

reinventing
venture capital
towards a new
economic
settlement

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contents

Acknowledgements	4
Summary	5
Introduction	11
1 The ‘triple challenge’	14
2 Current trends in venture capital	23
3 A critical assessment of UK venture capital performance	42
4 What can venture capital do for the UK economy?	58
5 How to get there: policies to boost the venture capital industry	71
6 Conclusions and policy recommendations	90
Notes	98
References	113

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summary

This report starts from the premise that the UK faces a ‘triple challenge’ — an unenviable combination of pressing economic, environmental and social difficulties which policy makers have no option but to respond to over the years to come. Economically, Britain will only secure a sustainable recovery by harnessing the innovative nature of smaller companies in the industries that will dominate the early twenty-first century. The environmental challenge is the huge task of making the transition to a low carbon economy in order to meet ambitious targets for greenhouse gas emissions over the next 40 years. And the social challenge is to respond to the unprecedented increase in inequalities of income and wealth over the last three decades, with the associated problems of social exclusion, social immobility and poverty.

This report asks to what extent the venture capital industry can help the UK meet these challenges, whether it needs to adapt its current investment approaches to do so, and what the most effective government policies are to encourage the industry to meet them.

Start-up firms of the type backed by venture capital are usually by nature highly innovative — they have a total focus on developing successful new products. Their innovative activity is also likely to create social returns and positive spillovers, which will be conferred on the wider economy. In this sense, venture-capital-funded start-ups will have a key role to play in developing new technologies for the low carbon economy to the stage where they can be adopted for large scale roll-out.

Indeed, based on previous simulation work of the impact of increases in innovation on economic growth undertaken for the European Commission, we estimate that national income could be increased by around £3 billion per year by 2020, if the new government ensures that £2bn of commitments already made to support the development of a low carbon economy are specifically directed to venture capital, and we assume — as seems reasonable — that 40 per cent of this is spend on R&D.

Key observations

Up to and including 2007, the UK invested a relatively high proportion of national income in venture capital compared with most other leading economies, including the USA. Nonetheless, since the onset of the 'credit crunch' and the economic crisis, the investments into venture capital have dropped very sharply from an average of £3 billion per year in 2004 and 2007 to just £1 billion in 2008.

However, the returns available to venture capital investors in the UK (and Europe) have consistently been substantially lower than returns to venture capital investment in the USA (the first country to develop a venture capital industry, and the acknowledged global 'market leader'.) The report analyses a number of plausible explanations as to why this is the case: US funds have more money to invest per fund, are better syndicated, have better expertise and due diligence, benefit from clusters and size effects, and have access to a better high value exit mechanism — in the form of highly liquid public equity markets. Although the UK does have a good structure of public markets in place, they need nurturing and supporting with fiscal incentives to boost the daily liquidity of smaller quoted companies.

The report assesses the impact of the existing policy initiatives to encourage venture capital in the UK and other leading industrialised economies. These analyses inform our policy recommendations, which are designed to address the shortcomings of the current UK venture capital market and close at least some of the gap, while meeting the 'triple challenge' outlined above.

Recommendations

Promote an integrated funding system for high growth SMEs

The report highlights that the UK venture capital industry does not operate in a vacuum, but as part of a broader funding 'escalator' for start-up companies running from angel and seed funding through start-up and expansion venture capital funding, all the way to exit via a trade sale or initial public offering (IPO). Venture capital policy needs to be structured so as to maximise the synergies between the different parts of the high-growth business funding architecture.

At the seed stage, it is important to ensure that the network and links that the existing public funds have with the business angel community are maintained. This will ensure a healthy flow of companies for the funds to invest in.

As companies enter the commercialisation stage and begin to seek further growth capital, public markets such as

AIM and Plus play an important role. Liquid public markets help to stimulate venture capital activity by providing a high value exit mechanism for early stage venture capital investors.

Rationalize the current institutional arrangements for publicly funded venture capital

Publicly funded venture capital makes up over 40 per cent of early-stage venture capital funding (according to recent research by NESTA), but current arrangements are far too complex. As the National Audit Office recently pointed out, there are dozens of funds, with overlapping remits and objectives. Individual funds are too small to build up reasonable portfolios of companies. This makes them more risk-averse and less effective investors than their US counterparts.

We recommend rationalising the current structure into a handful of funds — perhaps structured so the size of each fund is on a par with the leading US venture capital funds. Creating four or five private ‘super-funds’ would allow each fund to manage a portfolio of high-risk investments in the way that the leading US funds are able to do, rather than being forced into a ‘safety-first’ investment strategy through lack of funds. It would also enable the funds to make sequential investments in individual companies in the way that happens successfully in the USA, which should reduce the need for venture-capital-backed firms to return to the market again and again. This would also have the effect of increasing returns for early stage investors — as their initial holding would not become diluted — thus increasing the attractiveness of venture capital as an asset class. The Labour government’s suggestion to create UK Finance for Growth (UKFG) as an umbrella organisation to manage the variety of existing public-private funds (announced in the March 2010 Budget) would be a welcome step towards rationalisation.

The new funds should have a focus on ‘cleantech’ investments

Cleantech investments are broadly defined as investments whose innovative aspects can contribute to lowering carbon emissions. Based on recent calculations by Stern and Edenhofer (2009), the UK needs to be spending at least £1.7 billion per year on cleantech R&D to stand a reasonable chance of meeting long-run climate change targets, in conjunction with a large-scale programme of climate investment. Combined with existing public spending on venture capital, our proposed refocusing of public sector funding would enable the UK to meet this target through innovations by venture-capital-backed firms.

The super-funds should be looking to match public investment with private investment wherever possible

Recent research shows that this works better than purely public funding. However, if private matching funding is not forthcoming, public investment in venture capital should proceed nonetheless — to avoid the sector being starved of funds.

The super-funds should be able to hire top quality managers to oversee their investment portfolios

The current depression in venture capital funding makes now a good time for UK funds to hire first class fund managers — from the USA if possible. Our research found a gap in management experience and quality between the best performing funds in the USA and the rest of the world; the application of US management techniques and expertise to the UK is a good way to bridge that gap.

A public stimulus for venture capital funding

In the short run there is little prospect of the private sector being able to fill the funding gap which has emerged in the venture capital sector in the last two years. Without additional government support, there will be a much reduced flow of investment into start-up firms over the next few years. The consequences for innovation and business growth in the SME sector are likely to be disastrous unless action is taken to provide additional funding. The current funding drought also threatens to undermine the prospects for a substantial increase in cleantech innovation in the UK, which is an essential part of the investment necessary to make the transition to a low carbon economy.

We estimate that national income should increase by around £3 billion per year by 2020 if the government invests an additional £2 billion per year into venture capital in the financial year 2010–11. This assumes that 40 per cent of the additional money is spent on R&D. This would be enough to reverse the decline in investment that took place during 2008, and restore a healthy flow of funds to the industry. The innovative, high growth firms which venture capital funds provide equity capital for can boost economic growth — by achieving their growth potential and because their innovation has positive spillover effects elsewhere in the economy.

In the current climate we propose that the new government find all the required extra investment in venture capital by rerouting spending planned by the previous government for the low-carbon sector. For example, half

of the additional spending can come from directing the £1billion allocated by the previous government for the new green investment bank.

Reform venture capital trusts and the Enterprise Investment Scheme

As we outlined above, liquid public markets improve the exit environment for early stage venture capital investors. Action should therefore be taken to boost daily liquidity (trading volumes) on public markets. The Enterprise Investment Scheme (EIS) should also be reformed to boost angel financing. Venture capital trusts (VCTs) provide tax breaks for venture capital investment by venture capital funds, but their generosity was reduced in 2006, since when private sector venture capital investment has dropped markedly. The 2006 reforms should be reversed so that tax relief on VCTs is increased to 40 per cent and EIS investors are allowed to invest in businesses with more than 50 employees and with assets of up to at least £15 million. The rules on qualifying investments for VCTs should also be relaxed to allow secondary trading in equity in start-ups and AIM-quoted companies between VCTs.

Supporting fiscal incentives such as VCTs by allowing them to invest in the secondary market would boost daily liquidity in smaller companies, thereby further stimulating venture capital activity in the UK and reducing the cost of capital for smaller companies. This would also help venture capital funds exit from their investments at higher earnings multiples. Our research showed that the low levels of liquidity on AIM makes it difficult to secure a high initial share price at IPO, or to offload any remaining holdings the venture capital firm might maintain in the firm after the IPO stage. This perpetuates a preference for venture capital funds to seek trade sales or target overseas markets such as NASDAQ for an IPO. The Conservative Party has in the past committed to abolishing stamp duty on all share transactions. If the new government found a way of doing this simply for AIM shares it may go some of the way to improving liquidity in the market.

Reform the R&D tax credit scheme

The scheme provides a useful financial incentive for companies undertaking innovative activities, but needs to be reformed to make it more useful to start-up companies. Most venture-capital-backed start-ups do not make profits in their early years; R&D tax credits need to be made equally

generous for these firms as they are for firms that are in profit. Firms should also be allowed to claim for more than the value of their payroll taxes as many of them outsource their R&D. And the claim procedure for small firms should be simplified and made less onerous.

The social venture capital sector

The social venture capital sector, which invests with businesses that meet 'social' objectives rather than focusing purely on private profitability, is currently a small proportion of total venture capital funding but has expansion potential. We recommend that VCT rules should be reformed to give social venture capital funds more time to make investments without incurring tax penalties, as due diligence for these types of firm takes longer. Also, there is a case for public funding of an information network to bring together stakeholders in the social venture capital sector, to improve the flow of information between investors, funds and potential entrepreneurs.

introduction

Venture capital is a form of finance for small and growing businesses where funders invest at an early stage in the life cycle of the business in exchange for a stake in the business and, thus, of the proceeds from selling the business at a later date. Venture capital began as a concept in the USA, and has played a large role in the development of the USA into the world's most successful economy, with a number of high-tech success stories in computer hardware, software and the internet age (eg Intel, Microsoft and Google.) Following the USA's lead, venture capital industries developed in other advanced industrialised countries, particularly from the early 1990s onwards. The 'dot com' boom of the late 1990s saw venture capital lauded by many commentators as a vital part of the 'new economy'. But subsequently, as boom turned to bust in the twenty-first century — first the dot com bust and more recently the near-implosion of the world's financial system — venture capital has taken a much lower public profile.

The central question being asked in this report is what role venture capital — and the businesses funded by venture capital and related forms of business finance — can play in the UK economy in the future. This research starts from the premise that the UK faces a 'triple challenge' — an unenviable combination of pressing economic, environmental and social difficulties which policy makers have no option but to respond to over the years and decades to come. The economic challenge involves Britain trying to innovate its way out of recession by growing new, dynamic companies in the industries that will dominate the early decades of the twenty-first century. The environmental challenge is the huge task of making the transition to a low carbon economy in order to meet ambitious targets for greenhouse gas emissions over the next 40 years. And the social challenge is to respond to the unprecedented increase in inequalities of wealth over the last three decades, with the associated problems of social exclusion, social immobility and poverty. This report asks to what extent the venture capital industry can help the UK meet these challenges, whether it needs to adapt its current investment approaches to do so, and what

the most effective government policies are to encourage the industry to meet these challenges more effectively.

The report is structured as follows. Chapter 1 describes in detail the economic, social and environmental challenges facing the UK, and sets out a brief account of the kind of policies that progressive researchers and commentators in economics and related disciplines have argued might enable the UK to meet these challenges and build a prosperous, environmentally sustainable and more equal economy. Chapter 2 takes an initial look at the structure and extent of the UK's venture capital sector. The analysis looks first at the sector as a whole, then at two specific subsectors that we are particularly interested in as regards *reinventing* venture capital. One of these is *cleantech* — industries based around reducing the economy's greenhouse gas emissions by the development of low-carbon technologies such as renewable energy and waste management. Given the scale of the environmental challenge, the report argues that cleantech is likely to play a major role in the UK's economic future. The other subsector we focus on here is social venture capital — defined (roughly) as venture capital funds that invest in businesses that aim not just at maximisation of financial returns, but at some wider measure of benefits to society, or some section thereof. This is a tiny part of the venture capital industry at the moment, but one with significant future potential.

Chapter 3 assesses the current performance of the UK venture capital industry. The analysis benchmarks UK and European venture capital funds against the USA, the birthplace of the venture capital industry and the country where investors earn the highest average returns. The chapter examines a number of possible reasons why American venture capitalists are outperforming their British and European counterparts and asks what lessons can be learned for policy makers.

Chapter 4 asks what policy makers can realistically expect venture capital to deliver in terms of improved outcomes for the UK economy. How much of a difference can a well-functioning venture capital industry make to the UK's economic future? How important is venture capital to the achievement of a low carbon economy, and to tackling social inequalities (if at all)? Are there downside risks associated with encouraging venture capital? Given that serious questions are now being asked about the sustainability and suitability of the US economic model as a template for a successful long-term economy, should the UK be seeking

to import features of the American venture capital system into the UK, or is it just too dangerous? This chapter also presents some evidence on what the impact of increasing the supply of venture capital funding to the UK might be. We focus on two main quantitative measures. One is the effect of increasing venture capital on the level of innovation in the economy, and thus on economic growth. The other is the contribution that venture capital can make to meeting long-run climate change targets through precipitating increased investment in 'green' R&D.

Having set out a 'roadmap' for venture capital, chapter 5 looks at how to get there, with a detailed analysis of current policy measures in the UK and elsewhere that aim to promote and support the venture capital sector. The chapter looks at which policies seem to work and which do not, and also at how venture capital policy fits in with other economic measures, such as the fiscal stimulus packages that many countries are currently using to fight global economic recession and promote growth of 'green' industries.

Finally, chapter 6 gives our overall conclusions and a set of policies designed to reinvigorate the venture capital sector and help it play a key role in the UK economy's emergence from recession, as well as playing a key role in reducing climate change and reducing inequality and social exclusion.

The research in this report is based on three main strands of work. The first of these was a detailed review of the existing literature on venture capital and related forms of business finance in the UK and elsewhere. We have also conducted a series of interviews with venture capitalists, firms receiving venture capital funding and other experts and stakeholders in the venture capital industry between May and August 2009. These were used to inform chapters 3 and 4 in particular. Finally, chapter 4 also uses some of our own quantitative calculations of what the benefits to the UK economy of increased UK investment in venture capital might be.

1 the 'triple challenge'

This chapter sets the scene by looking at the economic, environmental and social challenges currently facing the UK. The objectives here are twofold. One is to outline the scale of the difficulties and issues currently facing the UK, but this section also takes the opportunity to set out the kind of economy we want to see in the UK in future years and decades.

Meeting the economic challenge: constructing an innovative and dynamic future economy

Following the implosion of the credit boom which had driven an economic recovery in the UK, USA and other leading industrialised economies after the 'dot com' crash of 2001-02, the world has been plunged into what is, on most economic indicators, the worst economic downturn since the Great Depression of the 1930s. Due to its relatively large financial services industry, the UK has been hit harder than other leading economies. A chain reaction of banking failures was only avoided by the nationalisation of a large proportion of the UK banking sector. In 2008 there was a year-on-year fall of around 5 per cent in UK output¹ and output continued to fall into 2009, with a huge concomitant rise in unemployment, a collapse in business investment, and a yawning fiscal deficit resulting from the combination of reduced tax receipts and increased public expenditure on welfare payments and other components of spending. Preliminary data for the third quarter of 2009 show that the UK experienced its sixth successive quarter of contraction, at a time when other leading economies such as France, Germany and the USA had already managed to emerge from recession.

