling up potential: over and above the umbrella fund's £150m government finance input (Table 8.2), an additional 20x match funding was raised (e.g. from institutions, banks, family offices) including foreign investment.

Partnership funding is also important to developing a successful VC market. ECF, Aspire and UKIIF each adopted different models for leveraging additional finance for company portfolio

investments. However, whether partnership funding is a programme requirement or not, it is widely adopted in early stage VC funding, being largely supported by both public and private VCs. Potential benefits include risk sharing, gaining key VC sector skills, opening up new and international market opportunities and presenting more viable exit cases (Hopp, 2010).

Typically, Aspire and ECF recipients sought additional finance at the outset. For example, for seven of the 12 ECF cases other funding followed (or was conditional upon) the ECF funding, including cases where business angel and bank loan finance was unlocked on completion of the deal, with £4.7m of ECF funding raising £7.9m from other sources within one year of the initial funding. UKIIF has no fund leveraging requirements, but with over four-fifths of investments in early stage R&D projects, other investors were often encouraged to prevent over exposure, strengthen human capital (e.g. by partnering VCs with particular market knowledge) and provide sufficient funds to develop the business. Several UKIIF lead investor funds recommended other private VCs as junior investors in the financing round, with these alliances contributing to a more robust business case for future investment rounds. At the time of the research UKIIF had invested almost £46m out of total project financing of £96m, with 55 per cent of additional finance (£25m) attributed as leveraged through UKIIF. Leveraged funds came from a variety of sources, including private VCs, business angels, banks and mezzanine funds.

Follow on Funding

The NAO report (2009) highlighted that HVCFs require sufficient size to provide suitable follow-on funding. Our follow-on survey revealed four businesses experiencing lack of HVCF further finance with an innovative energy business CEO commenting: ‘It is very tough with VCs backing off to later stage financing. Our early stage VC will not take us any further and we cannot raise sufficient funds

from our HNW contacts. In the absence of any suitable government funding we will be forced to slow down development further.’

The follow-on survey also found that two fifths (9/24) required further funding within the next 18 months, ranging from £150,000 to £13.3m (median £3m), with the largest amounts required by life sciences and advanced manufacturing businesses. The suggestion was that the larger investments required for later stage global sales development would be sourced from private and institutional investors, but that failure to secure follow-on funds would result in premature trade sales and the potential loss of the business overseas.

Several business managers voiced concerns that their fund managers were operating purely from an investment return perspective: ‘VCs are more interested in their fund performance than their portfolio companies, do not like diluting their share of equity with later stage private or institutional equity investment, and may force trade sales that the business does not really want.’ This minority viewpoint raises serious questions about how public backed VCs should operate. Those UKIIF fund managers favouring early stage partnering with other private VCs to share risk were clear that they wanted lead investor status and to avoid interim funding round partnership dilution where possible until they were ready to exit.

<A>‘UNDERSTAND THE IMPORTANCE OF GLOBAL INTERCONNECTIONS’

Lerner (2010) advocates a global perspective in establishing HVCF programmes, attracting foreign investment and VC skills which can be transferred into improved local VC spin out activities over time, as well as encouraging portfolio businesses to establish a multinational presence. The key proviso is that investment into businesses seeks a realistic return within the country where the funds

are being established, creating a viable VC market and developing businesses which drive forward the national economy. UKIIF, which invests mainly into UK businesses but includes European private VC funds and can invest globally, embodies this philosophy.

UKIIF provides a government backed pan European funded programme at a size (£330m) that is comparable with successful US VC funds with a global reach which can assist the growth of leading edge, innovative high tech companies. Interviews with UKIIF's continental European fund managers clearly demonstrated that the programme was 'providing more emphasis to fund UK based companies', leading to matched foreign funding investment and high level experienced overseas fund manager participation with UK businesses.⁸

