

The UK equity gap

Why is there no Facebook or Google in the UK?

Sarah Rigos
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About the Paper: this discussion paper is a contribution to the debate on how to support growth across the tech sector in the UK, with a focus on the funding gaps faced by tech firms. It is not a statement of Mayoral or UK Government policy. The paper was authored by Sarah Rigos, an analyst from Barclays, whilst on secondment to the Greater London Authority.

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1. What is the equity gap?

Defining the equity gap

In the UK, a view often expressed is that while we are successful at basic research and generating new ideas and early-stage companies, we are far less successful at developing these initiatives into genuinely global firms. This is a view held across much of the science and technology sectors, and most recently in the digital sector.

In his Tech City announcement on 4 November 2011, Prime Minister David Cameron said, 'the founders of Google have said they could never have started their company in Britain'. This begs the question, 'why is there no Facebook or Google in the UK?' Several explanations have been offered, such as the lack of a sufficiently entrepreneurial culture, skills gaps and the need for a more integrated European marketplace. One theory is that development and growth are held back by an 'equity gap' at various stages in the firm life-cycle.

The UK equity gap can be defined in different ways. While some approach it at a macro-level, looking at the difference in returns on VC funds in the UK versus the USA, this paper seeks to define the funding gap at a more micro-level. In order to do this, we must determine where in the chain of funding, small and medium UK enterprises (SMEs) are struggling to find finance in the tech sector.¹ If one imagines companies moving up a funding ladder as they develop, then the type of funding they require will depend on their position on this ladder. Thus, this paper defines the 'equity gap' as the occasions where companies require equity, but where equity is hard to attract (equity meaning investment, rather than loan funding).

To grasp how to fill the equity gap at a micro and policy level requires having a basic understanding of the wider economic system. Skills, employment, and the UK entrepreneurial environment are key to ensuring the success of policy proposals to fill the funding gap.

Policy suggestions to improve the funding gap have so far been primarily demand-led, focusing on the availability of finance investment. However, supply-based policies that improve UK companies' investment readiness are fundamental to realising any demand-based policy. This is because supply and demand variables are inextricably interrelated. For example, demand-based policies to improve the UK's attractiveness to investors, such as tax breaks or co-investment funds, will only be effective alongside policies to improve the investment worthiness of companies (eg increasing the supply of skilled labour). Since demand-based policies cannot be put in place without equal regard being given to the supply of UK SMEs, this paper is divided into two sections: 'microanalysis' that looks at demand-based policies (seed accelerators, angel investors, venture capitalists) and 'macro-analysis' focused on supply-based policies (entrepreneurial environment).

¹ 'Tech' is defined as a broad category relating to the research, development and/or distribution of technologically based goods and services. This sector contains businesses revolving around the manufacturing of electronics, creation of software, media, digital, computers or products and services relating to information technology, and biomedical and biotech.

At a basic level, demand-based policies are those that drive seed accelerators, venture capital, and angel investments into viable UK companies. Analysis of these industry sectors fall under the micro-level section because they are the most easily identifiable way to determine where small and medium UK enterprises (SMEs) are struggling to find financing in the technology sector. In this section, each industry is analysed and policy is proposed to increase each area's global competitiveness.

Supply-based policies are those that can help make UK entrepreneurs an attractive investment for the investors defined in the micro-analysis section. Supply policies fall under the macro-section of this paper and focus on the wider environment in which entrepreneurs generate ideas and operate their businesses. Specifically, it provides analysis of the UK entrepreneurial environment and laws, proposing policy to help grow this sector with an eye towards the UK's position in Europe.

Types of funding gaps

This paper analyses the funding gaps at different stages of the firm lifecycle, and proposes policies to attract greater levels of investment. Below is a graphic summarising the UK equity funding ladder (Figure 1) and the equity gaps. This is broken down by investment amount and correlated to typical financiers (Figure 2). While Figure 2 is two-dimensional, it should really have an additional dimension that specifies company sector.

Capital requirements for start-ups vary considerably based on industry type. For example, start-ups in the biomedical and biotech industries require a significant amount of funding to get going, unlike social media companies that can launch with a few thousand pounds. This has implications for industries such as biotech, medical, and pharmaceuticals where angels are unable to supply the amount of start-up funds, which may exceed £10m, and venture capitalists are unwilling to take the risk.

Seed/start-up funding gaps

The only price bracket which start-up companies can easily access is £0-£20K, which is provided by seed accelerators. The main identified equity gap is seed and start-up companies seeking funding of £50K-£1m. Venture capitalists are virtually non-existent in this funding space due to the level of high risk associated with pre-revenue companies and a preference to invest in companies with cash flow. Angel investors and syndicates generally invest in amounts of £0 to £250K for individual angels, and £0 to £1m through syndicates. However, for those sectors in which angels can invest, they provide an important source of funding. There is also an opportunity to provide further incentives to encourage more angel investment in the UK.

The Enterprise Finance Guarantee (EFG) scheme was set up to provide a government guarantee to a lender, such as a bank. This gives confidence for the lender to loan to a viable business looking to raise additional finance, consolidate their existing debts, or increase cash flow.² However, bank loans are rarely the most appropriate funding source solution for

² Under EFG, government guarantees 75% of a SME's bank loan. All of the High Street banks participate in this scheme, but the programme is not always being used to its full potential. In 2009-10 there was £350m of unallocated funds and currently only 6% of loans issued are to the technology and communications

a young business because repayment starts at a stage when their surplus revenue is minimal. While securing a bank loan prevents dilution of ownership or control, the impact on an SME's balance sheet and on ownership of assets if they default, usually outweighs the benefits of a bank loan.

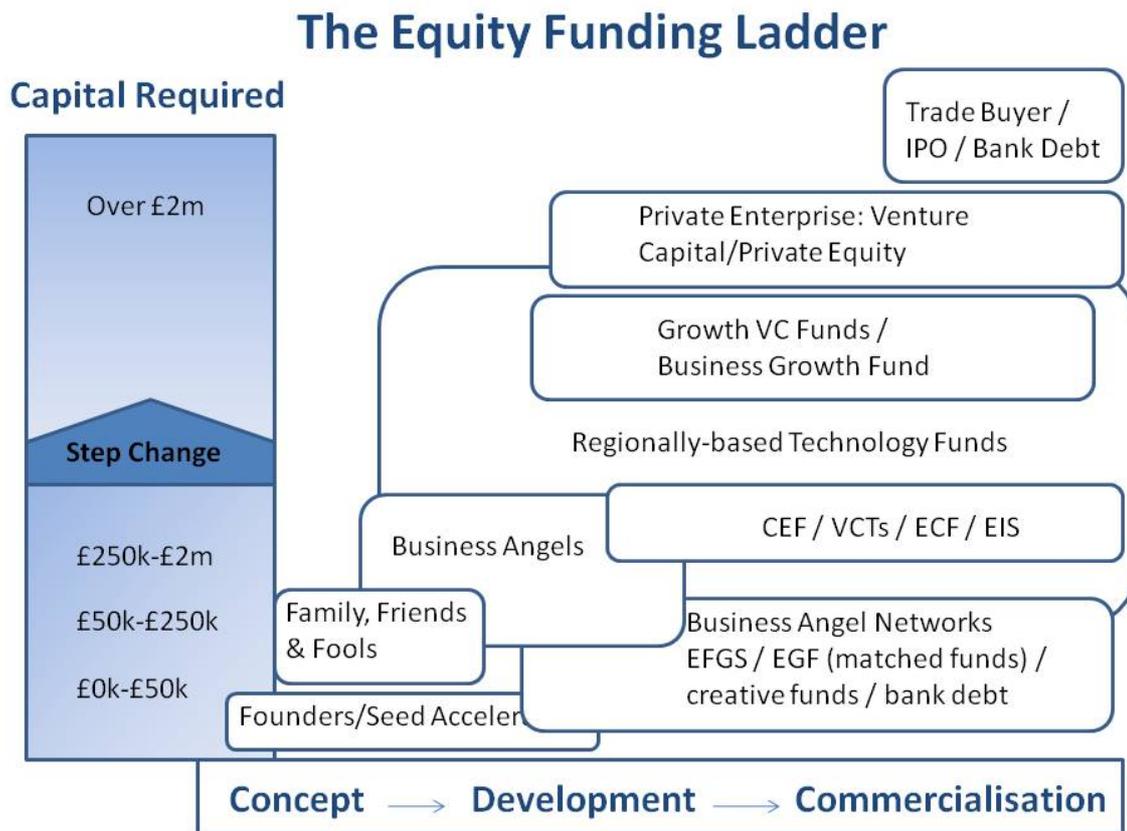
Mid- to late- stage growth company funding gap

There is less of an equity gap for mid- to late- stage companies seeking funding of up to £3m as angels and venture capitalists are not afraid to finance companies with cash flow. The primary funding gap for companies in this stage is when they require financing greater than £3m. Here, venture capital and private equity are failing to meet demand and simply do not have the funds available. UK banks are eager to loan up to any amount to companies with sufficient cash flow and assets. The Business Growth Fund implemented in April 2011 will target the late-stage funding gap by offering financing to companies with turnover of £10m-£100m.³ Analysis of banks and the funding gap is not addressed further in this paper, as they are a less relevant funding source solution for start-ups, and are filling the funding gap for mid- to late- stage companies.

sectors (Capital for Enterprise, 2009). There has been a recent push to promote awareness of the EFG scheme to entrepreneurs. For example, Barclays Bank has been educating their SME clients on the benefits of the EFG scheme.

³ The Business Growth Fund (£2.5b) consists of the majority of UK banks and will offer £2m to £10m in equity capital to these companies in return for an equity stake in the business. The Taskforce banks are looking to build an investment portfolio over the next years of £1.5 billion, subject to rolling review. The board will consist of independent non-executive directors and representatives of the banks.

Figure 1: The Equity Funding Ladder



Acronym Key: Capital for Enterprise Fund (CEF)⁴; Venture Capital Trusts (VCTs)⁵; Enterprise Capital Funds (ECF)⁶; Enterprise Investment Scheme (EIS)⁷; Enterprise Finance Guarantee Scheme (EFGS)⁸; Early Growth Fund (EGF).⁹

⁴ Capital for Enterprise Limited (CfEL) is an asset management company and the UK government’s centre of knowledge on the design, implementation and management of finance measures to support small and medium size enterprises across the UK. CfEL has over £1.1bn of assets and liabilities under its direct management. Including all the private sector money, these schemes have created SME financing schemes totalling more than £3bn.

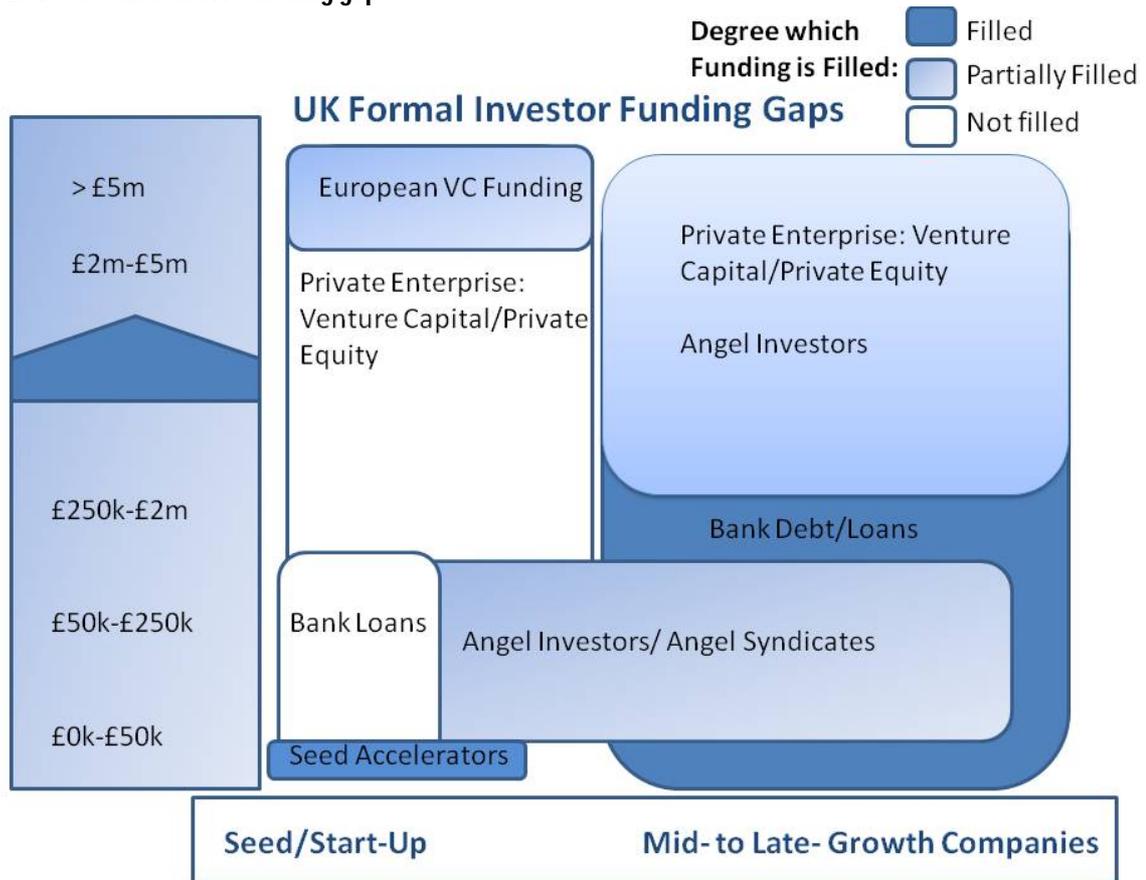
⁵ Venture Capital Trusts (VCTs) are designed to encourage individuals to invest indirectly in a range of small higher-risk trading companies whose shares and securities are not listed on a recognised stock exchange. By investing through VCTs you spread the investment risk over a number of companies.