In the current dire economic situation, politicians of all stripes have needed to think creatively and consider options for industrial policy that were previously unthinkable. Whilst Lord Mandelson was Business Secretary he renounced much of the non-interventionist rhetoric that characterised the era of Tony Blair's premiership (and indeed Gordon Brown's chancellorship) and is pioneering a new spirit of industrial activism. The 2009 BIS white paper *New Industry*,

New Jobs provides evidence of this:

What we need from the government 'is a vision of the kind of economy we want to have in ten years time and what it's going to take to get from here to there.' (Lambert, 2009). Critical to this will be ensuring that British science and technology are at the heart of the revolutions in industrial production that will define the 21st century. In promising areas like advanced engineering, electronics and biosciences, British companies already hold strong advantages, as they do in many parts of the services sector. But those strengths must be reinforced and Government needs to play a greater role in fostering them.²

In a speech in March 2009, Chancellor George Osborne highlighted the need to rebalance the economy from the heavy dependence on cheap debt finance which had characterised the pre-2007 era to a new model, much more reliant on equity finance:

We need a new model of growth. We need to change from an economy built on debt to an economy powered by savings and real returns on effort. A corporate sector less dependent on debt, with more equity investment in start-ups and the success stories of the future.³

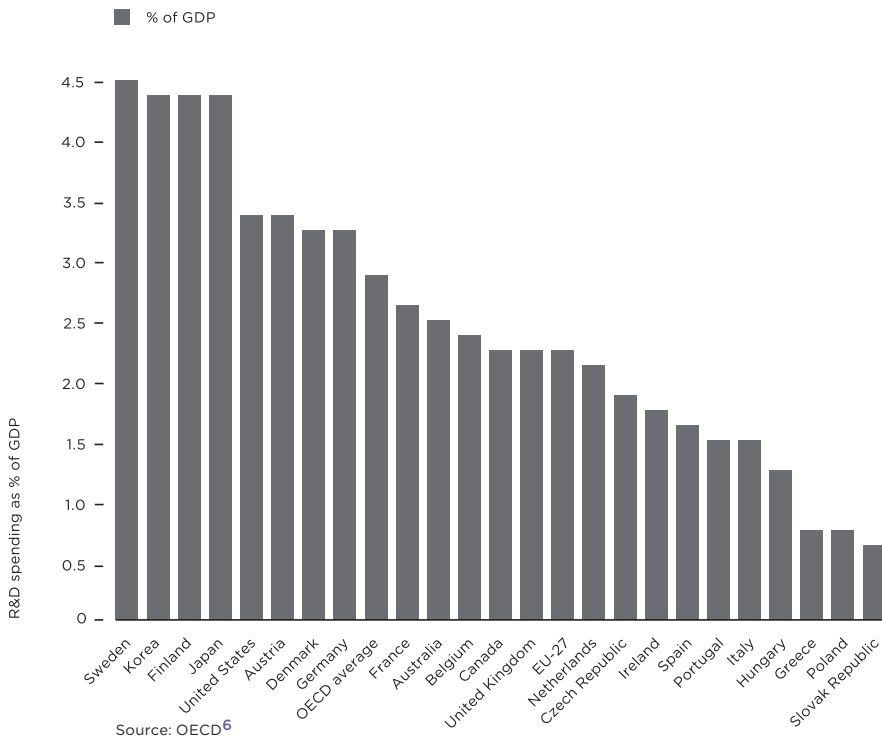
In November 2009 the Conservatives also proposed a 'green investment bank' to channel additional funding into small and growing environmental businesses, although details of this proposal have not yet been published.⁴

Clearly, on both sides of the political divide there is a wish to put the economic debacle of the past couple of years behind us and to make a fresh start for Britain by encouraging new investment in high-growth, high-potential industries. There is increasing acceptance that this represents the only way for Britain to maintain its position as one of the world's leading industrialised economies. In particular, following the large-scale failure of the financial sector, structural weaknesses in the growth-creating parts of the UK economy — which have been visible in aggregate statistics for many years — have become all the more apparent.

The most obvious symptom of this is in the UK's innovation performance, which is poor compared with most of our international competitors. In the long run, *innovation* is the key determinant of growth in any advanced industrialised economy,⁵ but aggregate statistics suggest that the UK suffers from a lack of innovation. Figure 1 shows total

spending on research and development in a selection of EU countries, and other comparable countries, for 2008. The UK's overall research and development (R&D) spending, at 1.8 per cent of GDP, is well below the OECD average, and only just at the level of the EU-27 average. Sweden, Korea, Finland, Japan and the USA all spend much more than the UK on R&D as a share of GDP. Furthermore, until very recently the UK's expenditure on R&D had been falling since the early 1980s, at a time when most other nations were maintaining or increasing R&D spending as a share of output.

Figure 1 **Gross expenditure on R&D in EU and selected other countries, 2008**



Of course, R&D is only one measure of innovation, and arguably not a particularly good one. It is heavily focused on manufacturing (which has fallen sharply as a share of UK output over the last three decades) and measures an *input* into innovation rather than the *outputs* from innovation (new processes or products). However, data on other measures of innovation tells a similar story. For example, Lucking analyses data from the EU Community Innovation Survey, which samples firms across the European Union.⁷ In 2001, Britain ranked joint 13th out of 16 EU countries in terms of the proportion of enterprises with innovation activities; only Greece and Spain ranked lower.

These kinds of weaknesses in underlying UK economic performance have been masked for the last decade and a half by strong growth in the UK financial services sector and a credit-fuelled consumption boom.⁸ Now that the good times have come to an end—at least for the time being—it is essential that the UK economy improves its innovation performance to deliver future growth.

Meeting the environmental challenge: towards a low-carbon economy

By 2008, the truth hit the UK and other advanced industrialised economies that the credit-fuelled bubble which had characterised the start of the twenty-first century was unsustainable, and fundamental economic adjustments would be necessary. However, well before the current economic crisis, policy makers already knew that far-reaching changes to the patterns of production and consumption in the economy were necessary to avert environmental disaster. The current scientific consensus is that severe cuts in global greenhouse gas (GHG) emissions in coming decades are necessary to prevent global average temperatures rising by an amount which would have extremely severe consequences for prosperity and for life on the planet.⁹

Recognising the scale of the problem, in 2008 the UK passed the Climate Change Act, which introduces the world's first long-term legally binding framework to tackle the dangers of climate change. The act sets a legally binding target of a minimum 80 per cent cut in GHG emissions by 2050 relative to 1990 levels, with an interim target of a 34 per cent reduction by 2020.

Reductions of this scale will simply not be possible without very major investments in new technologies to

enable industrial production to take place with much lower GHG emissions per unit of output than is currently possible (the new technologies to achieve this, including renewable energy, waste management and a whole host of resource efficiency measures, are collectively referred to as 'cleantech').

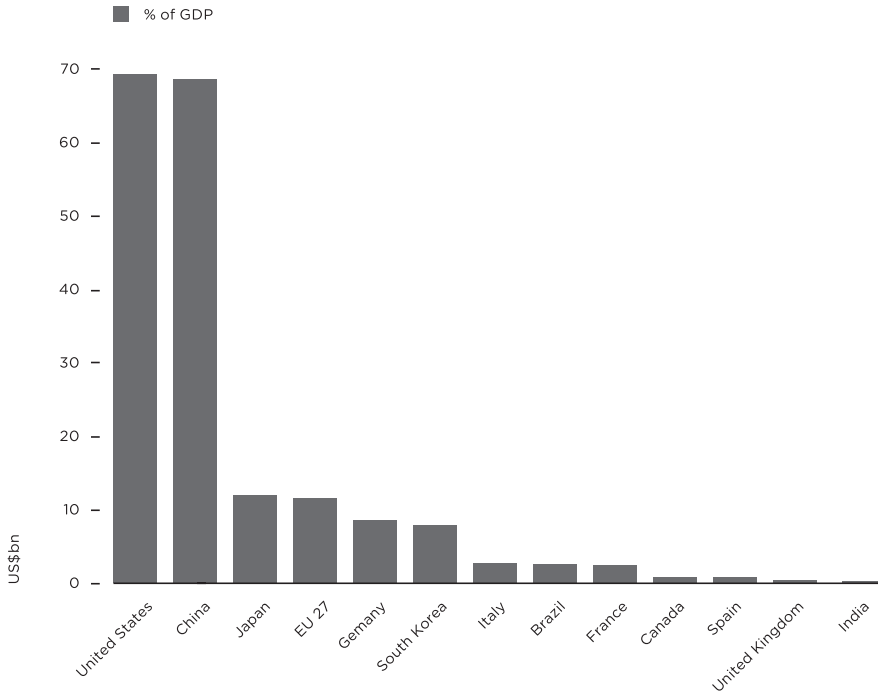
The challenge of meeting the 2020 and 2050 GHG targets set in the Climate Change Act and the challenge of transforming the UK economy via investment in new technologies to speed the emergence from recession are two sides of the same coin. In fact, some commentators have identified a new wave of cleantech investment as perhaps the most effective way to get the world economy back to a period of sustained growth. In his Robbins lectures delivered at the London School of Economics in June 2009, Nobel Laureate economist Paul Krugman said:

So what else can save us [from prolonged depression]?... The thing that would really save us is a surge in private investment... I actually think the prospect that we're really moving towards finally doing something about climate change may have a side benefit, which is that the prospect of increasingly high prices on carbon... could lead to a lot of business investment in advance. Both in the obvious green technology stuff, like wind power, but also more mundane things like weatherproofing... that could help us quite a lot.¹⁰

A cleantech stimulus

In the face of the current global downturn, several national governments have announced major investments in cleantech as part of the fiscal stimulus packages designed to create employment and keep the economy moving in the face of a collapse in private sector lending and investment in most of the industrialised nations. Figure 2, from research by the United Nations Energy Program,¹¹ shows the amount allocated to 'green stimulus' for sustainable energy (one of the key components of cleantech) by the EU27 and several individual countries as of April 2009.

Figure 2 **Green stimulus allocations to sustainable energy by country, April 2009, US\$bn**



Source: UNEP and New Energy Finance ¹²

The USA has announced the biggest stimulus package for low carbon technologies of any individual country – this was a key plank of President Obama’s strategy for election in 2008, and around one-tenth of the total additional spending stimulus in the package is targeted on renewable energy.¹³ China is a very close second to the USA, having announced just over US\$67 billion of ‘green stimulus’. These two countries make up well over half of the total global green stimulus announced so far.

The relative fiscal conservatism of the EU’s response to the economic crisis compared with the USA is reflected in the fact that the 27 EU economies taken as a whole have only committed just over US\$25 billion to green stimulus. Germany’s stimulus package makes up about a third of this total. The UK’s announcement of additional spending on renewable energy stimulus in the 2009 Budget was a tiny proportion of this, at only US\$300 million.

There has been no shortage of calls for more radical funding packages to move the UK towards a low carbon

economy. Lord Stern, who chaired the landmark review on the economics of climate change published by the UK Treasury in 2006, recently published a set of recommendations for immediate G20 action to precipitate a 'green global recovery'.¹⁴ The recommendations encompass four major areas where large-scale interventions are required — energy efficiency, upgrading physical infrastructure, supporting clean energy markets, and increasing spending on research and development on green technologies. As suggested in the original 2006 review, Stern estimates that the costs of inaction on climate change — a 'business-as-usual' approach — could amount to a permanent reduction of 15 per cent per year in GDP in the long run (this is the central estimate). In this context, even a green stimulus of the size announced by the USA looks very modest — let alone the tiny amounts committed by the UK and other EU countries so far.

In a UK context, the New Economics Foundation has called for a radical 'Green New Deal' to beat the recession, involving a sustained programme of investment in and deployment of energy conservation and renewable energies — specifically, maximising the energy efficiency of millions of residential and commercial properties in the UK, at a projected cost of around £50 billion per year.¹⁵ Relative to the size of the economy, this kind of recommendation makes even the largest cleantech stimuli so far announced look like small beer — yet, at around 3.5 per cent of current UK GDP, it still represents a bargain compared with Stern's prediction of damages caused by climate change equivalent to a 15 per cent drop in global output.¹⁶

The arguments for a large-scale cleantech stimulus — which would also surely help drive an increase in business innovation in the UK, thus addressing the wider economic challenge mentioned earlier — have been well made, but so far UK politicians have failed to commit funds on anything like the scale required. As things currently stand it looks most unlikely that UK cleantech firms — whether funded by the venture capital industry or otherwise — will be in a strong position to become global market leaders in cleantech given the relative size of the stimulus packages in the USA compared with the UK. The closedown of the Vestas wind turbine factory in the Isle of Wight in August 2009 — following a two-week occupation by the laid-off workers — served as an uncomfortable reminder of the difficult economic conditions facing the cleantech sector in the UK.

Meeting the social challenge: reducing inequalities in income, wealth and life chances

The current economic crisis has resulted in unemployment soaring to levels not seen in almost two decades. However, even before 2007, when employment as a percentage of the working age population had reached record highs, the UK was nonetheless characterised by high — and rising — levels of inequalities of wealth and incomes. Research on the most recent published data by the Institute for Fiscal Studies reveals that in 2007-08 income inequality rose to its highest level since comparable data began in the early 1960s — surpassing the worst excesses of the Thatcher era.¹⁷ Meanwhile, wealth inequality has been rising in recent years due to inflation in the value of housing and other assets that are extremely unequally distributed,¹⁸ while the UK's social mobility is low compared with most other advanced industrialised countries, having fallen over the 1980s and 1990s.¹⁹

New Labour's main response to increased inequalities has been to increase income transfers to low income families with children (through tax credits) and low income pensioners (through the Pension Credit). This has resulted in an increase in the amount of redistribution which the tax-benefit system achieves, but this has not been enough to prevent income inequalities rising to record levels. Increasingly, progressive commentators — whether conventional left-of-centre thinkers or 'progressive conservatives' — have come to the conclusion that policies need to address *asset* inequality as well as income inequality — whether through 'asset-based welfare' measures such as the child tax credit,²⁰ reforms to inheritance tax²¹ or recapitalising the poor.²² In the wake of the financial crisis — the most serious setback for the 'Anglo-Saxon' model of shareholder value for decades — there has also been a renewed interest in alternative models of the firm (such as mutual and employee-owned businesses), which may have the potential to spread the ownership of productive assets more widely and equitably.²³

The social challenge is inextricably linked to the economic and environmental challenges. The economic crisis has resulted in increased unemployment and worklessness, and a consequent rise in the number of households on low incomes. Meanwhile, the adverse effects of climate change are likely to affect the poorest members of society — in both the UK and developing countries — worst.²⁴ Thus, policies which can create a prosperous and sustainable UK economy will also assist with some of the UK's

social problems. However, the inequality in ownership of assets — for example, housing, shares and pension fund wealth — mean that economic success is likely to exacerbate wealth inequalities under current conditions. Thus there is a tension between meeting the economic challenge and meeting the social challenge. Whether this tension can be overcome — whether a prosperous UK economy can also be an equitable UK economy — is a key challenge for progressive policy makers. Later in this report we go on to ask how much, if at all, venture capital can assist in resolving these tensions.

2 current trends in venture capital

Before making recommendations on how the UK venture capital industry might best develop in the future, it is essential to have a clear idea of what venture capital is, what the extent of the venture capital industry is in the UK, and how this compares with other countries. This chapter covers these issues in detail.

Defining venture capital

It is important to be clear about exactly what we mean by ‘venture capital’ in this report. Venture capital is a component of *private equity* – an asset class that consists of investments into companies which convey ownership rights (equity), which are held privately (by intermediaries such as venture capital funds and private equity houses) rather than publicly traded (as is the case with *public equity* – eg public limited companies). The other component of private equity is *buy-outs*.²⁵ The difference between venture capital and buy-outs is that venture capital funds invest in companies which are start-ups – usually in their first few years of existence. Conversely, buy-out funds invest in *existing* companies – often taking them out of public equity ownership into private equity ownership (‘public-to-private’ deals).²⁶ Buy-outs are often financed using large amounts of debt (leading to the term leveraged buy-out (LBO) to describe these deals).²⁷

The focus of this report is on venture capital investment – private equity investment into start-ups rather than buy-outs. In the popular media over the last few years, the profile of venture capital has been somewhat eclipsed by buy-outs, and indeed many commentators have (erroneously) used the term ‘private equity’ as synonymous with buy-outs.²⁸

Venture capital investment is of course only one form of finance that businesses can secure, and is a very long way from being the most important source. A survey of small and medium sized businesses’ financing methods by the Centre for Business Research at the University of Cambridge showed that only 1 per cent of firms used equity finance,

compared with 5 per cent that used grants, 19 per cent that used commercial loans and 43 per cent that used credit cards.²⁹ This may help explain why BIS's recently conducted review of small business financing (the 'Rowlands Review'³⁰) explicitly excludes equity financing from its terms of reference, focusing mainly on bank finance (eg through loans).