Around four-fifths of surveyed ECF/Aspire (12/16) and UKIIF (14/16) recipients reported trading overseas or planning on exporting, a far higher proportion than typical UK SMEs.⁹ VC fund managers were often essential to their development, taking non-executive director (NED) roles or appointing specialists onto the board for guidance (e.g. in sales and marketing), providing considerable perceived added value to the performance of the business (Manigart and Wright, 2013; Clarysse et al., 2011). For the UKIIF recipients in particular, a crucial aspect was the VC's assistance in opening up overseas market opportunities (Lockett et al., 2008). In some cases, this was achieved with the fund managers providing guidance and expertise in finding prospective customers, undertaking international trade negotiations 'which could be complex and daunting in the case of prospective large overseas business customers' and in overcoming technical market barriers. For others HVCFs partnered with overseas private VCs specifically to help establish entry into overseas markets, notably in North American for several life science and digitech businesses.

Lerner's (2010) proposition that overseas companies be invested in and establish a presence within the host HVCF programme country is more contentious. ECF and Aspire were aimed specifically at UK owned and based businesses, the economic development argument being that these businesses will grow and generate long term jobs in the UK. A commonly highlighted problem

(Rigos, 2011) is that many of the assisted businesses will eventually trade sale, most frequently being acquired by overseas companies with the resultant loss of jobs and IP to the UK. Lerner's counter argument, which is broadly supported by current UK government policy, suggests that it is better to host innovation and enjoy the benefits of trade sale wealth, reinvestments, continued activity of the associated successful UK-based serial entrepreneurs and other related spin-out activities, than to be too prescriptive on retaining a national presence for these businesses.¹⁰

Our follow-up survey indicates that the vast majority (four-fifths) of recipient businesses will seek trade sale exits which will most likely be to an overseas buyer. Five out of the 32 originally surveyed businesses have so far been acquired, all by overseas companies (4 US, 1 Israeli), but some have retained a UK R&D and sales office presence. There is also some evidence that the entrepreneurs that sold out, or failed, are remaining in the UK and establishing new businesses. It is also evident that some of UKIIF's overseas investments have UK links which have led to strategic growth acquisitions and investments being made into the UK, indirectly resulting in jobs growth and financial spillover impacts. In an increasingly global economy, Lerner's position, therefore, makes considerable sense, provided that the host country remains an attractive and competitive place to do business.

<A>CONCLUSIONS

In conclusion, UK government intervention for early stage equity finance is justified in addressing the finance gaps ranging from seed funding where there is insufficient business angel and grant funding at below £0.25m up to and possibly exceeding £5m for intensive R&D sectors.

Lerner's (2010) aim for HVCFs to catalyse the development of a sustainable private VC ecosystem appears highly appropriate for the UK. The British Business Bank is developing a new post GFC funding escalator involving the three HVCF programmes considered here alongside the Angel Co-investment Fund (£200k to £2m investment range) and Business Growth Fund¹¹ (£2m–£10m), both introduced in 2011. This requires a holistic approach (Hughes, 2009) to operate cohesively in overcoming finance escalator breakages and maximizing the synergies of government finance and related support programmes.

While UK programmes have evolved along the lines of Lerner's (2010) principles by letting the market lead, a critical question is whether the market driven, commercial private sector ethos is in danger of eclipsing the wider economic development rationale for public interventions in this area. Our evidence suggests that HVCF programmes should avoid cherry picking the 'immediately fundable' business projects that private VC managers prioritize, by focusing more on the 'probably fundable' in order to maximize wider economic benefits and minimize displacement.

It is critical that HVCFs have the timescale to match the extending investment horizons of highly innovative intensive R&D sectors and the associated technical and regulatory delays that lengthen exit horizons. Evidence suggests these business sector investments may well stretch beyond the 10–12 year lifespan of HVCFs, indicating the need for extended programme management, or transition to rollover or follow-on funds, to achieve optimal outcomes for funds and their portfolio businesses. HVCFs must also have the size and scale to achieve Lerner's ultimate sustainable legacy objective from investment returns and ongoing future private sector VC fund development, enabling strategic government withdrawal.

Finally, recent UK experience through the UKIIF endorses Lerner's view that in an increasingly global economic environment it is vital to encourage inward investment, collaborating with and encouraging the best VC funds to invest in the UK. However, a crucial remaining question which certainly merits further research is whether successful portfolio businesses will create

sustainable jobs, investment and wealth creation within the UK economy rather than there being a leakage of these longer-term benefits.