⁶ Enterprise Capital Funds (ECFs) use government funding combined with private sector investment to establish funds that operate within the ‘equity gap’. Responsibility for the management of ECFs was transferred to CfEL.

⁷ The Enterprise Investment Scheme (EIS) is designed to help smaller higher-risk trading companies raise finance by offering a range of tax reliefs to investors who purchase new shares in those companies.

⁸ The Enterprise Finance Guarantee Scheme (EFGS) is a loan guarantee programme intended to facilitate additional bank lending to viable SMEs that are unable to secure a normal commercial loan. The program was developed to encourage risk funding for start-ups and growth firms. The goal was to increase the funding for small companies of on average £50,000 for ‘innovative and knowledge intensive’ businesses, as well as other growth businesses.

Figure 2: UK formal investor funding gaps



Methodology

Throughout the paper, comparisons are made between UK and US markets. This provides a context in which to set the UK. The US is noted as having the most robust financing system for companies at all stages of development. As such, it is an apt proxy for assessing the potential in the UK. The aim is not however to establish UK policy that directly copies that of the US, nor is it to use policy to mimic how US markets operate.

This paper uses quantitative and qualitative data to draw its conclusions. Secondary sources include academic journal articles, books, newspaper articles, company reports, and government documents. The degree to which each source was used varied depending on the availability of data in each market studied. For example, investing in unquoted businesses is a private activity, so finding documentation on the activity of related UK angels proved difficult. There are no directories of business angels and various angel networks define the term 'angel' differently. Analysis therefore, often relied on small surveys of business angels who were registered with a business angel network. The results were then extrapolated to give estimates of dynamics and the total size of the UK business angel investor market. However, at present neither the number of UK business angels, nor their investment activity can be measured with total accuracy. Far more data is available on the UK venture capital industry and significantly less on the opinions of UK entrepreneurs. Primary sources include attending venture capital and entrepreneur networking events, and discussions and interviews with selected angels, venture capitalists, and entrepreneurs.

Key research obstacles

Some of the key problems with statistics used to identify the equity gap include:

Type of company: Small companies may not necessarily equate to start-ups, but often surveys confuse the two terms. Small companies may have a steady cash flow so pose less risk for investors, whereas technology start-ups may have large capital requirements.

Comparability of companies' stages of development: The British Venture Capital Association (BVCA) provides an analysis of venture capital by number of companies and by amounts invested for 15 stages including the following stages: seed stage, start-up stage, early stage, later stage venture, and expansion/growth capital. In comparison, the British Business Angel Association (BBAA) survey offers analysis by number of investments classified into the following nine stages: seed, start-up, early stage/growth capital, expansion, late growth, established, turnaround, MBO, and other. These different classifications make it hard to compare levels of investment by stages.

Scale of activity: Some surveys only give an overall figure for the amount invested. It may not be clear whether 'number of investments' refers to investment 'deals', rounds of investment, or 'companies'.

Sector of investment: The sector 'technology' often groups companies together and the term does not have an agreed definition, which makes comparison across sources challenging.

2. Microanalysis of the funding gap

Seed accelerators

Position on the funding ladder

Business accelerators are one way to address the UK funding gap by offering investment readiness and mentoring for start-ups. Accelerators are programmes that combine the elements of traditional incubators, small amounts of equity-based funding, and in-depth coaching and mentoring. Other names for these include micro-seed funds, business growth accelerators, or boot camp programmes. This type of programme has primarily emerged in the software and web industries. They deploy a new pool of capital and invest in a fresh 'crop' of companies at least once a year. These programmes offer small equity funding at levels much smaller than any traditional VCs, which in some cases may overlap with angel investment.

However, where seed accelerators' funding differs from angel investments is that these programmes often invest in a group of companies all at once, before they are investment ready. They usually provide more mentorship and guidance than the typical angel investor(s), but often less funding. For example, the average amount invested by angels according to the BBAA was £156,357 per investment (alone or in groups: a total of £50.5m in 323 investments for BBAA and Linc members). However, seed accelerators rarely invest

more than £20,000 per company. The focus of accelerators is on mentoring, for which they offer a small sum of money in exchange for a small equity stake.

Seed accelerators are one of the most effective investment readiness platforms currently available. Firstly, their model requires helping many start-ups at one time, which means more companies are being prepared for finance in the UK. Secondly, investment readiness funding sizes of £5,000 to £20,000, while highly desirable for some start-ups, are unprofitable for venture capitalists. They also are unappealing to angel investors because these investors seek to invest larger sums in potential winners, rather than provide investment readiness services. Thus, seed accelerators are the primary providers of investment readiness advice. The key element of mentorship in these programmes can be critical in increasing the likelihood of a firm raising funds.

US versus UK markets

Y Combinator (YC) is arguably the most notable seed accelerator located in the US. YC's network is considered 'superior' with its unrivaled access to venture capital firms and links to the tech industry (due to its founders' personal connections) and location in Silicon Valley, California. However, entrepreneurs will always seek funding and good ideas are border-blind. To successfully construct a seed accelerator in Europe means avoiding the urge to replicate YC as this could lead to failure from the start. Research (Christiansen, 2009) shows that entrepreneurs value the parts of programmes that give them the most long-term success: connections to investors, brand/alumni connections, and product/business support. Thus, if the resources entrepreneurs get from a seed accelerator are not compelling, the programme will not receive the best applicants, and therefore will not achieve maximum success.

A seed accelerator needs to look critically at what resources it can offer. This consists of a founder's connections, market experience, and expertise. It also must differentiate itself from YC by finding its own niche. The Springboard programme in Cambridge, UK focuses on B2B software applications and is an excellent example of founders using their expertise and connections in a market niche. So, if the UK can find their own Paul Graham, with appropriate network connections and knowledge, other successful seed accelerators are achievable here. The key is that the founder and the mentors they assemble for the programme, should in itself be a compelling enough reason for entrepreneurs to apply for and attend the programme. It should be noted that the availability of funding at the end of the programme is essential to its success. In the case of YC, each three-month cycle culminates in a presentation to an audience in Silicon Valley that now includes most of the world's top start-up investors of both venture capital funds and business angels.

Policy implications

The lessons learned from analysing YC should prove invaluable for encouraging well-connected individuals who are specialists in a particular field to create a seed accelerator programme in the UK that provides funds of £5K-£20K to start-ups (see Table 1). Again, seed accelerators are not angels, but rather full-time mentoring programmes. Mentoring is already widely accepted as important and is subsidised by government (such as investment

readiness programmes). There may be insufficient reason for government intervention at the seed stage, if the private sector is adequately filling this space.

Table 1: Seed accelerator key points

- Understanding *why* the YC model was successful is central to adapting this to the UK, not blindly replicating models from the US.
- YC's success is due to the founders' expertise, experience, and connections and its location where there is funding available and accessible markets.
- To build a successful seed accelerator in the UK, founders should choose a niche based on their connections and expertise in their field(s) of specialty, and levels of demand.

Business angels

Position on the funding ladder

Business angels are high-net worth individuals who invest their own money either alone or through an angel syndicate, directly into businesses in which there is usually no family connection. Angels typically invest in the hopes of achieving a significant financial return through some form of exit strategy. Business angels are an important source of finance for entrepreneurs. In particular at the seed, start-up, and early growth stages of businesses, where the amounts required are too small to be economically viable for venture capital funds to invest.

Beyond providing finance, business angels can help to strengthen management teams through their own involvement or by introducing third parties. This is often referred to as 'intelligent money' and helps to address the 'management gap'. However, once the company reaches a certain size, or if larger sums are needed than they can provide, venture capital firms can make larger follow-on investments. This step in the funding ladder, however, has broken down in recent years. One reason is the contraction of the venture capital industry and the increase in its typical minimum investment. This has meant that there are fewer venture capitalists available to make follow-on investments (Mason and Harrison, 2011). Another is that venture capitalists have increasingly favoured later-stage deals where the risks are lower (reflecting the appetite of their own, private sector, investors).

Peters (2009) associates the lack of venture capital follow-on investment to angel-backed ventures as being a result of poor venture capital investment management that in the post-2000 tech crash was detrimental to angel investors. He claims this experience has led many angels to follow an 'early exit' investment strategy by investing in businesses that have smaller financial requirements. Such businesses are less likely to require follow-on funding as they seek an exit through a trade sale in just a few years. This would be consistent with a preference for social media software investments over capital intensive, 'deep technology' companies. However, others note that it is common for follow-on investors to take preference over earlier investors, whether the investors are angels or seed-stage venture capital funds. This argument suggests that the ability of the follow-on investors to gain preferential terms reflects their strong bargaining power, and that the only way earlier investors gain equal terms is if they have the 'firepower' to continue investing. In the case of

multiple rounds for high tech start-ups, angels will not have the 'firepower' and thus are unable to achieve the same terms. Experience of this shortcoming deters them from making such investments in the future, as was witnessed during the 2008 to 2010 credit crunch.

The lack of follow-on investment by venture capitalist finance means that business angels are also increasingly required for the future investments in their portfolio companies. The public sector can be an important source of funding in this space for SMEs, through co-investment funds which invest alongside business angel groups (and other investors) or as a direct investor (Mason and Harrison, 2011). The Business Angel Co-Investment Government Fund, launching in autumn 2011, will make £50m available to invest alongside angel networks or syndicates into eligible SMEs.

US versus UK markets

Although there is no comprehensive survey of business angel activity available in the UK, in 2000 there were estimated to be between 4,000 and 6,000 business angels, investing up to £1 billion annually. These figures are based on extrapolations from the number of angels who are members of networks. The latest BBA survey shows 4,555 angel members (excluding Scotland), of which an estimated 1,800 are considered 'active' and less than 500 made investments through the network in 2009/10 (compared with 590 in 2008/09). The reported total investment of the UK network members in 2009/10 was £50.5m (including Scotland) (Mason and Harrison, 2011).

By comparison, 'in the US there are approximately 250,000 business angel investors who invested over \$26bn (£18.3bn) in 2007 in some 50,000 new ventures' (Shane, 2009, pp.114). It should be qualified that in the US, angels are not investing predominately in seed and start-up companies. In fact, only 35.5 per cent of investments made by angels in the USA are in companies with no revenue at the time of investment (Shane, 2009). A 2003 study conducted by the Federal Reserve Survey of Small Businesses indicated that only 15 per cent of small businesses that received an angel investment in the previous 12 months were less than ten years old (Shane, 2009). Taking into account US and UK population size differences, there is over three and a half times as much business angel investment per capita in the US. This is commonly attributed to the English being more risk averse than their American counterparts, and to the US having more robust entrepreneur and venture capital markets. However, no single reason has been identified as overarching.

Despite their difference in size US and UK angel markets are in other respects quite similar. Research shows that angels in the US and UK are just as often not granted board seats and spend little time on due diligence (Shane, 2009). Moreover, in both countries, 50 per cent of angel investments are unrelated to the investors' expertise (Wiltbank and Bowker, 2007).