Although it is a small proportion of total finance for small and medium sized enterprises (SMEs), venture capital finance is extremely important for certain kinds of small business — those that are characterised by high growth prospects, high risk and substantial innovation. In general there are five possible ways of financing investment and business growth for small businesses, through:

- 1 *debt finance* — most commonly the provision of a loan of some form that is subsequently repaid at a pre-agreed interest rate, obtained from a bank or other finance provider
- 2 *'soft capital'* — typically associated with grant funding or financial subsidies provided from the public sector through grants or tax incentives
- 3 *existing profits* — if the business is profitable, profits can be reinvested
- 4 *equity finance* — whereby capital is provided to the company in return for a shareholding in the business by outside investors
- 5 *'mezzanine' finance* — a hybrid type of finance with some characteristics of debt and some of equity.

For the types of firms that are candidates for venture capital investment, equity finance — in some cases supplemented by soft capital — is usually the only funding option. Existing profits are typically non-existent — most start-up firms in the sectors which venture capital invests in make a loss for the first few years of their life because their products are still being developed while in the start-up stage, and so they have no revenue. Debt finance is difficult to obtain because banks are generally reluctant to loan money to start-up firms of this type as the risks of failure are so high and they lack tangible assets to use as collateral.³¹

There are two main types of venture capital fund:

- *private venture capital funds* — companies which raise money from various investors (eg pension funds, endowments, high net-worth individuals) and invest in start-up companies
- *venture capital funds with a public component* — these operate very similarly to private venture capital funds but

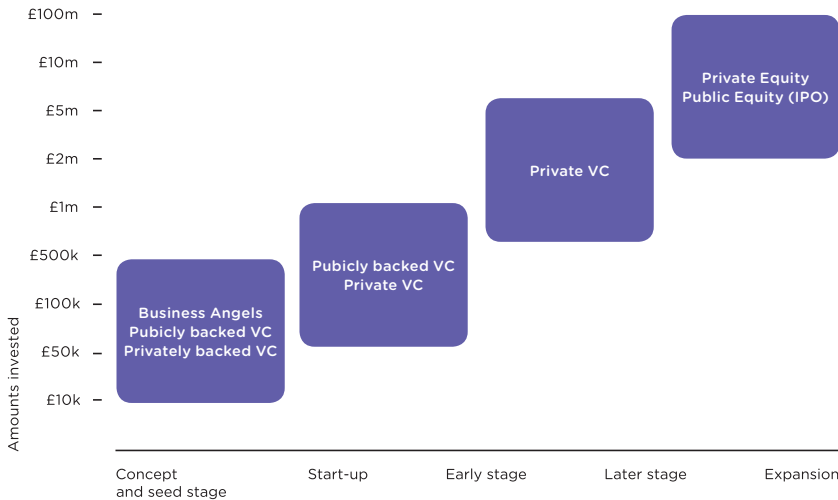
make use of funds provided by government, for example, through the regional development agencies (RDAs), either alone ('pure' public funding) or, more usually in recent years, in conjunction with private funds.

There are two other important sources of equity finance that are alternatives to venture capital:

- *business angels*— high net-worth individuals, often with a background in previous business start-ups, who invest their own money into start-up companies
- *public equity*— accessed by floating the company on a public stock market (the most common choice in the UK is AIM— the Alternative Investment Market, set up by the London Stock Exchange in the mid-1990s).

Figure 3, a modified version of a figure from a NESTA report by Pierrakis and Westlake,³² shows the relationship between venture capital and other sources of equity finance, which are largely distinguished by the funding levels at which they operate. Although there is considerable overlap, business angels mainly operate at the lower end of the funding scale, while the public equity (flotation) option only becomes viable at the high end.

Figure 3 Sources of equity finance for high-risk start-up firms



Source: modified version of figure from Pierrakis and Westlake³³

Within venture capital, types of investment can be subdivided into three basic categories:

- *Seed funding*— This is ‘pre-start-up’ funding provided to entrepreneurs who have the basic idea for a product or service but need to do work to develop the concept to a stage at which funders can make a decision on whether the potential for a viable marketable product exists. The level of funding required at the seed stage is much smaller than for later stages— typically less than £250,000.
- *Early stage funding*— This includes all the stages of funding that go towards starting up a small business with the aim of developing a marketable product. At this stage the expenditure will go on basic business overheads (premises, finance officer, management etc) plus research and development costs. In most cases, firms will need to receive more than one round of early stage funding. The level of funding required here is likely to be somewhere between £1 million and approximately £20 million, depending on the particular circumstances of the firm and the sector it is operating in.
- *Later stage or ‘expansion’ funding*— This refers to funding received by firms which have launched a product and are now profitable, but need additional capital to expand. It is arguable whether the firm can still be called a ‘start-up’ at this point and indeed in many cases the venture capitalists will

sell their holding in a company before it reaches this stage. Nonetheless, expansion funding is still counted as venture capital under most definitions of the term, including that of the British Venture Capital Association (BVCA).

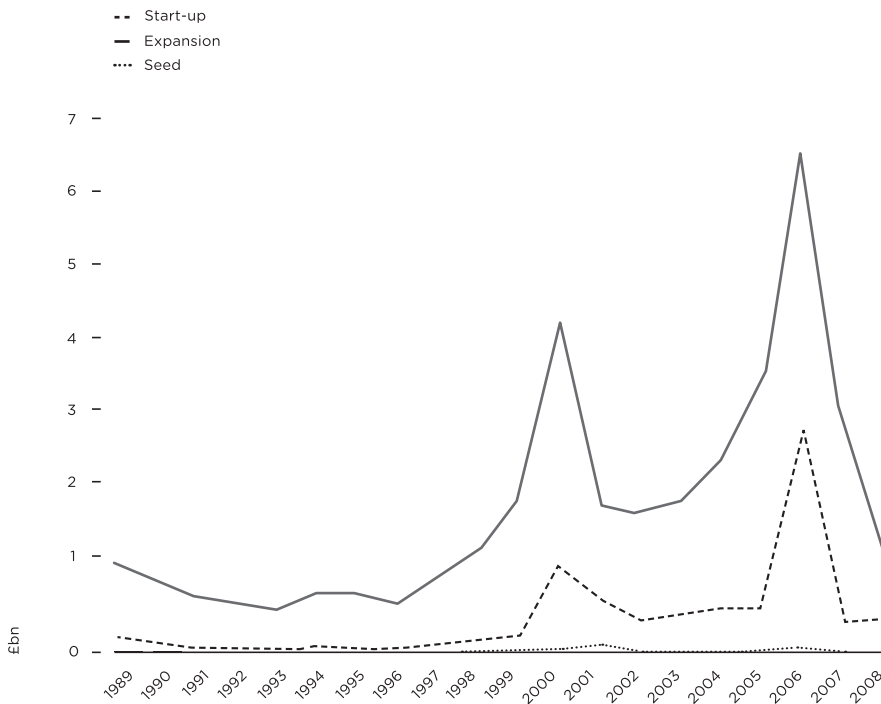
The expectation — or perhaps the hope — of venture capital investors is that firms receiving venture capital funding will progress to an exit — usually after more than one round of funding has been received, at which point the venture capital fund will be able to sell its stake and realise a profit. The two main exit strategies are:

- an *initial public offering* (IPO) — where the firm is floated on a stock exchange (typically AIM in the UK)
- a *trade sale* — where the company is sold to another firm (normally a larger, established firm operating in the same industry).

In practice, many venture-capital-funded firms never manage to exit in either of these ways, but instead become insolvent. In these cases the venture capital fund normally loses its entire investment.

UK venture capital over time

Figure 4 shows data from the European Venture Capital Association (EVCA) on the level of investments in venture capital over the period 1989 to 2008, broken down into seed, early stage and expansion capital (the three categories detailed in the last section). Note that there is a difference in the time path of investments made and capital raised; venture funds normally raise a certain sum of capital, which is then invested over a number of years, according to when they identify viable firms in which to invest.

Figure 4 **Venture capital investment in UK (£m, 2009 prices), 1989–2008**

Source: data provided to author by EVCA

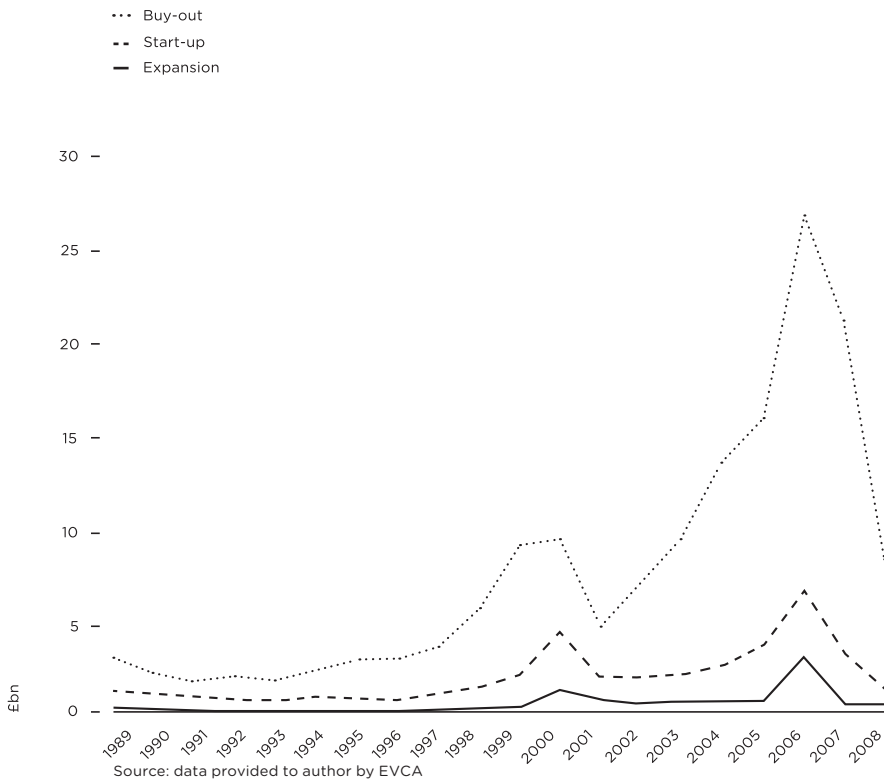
Figure 4 shows that total UK venture capital investment was relatively stable at around £1 billion between 1989 and 1997. At this point, the 'dot com' boom of the late 1990s took off, with total investment quadrupling by the peak of 2000. Funding then declined to a level of about £2 billion in 2003 before increasing again rapidly until the next peak of just under £7 billion was reached in the debt-fuelled boom of 2004–06. Investment has since collapsed to levels not seen since the mid-1990s, in the wake of severe global recession (which has also had a severe negative impact on the levels of new funds being raised).

In most years, the majority of venture capital investment is expansion capital – further rounds of lending to businesses which have already received previous capital. In boom years (eg 2000, 2006) start-up capital makes up about half of all venture capital lending; in most years it is well below this proportion. Seed funding is less than 1 per cent of total venture capital lending in most years although the number of entrepreneurs who receive seed funding is a much higher proportion of the total number of venture capital

deals, because the value of each individual seed investment is so small relative to start-up or expansion investments.

How does venture capital funding compare with the other type of private equity funding – buy-outs? Figure 5 shows the breakdown between venture capital and buy-out funding over the same time frame as figure 4. In the early 1990s the share of private equity accounted for by venture capital and buy-outs was roughly equal, but since then, and particularly in the years following 2001, buy-out funding has grown much more strongly than venture capital funding. By 2006, investment in buy-outs was around four times larger than investments in venture capital. It is this strong growth in the buy-out market that explains why the term ‘private equity’ has become increasingly synonymous with buy-outs in the public consciousness.

Figure 5 **Venture capital and buy-out funding in the UK (£bn, 2009 prices), 1989–2008**



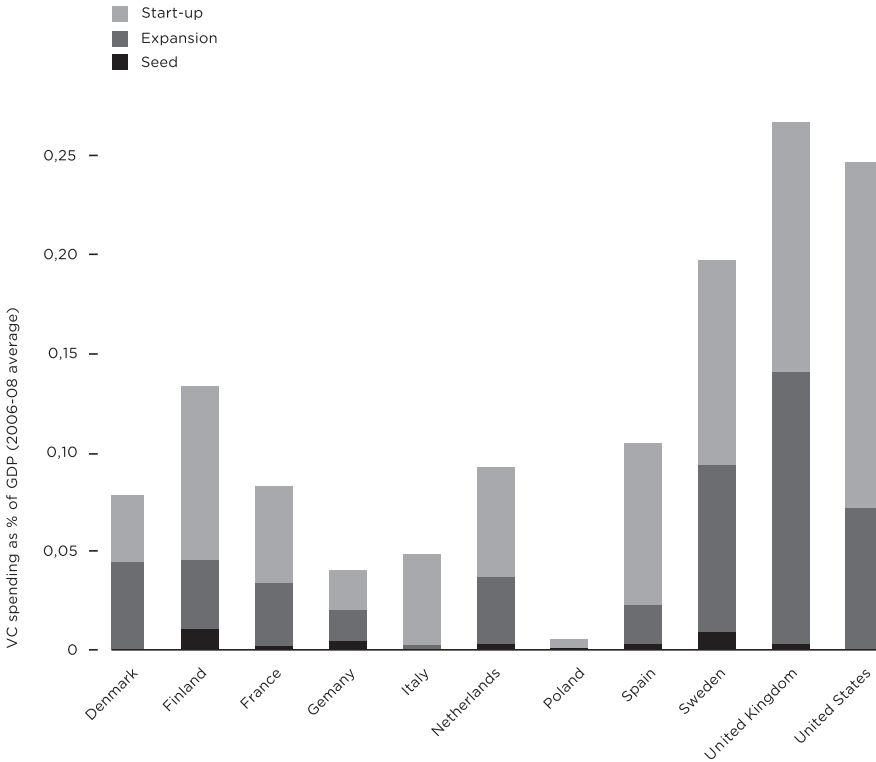
Unfortunately, neither the EVCA nor its British counterpart the BVCA produces a detailed breakdown of the industrial sectors in which venture capital investment is concentrated. The EVCA does produce a sectoral breakdown for private equity as a whole, which shows that the majority of investment in the sector over the years 2006–08 went into consumer services (retailing, media and travel—37 per cent of total investment), industrial sectors (eg construction, engineering, aerospace etc—24 per cent) and health care (11 per cent). The technology sector—software and computer services, hardware and equipment—accounted for only 6 per cent of total private equity investment in 2006–08, but 35 per cent of total early stage (seed and start-up) funding.

Within the technology sector, around 28 per cent of early stage financing in 2008 went into the computer software industry compared with 21 per cent into healthcare (particularly medical instruments and pharmaceuticals), 19 per cent into biotechnology and 6 per cent into semiconductors.

International comparisons

Figure 6 shows figures from the EVCA and the National Venture Capital Association (NVCA; the US national venture capital association) for the level of venture capital investment as a proportion of GDP (a measure of national income) in the UK and a selection of other European countries, plus the USA as a comparator. Because of the volatility of venture capital investment statistics in any given year, we have used a three-year moving average (between 2006 and 2008) to illustrate the differences between countries over a longer time period.

Figure 6 **Venture capital spending as proportion of GDP, selected European countries and the USA, 2006–08**



Source: EU country data provided by EVCA. US data from PricewaterhouseCoopers and NVCA.³⁴
The USA does not publish separate statistics for seed and start-up financing.