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<A>NOTES

1. Includes the Catalyst Fund which tops up multiple private funds to enable fund raising closure.
2. This model relies on a lead private investor finding potential investee businesses which they present to the fund manager who then decides whether to use the BIS funds to invest alongside the private investor based on an assessment of the latter's investment track record and the strength of the due diligence work undertaken.
3. Prior to the British Business Bank being formed in 2014, Capital for Enterprise Ltd (CfEL) was the UK government's body overseeing its equity programmes.
4. The EU state aid limit for the UK was subsequently raised in January 2014 from £2m to £5m.
5. Included the two umbrella funds not directly investing in companies.
6. Small Business Survey 2012 (BIS, 2013); Centre for Business Research (CBR, 2008); BDRC (BDRC Continental, 2010) Mid-cap finance survey.

7. Includes umbrella and underlying funds for which it is not possible to calculate the proportion of leveraged funds that would already have been committed.
8. Gilde Healthcare III fund, investing in the UK as well as across Europe and in the US, is managed by one of Netherland's most experienced VCs, established 1982.
9. The UK Small Business Survey 2012 (BIS, 2013) found that 19 per cent of SME employer businesses currently export.
10. While these arguments do apply to the UK, they are particularly relevant in the case of small economies such as New Zealand where the limited size of the equity and VC market combined with the limited size of the technological community can lead to successful TBSFs having to relocate abroad to develop further (Deakins et al., 2015).
11. Qualifying businesses are required to have £5m annual sales turnover. This is a private fund, established through the UK Government's Business Finance Task Force, backed by five UK banks (Barclays, HSBC, Lloyds, Royal Bank of Scotland and Standard Chartered) to provide growth funding.

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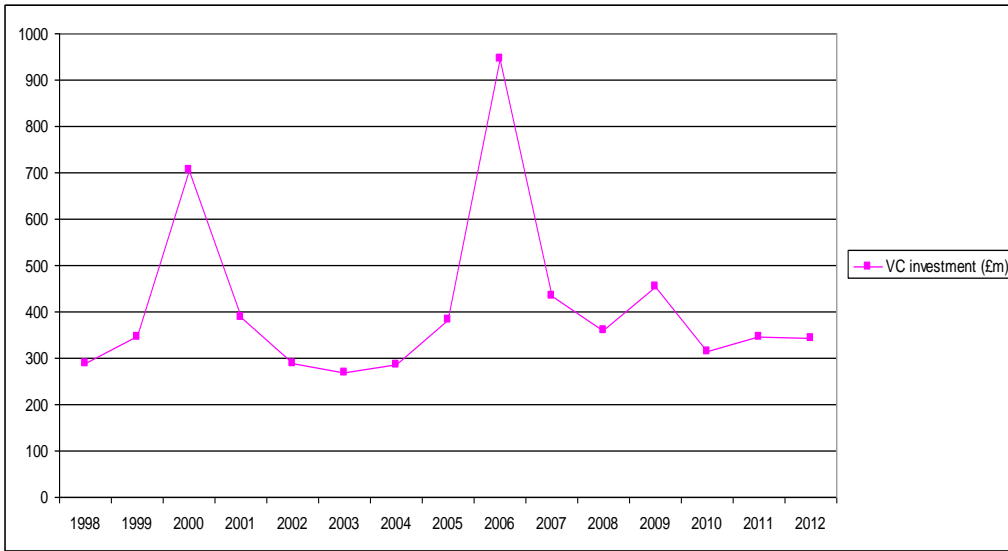
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Source: BVCA (2013).

<cap>Figure 8.1 Value of UK VC (£m) funded per year by BVCA members

<cap>Table 8.1 Business interviews by venture capital fund

Programme	Successful recipients	% of business investments*
ECF	12	21%
Aspire	4	100%
UKIIF	16	41%
Total	32	32%

Note: *At the time of survey.