The UK angel market

Mason and Harrison's (2011) study is the most in depth research to date on the UK angel market and is based on a BBA 2009/10 survey of 158 UK business angel network members (18 per cent response rate), with 406 exits achieved since 2000. While this study underpins the analysis in this section, caution is warranted as syndicate membership activity does not accurately reflect the entire UK angel market. Many angels prefer not to invest through

syndicates, and do not report their investments to any institutional body. The BBAA state that their membership figures under represent total UK angel activity and investments.

Mason and Harrison (2011) found that the overall estimate for angel investment activity in the UK in 2009/10 was £317.7m and the market remained remarkably stable despite the recessionary conditions.¹⁰ Most exits were failed investments, with 56 per cent failing to return capital (41 per cent lost all the investment) and nine per cent generating 80 per cent of the positive cash flows. The overall return on the 406 exits studied was 2.2x capital invested in less than four years.

Demand for angel funding has increased and while some of this additional demand was of low quality, angels actually invested in a slightly higher proportion of the deals available. Thus, while the proportion of businesses presented to investors has fallen, for those that make presentations to investors, the probability of receiving finance has actually risen (Figure 3). This suggests either that great ideas have not found it more difficult to raise finance from business angels in 2009/2010 than in the past, or angel networks have become more picky about the applicants they present to investors.

The supply of business angels has remained virtually unchanged according to BBAA estimates. These state that while the reported number of members of the BBAA networks has fallen by 993 to 4,555, this is due to double counting of members who belong to more than one network. The number of investments has increased slightly. In the UK (excluding Scotland) there has been a small increase (+20 investments; nine per cent) in the number of investments amongst BBAA member networks. The amount invested by angel investors (including Scotland) between 2008/2009 and 2009/2010 has dropped by 13 per cent from £57.8m to £50.5m (reflecting a fall in deal size), but overall deal sizes have remained fairly static, due to angels leveraging larger investments from co-investors (Table 2). Co-investment between angels and other types of investors (venture or government funds) has grown in the last couple years. In BBAA networks (which excludes Scotland), each £1 of angel investment leveraged £2.04 of other funding in 2009/10, compared with only £1.44 in 2008/09.

Angels appear to have not shifted their investment focus between 2008/09 and 2009/10 in terms of their preferred company stage of investment; over half of angel investments were in very early-stage pre-revenue ventures, over 50 per cent of investments by BBAA investors were in companies with five or fewer employees, and 78 per cent were in companies with ten or fewer employees. Other research has shown that since 2000, business angels have increasingly become more significant as a source of early-stage investment. They have increased from 16 per cent of all early-stage deals with private involvement in 2000, to 41 per cent in 2007 (Pierrakis and Mason, 2007, pp.20). However, it is important to note that the definition of 'early stage' investment included rounds 1, 2, and 3 and involved less than £2m. This is a different definition than the ones used by the BVCA or the BBAA, and by limiting the fundraising to less than £2m this particular study runs the risk of eliminating larger scale technology early stage funding deals from their analysis.

¹⁰ Although this assumes the inclusion of £18m raised for one company that the BBAA report notes 'skews' the results. Unfortunately it is not possible to adjust for this figure without knowing what proportion was co-investment and angel investment.

Figure 3: BBAA activity from 2008-2010

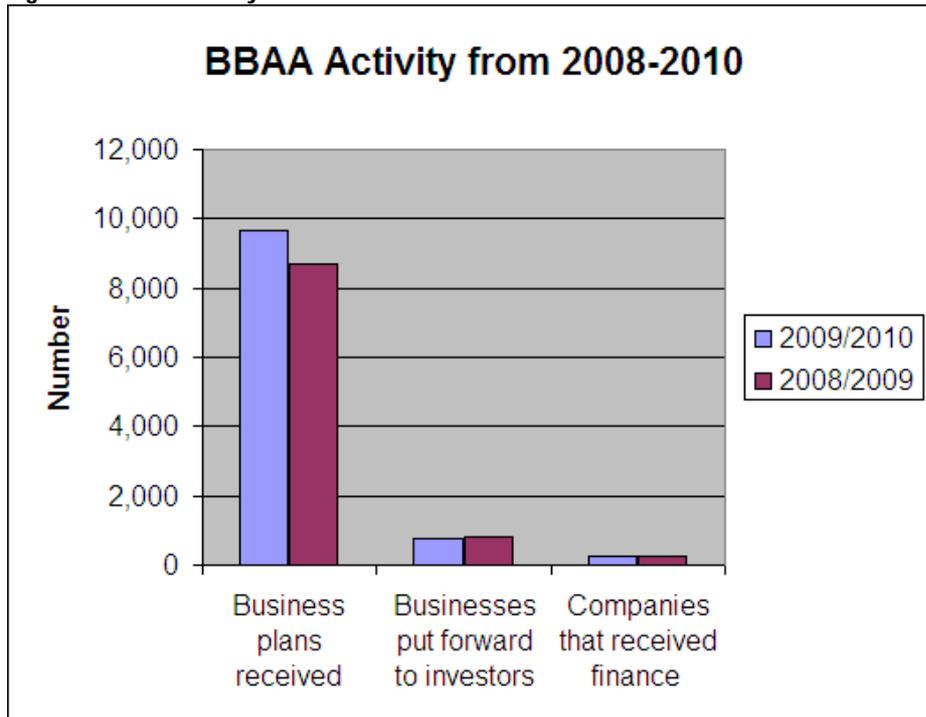


Table 2: 2009/10 BBAA Collective Investments by Angels

- In one-third of deals, angels collectively invested less than £50,000 per deal
- In over 50 per cent of the deals, angels invested less than £100,000
- In three-quarters of the deals, angels invested less than £200,000
- Over 50 per cent of all investments involved at least 2 angels, and 18 per cent involved more than five angels.

Profile of individual angel investors

The 2009/10 BBAA survey (Mason and Harrison, 2011) includes further details of 147 individual business angels. The survey found that the majority of respondents (72 per cent) made at least one investment in 2009/10, and the median was two investments, with a tail of active investors engaging in five or more investments (Figure 4). The amounts they invested in 2009/10 ranged from £10,000 to over £500,000, with a skew towards smaller investments: 56 per cent invested up to £50,000 and 75 per cent invested up to £100,000 (Figure 5).¹¹

¹¹ Caution is required in the analysis of these results as the survey was based on those who chose to complete a questionnaire sent to BBAA networks and individual members, available on the BBAA website, and distributed at various events. It is difficult to know if this self-selecting sample is representative.

Figure 4: Number of investments made by individual angels in 2009/10 (based on 147 responses from business angels, of which 106 made investments (a total of 276) in the period)

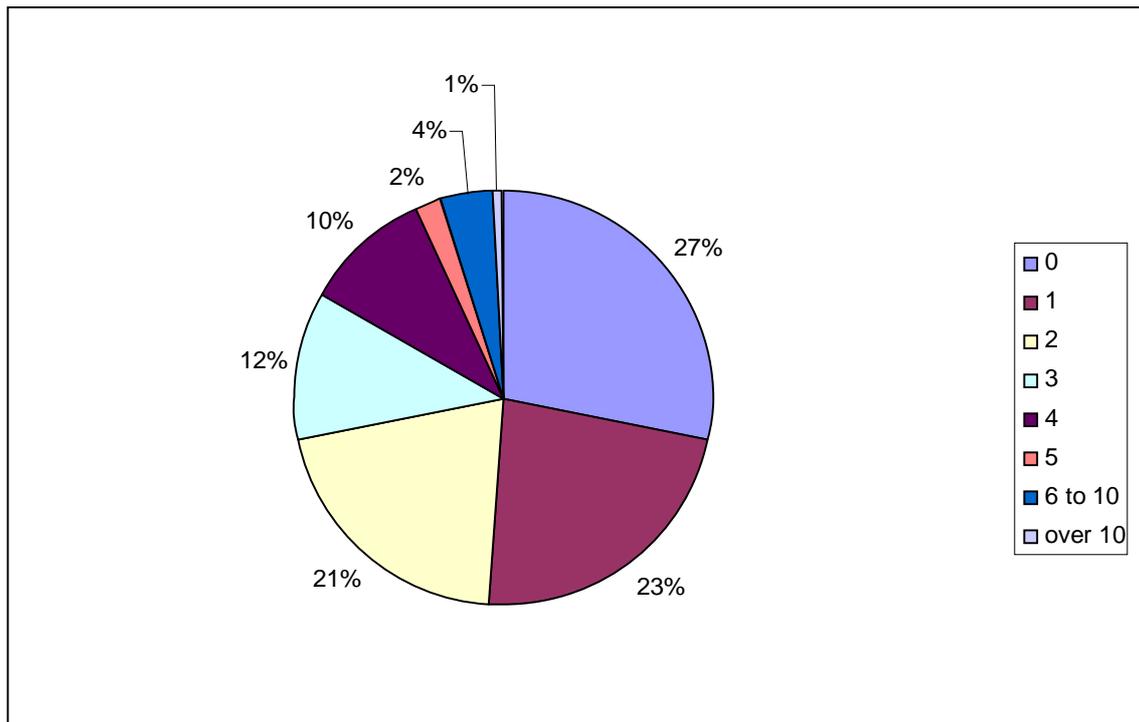
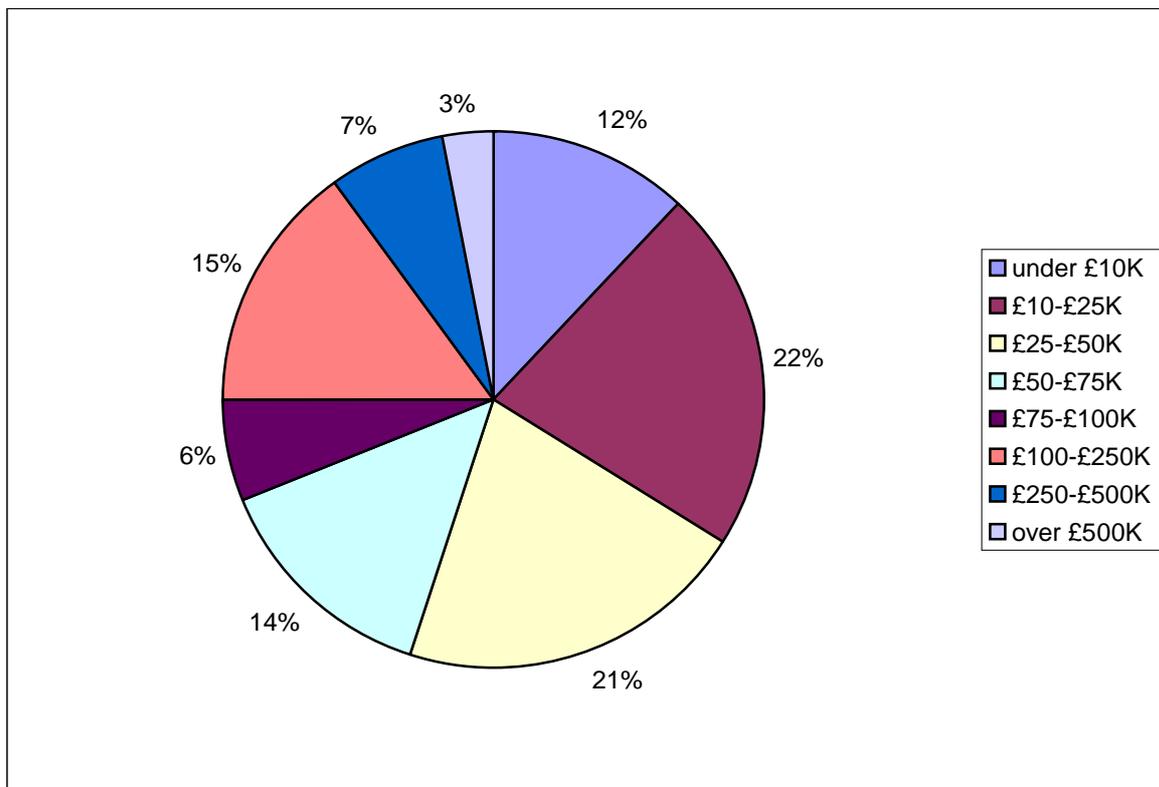