In terms of overall amount of GDP invested in venture capital, the UK is the leader in recent years from the countries surveyed here (and in fact, data from the OECD suggests that the only country which had a higher proportion of GDP invested in venture capital globally was Israel, with total spending at around 0.7 per cent of GDP).³⁵ On both start-up and expansion capital, the UK is ahead of other European countries and the USA. It is only in seed capital funding that the UK lags behind other European countries (most obviously Sweden and Finland, but also Germany and Denmark).³⁶

Although the USA has less national income invested in venture capital than the UK and Sweden, the US venture capital industry is split into several pockets or 'clusters' of highly concentrated activity—for example, 'Silicon Valley' in California. Within the states that comprise these clusters,

venture capital spending is a much higher proportion of GDP than the US average, and is also higher than the UK average.³⁷

Cleantech venture capital

The simplest definition of a cleantech company is ‘any company whose activities convey an environmental benefit’, but this is probably too vague to be useful. In the context of the environmental challenge mentioned earlier, it makes sense to define a cleantech company as any company whose activities contribute towards a *low carbon economy*—and in particular towards the ambitious target of 80 per cent reductions in greenhouse gas emissions by 2050.

Cleantech is sometimes taken to comprise just those sectors of the economy whose activities can be clearly labelled ‘environmental’—for example, renewable energy. However, this is far too narrow a definition. In fact, many cleantech innovations are aimed at reducing carbon emissions from other areas of the economy. That could be in a specific sector of manufacturing—for example, photovoltaic cells—or it could be a process innovation that reduces carbon emissions across the board (for example, low power-usage computer hardware). It is crucial to bear in mind that innovations that have nothing to do with what are conventionally thought of as ‘environmental’ industries might nonetheless have significant environmental benefits.

The FTSE Group’s definition of ‘environmental markets’ defines cleantech companies as ‘companies that provide products and services offering solutions to environmental problems, or that improve the efficiency of natural resource use’.³⁸ The FTSE Group identifies five subsectors of environmental industries, listed in detail in table 1.

Table 1 **Mapping the cleantech sector: the FTSE Group's environmental markets definition**

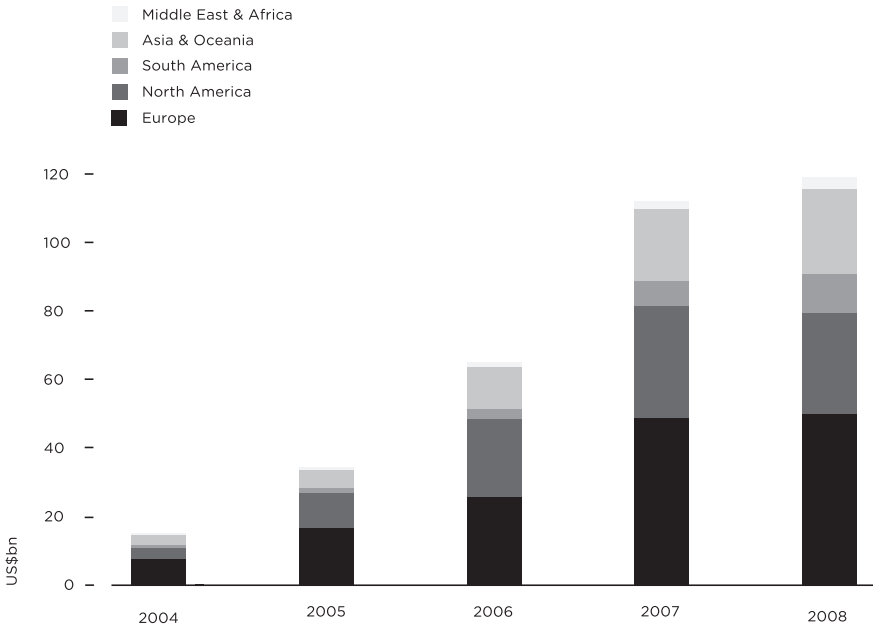
Subsector name	Description	Categories within subsector
Renewable and alternative energy	Companies that provide products and services along the renewable and alternative energy value chain	<ul style="list-style-type: none"> Wind power generation equipment Solar energy generation equipment Other renewables equipment Renewable energy developers and independent power producers Biofuels
Energy efficiency	Companies that provide products and services enabling more efficient methods of energy usage	<ul style="list-style-type: none"> Power network efficiency Industrial energy efficiency Buildings energy efficiency Transport energy efficiency General energy efficiency
Water infrastructure and technologies	Companies that provide or operate technologies, infrastructure and services for the supply, management and treatment of water for industrial, residential, utility and agricultural users	<ul style="list-style-type: none"> Water infrastructure companies Water treatment equipment Water utilities General water infrastructure and technology
Pollution control	Companies that provide technologies to reduce and monitor the contamination of air and soil to address global, regional and local environmental problems	<ul style="list-style-type: none"> Pollution control solutions (eg designing, developing and manufacturing equipment and services for reduction, prevention or clean-up of air or soil pollution) Environmental testing and gas sensing
Waste management and technologies	Companies that provide and/or operate technologies, systems and services for waste management, reuse and recycling	<ul style="list-style-type: none"> Waste technology equipment Recycling and value added waste processing Hazardous waste management General waste management
Environmental support services	Companies that provide environmental support services through consultancy, or trading services in environmental assets and securities	<ul style="list-style-type: none"> Carbon and other environmental assets trading Environmental consultancies

Source: FTSE Group⁴¹

According to data published by the BVCA, using its definition of cleantech companies as ‘those who use innovative technology to create products and services that compete favourably on price and performance, while reducing mankind’s impact on the environment’,⁴⁰ cleantech investments into venture capital comprised around 48 per cent of total early stage investments and 7 per cent of expansion investments averaged across the years 2007 and 2008. Unfortunately the BVCA’s European counterpart, the EVCA, does not publish data on cleantech investment in different EU countries for comparison purposes. A survey of EVCA members in February 2009 indicated that 29 per cent of early stage investors invested in the cleantech sector, and these deals represented 10 per cent of the total number of deals in the sector.⁴¹ If the average size of early stage deals in the cleantech sector is typical, this indicates that the cleantech sector has a higher proportion of total investment in the UK than in Europe on average.

The cleantech sector has undoubtedly grown rapidly over the last decade as governments and industrialists alike have placed greater emphasis on the need to invest in low-carbon industrial solutions to reduce the likelihood of catastrophic climate change. Figures from the US venture capital association (the NVCA) suggest that US cleantech venture capital funding (including early stage and expansion capital) grew from 1 per cent to 8 per cent of venture capital funding between 2001 and 2007. Figure 7 shows data from UNEP’s sustainable energy investment report on total private equity investment in sustainable energy (a key component of cleantech) between 2004 and 2008. These figures include venture capital *and* buy-out investment, but they show there has been a very strong upward trend in Europe, North America and other continents in investment in this sector over the last five years.

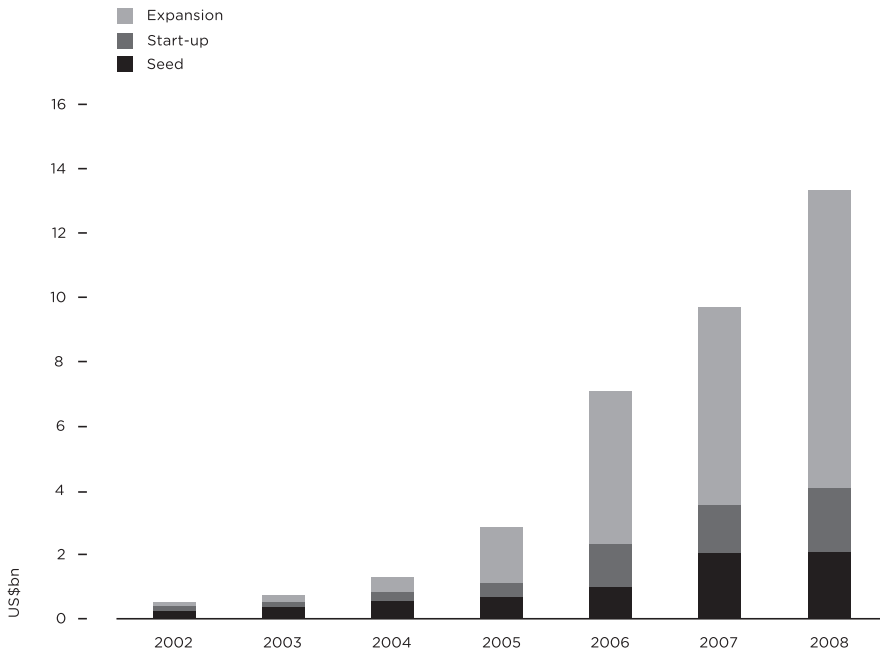
Figure 7 **Private equity investment in sustainable energy (US\$bn) by continent, 2004-08**



Source: UNEP and New Energy Finance⁴⁴

Figure 8, also taken from UNEP's sustainable energy investment report, splits global private equity investment in sustainable energy into different types of venture capital funding and private equity capital. The figure shows that both private equity and venture capital funding experienced explosive growth at a global level between 2004 and 2008. Private equity capital, which in this sector largely represents funding for the roll-out of existing technologies on a larger scale (building wind farms, etc), grew faster than early and later stage venture capital funding, rising from only US\$120 million in 2002 to US\$9.1 billion by 2008. However, total venture capital funding still grew by an average of over 50 per cent per year, expanding from about US\$500 million in 2002 to over US\$4 billion by 2008. As the cleantech industry matures, one would expect the amount invested in expansion capital to be many times the amount invested in venture capital, as much of the infrastructure involved in renewable energy, for instance, is highly capital intensive and thus expensive to roll out.

Figure 8 **Venture capital and other private equity investment in sustainable energy (US\$bn), 2002-08**



Source: UNEP and New Energy Finance⁴³

Social venture capital

There are a number of ways in which a business can be classified as meeting 'social' objectives. Different venture capital funds (and organisations carrying out activities which are similar to venture capital funds, even if they would not call themselves venture capitalists) have different criteria for what counts as a 'social investment'. The unifying feature of definitions of social business activity is that they all involve something beyond, or in addition to, the private profitability of the business. There are many ways in which the 'social' aspect of a business could manifest itself. For example:

- *who the business employs* – many social enterprises focus on employing deprived members of the community
- *where the business operates (geographically)* – eg in communities, areas or regions that are particularly disadvantaged
- *the sector the business operates in* – for businesses operating in the UK, sectors that add social value (what economists call 'positive externalities') would include health and education;⁴⁴

overseas, a wider range of activities could be considered, eg companies building telecommunications networks using mobile phone technology in developing countries

- *the business's trading activities* — eg firms involved in ethical trading activities (eg the fairtrade movement)
- *the business's investment activities* — eg an ethical investment policy
- *structuring the ownership and/or control of the business in a progressive way* — eg firms that include a commitment to employee ownership and/or participation.

This is a wide range of potential definitions of 'social business' and the situation is made even more complicated by the fact that different investors in this field have varying criteria for what counts as 'social investment'.

The social venture capital 'scene' in the UK (and indeed in other countries) is a tiny proportion of venture capital. In fact, there are only two firms which are currently operating what one could call a 'pure' venture capital fund model to invest in social businesses — Triodos and Bridges Ventures (although there are more organisations currently trying to raise funds). In addition to this, however, there are a lot in common with venture capital. Table 2 gives details of the precise form of investments that each of these organisations makes, the amount of funds they have raised so far, and the particular definition of 'social' they use.

Table 2 Selected organisations providing social venture capital and related funding streams in the UK

Name and website	Type of funds provided	Amount of funding	Investment criteria
Triodos Bank www.triodos.co.uk	Venture capital	Opportunities fund: £4m	Investments have to be performing a socially or environmentally useful function by virtue of the sector they are trading in. Funded companies generally need minimum turnover of £400,000 per year.
Bridges Ventures www.bridgesventures.com	Venture capital	Community Development Ventures (CDV) Fund I: £40m CDV Fund II: £75m	<i>Regeneration:</i> businesses must be located in the most deprived 25% of the UK, as defined using the government's index of multiple deprivation, and contribute to their local community via employment creation, substantial expenditure to suppliers, or serving the area as a core market. <i>OR sustainable business:</i> an ability to demonstrate strong social benefits in sectors such as healthcare, education, the environment and ethical business.
Venturesome www.cafonline.com	Loans, mezzanine finance	£12.5m since 2002	Small entrepreneurial charities.
Launchpad (Young Foundation) launchpad.youngfoundation.org/	Seed funding, incubator facilities, venture capital funding	Funds still being raised.	<i>Health launchpad:</i> social enterprises that address long-term conditions. <i>Education launchpad:</i> innovation in practical learning and education for young people.
Catalyst Fund www.catfund.com	Venture capital (focusing on expansion phase)	Currently fundraising, target: £40m	Energy efficiency and environment; health and wellness; education, training and recruitment; ethical consumerism.
Baxi Partnership www.baxipartnership.co.uk	Loan or quasi-equity investment, assistance with arranging employee buy-outs	£20m fund	Invests in employee-owned enterprises.
UnLtd Ventures www.unltd.org.uk	Provides seed grants to social entrepreneurs (using money from Millennium Commission); acts as a broker between social entrepreneurs and interested funders – funding types include debt, equity and mezzanine	Millennium Commission legacy funding: £100m Other funding accessed through external investors on a case-by-case basis	Supports social entrepreneurs – 'people with vision, drive, commitment and passion who want to change the world for the better'.

Name and website	Type of funds provided	Amount of funding	Investment criteria
Big Issue Invest www.bigissueinvest.com	Loan finance (currently), venture capital (forthcoming)	Venture fund target: £10m	<i>Loan finance:</i> social enterprises or the trading arms of charities that have been trading for three years and have a turnover of at least £250,000. <i>Venture fund:</i> for social enterprises that have a clear social purpose and compelling business model. Mainly looking to finance growth of established social enterprises but will also consider financing early stage enterprises.
Social Finance www.socialfinance.org.uk	Loan finance from a proposed social investment bank	Currently fundraising	Investment criteria still being determined.
4ip www.4ip.co.uk	Equity and loan investments	Channel 4 has committed £20 million; partners are providing co-investment support up to £50m	From website: '4iP is an innovation fund to stimulate public service digital media across the UK. In English, that means supporting great ideas for websites, games and mobile services which help people improve their lives.'

Source: organisational websites and author's interviews with organisational representatives

Table 2 shows a broad spectrum of funding organisations operating in the social investment area, ranging from funds that adhere to the standard venture capital model, through loan and mezzanine finance providers, organisations that offer consultancy and brokerage services, incubators and funders of employee-owned enterprises, and funds that invest in social ventures in specific areas of industry (such as 4ip). In addition to this there are also a number of business angels who operate in the social enterprise sector (for example Gordon Roddick, the widower of Body Shop founder Anita Roddick), although these are a tiny proportion of the total number of business angels.

There are also big differences between these organisations in the trade-off they make between the social benefits of their investments and the private returns to the funds invested. At one end of the scale, Bridges Ventures tries to realise private returns that are at least as good as the rate of return for venture capital funds which invest in other areas of the economy – in other words, consistent with their investment meeting the social criteria that each of their funds has set, they are looking for the highest possible return.

By contrast, Triodos is looking for a minimum acceptable private rate of return on funds invested, but subject to that constraint the fund is willing to make a trade-off between social impact and private returns, for example, settling for a somewhat lower rate of private return in exchange for a higher social return. At the other end of the scale, the Young Foundation's Launchpad initiative does not aim for a particular rate of return on capital invested – instead, it focuses on trying to measure the positive social impact of projects which are funded. Of course, measuring social impact of capital invested is a lot harder than measuring the financial returns, although the literature on project evaluation provides some useful techniques for this purpose, provided adequate data are available.⁴⁵

The level of return on investment that different types of funds aim for affects the mix of organisations that invest in them. For example, Bridges Ventures has some investment from mainstream banks such as HSBC, whereas Triodos and Launchpad rely more on a combination of charitable trusts and foundations on the one hand, and high net-worth individuals looking for an alternative to standard investments on the other.