<cap>Table 8.2 Breakdown of fund manager interviews

Fund	Location
Enterprise Capital Funds (ECFs): The Catapult Growth Fund (ECF) IQ Capital Fund Oxford Technology Seraphim Capital Fund Sustainable Technology Partnership Amadeus and Angels Seed Fund Dawn MMC	Leicester Cambridge Oxford London London Cambridge London London
UK Innovation Investment Fund (UKIIF): Hermes GPE Environmental Innovation Fund European Investment Fund UK Future Technologies Funds Underlying funds: Zouk Cleantech II Scottish Equity Partners Environmental Energies WHEB Ventures DFJ Esprit Advent Life Sciences Gilde Healthcare III	Fund of funds manager, London Fund of funds manager, Luxembourg Hermes fund, London Hermes fund, Glasgow and London Hermes fund, London EIF UKFTF fund, London and Cambridge EIF UKFTF fund, London EIF UKFTF fund, Utrecht and Cambridge USA

<cap>Table 8.3 Ability of recipient businesses to raise finance from elsewhere without government VC funding

	ECF/Aspire	UKIIF
definitely would not have raised finance from other sources	2 (12%)	1 (6%)
probably would not have raised finance from other sources	1 (6%)	0 (0%)
no strong opinion	2 (12%)	0 (0%)
probably would have raised finance from other sources	6 (38%)	4 (25%)
definitely would have raised finance from other sources	5 (31%)	11 (69%)
Total recipient businesses	16 (100%)	16 (100%)

<cap>Table 8.4 Extent to which recipient businesses would have gone ahead with business plans without government VC funding

	ECF/Aspire	UKIIF
would not have gone ahead at all, in any format	6 (38%)	1 (6%)
would have gone ahead at the same time, but on a smaller scale	1 (6%)	5 (31%)
would have taken longer to go ahead, but at the original planned scale	2 (12%)	3 (19%)
would have taken longer to go ahead and on a smaller scale	2 (12%)	4 (24%)
would have gone ahead at the same time and at the same scale	5 (31%)	3 (19%)
Total recipient businesses	16 (100%)	16 (100%)

<cap>Table 8.5 Total employment and sales turnover, actual change and future forecast

Total Employment	ECF/Aspire			UKIIF			Total		
	N=	median	mean	N=	median	mean	N=	median	mean
Time of funding	16	4	9.5	16	11	38	32	5	26
1 year after funding*	16	10	12.9	16	20	58.4	32	15	39.5
2 years after funding	-	-	-	14	35	69.1	-	-	-
3 years after funding**	-	-	-	14	60	84	-	-	-
4 years after funding	10	26	25.7	-	-	-	-	-	-
5 years after funding**	10	30	29.4	-	-	-	-	-	-
Annual Sales Turnover (£m)									
Time of funding	16	0	0.56	16	0	6.2	32	0	3.85
1 year after funding	16	0	0.7	16	1.3	10	32	0.9	6.2
2 years after funding	-	-	-	14	1.5	14.3	-	-	-
3 years after funding*	-	-	-	14	3.25	18.9	-	-	-
4 years after funding	10	0.38	1.62	-	-	-	-	-	-
5 years after funding*	10	1.2	2.17	-	-	-	-	-	-

Notes:

* ECF/Aspire surveyed February 2010, UKIIF surveyed February 2012.

**Year 3 is the next year forecast for UKIIF.

**Year 5 is the next year forecast for ECF and Aspire.

<cap>Table 8.6 business performance, time and type of investment exit expected

Performance	Year 1 All* (Column %)	Year 2 UKIIF (Column %)	Year 4 ECF/Aspire (Column %)
Better	30%	29%	0%
Same	48%	43%	40%
Worse	22%	28%	60%
Time to Exit			
Median	5 yrs	5 yrs	6.5 yrs
Range	2–7yrs	2–7 yrs	4–10 yrs
Longer	n/a	29%	80%
Same	n/a	64%	20%
Shorter	n/a	7%	0%
Type of Exit			
Trade Sale	67%	72%	80%
IPO	25%	21%	10%
Other	8%	7%	10%
N=	24	14	10

Note: * ECF/Aspire surveyed February 2010, UKIIF surveyed February 2012.