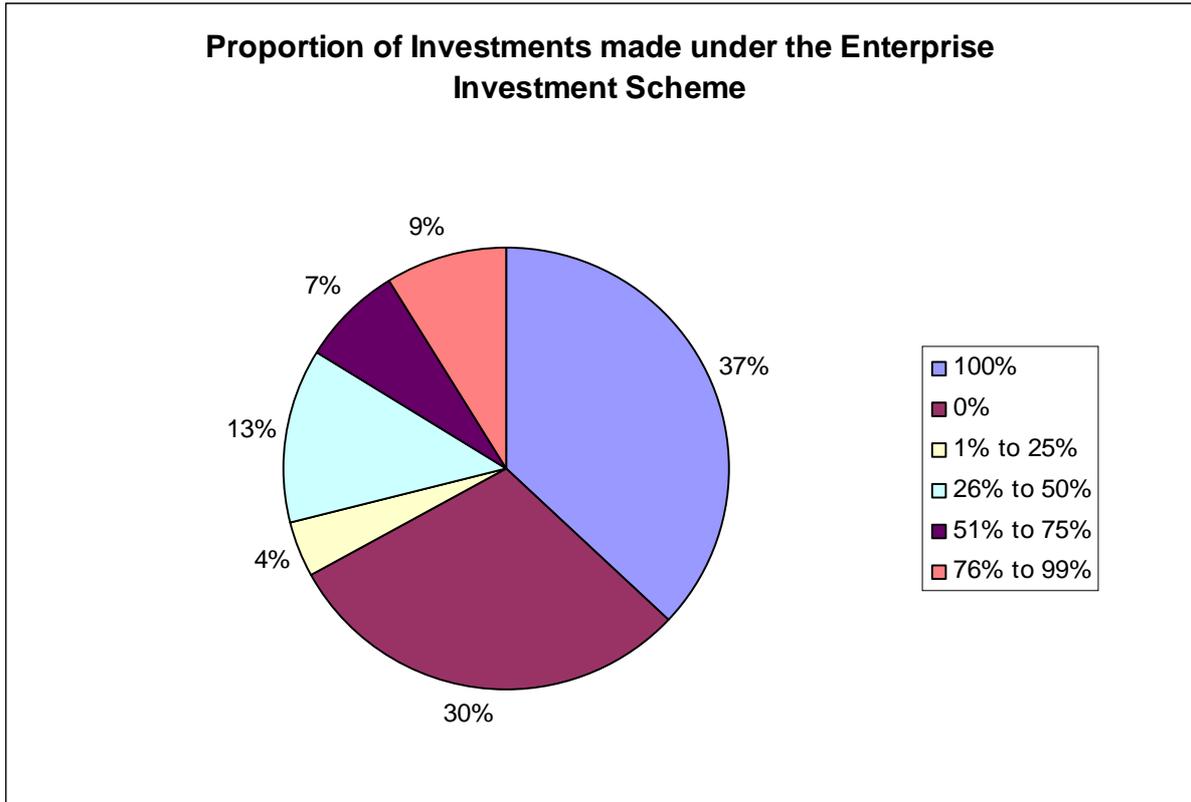
Figure 5: Amount invested by individual angels in 2009/10 tax year (based on 147 responses and excluding those who did not make any investments during the period (41 [28%] of the 147)



Enterprise Investment Scheme

The Enterprise Investment Scheme (EIS) allows income tax relief at 30 per cent to investors on qualifying investments up to £500,000 per tax year. The EIS was used in 57 per cent of these investments and 83 per cent of the investments were with co-investors. While the proportion of investors who did not use the EIS is slightly higher in 2009/10 (31 per cent) than in 2008/09 (24 per cent), the proportion of investors using EIS for all of their investments was also higher in 2009/10 (38 per cent) than in 2008/09 (32 per cent) (Mason and Harrison, 2011) (Figure 6). Whilst caution is appropriate in drawing conclusions from such a small sample (106 business angels), clearly EIS investment statistics do not accurately represent total angel investor activity. This is because they include individual investors who would not be classified as business angels (family and friends) as well as excluding angel activity that is not eligible for EIS. It is evident that angels are prepared to invest without the benefit of EIS, presumably in some cases because of the attractive nature of the particular investment even if it falls outside the scope of the EIS (for example, financial services and property). Of interest may be that one study (HMRC, 2008) found that EIS backed-companies had a lower survival rate than unsupported companies.

Figure 6: Proportion of investments made under the Enterprise Investment Scheme



Angel investment in technology industry

In the UK, business angels invest across a wide range of industries, but there is a strong focus on the technology sector (

Figure 7) (Mason and Harrison, 2011). However, they are limited to certain technology companies as the amount of funding they typically commit is not sufficient for high risk, capital-intensive technology start-ups. Angels are overall less likely to invest in technology than venture capitalists, with 24 per cent of angel finance going to the technology sector, compared to 44 per cent of venture capital in the same survey period. Research shows that angels make better returns when they know the industry, and it is reported that only five per cent of angels in the UK are technology specialists (Lord Sainsbury of Turville, 2007).

Since the Bank of England's 2001 report, there has been no new data gathered on UK angel investment in technology. The only relevant source available is data from companies raising funds under the Enterprise Investment Scheme (EIS). However since not all angels use the EIS, this is not fully reflective of UK angel market involvement in tech companies. Looking at EIS data, it is clear that technology-sector investments at the seed and start-up stages account for a minority of the amount invested by business angels.

A study commissioned by the then Inland Revenue from the period of January 1994 to the end of 2000-01 tax year, showed that only 30 per cent of the EIS companies surveyed were classified as high-tech. Of these, only 51 per cent classified themselves as start-up or early stage (Boyns, Cox, Spires, and Hughes, 2003). This indicates that only 15 per cent of companies receiving EIS were high-tech and start-up or early stage. More recent provisional statistics from HMRC for 2008/09, found that high-tech companies (including computer consulting) at all stages of development accounted for only 24 per cent (£124m) of amounts raised, and 28 per cent of the companies raising funding under EIS.¹²

A survey of business angel networks reporting by number of investments (rather than by amount invested) found that 70.5 per cent of investments by BBAA members responding were non-seed and non-start-up (Mason and Harrison, 2009, pp.62). Thus, while angels investing through networks and syndicates report a high percentage of deals in the technology sector, given the low percentage in seed and start-up companies overall, we can surmise most of their deals are not in seed and start-up tech companies.

Current data on entire angel investment in UK tech companies is sparse. However, a study of the Scottish market showed Digital Media and Enabling Technologies (DMET), energy, life sciences and chemicals accounted for 88 per cent (£19.3m) of total invested by angels in 2008. Of this total, DMET accounted for 46 per cent (£10m) – of which 60 per cent was in digital media – and 35 per cent (£7.8m) was in the life sciences sector. While Scottish angel investors appeared to be more geared towards high-tech industries than UK angels, most of their investments were in companies over three years old or in follow-on investment. Only £2.12m was new investment by angels in companies that had been in operation for less than three years (Boag, et al., 2008).

Why Scottish angels are more predisposed to high-tech companies at the later stage, and less in start-up and seed, is an interesting question. It has been suggested it may relate to their capacity to raise greater investment funds than UK angels on account of the Scottish Co-Investment Fund (a major player in the Scottish market). However, the average amount

¹² The actual amounts were £503m for 1,841 companies (an average of £273,221 per company), of which £123m was for 524 Hi Tech companies (an average of £234,733 per company). These are provisional figures.

raised in rounds including angels recorded by the BBAA (excluding Scotland) was £401,224. The average amount raised in rounds including angels recorded for Scotland by LINC was £352,564, despite the well-established Scottish Co-investment Fund. Even when looked at by the proportion of larger deals (Table 3), which includes angels plus any co-investment, the difference is not significant (Mason and Harrison, 2011).

Since the Scottish Co-Investment Fund requires at least pound-for-pound matching, the majority of investments by angel groups (85 per cent) are co-investments. In the vast majority of cases angels have provided at least 50 per cent of the overall investment (Mason and Harrison, 2011). The greater focus on technology for Scottish angels may reflect the nature of the deal flow¹³ in Scotland, which may be less varied than elsewhere in the UK, rather than the availability of a co-investment fund.

¹³ Deal flow is defined as the rate at which investment offers are presented to funding institutions.

Figure 7: 2009/10 BBAA Investments Based on Industry Type (by number of investments, not value)

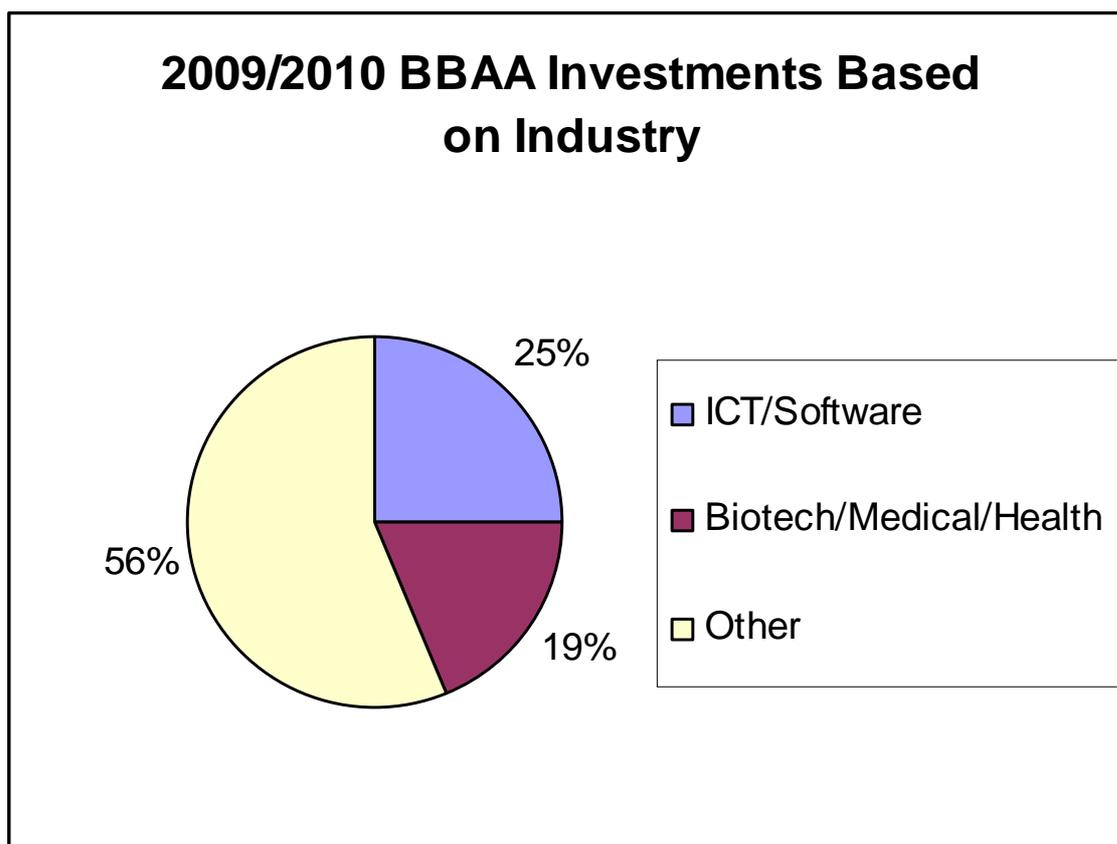


Table 3: BBAA and LINC Deal Sizes

	Deals under £500k	Deals £500k-£999k	Deals over £1m
BBAA	80%	11%	10%
LINC	78%	15%	6%

Policy implications

Review Enterprise Investment Scheme (EIS)

The EIS does not seem to be supporting primarily early-stage companies. An Inland Revenue commissioned study found that only 34 per cent of companies receiving funding under the EIS scheme classified themselves as in the 'start-up' phase and 19 per cent categorised themselves as 'early stage'. Among companies raising funds for the first time under EIS, 78 per cent were more than a year old and 41 per cent more than two years old. However, it is clear that tax incentives have a material effect on encouraging business angel investing. NESTA (Wiltbank, 2009) conducted a survey which found that 82 per cent of the participating investors had used the EIS and 57 per cent of the 1,080 investments made through these investors used the EIS. Investors reported that 24 per cent of their investments would not have been made without tax incentives, and 53 per cent of the

investors said they would have made fewer investments without tax incentives. Regardless of its critics, the EIS is a significant incentive for angel investment. Thus, improving EIS tax relief could further spur angel investment in the UK. Currently the EIS tax relief is at 30 per cent, but it could be increased to 40 per cent, providing greater incentive for angels to invest in early-stage, pre-revenue investment that involves higher investment risks. However, the cost of this in lost tax revenue clearly needs to be offset against the longer term economic potential benefits.