It should also be noted that some of the social venture capital funds include environmental benefits as one aspect of social benefits, and so there is an overlap between the types of firms that cleantech venture capital funds invest in and those that some of the social venture capital funds invest in. However, because this report devotes a whole section to cleantech investment in its own right, we maintain a separation between cleantech venture capital and social venture capital in this report – while recognising the complementarities between them.

The social venture capital sector is currently a very small proportion of overall venture capital, with the overall amount invested in the last two years well under £100 million. Neither the BVCA nor other organisations dealing with the sector publish statistics on aggregate investments in the sector over time, so it is not possible to provide statistical evidence on recent trends in the sector as we were able to do for venture capital as a whole, and for cleantech. However, if the organisations which are currently attempting to raise new funds manage to achieve their aims, the sector will expand at a rapid rate.

Summary

The evidence in this chapter suggests that the UK compares well with other countries in terms of the overall amount it invests in venture capital as a proportion of national income, although investment has fallen off in the wake of the recent economic crisis. The UK also compares well with other countries in terms of cleantech venture capital investment. Compared with the venture capital sector as a whole, the social venture capital subsector is at a fledgling stage, but is well placed to expand in the future if additional funding can be raised and if currently funded projects can provide a reasonable return to investors in addition to meeting their social goals.

3 a critical assessment of UK venture capital performance

The previous chapter established that the UK has invested more in venture capital as a proportion of national income over three years than the USA or other European countries have. However, investing a lot in venture capital will make little difference to economic performance if the investment fails to produce good results. The size of the *return* to funds invested is crucial. This chapter looks at the performance of venture capital funds in the USA, which is generally acknowledged to have the most well-developed and well-functioning venture capital industry in the world. I compare the average fund returns available to venture capital investors in the UK and other European countries with those available in the USA. The results are unequivocal: there is a large 'performance gap', with the USA doing a lot better than other countries on average.

This does not necessarily mean that the UK venture capital industry or the European venture capital industry should attempt to become an exact copy of the US industry. Even if that were possible, the USA is far from perfect, as I show in this chapter, and it is only to be expected that different countries will have different strengths and weaknesses. However, it is certainly true that while the quantity of the UK's venture capital investment has been at world-leading levels (at least until the current financial crisis), the quality of investment leaves something to be desired.

This chapter first presents figures on the performance gap between the USA and other countries, and then analyses some potential explanations for the gap. The arguments presented here play a crucial role in helping construct an idealised template for the kind of venture capital industry the UK might want in the future, in chapter 4.

Venture capital performance in the EU and USA

Several academic studies have attempted to estimate the returns to investment in venture capital, with particular emphasis on how the USA compares with Europe. Table 3 shows figures from recent studies. The measure of fund performance given here is the internal rate of return

(IRR), which measures the average annual rate of return on each dollar (or euro or pound) invested in the fund.⁴⁶ The figures are means (averages) for the sample unless otherwise stated.

Table 3 **Internal rates of return to venture capital investments in the EU and USA**

Study and time period	Average US IRR	Average European IRR
Jenkinson ⁴⁷ Internal rates of return, 1986–2007 (including open funds)	Not included in study	Early stage: –0.8% Development: 7.8% All: 4.5%
Lindström and Maula ⁴⁸ IRR, all funds of 1998 vintage or older (therefore closed)	21.3%	8.6%
Rosa and Raade ⁴⁹ 10-year fund IRRs 1994–2003	Early stage: 37.0% Development: 20.4% Total: 25.4%	Early stage: 1.3% Development: 10.7% Total: 8.3%
Hege, Palomino and Schwiendbacher ⁵⁰ IRRs calculated between 1997 and 2003 on individual firms that exited or failed	Mean: 279% Median: –39%	Mean: –40% Median: –61%

Note: figures in the bottom row⁵¹ are not strictly comparable with other estimates because they show returns for individual firms rather than funds. However, they still illustrate a useful comparison between US and European venture capital performance, so we have included them.

The results from these studies show, without exception, that returns to investment in US-based venture capital funds are a lot higher than returns to investment in European-based venture capital funds. For early stage funds in particular, European investor returns are abysmal; most empirical estimates place them no higher than zero (taking into account the statistical margin of error on the estimates), and in some cases they are negative.

Recent empirical work also shows that returns to venture capital investment in European funds lag behind other types of equity investment. For example, Jenkinson calculates that average returns to buy-out funds are 16.3 per cent – around eight points higher than venture capital funds.⁵² European venture capital fund performance also lags behind the public equity market performance (as measured by the share indices of various European countries) in most studies.

What about comparative differences in venture capital fund performance between different countries in Europe? Gregoriou et al analyse differences between venture capital performance in European countries using a dataset of firms that received venture capital investments between 1983 and 2004 (the dataset is mostly concentrated between the years 1991 and 2001).⁵³ Table 4 shows the difference in mean and median internal rates of return for the firms contained in the data, together with the maximum and minimum achieved rates of return on an individual investment.

Table 4 **Comparative IRRs to venture capital investments in European countries (%/year)**

Country	Mean	Median	Minimum	Maximum
UK	19	-13	-100	4,214
France	11	2	-100	1,053
Germany	60	-9	-100	3,058
Scandinavia	-4	1	-100	673
Other European	-16	-9	-100	1,003
Overall	14	-2	-100	4,214

Source: Gregoriou et al⁵⁴

The fact that the results in table 4 do not adjust for firm size and the size of each investment means that the statistics are more volatile than those in table 3. Individual returns to venture capital investments range from -100 per cent (when the firm fails completely) to a maximum of over 4,000 per cent for one UK-based firm. (In this particular case this corresponds to a return multiple on the initial amount invested of around 1,100 times the initial investment!) To the extent that the results can be reliably interpreted given the volatility of the data, it looks as if Germany has the best mean return to venture capital investments in firms, and France and Scandinavia the best median return. The UK's mean performance does not look significantly out of line with the European average.⁵⁵ This conclusion is backed up by Hege, Palomino and

Schwienbacher, who compare UK venture capital fund performance with the rest of Europe and find no statistical difference in the returns.⁵⁶

Recent research from the BVCA and PricewaterhouseCoopers analyses the returns from ten UK-based venture capital funds raised from 2002 to 2004 — after the dot com bubble — involving purely private money (with no element of public funding) and finds very similar median and mean returns to those which Gregoriou et al found.⁵⁷ Table 5 gives a summary of their main findings, comparing the returns with a sample of 27 funds raised in the bubble period of 1998–2001. Funds that began investments during the bubble period mostly produced abysmal returns — the mean return was negative. The funds that have been raised since then have produced better mean returns, but even lower median returns so far. However, returns on well-performing companies in these funds are still being earned at the moment as the funds are still relatively young, so it may be that median returns will improve over time (although the current recession may impact adversely on returns). There is huge variation in returns; for the post-bubble funds, the range between the 90th and 10th percentile (the range that the ‘middle’ 80 per cent of funds’ returns lie between) is +17.2 per cent to –22.7 per cent.

Table 5 **BVCA and PWC results for distribution of rates of return to recent venture capital funds in the UK, as of December 2008**

Measure	Bubble period (1998–2001) Returns (IRR, %)	Post-bubble (2002–04) Returns (IRR, %)
Number of funds analysed	27	10
Mean return	-2.4	7.7
90th percentile	6.0	17.2
75th percentile	0.9	2.8
Median	-4.8	-7.2
25th percentile	-15.1	-16.9
10th percentile	-26.4	-22.7

Source: BVCA and PricewaterhouseCoopers⁵⁸

Why does venture capital in the USA perform better than in the UK (and Europe?)

Clearly, if the empirical studies of venture capital performance over recent years are correct, US venture capital investments have performed (on average) much better than European investments. Therefore, a crucial component of reinventing venture capital in the UK (and elsewhere in Europe) lies in analysing just what it is that makes the US venture capital market so much more successful than the British and European venture capital markets.

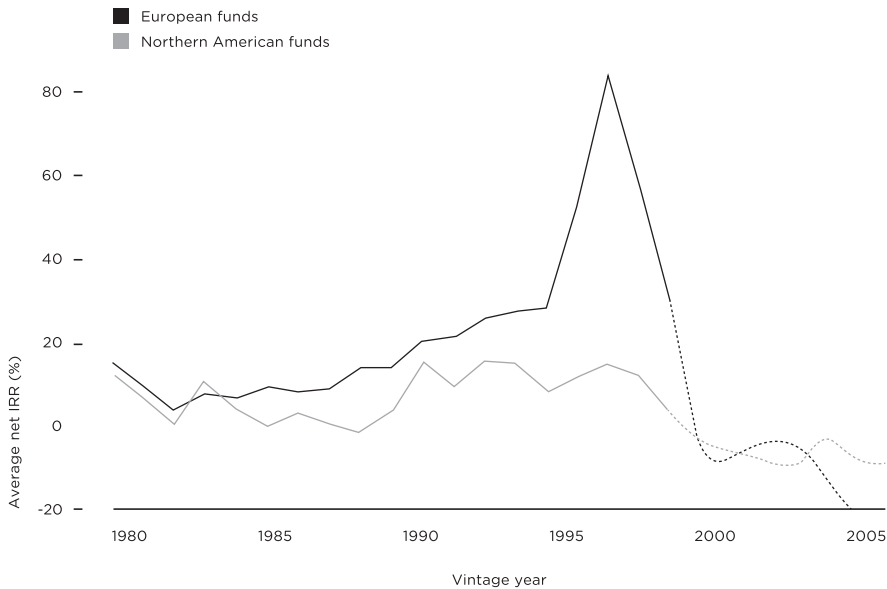
Although it is almost certainly not the case that the USA represents a 'perfect' venture capital market, it is nonetheless certain that British and European fund managers would give their right arms to be making the sort of average returns that the empirical studies in table 3 indicate for the USA. However, as we shall see, the exact picture is more complicated than this, and it is not just a question of 'American venture capital equals good, British venture capital equals bad'.

This section examines several possible reasons why US venture capital funds perform better than the UK, and tries to clarify just what in the data is driving the measured differences in performance. We draw both on published evidence and on the interviews conducted in the qualitative phase of our research with venture capital fund managers, firms that have received venture capital investment and other industry experts and stakeholders. In conducting this investigation we reveal several underlying weaknesses and issues with the UK venture capital industry. These will be carried into the next chapter, which examines policies designed to improve the operation of the venture capital market.

Availability of high-value exit options in the USA

So far, our comparison of venture capital returns in the USA and European countries has looked only at comparisons averaged over a number of years. However, one important feature that is driving the high returns of the USA relative to Europe only becomes apparent when looking at differences in *year-on-year* returns over the business cycle. Figure 9 is taken from Lindström and Maula⁵⁹ and shows average IRRs of US and European funds for funds whose *vintage* (the year the fund started to invest) was between 1980 and 1998. Remember that funds tend not to invest all the funds they raise in one go, but rather over a number of years (normally up to five).

Figure 9 **Aggregate venture capital fund performance in Europe and North America, vintage years 1980–98**



Source: Lindström and Maula.⁶⁰

Figure 9 shows that in the early 1980s, returns to European and North American funds were roughly equivalent. A small performance gap opens up after 1985, but it is less than 10 percentage points in most years—nothing like as big as the differentials shown in table 3. The bulk of the performance gap (at least as measured in the Lindström and Maula study) is produced by the huge differential in returns that occurs for funds with vintages between 1994 and 1998—and especially the vintage year of 1996, where the average net IRR for North American funds shot up to around 75 per cent, compared with a European figure of around 15 per cent. Funds with a vintage of 1996 would have been investing at the optimal time to cash in on IPOs carried out at the height of the ‘dot com’ boom, which produced a large number of very high-value exits of US internet and technology firms via IPOs on the NASDAQ index. While the wave of technology-related stock markets that sprang up in the late 1990s, such as Frankfurt’s Neuer Markt and Brussels’ (now defunct) EASDAQ, secured some high value IPOs for venture-capital-backed firms there were nowhere near enough of these to emulate the success of NASDAQ in the USA.⁶¹ In any case, the ‘dot com’ NASDAQ boom was short lived; the stock market crash of 2000–01 meant that returns for funds raised

in the early years of the new millennium were negative in most cases. (Figure 9 should be taken as suggestive only for performance data for funds with vintages of 1999 and later because not enough time had elapsed by the time of Lindström and Maula's paper for these funds to have delivered full performance results, but the general picture of negative returns in the early 2000s is confirmed by other studies.⁶²)

The general consensus from published work and the interviews we conducted is that European stock markets lack a high-value exit mechanism — a 'NASDAQ for Europe' in other words. The UK's own growth market, AIM (created in 1995 as the Alternative Investment Market), has handled a number of venture-capital-backed IPOs at reasonable multiples of the initial investment since 2000⁶³ but does not have the same degree of specialist technology expertise that NASDAQ has. As shown by Arcot, Black and Owen,⁶⁴ AIM SMEs tend to suffer from a lack of daily liquidity (low trading volumes) in the stocks of its smaller companies (which include the majority of ex-venture-capital-backed IPOs).⁶⁵ That is, once stocks are acquired in an IPO, they tend to change hands rarely, which makes it more expensive to raise capital in the first place as investors are concerned that they will not be able to sell easily (the liquidity risk premium). This has led to concerns from venture capital firms that AIM represents a poor exit option compared with NASDAQ because the lack of liquidity in the market makes it difficult to secure a high initial share price at IPO, or to offload any remaining holdings the venture capital firm might maintain in the firm after the IPO stage. The recession has further accentuated the problems of low levels of daily liquidity, with investors demanding a greater liquidity risk premium and making the cost of raising funds disproportionately expensive. The London Stock Exchange has taken a number of steps to address this issue including supporting independent equity research for SMEs, helping companies with their investor relations activities, reducing trading fees, and working to provide the most optimum trading models for smaller companies. As explained in the recommendations section, however, any action which policy makers could take to incentivise a greater range of investors to support SMEs and encourage daily liquidity, including reform of the VCT regime, would translate into a lower cost of capital for issuers and a more attractive environment for future venture capital exits.

Overall, one plausible interpretation of the results shown in figure 9 is that the NASDAQ boom, and the huge returns for US venture capital investments that it produced,

was something of a one-off driven by a stock market bubble, and that investors into venture capital are unlikely to see such high returns again. In other words, not only is there little prospect of a 'NASDAQ for Europe', but equally there is little prospect of vintage late-1990s NASDAQ returns even in the USA. If this is the case, however, it poses a problem for policy makers looking to increase investments into venture capital funds. Given that European venture capital returns lag behind those achievable from other types of private equity (such as buy-outs) and the public stock market, why on earth should investors want to invest in venture capital? And if the measured returns are so low, what can possibly be the benefit from increased venture capital investment? These questions lie at the heart of the policy makers' dilemma over venture capital and we shall return to them at the start of the next chapter. However, given that even discounting the 'bubble years' of the late 1990s there is still a substantial premium to US venture capital investment compared with European venture capital investment, in the remainder of this section we examine other reasons why the USA might have an advantage.

Size of the US venture capital market, geography and clustering

Although, as shown in figure 4, the UK has the largest amount invested in venture capital as a proportion of national income, there are two factors which ensure that firms seeking access to venture capital funds in the USA deal with markets that are bigger — in *absolute* terms — than the UK. First, the US economy is much bigger than the UK economy. Second, the US market is concentrated around a number of *clusters* of venture capital and venture-capital-funded firms — for example Silicon Valley in California, Boston, Massachusetts, 'Silicon Alley' in New York City, and Austin, Texas.⁶⁶ Within each of these clusters, venture capital funding is a much greater proportion of local or regional GDP than is the case in the UK as a whole. For example, in 2008 FORA, the Danish Enterprise and Construction Authority's Division for Research and Analysis, calculated that venture capital investment as a share of GDP in the US state of California — which contains Silicon Valley — in 2007 was approximately double the share of venture capital in GDP in the UK.

The largeness of the US market has three main positive consequences for firms seeking venture capital in North America. First, it allows a 'thick' market to operate — availability of funds for investment (in normal

economic conditions) is high, and the market is reasonably competitive. Representatives from venture-capital-backed firms that we interviewed for this project were, in general, critical of the thinness of the UK venture capital market. Often in the UK, businesses seeking venture capital funding find it very difficult to get more than one funding offer from a venture capital firm (or consortium of firms), which makes it hard, if not impossible, for start-up companies to 'shop around' for the best deals. Consequently, firms felt that venture capitalists operating in the UK drive a very hard bargain over the terms on which they provide equity to the company.⁶⁷ There was a widespread feeling that start-up businesses were getting a poor deal. The response of the venture capital fund managers we interviewed about this complaint was that because the venture capital market was so risky, venture capital firms need to invest on fairly punitive terms to secure high levels of profit from the small number of successful firms they back — to offset losses on the large numbers of venture-capital-backed firms that fail. Evidence on the distribution of returns to venture capital investments backs this up.⁶⁸ But nonetheless, it remains true that the bigger the (localised) market for venture capital, the greater the likelihood of healthy competition between different venture capital funds to back the best start-up ventures.

Second, the concentration of the US market into clusters allows a thriving ancillary industry of people who provide the skills that venture capital funds and companies use — for example patent lawyers who allow venture capital funds to carry out 'due diligence' (research on the viability and genuine newness of innovations) before committing funds. Once again, a well-functioning market in these ancillary services is a function of the size of the particular cluster.

Finally, the size and scale of the US market for innovative products makes it relatively easy for venture-capital-backed firms to expand well beyond the start-up stage.⁶⁹ The European market, despite being much more integrated than it was in previous decades, is still not a true single market in the way that the USA manages to operate.⁷⁰ However, the difference between the USA and the EU in the extent of market integration should reduce in the future as the EU becomes more integrated. Other things being equal, this should improve EU venture capital performance relative to the USA.

Sequential funding

Venture-capital-backed firms seldom get all the funding they need to develop an innovative product to the stage where an exit is possible (via an IPO or trade sale) in one go. Rather, most firms have to return to the venture capital market after their initial funding round to secure further funding. And before securing an initial 'series A' round of venture funding, many entrepreneurs are dependent on initial investments from seed funds, 'soft capital' or business angels for support.

The need to return to the venture capital funding market to secure additional rounds of funding was cited by our firm-based interviewees as a major drawback of the way the UK venture capital market typically operates, for two main reasons. First, early stage investors tend to see their shareholdings severely diluted in future funding rounds — a process one interviewee referred to as 'homeopathic shareholding'. If the later-stage investors are different firms from the early stage investors (which is often the case), they have no incentive to secure favourable returns for the early stage investors and this normally results in very poor returns for the early stage investors, who tend to end up with a relatively small share of the company after the later-stage money is put in (and consequently, can only achieve low returns on their initial investment even if the company manages to make it to an IPO or trade sale). This helps explain why the measured returns to early-stage investments in the UK are so poor. Second, sequential fundraising results in extra administrative overheads for the firms raising money as they often have to deal with a different set of investors at each funding round.

By contrast, US-based venture capital funds are more likely to back a given firm over several funding rounds — in many cases they offer funding from the seed stage right through to IPO. There are some UK-based venture capital funds which have a track record of operating in this way (for example Amadeus and Abingworth) but the approach is less common in the UK — at least, until recently. Most of our interviewees felt that one response of UK-based venture capital funds to the recession of the last two years was to reinvest in their existing portfolio of firms rather than undertaking investments in new firms, which were seen as particularly risky at the present time.

US-based venture capital funds also tend to make larger investments in the individual companies they back than do UK and European venture capital funds. Research by Jääskeläinen, Maula and Murray shows that the average

size of an early stage investment by US-based venture capital funds in the early 2000s was around €4 million, compared with around €1.5 million in France, and less than €1 million in other European countries.⁷¹ This is likely to increase the number of times that venture-capital-funded firms in Europe will have to go back to the market for additional funds compared with their American counterparts.

Size and portfolio approach of firms

The average size of US venture capital funds is larger than UK funds,⁷² which means that individual US funds can afford to back a larger number of companies than UK funds can. Venture capital investment is inherently extremely risky, and as we saw earlier in this chapter, the distribution of returns is highly skewed at the top, and features a lot of zeroes at the bottom. Out of any given ten investments, it may be that at least half fail, and only one or two perform really well (in the sense of generating high multiples of the fund's initial investment.)

In this investment environment, larger funds are at an advantage because they can back more firms than smaller firms — thus they have a better shot at the ‘big win’ than smaller firms, in the same way that a person who buys more lottery tickets has a better shot at the big prize. Investing in start-up firms is not a matter of pure luck like the lottery, but there is a great deal of luck involved.

For example, no one in Silicon Valley in the mid-1970s could have possibly known that out of the dozens of fledgling software companies that started up in response to the birth of the microcomputer industry, Microsoft would become the dominant force that it is today. Twenty years later, no one would have been able to identify the precise factors that made Google the market leader in the internet search engine industry by the year 2000.

Many of our interviewees felt that the comparative smallness of most of the UK venture capital funds compared with their US counterparts pushed the UK funds into a conservative investment strategy, seeking to avoid making losses rather than backing high-risk investments in the hope of making large profits. As one of our interviewees who worked in a start-up company put it:

UK venture capital funds are not big enough... a lot of the funds we approached for expansion funding were much bigger than — and had to be much bigger than — £10 million or so, which is often seen as an acceptable size for a UK fund.

Another interviewee put it this way:

In the UK there is a tendency for small-scale venture capital investments — in the hundreds of thousands of pounds, rather than the millions. That level of funding can create ‘interesting’ companies which can make reasonably valued exits via trade sales, but it won’t create the kind of star performers we’ve seen in the United States.

The problem is that a ‘safety-first’ investment strategy is a contradiction in terms in a high-risk investment environment. This certainly does not mean that UK venture capital firms need to be reckless or abandon due diligence, but they do need to consider risk in a more portfolio-orientated manner and operate larger funds to succeed along the lines that US firms have done in recent decades.

Additionally, US venture capital funds appear to be better at organising syndicated deals across large numbers of funds, which helps them raise amounts of capital for big deals that may be beyond the capacity of any single venture capital fund to afford. Although syndicated deals certainly do occur in the UK as well, the average number of funds involved tends to be lower — maybe three or four funds in a single deal at most, compared with up to ten or so in the USA.

Maturity of the US venture capital market

The USA was the first country to have a venture capital industry in the way we now define the term and its development was ten to 20 years ahead of other countries. Even as far back as the 1970s key US clusters like Silicon Valley boasted a thriving venture capital industry, while the UK and other European countries did not really develop large-scale venture capital until the 1990s. The consequence of this is that the USA has a more mature venture capital market than any other country that provides a reservoir of expertise in the industry, which venture-capital-backed firms and venture capital funds alike can draw on. There is a greater preponderance of ‘serial entrepreneurs’ — people who move from one start-up to the next — in the US start-up market than in the UK, and also there is more transfer of personnel

between start-up firms and venture capital funds — providing a greater knowledge base to draw on. This is not to say that the UK venture capital industry — and the related networks of UK business angels — does not possess an important repository of knowledge and experience, for they most certainly do. However, at this stage in the development of the UK venture capital industry it is still relatively young compared with the US venture capital industry. As the UK venture capital industry matures, the USA's experiential advantage should reduce.

Attitudinal and cultural differences

One theme that surfaced repeatedly in our interviews was that the USA has a more entrepreneurial and less 'risk-averse' culture than the UK and Europe, and that this was one of the differences driving the success of US venture capital funds. The basic argument was twofold. First, that the Americans are more comfortable with high-risk investment strategies than the Europeans. Second, that the USA has a greater supply of people who want to be entrepreneurs (per head of the population) than other countries do.

Although the anecdotal evidence for these suggestions is ubiquitous, the empirical evidence is mixed. Recent reports by Global Entrepreneurship Monitor provide some support for the idea that the USA is more entrepreneurial than Europe; of the advanced industrialised countries surveyed, the USA, Israel, Iceland and Canada exhibited a higher prevalence of 'high-growth expectation entrepreneurial activity' (the measure of entrepreneurship most closely related to venture capital activity) than any of the EU countries.⁷³ On the other hand, data from the Eurobarometer survey analysed and compared with data for the USA by Thurik and Grilo suggested that although a higher proportion of people in the USA considered starting their own business than in the EU, the proportions of survey respondents who had actually started a business in EU countries was actually slightly higher than in the USA.⁷⁴

One factor that many of our interviewees felt was an important determinant of the success of start-up businesses in the USA — whether venture-capital-backed or otherwise funded — was that Americans seemed to be more comfortable with the sacrifices required to succeed in the start-up environment: long and often unsociable hours, hard work and few, if any, holidays. Certainly, aggregate data show that US workers and the self-employed work longer hours, and have shorter holidays, than their European counterparts.

However, these comparisons are based on data for the whole labour market rather than the tiny subsection of venture-capital-funded start-ups, and to date there has been no rigorous examination of the links between working culture in start-up industries and economic performance. It may well be that working arrangements in UK or European start-ups are not actually that different from their US counterparts – without further investigation (and extensive data collection) there is no way of knowing for sure.

Differences in institutional make-up of investors

Lerner, Schoar and Wong find evidence that the returns to private equity investments (in the USA) differ according to the *types of institution* that invest in them.⁷⁵ Controlling for factors such as the vintage year of the fund and the fund type (venture capital or buy-out), funds invested using money from endowments outperform funds invested by financial institutions (such as pension funds and insurance companies) by around 8 to 10 per cent annually. Analysis of different types of fund suggested that the premium to endowment backed investments applied equally to venture capital and buy-out funds.

Lerner et al suggest that the main reason for the differential performance of endowment-backed private equity compared with other forms of private equity is down to experience. US endowment holders such as universities and foundations were some of the earliest investors to commit large amounts to private equity funds, which may have helped them gain deeper experience and levels of understanding about the determinants of good and bad performance in this asset class than investors who have entered the sector more recently.

Data supplied to the author by the EVCA suggest that across the EU, endowments and foundations contribute only a very small proportion of private equity funding. For example, in the UK in 2007, just 2.6 per cent of private equity investments were made by endowments – compared with 26.7 per cent by pension funds, 13.2 per cent by ‘funds of funds’ (funds that invest into other funds) and 9 per cent by banks. The comparable figures for the USA in 2008 were 10 per cent from endowments, 36 per cent by pension funds, 17 per cent by funds of funds and 9 per cent by banks.⁷⁶ Thus, the greater proportion of private equity funding coming from endowments in the USA probably conveys an advantage to the USA in terms of investor experience.⁷⁷ However, data from the BVCA shows that

in 2007, around 70 per cent of the funds raised from UK venture capital funds came from overseas – which considerably dilutes the impact of any inexperience on the part of UK investors.⁷⁸

Firm performance after the start-up stage

There is a well-known gap in the performance of small and medium sized enterprises (SMEs) in the ‘expansion’ phase – just after the start-up phase, when firms are beginning to make profits and expand to full scale (often backed by capital from an IPO or venture capital expansion fund). Bartelsman, Scarpetta and Schivardi show that the rates at which small firms are created, and the rate at which they fail, is quite similar for the USA and Europe,⁷⁹ but in the USA firms that survive the start-up stage experience higher subsequent employment growth. Furthermore, Bartelsman et al find that high-productivity small firms are more likely than low-productivity small firms to grow in size in the USA, but the same isn’t true in Europe. This finding is part of the explanation for the well-known productivity differential between the USA and Europe.⁸⁰ ‘Gazelle’ firms – SMEs with exceptionally high rates of employment growth and productivity – are a much rarer beast on this side of the Atlantic.⁸¹ Of course, differences in the venture capital regimes in Europe and the USA are only one aspect of the business environment, and it may well be that other aspects such as the planning regime, access to finance for *larger* businesses, the skills and labour force base, the overall corporate tax environment and/or the regime for taxing capital gains are important in explaining the differences. We do not pursue these further here as they are largely outside the scope of this report.⁸²

Government policy

So far, this section has looked at explanations for the performance gap between USA and UK venture capital funds that are primarily due to the behaviour of the funds themselves (or their investors) in each country. However, it may be that government policies to encourage venture capital produce better results in the USA than the UK. I defer a full discussion of government policy towards venture capital until chapter 5, but it is important to mention the topic initially at this stage, as a possible additional explanation for the performance gap.

Conclusion

This chapter has shown that there is a very long list of plausible explanations why the returns to venture capital investment in the USA have outstripped those in the UK and Europe in recent years. There is good reason to believe that US venture capital funds do better than UK funds because they have more money to invest per fund, are better syndicated, have better expertise and due diligence, benefit from clusters and size effects, and because the venture capital market is more mature in the USA. Additionally, there is some evidence that greater levels of entrepreneurialism in the USA, more knowledgeable institutional investors and a favourable environment for businesses to grow after the start-up stage, all help increase US returns to venture capital compared with European performance.

Chapter 5 will explore what government policies there have been to reduce the 'performance gap', but before looking at this in detail, we next return to the 'triple challenge' theme of chapter 2 and ask: how might the venture capital industry help the UK achieve a more successful, environmentally sustainable and socially just economy in the years and decades to come?

4 what can venture capital do for the UK economy?

Chapter 1 outlined the ‘triple challenge’ — economic, environmental and social — facing the UK economy, while chapter 2 outlined the current role that venture capital plays in the UK — including its cleantech and social subsectors, and chapter 3 looked at current returns to venture capital investors in the UK. This chapter broadens out the economic discussion by examining what the potential role for the venture capital industry is in meeting the challenges that the UK economy faces is, and what the theoretical arguments are for government intervention to encourage investment in venture capital. This section also presents some quantitative estimates of what the social pay-off to increased investment in venture capital might be, focusing on the role played by the innovation that takes place in venture-capital-backed firms.

How venture capital can contribute to economic growth

Based on the returns to UK venture capital investment reported in chapter 3, it would be all too easy to write off British (and European) venture capital as an overall failure, incapable of producing reasonable returns for investors. However, this would be too hasty a judgement. For one thing, the comparison with the USA shows that it is possible for venture capital investments to deliver good returns to investors if the industry is set up and run in the right way. Obviously replicating the success of US venture capital is a fundamental challenge for UK venture capitalists and policy makers alike, and one that we cover in detail in chapter 5. But even given the poor private returns to UK venture capital investments, there is a strong argument that the social returns to venture capital are higher than the private returns. This is because of the social benefit of *technological spillovers*.

Start-up firms of the type backed by venture capital are usually innovative by their very nature — the unpredictability of innovation is one of the main things that make a venture capital investment risky. So far we have focused on the private returns from venture capital investment (the returns to venture capital fund investors) but there are

strong economic arguments for believing that there will also be social returns from the innovative activity that start-ups undertake — ‘spillovers’ — which accrue more widely. Modern economic theory recognises that innovation is fundamentally an advance in human knowledge, and thus has a ‘public good’ aspect.⁸³ Public goods are ‘non-rival’ to the extent that one person’s consumption of a particular good does not preclude other people’s consumption of the same good. If I eat an apple then it is not available for anyone else to eat; but if I become informed about an innovation, it does not preclude other people from being informed about that innovation also.

The non-rival aspect of knowledge creates positive spillovers in the economy, because once a firm has made an innovation, other firms can exploit that innovation in their production process without needing to make the innovation all over again. The implication of this is that left to its own devices, the market will provide a level of innovation that is below the socially optimal level. This provides a justification for government support for innovative activity. Patents (which confer a time-limited monopoly on the innovation to allow the innovator to capture the profits) are one approach to doing this but they are not a complete solution because not all innovations can be patented, and also because as an explicitly time-limited policy they do not capture all of the long-run benefits from innovation. Therefore, most governments provide a subsidy to innovative activity (usually through some kind of tax break). Chapter 6 explores the potential size of the spillovers to innovation in more detail.