Under the current EIS and VCT schemes there is no explicit restriction to invest at a certain company stage. EIS and VCT schemes are based on company size (number of employees and gross assets). While these criteria are supposed to be indicators of SMEs, another scheme could be introduced to create more accurate proxies to ensure seed and start-ups have greater representation. To increase the amount of seed and start-up companies that benefit from the EIS, there should be a similar EIS system to target business angels. The Treasury consulted in summer 2011 on proposals to encourage investment in start-up businesses, through the reform of the EIS and VCTs. The proposed Business Angel Seed Investment Scheme (BASIS) would be a viable policy that could also meet this requirement - restricted to a narrower category of investor and a narrower range of company (HM Treasury, 2011).

Ordinary versus preference shares

One area of the EIS that requires immediate review is the rule that currently restricts business angels to invest in return for ordinary shares when using the EIS. This leads to conflicts when it comes to investing in the next round, or on exits. This is because venture capitalists primarily invest using preference shares, or a class of ordinary shares with preferential rights, which allow holders to be paid dividends before ordinary shareholders and/or liquidation priority.

A sensible alternative would be for business angels to be able to invest using preference shares and still benefit from the EIS. Some argue even if angels can invest in preferential shares, the only way for any investors – whether business angels or seed funds – to gain the same rights as venture capitalists providing follow-on funding is to take part in the follow-on round. This is because the provider of the follow-on funding is often in the position of dictating terms and may require, as a condition of providing funding (usually at a higher share price than that paid in previous rounds), preferential terms on exit.

Marketing angel investing as an investment strategy

Concerns have risen from the entrepreneur network that the EIS is not sufficiently marketed to wealthy individuals as a viable means of investing in their wealth. Angel investing needs to be sold to high-net worth individuals as a legitimate return on investment and the EIS provides a key incentive. Government could implement programmes to bring together people from the City who do not traditionally invest in tech-start ups with selected entrepreneurs to try and bridge the gap between London's tech start-ups and the City of London.

There has been an explosion of highly skilled workers starting up companies in London searching for seed capital. One way to meet this demand is by informing people who have

successful careers in the City about the investment opportunities available in the capital's tech sector. Recently, a platform has been launched by six entrepreneurs, venture capitalist, and angel investors to facilitate this (City Meets Tech, 2011). Government should support this activity by promoting networking events between high-net worth individuals and entrepreneurs and/or sponsor an EIS marketing campaigns to raise awareness of the tax benefits.

Create a co-investment fund

The Business Angel Co Investment Fund (CoFund), approved on April 12, 2011, intends to be operational by autumn 2011. It will provide syndicates with funds of between £500,000 and £1m in investment rounds ranging from £200,000 or more into eligible SMEs (Capital for Enterprise, 2011). The fund's aim is to increase finance availability for start-ups, however, it may not have this intended effect. It closely resembles the framework of the Scottish Co-investment Fund which is used in the majority of the country's angel deals. In Scotland, angels are less likely to make investments of under £25,000 and more likely to invest over £200,000. Since the Scottish Co-investment Fund requires at least pound-for-pound matching, the majority of investments by angel groups (85 per cent) are co-investments, and in the vast majority of cases angels have provided at least 50 per cent of the overall investment (Mason and Harrison, 2011). Thus, co-funds encourage a higher proportion of follow-on investments, which invariably means less available financing to new start-ups.

In 2009/10, the majority of companies funded through BBAA networks raised finance for the first time from that network, whereas for LINC Scotland most investments were follow-on deals. The proportion of BBAA network investments involving companies raising finance from the network for the first time rose from 59 per cent in 2008/09 to 67 per cent in 2009/10. By comparison, follow-on investments as a proportion of all investments by Scottish angel groups increased from 67 per cent in 2008/09 to 76 per cent in 2009/10. Consistent with this trend, the proportion of investments made in Scotland into companies with more than ten employees has risen from 29 to 33 per cent, compared to BBAA investments that increased only from 12 to 22 per cent. This is clearly an issue for policy makers, as one outcome of the move to more follow-on later stage investments in Scotland is the increase in the equity gap at the bottom end of the market. This should be considered when moving forward with the CoFund.

Review Enterprise Management Incentive (EMI) scheme

Studies have shown that angels with relevant industry and entrepreneurial experience produce better final results. The distribution of returns where angel investors became board members has significantly more positive outcomes. Public policy could incentivise angels with specific industry expertise to become actively involved and sit on the boards of the companies they invest in. One such proposal was put forth recently by NESTA (Wiltbank, 2009). It proposes the current EMI scheme should be amended to provide further specific incentives to business angel investors who take an active role on the board post-investment. This would be by allowing them to receive EMI share options in recognition of their role in supporting and mentoring the businesses in which they invest. Currently, only employees qualify for the EMI scheme and they must meet a minimum work threshold of 25 hours per week, or 75 per cent of their working time. This would provide greater incentive to

individuals with specialist skills and experience to become active investors. It would allow them to take lead roles as angels both in regards to representing syndicates and providing specialist skills and knowledge to the investee businesses (Wiltbank, 2009). However, one study found that angel investors who took managerial roles suffered lower returns. The relationship between better outcomes and board roles may therefore reflect situations where the investor was a good fit for the needs of the board.

Venture capital/private equity

Position on the funding ladder

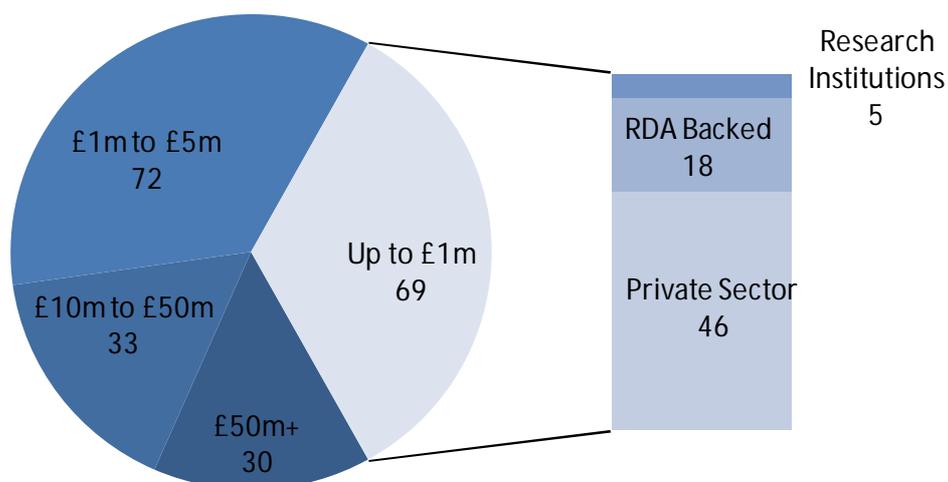
Venture capital is finance provided to high potential, high-risk growth start-up companies. The majority of UK venture capital is not invested in start-up, seed, or pre-revenue ventures. Of the £20.4bn invested by the British Private Equity & Venture Capital Association (BVCA) members in 2010 £8.2bn was invested in UK companies. Moreover, only four per cent (£313m) of the total funds invested went to early stage investments (defined as seed, start-up, early stage and later stage VC) (BVCA, 2010). A further £1,651m (20 per cent) was invested at the expansion/growth stage. Whilst the proportions are relatively low, reflecting the focus on later stage and MBO/MBIs, in total BVCA members invested £1,964m in 725 companies in the seed, start-up, early stage, later stage (397 companies) and expansion/growth capital (328 companies).

Some have reported that it is not profitable for the private sector (venture capital/private equity) to offer equity finance of less than £2m due to minimum overheads, risks and due diligence associated with high growth SMEs requiring finance (BIS, 2009). Whilst BVCA members do invest smaller sums (the average amount invested at each of the seed, start-up, early stage, and later stage venture capital ranges from £259k to £1.2m), most money is targeted at larger, later stage deals. This reflects the inferior performance of 'venture funds' compared with growth and MBO funds. As such, the primary role of venture capital/private equity in the funding ladder is to fill the mid-to late-stage larger scale growth company funding gap and to provide funding for MBOs/MBIs (BVCA, 2010).

Supply of small sums of finance for mid- to late- growth companies

The UK represents the largest venture capital market and private equity market in Europe, investing over £8bn in 2010 (Clarysse, Knockaert, and Wright, 2009). There are 204 private equity funds in the UK, most based in London. When you segment the average amount each of these funds states it may invest per company, only one-third provides investments of around £1m (Figure 8).

Figure 8: Amount and Number of Funds Invested by BVCA Members in 2009 (member directory 2009-10)



Research commissioned by the Department of Business, Innovation and skills (BIS, 2009) concluded that there is an equity gap in the UK market for businesses seeking between £250,000 and £2m. This is due to private sector/equity finance firms being unwilling to invest funding of this size into businesses. Moreover, NESTA reported in July 2010 that the number of new funds established since 2008 is not sufficient to replace earlier funds that have come, or are coming, to the end of their allotted investment period. Funds that have remained open are focusing on existing portfolios and not seeking new investments (NESTA, 2010). NESTA (2010) also predicts that fund raising will remain challenging until funds are able to decrease the backlog of companies in their portfolios. Liquidation would generate distributions to fund investors. Such funds will also need to show attractive IRRs in order to persuade investors to support new funds.

Several UK government policies have attempted to facilitate investment of £1m-£3m into SMEs, but it is important to distinguish between SMEs seeking relatively small sums of growth funding and start-ups. Within start-ups, there is also an important distinction between those needing relatively small sums of capital, and capital intensive technology start-ups. A reminder of some of these programmes: Venture Capital Trusts (VCTs) are venture capital funds with a stock market quote that give tax relief for those investing in the funds, which then invest in small companies; the Enterprise Investment Scheme (EIS) is aimed at business angels making individual investments in SMEs and offers a number of tax incentives; Enterprise Capital Funds (ECFs) encompass both private (typically business angel) and public capital and are invested in a fund and managed by the private sector.

These schemes target different parts of the equity gap. For example, latest statistics for the EIS show that £205m of the £505m provisional total for 2008/09 was for companies able to raise over £250k and up to £1m under the EIS. Venture Capital Trusts, which will typically invest more than angels under the EIS scheme, have various investment strategies. None of these schemes is specifically targeted at start-up and early stage companies. This is of particular relevance to London as the capital has strong clusters in high tech sectors

(including social media, life science and software for many of the established industries in London). Start-ups in these sectors need funding if they are to stay and contribute to economic growth rather than fail or move overseas to secure investment.

US versus UK Markets

One of the key differences between the US and UK venture capital markets is the amount invested per company, which is much lower in the UK (Table 4). There is some variation in definition. Still, the difference reflects the relatively lower levels of VC funding available at the earlier as well as later stage, and the smaller scale of UK venture capital funds in this part of the market.

Table 4: US v. UK Funding Stages

UK (companies)		US (deals)	
Seed and start-up	£538k	Seed	US\$4.67m
Early stage	£768k	Early	US\$4.62m
Later stage venture	£1.2m	Expansion	US\$8.38m
Expansion/growth	£5.0m	Later stage	US\$8.46m

Source: *BVCA Private Equity and Venture Capital Report on Investment Activity 2010*; and *National Venture Capital Association Yearbook 2011*

A recent study (Lerner, Pierrakis, Collins, and Biosca, 2011), identifies the key factors associated with venture capital fund performance in the US and UK markets. Analysing over 83,000 companies from the years of 1990 to 2005, the study examines which factors may explain the performance difference between the UK and US-based venture capital funds. It concludes that while there is still a gap in the performance returns of UK and US funds, this gap has significantly narrowed in recent years. The differences in returns were more apparent during the 1990s dotcom bubble, where fund return differences (net IRR)¹⁴ between the average US and UK fund was 20 per cent for funds raised in 1990-1997, compared to one per cent for funds raised in 1998-2005. The convergence was driven by declining returns in the US, as opposed to improved returns in the UK.

In light of these findings, we can expect poor performance to improve in the coming years as venture capital funds cash out of their social network investments, assuming exit opportunities remain positive. Since the US venture capital industry has more and larger funds invested in social networks than their UK counterparts, this could foreshadow a widening of the presently narrow performance gap.