The stage at which innovative activities are supported is also important. In general economists think that support at early stages is more necessary — because the closer the business is to an actualised product, the more the returns are private rather than public.⁸⁴ This provides a rationale for specific government support for early stage funding rather than later stage or expansion funding.

Applicability of the venture capital model

We should be clear that venture capital is not a model that can be applied to SME funding as a whole — as shown in chapter 2, venture capital is a tiny proportion of overall SME investment. So it would be ridiculous, for example, to expect venture capital funding to fill the gap caused by the fall in bank lending to small businesses that has occurred since the ‘credit crunch’. Venture capital is a niche funding

market — but a very important niche, given the potential role that venture-capital-funded companies can go on to play in the wider economy. For example, Shane estimates that in the USA, by 2003, companies that had been backed by venture capital employed around 10 million people — just under 10 per cent of the US private sector labour force.⁸⁵ Given that venture capital investment in any given year in the USA is normally less than 0.2 per cent of GDP, this is an astonishing figure. UK-funded venture capital firms have not achieved employment figures anywhere near as substantial as this (so far), but the US experience demonstrates the potential that a well-functioning venture capital market has to impact on economic performance. The US venture capital industry is based on a fundamentally sound — and successful — model of real growth through innovation.

In the wake of the current financial crisis and recession, there will be justifiable wariness in some quarters about the idea of trying to make any aspect of the UK economy more like the US economy. There is a strong case for saying that reckless financial innovation, poor regulation of financial markets, and the cultivation of a massive housing and asset price bubble by the US Federal Reserve played an important role in getting the global economy into its current mess. And although many of these neoliberal nostrums were also warmly embraced in the UK, they were taken to even greater extremes in the USA. So why would the UK want to take any lessons from the US economy at this, of all times? To answer this question we have to distinguish between the parts of the US system that have functioned well over recent decades and the parts which have been dysfunctional. In the US venture capital market, risks to investors are certainly high — but they are transparent, and relatively straightforward. If a company you invest in does well, you can realise stratospheric returns; if not, you often lose your money. This is completely different from (for example) the subprime mortgage lending market as it operated up to 2007, where risks were obfuscated behind complex financial instruments which few, if any, investors understood, and the whole viability of the industry was contingent on the maintenance of an ever-expanding asset price bubble.

This is not to say that the US venture capital industry has not been susceptible to bubbles in the past; huge amounts of investor funds poured into the market in the dot com boom of the late 1990s, for example, followed by several years of poor returns when the market crashed. But the US venture capital industry is based on a fundamentally sound — and successful — model of real growth through

innovation, in a way that separates it completely from the dark arts practised in much of the financial sector in the last decade. In other words, UK policy makers need to be sophisticated enough to learn from the successful parts of the US model while rejecting the unsuccessful parts.

Venture capital and the low carbon economy

The case for using the venture capital industry to help build a low carbon economy is closely related to the case for using the venture capital industry to help increase innovation. The development and roll-out of new technologies in areas such as renewable energy sources, energy efficiency, recycling and waste management are vital if the UK — and other countries — are to stand a chance of limiting greenhouse gas emissions to levels that minimise the threat of dangerous climate change later this century. Roll-out of technologies after the development stage involves huge amounts of investment and is best undertaken by larger companies funded by the public or private equity markets — or, in some cases, by government. This leaves venture-capital-funded start-ups with a key role to play in developing new technologies to the stage where they can be adopted for large-scale roll-out. Obviously, cleantech R&D will not be exclusively left to the venture capital sector; R&D facilities at larger companies and university departments will also have a role to play. But because venture-capital-funded start-up firms have an unambiguous focus on developing successful new products, they will have a crucial role to play in this market. There is also an important role for venture capital funds based around universities with significant research specialisms in low carbon technologies such as the University of East Anglia's Carbon Connections fund in 'spinning out' university innovations into successful products.

Additionally, and importantly, the market for low-carbon technologies is very much an emerging and expanding global market. Companies that can develop and introduce innovative products and processes which reduce carbon emissions have an opportunity to establish a crucial advantage by getting to the marketplace before their competitors. At present it is anybody's guess which countries will establish world-leading low carbon industries. The UK has a strong science base for low-carbon technologies in the university sector, but as shown in chapter 1, the overall amount we spend on R&D is low as a share of national income compared with our leading competitors. This means

that it is vital to expand cleantech venture capital activity sooner rather than later to capitalise on university-based innovations while making up for the UK's deficiencies in research and development.

Venture capital and inequalities

There are two aspects to the question of how venture capital might contribute, if at all, to reducing inequalities in income and wealth. One is to do with the distributional effects of the venture capital sector as a whole, and the other is to do with the specific effects of the social venture capital sector.

In terms of the overall impact of the venture capital sector on the distribution of income and wealth, at first glance it seems obvious that a more successful venture capital sector would exacerbate inequalities. After all, returns are highly skewed, and each highly successful venture-capital-funded company is likely to result in the creation of several multimillionaires (the founders, who normally maintain some equity stake in the company, and in some cases individual investors, such as business angels). However, large financial returns to founders of successful start-up companies — who have, after all, built something very valuable from scratch⁸⁶ — seem more justified than many of the rewards paid out to bankers who had to be bailed out at massive public expense. The prospect of a large return also provides a clear incentive to start a business in the first place — a risky venture that might be otherwise unattractive to potential entrepreneurs. Capital gains tax can be levied at a rate which produces an acceptable trade-off between redistribution and incentives.

In any case, venture-capital-funded companies (and ex-venture-capital-funded companies) are likely to have a large share of high-skilled jobs, given that they are mainly focused on research and development, whether in the formally defined 'high-tech' industries or elsewhere. Although data does not exist to analyse this in the UK in detail, it is likely that the venture capital sector makes an important contribution to the availability of high-skilled job opportunities, and thus to providing high-quality employment and enhancing UK productivity.

The social venture capital sector has the advantage (from a distributional point of view) that it can evaluate investments using 'multiple bottom lines' — assessing the contribution that candidates for funding make against criteria that are specifically related to social

issues (for example, employment of disadvantaged people, provision of services to low-income communities, impact of a company's trade arrangements on producers in developing countries, etc). This makes project assessment more difficult but can ensure that, if successful, investments in social venture capital reduce social exclusion and inequalities as well as delivering returns to private investors. However, the small scale of the social venture capital sector as things currently stand means that it would be difficult to make an assessment of its aggregate impact on any given social indicator.

Quantifying the possible benefits from venture capital

This section attempts to assess what the benefits to the UK from the venture capital industry currently are, what the impact of increasing the *quantity* of venture capital investment might be, and what the impact of increasing the *quality* of venture capital investment might be. This is the most speculative part of the analysis in this report, due to a lack of good data, and inherent shortcomings in the quantitative techniques available for use. Nonetheless, it represents the best assessment to date of the importance of the venture capital industry to UK output and innovation, and to the UK's climate change commitments.

The effect of the UK venture capital sector on economic growth

The task of estimating the impact of the UK venture capital sector on economic growth is hampered by the fact that, up until very recently, there has been a shortage of good quality micro-level data on the firms that venture capital invests in. This has been rectified to a large extent by the release this year of a new business demography database constructed by the Office for National Statistics (ONS), the Business Structure Database (BSD), which provides business demography information for the full population of businesses in the UK over the period 1997 to 2008. Anyadike-Danes et al have used this database to measure the contribution of 'high-growth' firms to employment in the UK, but as yet the database has not been used to examine performance differences between venture-capital-funded firms and other firms.⁸⁷ We would have conducted our own research on the dataset for this purpose had it not been for the fact that the database arrived in the public domain too late to be included in the research for this report.

In the absence of good-quality microeconomic data to use to measure the impact of venture capital on the economy, we are forced to rely on macroeconomic data. One obvious source of data to use would be the investment returns data covered in chapter 3. However, this ignores the obvious point that the returns to investors in venture capital and the overall impact of venture capital on the economy are not one and the same thing. For one thing, any spillovers to innovation in the venture capital sector are unlikely to be captured in the private returns to investment. For another, the returns to investors from a trade sale or IPO of a venture-capital-backed company will reflect the assessment of the buyers (the buying company in the case of trade sales, stock subscribers in the case of IPOs) of what the future profitability of the company is likely to be – and this may differ substantially from the subsequent profit performance that the company actually delivers. For example, in the ‘dot com’ boom companies were being acquired in trade sales, and floated on indices like NASDAQ and AIM, at extraordinarily high valuations – which, in most cases, proved to be an abysmal investment for the buyers. While measures of the returns to investors in venture capital are useful for comparing performance between different venture capital funds, they are not very useful for calculating the overall contribution that venture-capital-backed companies – or companies that were once venture-capital-backed – make to the economy.

An alternative strategy – the main one we focus on here – is to look at evidence on the amount of innovation being undertaken by venture capital firms, and measure the overall economic returns to that innovation. To answer this question we use evidence from recent macroeconomic studies of the impact of increasing R&D intensity in the UK and other European economies that the European Commission funded as part of its assessment of progress on the Lisbon Strategy of 2000 (which aimed to make the EU the world’s leading knowledge-based economy.⁸⁸ These studies use macroeconomic models combined with evidence on the social returns to innovation to derive estimates of the impact of increasing the amount of R&D undertaken in each country.⁸⁹ We use evidence from two studies in this chapter:

- Gelauff and Lejour, who use the Netherlands Bureau for Economic Policy Analysis’s WorldScan applied general equilibrium model to analyse the impact of increasing R&D intensity to 3 per cent of GDP – the original Lisbon Strategy target – in each EU economy;⁹⁰ currently R&D spending averages approximately 1.8 per cent of GDP across the EU, and the same in the UK, as shown in figure 1
- Barrell and Kirby, who use the UK National Institute for Economic and Social Research’s NiGEM dynamic general equilibrium model to model the impact of increasing R&D intensity to 2.7 per cent of GDP – the revised 2007 European Commission target – in each EU economy⁹¹

Table 6 gives details of the precise scenarios modelled for the UK increase in R&D and the results in terms of increase in GDP for the time periods under consideration.

Table 6 **Models for increasing R&D in the UK and the resulting increase in GDP by 2025**

Study	Assumptions	Country/area to which result applies	Increase in GDP by 2025 relative to ‘business as usual’ (%)
Gelauff and Lejour ⁹²	Coordinated EU increase in R&D from 1.8% of GDP to 3% of GDP by 2010, maintained until 2020. (a) lower bound scenario: conservative assumptions on size of R&D spillovers (b) upper bound scenario: optimistic assumptions on size of R&D spillovers	EU27	3.2
		UK	2.7
		EU27	10.1
		UK	7.3
Barrell and Kirby ⁹³	EU increases R&D from 1.8 per cent of GDP to 2.7 per cent of GDP by 2010; R&D is maintained at that level (as a percentage of GDP) thereafter.	EU27	4.19
		UK (coordinated with other countries)	3.37
		UK (unilateral)	3.09

These results imply that the impact of increased innovation associated with increased investment into venture capital is reasonably large. Consider, for example, total venture capital spending at 0.27 per cent of UK GDP (the average figure for the years 2006 to 2008). Research and

development is the major component of spending in start-up companies. If we assume that 40 per cent of investment in venture capital goes on R&D spending (a figure in line with recent BVCA research on the proportion that venture-capital-backed firms spend on R&D⁹⁴) this would imply that R&D spending for the venture capital sector is around 0.11 per cent of total GDP. Using a linear extrapolation from the results above, this would imply that doubling the proportion of UK GDP invested in venture capital from 0.27 per cent to 0.54 per cent would result in gains to the UK economy of between 0.25 per cent and 0.7 per cent of GDP (taking the lower and upper bound estimates from Gelauff and Lejour⁹⁵ respectively). The estimates by Barrell and Kirby imply that doubling the proportion of UK GDP invested in venture capital would increase UK GDP by about 0.4 per cent, which seems a reasonable central estimate to use.⁹⁶

What does this mean in monetary terms? Current UK GDP is around £1.4 trillion (£1,400 billion). This implies that doubling spending on venture capital from around £3.8 billion (the current average level between 2006 and 2008) to £7.6 billion would produce a long-run increase in GDP of around £5.6 billion. As a rough guide, each additional pound of investment in venture capital delivers around £1.50 in additional GDP. Viewed in these terms, venture capital is a much better social investment for the UK economy than a private investment as things currently stand. Given the results on the private returns to venture capital investment in the UK discussed in chapter 3, most UK investors would be fairly happy with an earnings multiple of 1.5 on their original investment.

It is important to realise that there are a number of uncertainties surrounding this figure and it should be taken as a very rough guide to the efficacy of venture capital spending only. The most important qualifications to this calculation are as follows:

- The estimates on social returns to innovation are subject to a wide margin of error. For example, depending on whether the upper bound or lower bound estimates from Gelauff and Lejour are used,⁹⁷ the increase in GDP resulting from an increase of £1 in R&D spending could be as low as £0.90 or as high as £2.70.
- Most commentators suggest that social returns to early stage research are higher than the social returns to R&D spent on products that are closer to market.⁹⁸ To the extent

that venture capital funding is focused on seed and early stage research, its social returns are likely to be higher than average. However, none of the macroeconomic models that have been used for these kinds of simulation analysis disaggregate R&D spending into early stage and later stage spending, so we are unable to incorporate this directly into our estimates.

- The analysis explicitly assumes that R&D investments made by venture-capital-funded firms are ‘as good’ as R&D investments made elsewhere in the economy. In fact, they could be better, or worse. The poor returns to venture capital in the UK and Europe — compared with investments in private equity or public equity (stock markets) — might suggest that venture-capital-funded firms make poor or inefficient R&D investments. On the other hand, it may be that small firms of the type funded by venture capital are worse at appropriating the returns from R&D investment — their investment produces a large social return through spillovers, but very little private return. A priori it is impossible to know which of these scenarios (or some intermediate case) is correct. There is little academic research on the specific spillover effects of venture capital investment; this is a gap in the empirical literature which will need to be filled in future years if more light is to be shed on this issue.

The empirical approach used to derive these estimates of the social returns to venture capital investment also ignores the future role that venture capital might have in creating companies that go on to become market leaders in their chosen fields — along the lines of eBay, Google or Intel in the USA. Shane estimates that in the USA by 2003, companies that had been backed by venture capital at their inception through to trade sale or IPO went on to generate US\$1.8 trillion in sales — around 17 per cent of US GDP at that time.⁹⁹ Clearly we cannot just divide this figure by the annual investment made in venture capital in the USA to arrive at a figure for the ‘wider’ contribution of venture capital to US economic success; it is a sales figure rather than a profitability figure, and also the companies concerned will have gone on to receive investments of many times the original venture capital investments through the stock market after flotation. Nonetheless, it does suggest that to the extent that venture capital manages to nurture companies that then become world leaders — or even major players in their particular industry — this should somehow be reflected in estimates

of the overall value of venture capital investment. However, so far the USA is the only country where companies that originated from venture capital funding make up anything like this large a percentage of the existing company stock.

The contribution the UK venture capital sector can make to meeting climate change targets

If estimating the effect of venture capital on economic growth was hard, estimating the effect of venture capital investments in the cleantech sector on reductions in greenhouse gas emissions is much harder. As well as modelling the effects of cleantech R&D on the state of technological progress—and therefore the capacity of the global economy to reduce emissions—climate researchers have to model the extent to which R&D innovations are ‘rolled out’ across different national economies and the aggregate impact of the resulting emissions reductions on the average temperature increase in decades to come. This then has to be converted to a monetary metric to measure the increase in prosperity resulting from a given level of climate change investments relative to a ‘business-as-usual’ scenario where global warming goes unchecked. The cumulative margin of error arising from such calculations is enormous.