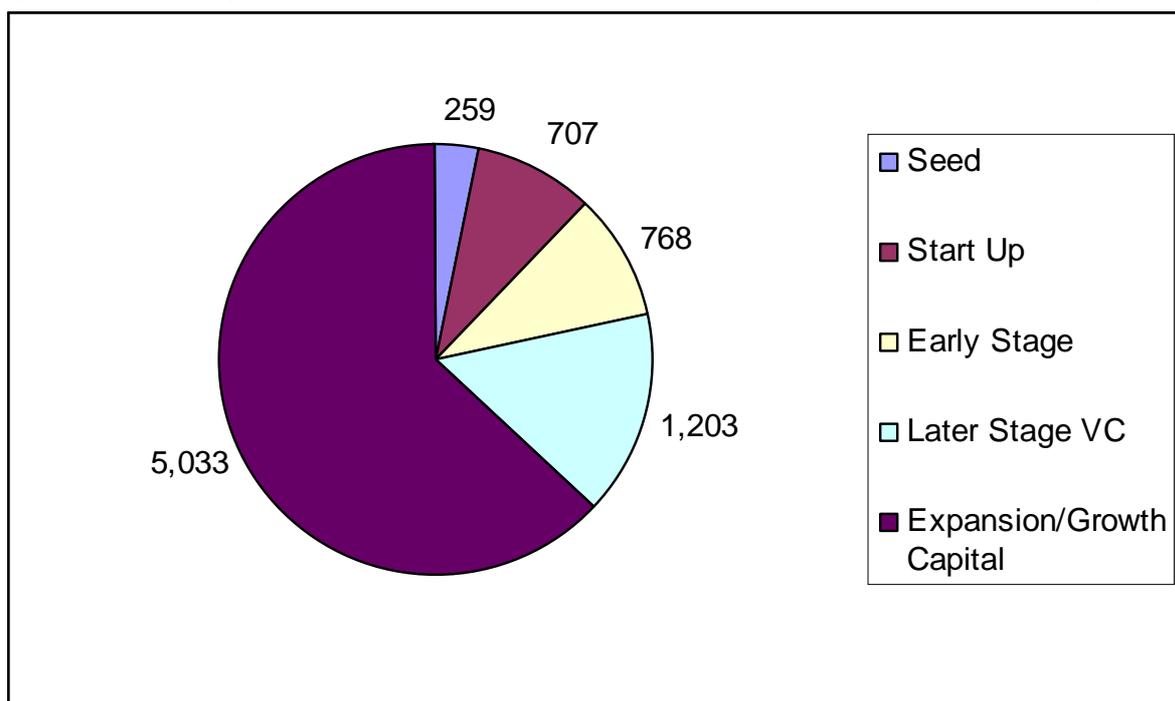
¹⁴ Net IRR earned by a LP to date after fees and carry. The internal rate of return is based upon the realised cash flows and the valuation of the remaining interest in the partnership. IRR is an estimated figure, given that it relies upon not only cash flows but also the valuation of unrealised assets.

The UK venture capital market

In 2010, the total amount invested by UK venture capital funds was £1,651m at the expansion/growth capital stage, compared with only £10m at the seed stage, £46m at the start-up stage, £168m at the early stage, and £89m at the later stage. Of these stages, the average amount invested by UK venture capital funds per company in 2010 was highest at the expansion capital stage at £5m, but only £259k at the seed stage, £707k at the start-up stage, £768k at the early stage, and £1.2m at the later stage (Figure 9) (BVCA, 2010).¹⁵ In the US, the average amount per deal in 2010 was US\$4.67m at the seed stage, US\$4.62m at the early stage, US\$8.38m at the expansion stage, and US\$8.46m at the later stage.

Whilst there are some differences in definitions, this shows the higher figures for the US at the earlier stages. In Silicon Valley, California, 300 companies receive funding of £5m-£20m per year, whereas this number is only 60 across the UK. This suggests that four out of five start-ups in the UK fail to progress to this higher-funding level (DFJ Esprit, 2011). Funding of this size often primes a company for a larger exit, which means that the UK may cultivate great start-ups, but fails to support them through their entire financing life cycle. Consequently, hundreds of technology firms fail to realise their full potential and become either stagnant or cease to operate.

Figure 9: 2010 Average amount invested (£1,000s) by UK venture capital funds per company by stages



Why is the market not filling this gap?

A study conducted by DFJ Esprit (2001) part of Silicon Valley firm Draper Fisher Jurvetson's international network, found that it takes approximately seven to ten years to build a successful new technology company. After this time period, one-in-three investments

¹⁵ "Venture" is defined as seed, start-up, early stage, and later stage venture based on full members of the BVCA and 100% response rate.

generate 600 per cent return, one-in-three recovers their value, and one-in-three lose capital. In simple terms, the venture capital industry manages risk by balancing the high returns from the third of successful companies with the two thirds that did not turn a profit. However, it is also important to note that seed, start-up and early stage funds do not generate the same returns as later stage funds, and also that the industry features a wide range of returns by funds within the same sub-sectors.

The returns for high tech venture capital are not appealing to institutional investors, such as fund managers, or high net worth investors. These groups can achieve annual returns of 15-25 per cent by putting their investments elsewhere, such as private equity or property, as opposed to the 0.6 per cent annual returns (BVCA average to December 2010) without leverage in the high-tech venture capital sector. Filling the funding gap will require addressing the disincentives for institutional investors to invest in the high-tech venture capital sector and ensuring that high-growth SMEs are finance ready to access equity finance. In all target sectors, early stage funds are looking for 'game changing' propositions with global growth potential, high barriers to entry, and clear competitive advantages with proprietary IP.

Evolution of ITC and Global Venture Capital Markets

Culture of the 1990s dotcom era

In the 1990s, public investors were the ones who earned the greatest returns because most capital appreciation in the major dotcom businesses took place only after a company went public. However, today companies are able to create value far faster than had been previously thought possible. A company can experience enormous value creation before going public, which makes company builders and private investors the biggest winners.

William Quigley (2011), Managing Director at Clearstone Venture Partners argues three reasons account for the low valuation of companies during the 1990s. Firstly, they did not reflect the extraordinary growth rates of the Internet, which today investors are factoring into their valuations. Secondly, the rise in hedge funds has allowed for specialisation in particular asset classes, such as technology. The number of hedge funds and the amount they manage has doubled since 2000. With specialisation comes expertise and greater insight into the potential value a company can reach. Thirdly, the far higher valuations accruing to private companies today can also be attributed to the speed at which companies can now exploit the global marketplace. Today, companies consider their international growth strategy to be as important as their domestic one. More than ever before, companies are accruing value quicker and scaling faster as they ride on the back of the burgeoning tech sector's global reach.

Venture returns characteristics of this decade

Various trends seem to be emerging in the venture capital market that will define venture returns this decade and, potentially, impact the scope for innovative companies to receive funding. In social media and parts of the software market, funding is more readily available for young companies, and valuations are high reflecting investor appetite. If valuations remain high, or concerns increase about a 'bubble', both venture capitalists and angels may

withdraw from this market. Whether returns prove attractive will obviously depend upon the market for exits (either trade sales to larger companies or via IPOs) after the young companies reach a suitable stage of development. For other technology companies at the start-up and early stage (particularly those requiring larger sums such as life science and therefore dependent on venture capital) it is still extremely difficult to get funding. It is hard to see this situation changing, given the relatively large sums required, the long time to exit (five to seven years) and the availability of alternative, safer, asset classes with better returns on which investors can focus. For more developed, cash generative SMEs seeking growth funding, the gap – for both equity and loans – has largely been addressed with the support of various government schemes, some in partnership with the banks.

Venture capital investment in technology industry

In contrast to the scarcity of data on UK angel investment in tech start-ups, it is relatively easy to judge the amount invested by venture capitalists in technology companies. The BVCA (2010) shows that in 2010, £226m was invested at the 'venture' stage into 331 technology companies and a further £207m at the expansion stage into 138 technology companies. This accounted for 72 per cent of total amounts invested at the venture stage and 13 per cent of total amounts invested at the expansion/growth stage.

In comparison, in 2010, tech firms in Israel attracted \$1.3bn in venture capital; nearly twice as much as Britain, whose economy is ten times as big (The Economist, 2011). Venture capital in the US is even more focused on the technology sector. From 1990 to 2004, some 81 per cent of all US venture capital was invested in just five industries, all of which were technology based including computer hardware, computer software (including internet), semiconductors and other electronics, communications and biotechnology. Moreover, 73 per cent of recipient companies operated in these industries (Shane, 2009). An MIT study powerfully indicated the importance of venture capital at the start-up stage for technology companies (Shane, 2009). Its findings support the view that the UK government must focus on specialist venture capital funds, as well as business angel networks to support high growth technology companies likely to succeed and become meaningful contributors to the British economy.

Filling start-up and early stage funding gaps

The UK government has attempted to relieve the mid-to-late-stage funding gap. Smaller sums of growth capital are available from business angels (encouraged by EIS tax incentives) and from Enterprise Capital Funds (typically government/angel co-investments where government agrees to a lower return to encourage angel investment), and from VCTs (funds offering individual investors tax incentives).

Larger sums are available from banks, supported by the Enterprise Finance Guarantee scheme (typically where there is positive cash flow to service and repay debt, but an absence of tangible assets to provide appropriate security). For established companies with even larger turnover (£10m-£100m) seeking equity of £2m-£10m, there is now also the Growth Capital Fund. Larger sums of equity are also available from the venture capital funds which have benefited from the UK Innovation Investment Fund (UKIIF). However, this fund was provided to fund managers with the directive to achieve top quartile returns. As such it

is not necessarily being provided to UK seed and start-up stage technology funds directly, but is being delivered to funds investing in the UK, Europe and elsewhere in companies at various stages of development.

There remains a shortage of start-up and early stage funding, which is particularly acute in large scale technology start-ups. If policymakers want to prevent great UK companies from heading to the US, they could meet the need for start-up funding by setting up US-style venture capital funds. To achieve critical mass and enable a spread of investments such funds need to be at least £50m, which requires an average of £5m a year of the ten-year fixed life of the fund. For funds aiming to bridge the funding gap for deep technology, around £150m, or £15m a year over ten years, would be appropriate to enable a spread of investments and give capacity to make follow-on investments in 'winners', thus enhancing the potential for good returns.

Critically, this fund should be privatised by the end of the ten year period. Israel's Yozma government fund, established in 1993, demonstrates the benefits of targeting government intervention to remedy market weaknesses and withdrawing once its objectives have been accomplished. Yozma provided matched funding of around 40 per cent of capital for a range of venture capital companies. Government invested US\$100m into ten hybrid funds that provided finance to over 200 start-ups. It was privatised in 2000, when the sector was considered to be established. Yozma led to more than 30 foreign-based VC funds operating in Israel, and increased the initial investment under management from \$100m to \$250m by 1996, and to \$2.9bn by 2001. The Israeli case clearly shows that targeted government intervention can remedy market weaknesses, and that there is a financial benefit to government withdrawing once its objectives have been accomplished (Clarysse, Knockaert, and Wright, 2009).

A. Encouraging investor activity

The UK government already offers a range of government policies that support mid- to late-stage companies in all industry sectors. Nevertheless it is clear that revision of existing policies and implementation of new initiatives could further stimulate the UK venture capital market for seed and start-up stage technology companies.

Government-run programmes to stimulate firm collaboration

To stimulate collaboration between firms, the US government created programmes to provide matching funds to consortia of firms. This was done during the Clinton administration as a mechanism for Federal programmes to support the adoption of advanced technologies. The belief was that great innovation often requires tapping into the knowledge that resides in multiple firms. However, firms can view collaboration as risky on account of potential loss of technology secrets and programme ownership.

The Advanced Technologies Programme (ATP) provides matching funds for firms and 'consortia' for the development of 'precommercial' technologies. ATP's budget grew from \$47m in fiscal 1992 to \$491m by 1996 (Mowery, D.C., 1996). The US government reasoned

that giving firms incentives to collaborate would accelerate technology innovation, increase the success rate of projects, facilitate information sharing, and decrease coordination costs. One study on the effect of the ATP program in the automobile industry found that ATP accelerated and improved the successful outcome of collaborative projects (Dyer and Staheli, 2001). This encouraged them to take on higher risks and longer-term research than collaborative endeavors without government involvement. Also, ATP provided funding during critical stages and helped joint ventures overcome barriers to collaboration, which helped such projects run more smoothly.

In the US, multi-firm and/or multi-institutional collaboration is required for many other programmes. This includes the National Institute of Standards and Technology's Advanced Technology programme, the US Department of Labour's Regional Skills Alliance programme, and the National Science Foundation's Advanced Technology Centres (McKinsey & Company, 2011). A similar government programme to the ATP in the US could stimulate multi-firm collaboration in the UK and help make firms more attractive to investors.

Exiting on an initial public offering (IPO)

The capacity for a successful exit depends on a number of factors including the stage of the company, its initial entry valuation, progress of competitors, and the opportunities for exit by trade sale to a larger company or via an IPO. Many of these, including IPOs, are affected by cyclical factors. Some have suggested the buyer's market is more robust in the US, where large companies actively seek to acquire small companies as part of their business strategy (including acquisitions overseas).

Michael Kaplan (2011) observed that many US venture capitalists realise their returns when a company goes IPO and is floated on the NASDAQ, whereas buy-outs are a more common exit strategy in the UK. In his foreword to the 2009 BVCA report *Benchmarking UK Venture Capital to the US and Israel: What lessons can be learned?*, Sir Ronald Cohen asserts that exiting a venture capital investment via public markets is more challenging for EU high-tech companies than US and Israeli companies (Clarysse, Knockaert, and Wright, 2009). He suggests a review of the feasibility of a pan-European stock exchange to finance high-growth companies.

While it is true that EU stock markets are more fragmented and lack the scale to deliver the depth and liquidity magnitude of US public markets, namely NASDAQ, this has become less important in recent months. In an interview with Simon Cook (2011), CEO of DFJ Esprit, changes that are taking place in the NASDAQ were revealed. Historically US firms stayed in the US and exited on NASDAQ. After the Enron scandal, NASDAQ became less active at a time when China's stock exchange market seemed to boom. US venture capital firms quickly realised the benefit of bringing the Silicon Valley model to other areas of the world, and so too did NASDAQ. Between 2001 and 2008, very few foreign companies were floated on NASDAQ. However, in the last 6-12 months NASDAQ has become more international and some of the most successful IPOs on NASDAQ have frequently been foreign companies operating outside of the US. For example, last year the most successful company on NASDAQ was a Swedish tech company, Qliktech. If NASDAQ has opened its doors for business, UK companies may start to consider it a viable exit strategy.

B. Maximise returns

Government sponsored boards that decide when and how to invest funds can maximise returns by picking appropriate fund managers and targeting funds better. Selecting the right fund manager is significantly more important than choosing from which country the fund operates. Forty-five percent of UK funds outperform the median US fund, and 22 per cent of UK funds established since the post-bubble period would have been in the top quartile of US funds based on returns (Lerner, Pierrakis, Collins, and Biosca, 2011). However, government also has to recognise that if it is targeting the equity gap, it will see lower returns than later stage deals. This is why the private sector avoids such investments, creating an equity gap. Government therefore must ensure it achieves its economic aims, at minimum public cost, rather than competing with the private sector by investing in funds with the best financial returns. The strongest quantifiable predictors of VC returns are:

- **Experience** - More experienced managers perform better. Success is positively correlated to the number of previous funds partners started where the market benchmark was outperformed (Lerner, Pierrakis, Collins, and Biosca, 2011).
- **Who** - Repeat founders have better success, regardless of whether their first companies failed. Ninety per cent of the big exits, and 66 per cent of the smaller exits, are not first time entrepreneurs. Also, co-founders tend to do better than single-founders, and younger founders tend to do better than older founders (Lacy, 2011).
- **Early birds** - VCs that invest in earlier rounds receive larger ROI on average (Quigley, 2011). It is not that early-stage funds outperform later-stage funds, but that getting into the venture at an earlier round can pay off. In the case of investing in earlier rounds, it is obviously important that early investors can maintain their investing through all future funding rounds. Those who fail to invest in later rounds often see their returns reduced or eliminated by dilution or are adversely affected by later stage investors requiring favourable terms as a condition of their investment. This is potentially a major deterrent to angels investing in companies which require multiple funding rounds.
- **Fund size** - Funds can be too big or too small. Lerner, Pierrakis, Collins, and Biosca (2011) attribute poor returns on UK funds not to those investing, but to the funds' characteristics. On average the UK has smaller funds than the US, and returns on smaller funds are not as robust as returns on larger funds because of the diseconomies of scale.
- **Location** - Performance seems to have been higher for funds located in the four largest hubs – California (Silicon Valley), New York, Massachusetts, and London. Funds from these hubs always perform better regardless of whether the fund invests in that hub area or another region (Lerner, Pierrakis, Collins, and Biosca, 2011). For example, it has been suggested that a London venture capital firm investing in a Liverpool company will have a greater ROI than a Liverpool venture capital firm investing in the same company - despite having less proximity and connections.

However, others stress the importance of start-up and early stage funders being involved in their investee companies.

- **Market** - Lerner, Pierrakis, Collins, and Biosca (2011) found large variations in returns generated by different sectors. The study reported that those funds with a larger share of their investments in internet and computers, biotechnology and healthcare, and business services delivered the highest returns during the study period. However, it must be remembered that other factors are relevant to performance, including the size of funds analysed, lifecycle stage of the company receiving investment, the appetite for acquisitions in particular markets, and the IPO climate.
- **Public versus private funds** - The gap between publicly backed and private funds has narrowed in recent years. This suggests that either government has become more strategic when designing new venture capital schemes or that it is less focused on targeting the equity gap and more focused on financial returns. Historically, UK public funds have been less successful because they invested in the wrong locations, were not the right size, and had rules that prohibited follow-on investment thereby jeopardising a company's chance for survival. Where the size of the fund or the rules prevent follow-on investment, it is difficult to generate optimum returns (Lerner, Pierrakis, Collins, and Biosca, 2011).

Microanalysis policy summary

The funding gap is a problem that all small firms experience when they try to expand and they do not necessarily have to be start-ups or even necessarily tech-based businesses. This research concludes that it is not especially difficult to start up – for example 14 per cent of London businesses in any given year are new. The real problem businesses have is when they attempt to scale up. There have been many high-tech start-ups that are purchased once they reach the equity gap, often by companies located outside of the UK. Three key policy points should be taken from this micro analysis (Table 5).

Table 5: Microanalysis Summary

1. Policymakers may fear failure, but they must keep in mind how the venture capital industry's profits operate. The industry as a whole may not be profitable, but every couple of years there is an exit that makes up the loss suffered by the industry – such as when Skype was sold for £10bn to Microsoft.
2. *Boulevard of Broken Dreams* (Lerner, 2009) clearly shows that the perceived market failure in small capital financing is not easily solved by public sector interventions. Failure rates are similar across public and private sectors.

3. Macro-analysis of funding gap

So far this summary paper has focused on demand-based policies to improve the availability of finance investment for UK companies. However, policies to improve investment capacity in the UK will only be realised if investors are presented with attractive companies to invest in. Thus, the ability to attract greater funding through policy implementation will in part depend on the success of supply-based policies to improve the supply of high quality investment-worthy companies. This section provides a summary analysis of the UK entrepreneurial environment, and proposes policies to facilitate the growth of this sector.

Profiling tech entrepreneurs

US versus UK market

Only five of the top 100 computer science programmes in the world are in the UK, whereas 19 of the top 25 are located in the US. This means the pool of talent available to tech start-ups in the UK is smaller (McKinsey & Company, 2011). As a result, there is a need to ensure the supply of skills is sufficiently responsive to demand, for example through increasing employer engagement in provision. A number of programmes are already taking place in the UK, for example, Skills Matter sources software innovators from around the world to come to London and transfer their skills to software developers through running workshops and seminars. The e-Skills sector skills council runs Information Technology Management for Business (ITMB) degrees, designed with industry leaders. Schools are also becoming increasingly active in engaging businesses, helping for example to raise aspiration and provide work experience.

Interviews with entrepreneurs also revealed a call for a more vibrant culture of entrepreneurship and competition at the grassroots level in the UK. Many pointed to the belief that the British (and their European neighbours) are not as entrepreneurial as their US counterparts. This is reflected in recent research, which shows that the share of the British population interested in entrepreneurship is 18 percentage points lower than in the US (McKinsey & Company, 2011).

The cultural differences towards entrepreneurship are reflected in the behavior of many UK entrepreneurs who exit their company and become angels or venture capitalist investors. In comparison, many US entrepreneurs who exit become serial entrepreneurs, or 'repeat offenders' (Lerner, Pierrakis, Collins, and Biosca, 2011). Repeat founders have better success, even if their first companies failed. A study of 500 US start-ups over a ten year period looking at success rates of entrepreneurs found that 90 per cent of the big exits and 66 per cent of smaller exits were not first time entrepreneurs (Lacy, 2011). Always having to recruit new talent to the entrepreneurial pool, means the UK misses the benefit of top entrepreneurial talent becoming 'repeat offenders' (who hone their skills with each failure and therefore increase their likelihood of future companies' successes and exits). One way the government could encourage company founders to stay in the entrepreneur profession is to provide tax-breaks for succeeding companies they start. This could follow a tiered system that increases breaks for each subsequent attempt with caps at three or four companies.

There is no data available to confirm whether US entrepreneurs are more likely to be 'repeat offenders' than UK entrepreneurs. However, the belief that there is more entrepreneurial spirit and longevity in the US relative to the UK is relevant regardless of its legitimacy, because stereotypes and beliefs will influence venture capital, angel, and entrepreneurial appetite.

Profiling UK entrepreneur population

Some have argued that the best innovation comes from young individuals, according to a study of 500 start-ups over a ten year period looking at success rates of entrepreneurs. Roy Conway and David Lee, founders of the premier Silicon Valley angel venture fund, SV Angel, state that they receive better returns on their funds when they invest in a founder who is around 25 years old. 'Entrepreneurs sort of look like professional athletes in the terms of their peak age' (Lacy, 2011).

However, as stated above, others point to the success of serial entrepreneurs and the importance of relevant experience. This is less probable in 25 year olds, particularly in the case of technology companies which may take up to seven years to exit. Another important factor in profiling entrepreneurs is the sector. For example, SV Angel focuses on internet, e-commerce and information technology. In the life science sector, where investments amounts are typically much larger, the average age of entrepreneurs (and their experience) is likely to be significantly higher than 25. A 2009 US survey (Wadhwa, 2011) of 549 company founders across a dozen fast-growth industries found that, the average and median age of these founders when they started companies was 40.

Nevertheless, understanding that some of the best talent is straight out of university has three implications for strengthening innovation in the UK. Firstly, universities are important incubators of technology and innovation. Secondly, some of the best innovators are young individuals without significant savings and so will likely require funding to get their companies up and running. Lastly, some of the top entrepreneurial talent may feel pressure to enter the corporate environment to pay off university incurred debt.

Policy proposals

A. Innovation in the UK

In Europe there is a shortage of start-ups that grow to dominate an industry, such as Microsoft or Google. Reflecting this, there is significantly more business movement in the US than in Europe (Biosca, 2010). The US has on average a larger share of fast growing firms, and a larger share of rapidly shrinking firms. Europe on the other hand has a larger share of static firms that are neither expanding nor contracting (Biosca, 2010).

The advantage of the US business climate is that both a higher share of growing and shrinking firms are correlated with faster productivity growth. A less dynamic business growth distribution is associated with lower productivity growth and is symptomatic of less experimentation and a slower reallocation of resources from less to more productive businesses.

Spatial economic models suggest firm competition sorts companies into optimal spaces (Glaeser, 2008). It is also known that businesses benefit from co-location; clusters of companies facilitate the flow of ideas, especially among knowledge-intensive businesses, such as technology companies (Jacobs, 1970). A recent study found that doubling an urban area's employment density raises average labour productivity by around six per cent (Melo, Graham, and Noland, 2009). Therefore, productivity payoffs for firms have wider social returns for cities, such as London, by helping them grow. This also suggests that there is good reason to locate high-tech firms together within cities.

It is important to foster a more dynamic UK business climate by removing barriers to growth and contraction. One of the key ways for policymakers to encourage innovation is by creating an environment which encourages innovative start-ups through ensuring the regulatory environment supports rather than stifles innovation. This ensures that business support and funding is available to encourage a firm growth trajectory.

The OECD aggregate Product Market Regulation (PMR) indicators rank the US better than any European country. Indicators of PMR include economy-wide regulation, regulation impact, and sectoral regulation (OECD, 2011). The UK's PMR hampers competition and keeps the cost of inaction low, which results in stagnant firms. Liberalising product market regulation would increase competition, which should encourage greater drive and innovation, thereby resulting in a more dynamic growth distribution (Biosca, 2010).

B. Tapping into universities

Companies are created by innovative minds. Research suggests a strong correlation between world-class universities and successful start-ups (McKinsey & Company, 2011). In the UK, the city of Cambridge enjoys the highest concentration of high-tech companies in Europe. The strength of Cambridge University coupled with intelligent students and willing financiers, has fostered a thriving tech start-up community. From 2001-2006, Cambridge saw 108 companies receive venture capital funding, and commercial spinouts from the University attracted £140m. Raising innovation rates in the UK will require leveraging university resources and funding the ideas that follow.

However, the present environment does not facilitate this relationship. For example, top entrepreneurial talent may feel pressure to enter the corporate environment to pay off university debt, while laws discourage university professors from becoming actively involved in entrepreneurial companies. It is imperative that policy works to facilitate the inclusion of university members into the entrepreneurial market. Below are policy suggestions to tap into the talent and resources of UK universities.

Funding for spin-outs – Improve the coordination of angel funding with the innovations emerging from the higher education sector to increase deal flow and raise commercialisation rates.

Incentivise collaboration and knowledge exchange - Provide incentives to maximize knowledge exchange between universities and SMEs, across sectors and disciplines. Examples of previous initiatives in this area include innovation vouchers that provide credits to encourage eligible firms to access university expertise.

Review research and development tax-credits - Currently all SMEs that spend £10,000 or more a year on R&D are entitled to 200 per cent tax deduction, which is set to increase to 225 per cent as of April 1, 2012, subject to government approval (McKinsey & Company, 2011). The further propositions in the 2011 budget to remove the current £10,000 de minimus spend and the requirement to have paid PAYE/NI in the year before would seem to suggest the HM Revenue & Customs (HMRC) are trying to ensure more high-tech, start-ups and small and medium enterprises (SMEs) are able to benefit from this relief. While the propositions are certainly a step forward, it would be advantageous if R&D tax credits were paid up-front rather than retrospectively, as they are an important part of SMEs' cash flow.

Allow non-executive directors and academics to participate in the enterprise management incentive scheme (EMI) - This would enable high growth companies to attract highly skilled employees and retain academic founders in the firm. It would also reduce the risk of the company failing by securing employees with expertise in managing high-growth firms (Clarysse, Knockaert, and Wright, 2009).

Increase businesses engagement in skills supply – Encouraging business engagement in the supply of skills is critical to ensuring students have the technical ability and softer skills new businesses will need to grow. Initiatives can range from involving tech firms in course design to work experience placements.

University entrepreneurship - Improve the entrepreneurial infrastructure around universities. Examples include providing more flexible office space in high demand areas such as London, increasing the quality and provision of business mentoring and investment readiness programmes. This should be linked to entrepreneurship training and student internships with start-ups to inspire graduates to consider entrepreneurship as a viable career option.

Loan relief to graduates – To ease the pressure on graduates to enter the workforce after university, the government could introduce student loan relief to those who start a business right after leaving university. One measure would be to allow those who are earning more than £21,000 to allocate part of their earnings to re-invest into their business (such as renting office space or taking on new employees). This portion could be deducted so that their income is reduced below the repayment threshold level (McKinsey & Company, 2011).

C. Retaining top entrepreneurial talent through a supportive environment

As previously mentioned, legal regulations can prevent companies from emerging, expose them to liabilities, and limit growth potential. Entrepreneurs care about legal regulations because laws directly influence a company's success rate. For example, UK libel law results in a loss of UK-based companies. A website built on user-generated content has less legal risk in the US than in the UK, so UK companies for which this applies tend to move there. Also, in the UK it can take up to 3.5 years longer to receive a patent than in the US, which may result in a UK company missing out on valuable IP ownership. Thus, current UK patent law can limit a company's growth potential. To attract and retain top entrepreneurial talent in the UK requires supportive regulation.

Review visa requirements - Many entrepreneurs believe the current visa criteria prevent talent flow into the UK, which is a major barrier for business growth. The UK government announced changes to the UK's visa system to take effect 6 April 2011, but these will not largely affect the Tier 1 (Entrepreneur) visa. The main issue for entrepreneurs in the UK still remains the capital requirement for a visa application that requires holding a minimum of £200,000 to start the proposed business. Interviews of entrepreneurs have suggested two regulatory policy changes that would aid start-ups: base the criteria for entrepreneur visas on job creation (rather than minimum capital) and lower capital requirements.

Rebalance tax incentives to support intangible investment - The tax system in the UK at present disadvantages intangible investments (eg process improvements, creative ideas, skills, IT). Intangible capital accounted for 25 per cent of contributions to labour productivity growth in the UK from 1995-2006, compared to 30 per cent in the USA (McKinsey & Company, 2011). An OECD working paper (2006) found that, in contrast to other countries such as the US and Japan, no real tax incentives exist for businesses investing in intellectual assets in the UK aside from Research and Development (R&D).

Review capital gains relief - UK business founders have complained that they are unable to leave their companies because if their firm were sold, they would be disadvantaged by current capital gains tax rules. By amending this requirement, companies could let their founders leave, which could reduce the financial salary burden on their companies and free the founders up to pursue other ventures. In essence, entrepreneurs' relief discourages serial investors and creates a compulsion for a founder to remain in a company. Entrepreneurs are only exempt if they own greater than five per cent of the company at time of sale of all stock (McKinsey & Company, 2011, pp.56). A capital gains preference system that encouraged successful entrepreneurs to reinvest their profits would support the entrepreneurial environment.

Current IP law - The Hargreaves Report (May, 2011) outlined proposals to update the UK's outdated IP laws, including a call for laws protecting designs and copyright to be overhauled in the UK. The report also suggested that the UK champion the creation of a unified European Union patent court and a single European patent system. Many of the report's recommendations were put forward in the 2006 Gower review of IP, but were not adopted (Ring, 2011). The Hargreaves Report is not strong enough if the UK's IP law is to be competitive with US law. For example, it does not suggest the UK implement the US concept of 'fair use' which allows significant portions of work to be used without permission. Until this is changed, the UK will retain its exhaustive list of possible user rights, including format shifting, backups, and parodies which limit innovation and flexibility (McKinsey & Company, 2011).

Libel law - In the US, section 230 of the Communications Decency Act gives websites broad immunity from liability for comments written by users; section 230's coverage does have exception for federal criminal liability and intellectual property law. Courts have interpreted Section 230 as providing complete immunity for internet service providers (*Zeran v. AOL*, 129 F.3d 327 (4th Cir. 1997); *Green v. AOL*, 318 F.3d 465 (3rd Cir. 2003)). There is no equivalent in the UK. A website built on user-generated content has less legal risk in America than in the UK. In the UK, hosts are liable if they do not take down a libelous comment 'expeditiously' once made aware of it. Since it is hard to determine if a statement

is libelous or not, many hosts don't take the risk, or they just launch their company in the US.

Patent law - It currently takes 2.5-4.5 years to get a patent approved in the UK. The United States Patent and Trademark Office (USPTO) in May 2011 launched a new programme, called Track One, in conjunction with President Obama's programme Startup America, which allows inventors and businesses to have their patents processed within 12 months. This is a big improvement on the previous average three year period it takes to process a patent in the US. For biotech and ITC companies, patent protection is vital to both securing funding during the growth stage and later to be appealing purchases in a trade-sale. The UK should speed up this process to reach the 12 month level that will shortly be enjoyed by many companies in the US.

Liberalise labour market regulation - Inflexible employment regulation can act as a barrier to growth. If badly designed, labour market regulation can limit firms' incentives to experiment with uncertain growth and prevent them from relocating labour to more productive areas. NESTA proposes the UK implement a 'flexi-security' model that protects individuals instead of jobs (Biosca, 2010).

D. Leveraging London

In June 2011, New York City Mayor Bloomberg pledged to be 'The Number 1 City in Digital Tech'. Mayor Bloomberg called on the US national government to relax immigration laws to allow for a new visa for entrepreneurs who have secured investment. This push came from a US study which found that immigrants or the children of immigrants, founded more than 40 per cent of Fortune 500 companies. These companies employ more than ten million people worldwide with combined revenues of \$4.2 trillion (Arrington, 2011).

The race to win the top global digital entrepreneurial talent has moved beyond national governments and now falls squarely within the objectives and ambitions of the leaders of the world's major cities. The supply of entrepreneurial talent is ample, as individuals with great ideas have long recognised the need to relocate to the world's leading tech hubs. With entrepreneurs knocking at the doors of major cities, the first European government that lowers entrepreneur visa criteria could ultimately become the continent's premier digital tech city.

London should be the primary vehicle in the UK's fight to secure this title. It hosts the strongest knowledge and research base, technical and creative skills and global-local connectivity. The capital is a cultural hub and the world's leading financial centre (Global Financial Centres Index). London is also Europe's largest investment banking centre and the second largest centre for hedge fund management globally. Two-thirds of all European hedge funds are based in London, and in 2010 around 19 per cent of global hedge fund assets were managed from London (London and Partners, 2011).

Focusing on attracting Silicon Valley start-ups, or American corporations, may not be the most strategic option to secure the UK's position as the leader of digital technology. *The Economist* (2011) noted that because of the shared language, British firms face intense competition from American companies, but American companies benefit from an enormous

market that allows them to gain economies of scale and large audiences very quickly, while accessing the UK market via the internet. It is not as easy to go the other way.

On many levels London is perceived to be the European hub for tech start-ups. The capital should refocus its radar away from the US and onto the growing digital European and non-European markets that sit at its back door. The US is eagerly looking to attract both European, and non-European entrepreneurial talent, but London has the advantage of proximity.

The focus should be on supporting technology companies that improve ROI for those sectors where the UK is already a world leader. This means supporting technology innovation in all sectors where the UK has key strengths and not focusing exclusively on the currently 'hot' sector of social media.

London already has the highest rate of start-ups nationally. The capital's tech firms have forged niches in product spaces, not only social media (drawing on other parts of the creative economy), but software serving London-based industries such as financial services; life science companies based on the well-established cluster of research/teaching hospitals and industry; and environmental technology.

4. Conclusion

The funding gap is a problem that all small UK firms experience when they try to expand; they do not necessarily have to be start-ups or even technology-based businesses. This research concludes that it is not especially difficult to start a company in the UK – for example 14 per cent of London businesses in any given year are new. The real problem businesses have is when they attempt to scale up. There have been many high-tech start-ups that are purchased once they reach the equity gap, often by companies located outside of the UK. In short, the UK cultivates and fosters great start-ups, but does not sufficiently support them throughout their entire life cycle.

A UK venture capital equity gap is more pervasive for start-ups and early stage companies than for established companies. The funding gap for established companies, whether for small or large sums of equity or debt, has been targeted by several government-backed schemes. Start-ups in non-capital intensive sectors, such as social media software, seeking relatively small sums of between £250,000-£1m still face an equity gap. Capital-intensive high tech start-ups may need funding rounds of up to £10m. Angel investors have partially filled a gap for companies looking to raise £0-£50,000. However, further involvement of this sector will be fundamental to compete with the burgeoning angel market in the US.

This paper offers demand-side policy suggestions to encourage further angel and venture capital investment into UK-based companies. Some of these angel investment policy recommendations include improving EIS tax relief, revising EIS share structure requirements, marketing the EIS, and making a business angel focused EIS scheme. Venture capital policy recommendations focus on implementing US-style match funding for 'consortia' of firms, creating globally competitive venture capital funds, and strategising government fund allocation to maximise returns.

The ability to plug the funding gap through micro-policy implementation depends equally on the success of supply-based macro-policies to facilitate the supply of high quality investment-worthy firms. The macro-analysis section details policy suggestions to improve the wider UK entrepreneurial environment. These include numerous legal and policy recommendations in the UK within the following areas: tapping into university talent, encouraging innovation, addressing the stagnant business market, retaining top entrepreneurial talent, and leveraging London.

To date, policy suggestions to improve the funding gap have been primarily demand-led, focusing on the availability of finance investment. However, supply-based policies that improve UK companies' investment readiness are fundamental to realising any demand-based policy because supply and demand variables are inextricably interrelated. This paper provides a holistic overview of the UK equity gap, helping to address the question, 'why there is there no Facebook or Google in the UK?'

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About the Author: Sarah Rigos is an analyst on secondment from Barclays with the Greater London Authority. She holds degrees from Cornell University (BA Government) and The University of Oxford (MPhil Comparative Government).

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