Given these substantial uncertainties, rather than attempting to derive an explicit cost-benefit analysis of the impact of increases in UK cleantech R&D on future standards of living, this chapter poses the more modest question of asking what degree of investments in cleantech venture capital would be necessary to meet the recommendations for increases in cleantech R&D spending outlined in the recent report by Stern and Edenhofer for the G20 London Summit in April 2009.¹⁰⁰ As part of the package of environmental investments detailed in chapter 1, Stern and Edenhofer recommend that all G20 members increase their total spending on R&D related to energy efficiency, renewables and carbon capture and storage to at least 0.05 per cent of GDP. Given that UK GDP is currently around £1.4 trillion, this implies that R&D spending on these areas needs to total at least £700 million. If (as assumed in the previous section) venture capital companies spend an average of around 40 per cent of their funding on R&D, cleantech venture capital investment of around £1.7 billion per year would ensure that UK R&D met the target set by Stern and Edenhofer—even without taking into account R&D investments by larger firms. In the conclusions to this report, we take £1.7 billion per year as a target minimum level for UK cleantech R&D investment—thus erring

on the side of caution in ensuring that the UK makes sufficient investments in this area.

Of course, £1.7 billion of cleantech R&D spending will not be enough by *itself* to ensure the transition to a low carbon economy. As outlined earlier in this report, a complete package of investments to transform the UK into a low carbon economy would involve large-scale roll-out of energy efficiency measures, infrastructure projects and other interventions to support clean energy markets. However, these larger-scale investments are mostly not relevant to start-up companies of the type funded by venture capital; they are the province of larger companies funded by private or public equity, or directly by the government. Venture capital has a role to play in cleantech that is smaller in terms of the actual size of funding than large-scale rollouts and infrastructure investments, but it is a very important role in terms of developing technologies in the near future that can then be rolled out ubiquitously in future years and decades.

The contribution of venture capital to social indicators

Ideally it would be useful to make an econometric analysis of how venture capital investments affect the distribution of income and wealth, focusing on (for example) the distributional impact of returns to investors, IPOs and trade sales, and subsequent development of successful companies that start off in the venture-capital-backed sector. Unfortunately the data and analytical requirements for such an analysis are mostly beyond current levels of research technology and data availability. The data requirements for such an analysis would be extreme; it would need to link together individual-level information on holdings of venture capital investments — whether directly or through intermediaries such as pension funds — with company level information on performance while backed by venture capital and after exit. Furthermore, the econometric methods for such an analysis would need to be capable of isolating the *causal* impact of the venture capital sector, and individual venture capital investments, on the subsequent development of the UK economy. This is a tall order, to say the least. The macroeconomic models used to derive the effect of R&D spending on economic output are child's play by comparison. Hopefully at some point in the future econometric methods and data quality will advance to the point where researchers can produce hard evidence on how venture capital affects inequality in society as a whole. But this is still a long way away.

On a less ambitious note, no evaluation of the impact of *social* venture capital investments by case has been carried out yet as far as we know, probably due to the newness of the sector. However, techniques for evaluating social returns to these kinds of investment have advanced greatly in recent years,¹⁰¹ and social venture capital interventions are a prime candidate for future research, funded by either the Office of the Third Sector or an independent funder. The Young Foundation intends to carry out evaluations of its education and health Launchpad schemes (detailed in table 2) but these are currently still at the planning stage. Results from evaluations like this will provide crucial evidence on how the wider returns from social venture capital schemes measure up against the narrow returns to investors. If the schemes produce good results on average, this is likely to provide impetus for the sector to grow.

5 how to get there: policies to boost the venture capital industry

Chapter 4 established that venture capital has a crucial role to play in creating a prosperous, low carbon UK economy. Governments in the UK and elsewhere are already mindful of the benefits of venture capital funding and expertise, and there is a set of policies already in place which are designed to boost the quantity of venture capital investment. This chapter first looks at the UK government's own conception of the arguments for government support for the venture capital industry, which focuses on its claim that high-growth businesses face a 'funding gap' in the provision of equity capital, as well as arguments based on spillovers to venture capital. The rest of the chapter looks at the existing measures in the UK and, where relevant, in other countries. It examines their rationale, the extent to which they succeed in fulfilling their objectives, and the extent to which those objectives are the right ones. Where appropriate, we draw on comparative evidence from the USA and other European countries.

The government's rationale for encouraging venture capital

In chapter 4 we pointed out that there are strong reasons for believing that left to its own devices the market will invest less in venture capital than the level that is socially optimal, because of the social returns to innovation arising from venture-capital-backed firms which are not captured by private investors. The Labour government used this 'social returns' justification as one argument to justify intervention to boost the levels of venture capital investment. However, in most of the recent literature from BIS — and its predecessor, the Department for Business, Enterprise and Regulatory Reform (BERR) — the government has focused on a different (although related) rationale: the 'equity gap'. This term refers to the particular difficulties which start-up firms have in raising funds when they are at a certain size (or sizes).¹⁰²

The equity gap that the UK government has focused on is at the level between what would normally be considered the 'seed' or 'angel' funding stage and the main stage

of start-up funding proper — funding rounds of about £1-2 million or so. The problem appears to be that venture capital firms are only comfortable with investing this kind of sum after doing proper ‘due diligence’ — investigating whether the product or other innovation that the firm is developing has real potential, whether it violates existing patents, and so on. The costs of due diligence have a substantial fixed component rather than varying in proportion with the size of the investment being made. Likewise, there are costs associated with making an investment. Therefore, small investments (in the £1-2 million region) are simply not seen as economically viable by the venture capital firms — the expected return from an investment of this scale is not big enough to justify the outlay on due diligence and managing the relationship with the firm once the investment has been made.¹⁰³

In addition to the £1-2 million equity gap, many of the venture-capital-funded firms (and some, though not all, of the venture capital fund managers) that we interviewed suggested that there was an additional gap further up the funding scale — when businesses have secured one or more rounds of funding from venture capital and are looking for expansion capital, but before they are ready for an IPO. Roughly speaking, this would be at a market capitalisation level of between £20 and £40 million. There was a widespread feeling that in recent years venture-capital-funded firms had been left with no other option than to go for an IPO — usually on AIM — because options for securing venture capital funding at this level were limited in the UK. Trying to raise money via an IPO before the company is at an optimal size to go to the public markets can, in the worst case scenario, make it difficult to interest enough potential buyers for the IPO to take place — a problem which is compounded by the low levels of liquidity for small companies whose shares are traded on AIM. More usually, the IPO will be achieved but at a relatively low price per share, reducing the returns which the venture capital funds are able to make on the sale. This is a factor contributing to the low returns to UK venture capital detailed in chapter 3.

As well as the equity gaps suggested in our interviews, it is also important to bear in mind that a lot of UK-based start-ups experienced problems in returning to the market for additional rounds of funding — at a variety of funding levels — for the reasons outlined in the last chapter. For instance, repeat funding rounds result for many firms in the additional administrative overheads of having to deal with different venture capital funds at each funding round,

and produce an increased likelihood of diluted or ‘washed out’ shareholdings for early-stage investors.

Supply or demand?

Most venture capital policies in the UK are aimed at increasing the supply of venture capital funds — either through some kind of financial incentive to invest in venture capital or by direct funding through public sector funds or procurement. However, one important point that emerged in the interviews conducted for this report is that there is a real debate to be had about whether the constraint on venture capital performance is on the supply side or the demand side.¹⁰⁴ Is the main problem with the UK venture capital industry on the supply side — a lack of investment funds, and/or a lack of investment expertise to secure high returns? Alternatively, is the problem on the demand side — is it the case that there is a shortage of viable entrepreneurial ideas in the UK — in which case, extra funds would have little or no impact on the size or performance of the venture capital industry?

This question is a major unresolved issue, and we encountered fundamental differences of opinion among the venture capital fund managers whom we interviewed. In general, fund managers only gave financial backing to a very small proportion of the start-up firms and entrepreneurs who approached them with business plans. Some fund managers felt that they would like to be able to fund a greater proportion of business ideas than they were doing at the moment, and that supply of funds was the main constraint on doing this. Others felt that they were already backing all the really good start-ups that approached them and that the main constraint was that the average quality of business ideas was poor — hence the vast majority of applications for funding were simply not good commercial investments.

The statistics on investments in venture capital in the UK — and returns to those investments — tell us three things in particular. First, the venture capital industry has managed to expand from a small niche market to the largest amount of investment (relative to national income) of any OECD country over the last 30 years. Until the recession of 2007, availability of funds does not seem to have been a problem in aggregate in the UK, although as mentioned earlier in this chapter, policy makers have identified specific ‘gaps’ at certain funding levels. Second, however, *the average quality of investments in the UK — as measured by average returns — is relatively low*, particularly for seed and early stage capital. As one of the UK’s leading academic experts on venture capital, Professor David Connell of Cambridge University, suggests:

Over a prolonged period of 20 years, the venture capital industry has demonstrated an inability to deliver average returns for its own investors... As a director of one of the most experienced firms in the alternative assets community puts it, 'you would not propose investing in European (including UK) venture capital unless you thought something was going to change'.¹⁰⁵

Finally, the particular period since the onset of recession in 2007 has seen a collapse in the amount of new funding going into venture capital, and private equity in general. Although the amounts being invested also fell after the 2000–01 dot com crash, the reduction in funds raised since the beginning of 2008 is much worse. This is a very pressing crisis for the venture capital industry, which deserves immediate attention from policy makers, as I discuss when framing conclusions in chapter 6.

Boosting the supply of venture capital: the policy options

Most UK policies have been designed to boost the *supply* of venture capital (rather than the demand for venture capital), the implication being that the government has felt that the constraint to venture capital activity is on the supply side (a lack of investment funds) rather than the demand side (a lack of good investment ideas). This section looks in detail at the different policies that have been tried in recent years in the UK, drawing also on evidence from other countries where relevant.

Tax breaks

The tax system is one of the main tools available to the government to increase the supply of venture capital and several policies have been launched in this regard in the UK over the last 15 years. Below we analyse the most important of these, and consider evidence from abroad on the effectiveness of different kinds of tax reform.

Venture capital trusts and the Enterprise Investment Scheme

Venture capital trusts (VCTs) and the Enterprise Investment Scheme (EIS) are the main tax vehicles designed to increase investment in venture capital. Both were originally introduced by the Conservative government in 1995, although the rules have been changed several times since then. VCTs are quoted public limited companies that invest

shareholders' funds in unquoted companies (including start-up companies) or companies admitted to AIM. Investments are only allowed when money is invested directly in the companies rather than in someone else's investment. AIM stocks can only be included in a VCT when acquired through IPOs; secondary trading of AIM stocks within VCTs is not permitted. Also, VCTs cannot invest in companies listed on the Main Market of the London Stock Exchange. A VCT must invest at least 70 per cent of its funds within these types of qualifying company within three years of its inception.

Individuals investing up to £200,000 in a VCT are entitled to income tax relief at 30 per cent on the investment provided that it is held for at least five years. (Before April 2004 the rate of tax relief was 20 per cent; it was raised to 40 per cent in the 2004 budget temporarily in an attempt to revive the venture capital market after the dot com crash.)

The EIS is a tax relief for investment in start-up and early stage businesses, which is aimed at direct individual investors in companies rather than through venture capital funds. The investor receives income tax relief equal to 20 per cent of the value of his or her investment in the company (in the year in which he or she makes the investment), up to a maximum of £100,000 (or the total value of his or her income tax bill). The EIS is highly popular with business angels; research for NESTA by Wiltbank suggests that over 80 per cent of angels surveyed were using the scheme, or had done at some point in the past.¹⁰⁶

VCTs and the EIS are specifically aimed at small companies, and the qualifying criteria for companies have been tightened over time. Originally, companies could qualify for the scheme if their gross assets exceeded £15 million, but this figure was reduced to £7 million in 2006. In 2007 additional restrictions were introduced to prevent more than £2 million being raised per company, and companies had to employ no more than 50 people to qualify.

The reduction in the rate of tax relief on VCTs in 2006 was criticised by representatives from the business community and the investment industry alike, on the grounds that it was followed by a sharp fall in the new funds raised by VCTs, from £790 million in 2005-06 to £267 million in 2006-07, £219 million in 2007-08 and £135 million in 2008-09.¹⁰⁷ The timing of this drop in new funds raised predated the 'credit crunch' of mid-2007 onwards, and so seems to have been substantially caused by the reduction in the generosity of the VCT regime rather than the economic crisis (although the crisis certainly will not have helped

matters). Clearly, if the original increase to 40 per cent was driven by the weakness of the market for investment funds in the wake of the dot com crash, then there is a strong argument for a higher rate of relief again, now that market conditions are even weaker than in the early 2000s.

Comparable schemes in other European countries tend to be more generous. For example, the French scheme Fonds Commun de Placement à Risques (FCPR) and variants thereof allows investment into listed companies with market capitalisation of up to €150 million.¹⁰⁸ In the USA, the degree of tax relief available for venture capital investment varies from state to state.

Figures for total annual expenditure on VCTs and EIS from the Treasury show that VCTs cost the Exchequer approximately £80 million in the 2007–08 financial year, while EISs cost approximately £180 million. The costs for 2008–09 were smaller than this, at £60 million and £130 million respectively, due to the decline in venture capital fundraising as a result of the economic crisis.¹⁰⁹

Research by Boyns et al on the amount of additional investment that VCTs and EIS produced suggested that between 52 per cent and 87 per cent of the investments made in the schemes was additional—it would not have happened in the absence of these schemes.¹¹⁰ Cowling et al evaluate the impact of the EIS and VCTs on company performance, finding that investments made under EIS and VCT were associated with growth in fixed assets and employment and an increase in sales, but that profitability in EIS and VCT-backed small firms was somewhat lower than in equivalent firms that did not benefit from such investments.¹¹¹

R&D tax credits

The UK's research and development (R&D) tax credits scheme provides a subsidy for certain types of spending on R&D by firms.¹¹² There is a more generous rate for small firms—defined as those with under 500 employees—than for large firms. HMRC data shows that the R&D tax credit for small firms cost the Exchequer approximately £200 million in 2006–07 (the most recent year for which figures are available).¹¹³

Innovation is a key determinant of economic growth, both through driving high returns to investment for innovative firms and spillovers in the wider economy.¹¹⁴ Venture-capital-backed start-up firms have to be successful innovators if they are to realise rapid growth and (eventually) high profitability. Although R&D spending is only one component of innovation, it is an important component,

and hence the R&D credit, which provides a financial incentive for firms to innovate, would at first glance seem to be a welcome addition to the set of policy tools to encourage increased numbers of successful start-up businesses. This is particularly important, given that the UK spends less on R&D as a proportion of national income than most of its international competitors (as shown in chapter 1). However, there are three problems with the R&D tax credit scheme as currently constituted, which make it less effective for start-up firms than for more established SMEs:

- 1 The scheme is less generous for firms that are not making a profit than it is for firms making a profit. Profit-making SMEs are allowed to deduct up to 175 per cent of their allowable R&D expenditure when calculating their profit for tax purposes. At the current small firms' corporation tax rate of 22 per cent, this means that firms in profit receive a credit of up to 38.5 pence per pound spent on R&D. For loss-making firms (the vast majority of start-ups), the payable credit is only 24 pence per pound spent on R&D.
- 2 The amount of credit paid to firms cannot exceed the value of the national insurance contributions and PAYE income tax that the firm's employees were liable to over the same period. Many start-ups, particularly at the very early stages, do not employ many staff, so it is quite possible that their maximum tax credit eligibility will be limited by this rule. Furthermore, many start-ups use external consultants or outsourced R&D, which does not attract a payroll tax liability and so does not help push their cap up.
- 3 The amount of bureaucracy and form-filling involved in applying for the credit puts off many smaller firms¹¹⁵ and so take-up is not as high as it could be.

Although there has been no formal evaluation of the UK's R&D tax credit scheme thus far due to data limitations,¹¹⁶ Bloom, Griffith and Van Reenen surveyed a panel of OECD countries and found that R&D tax credits had a positive impact on R&D on average.¹¹⁷

Assessment of the effectiveness of tax incentives

The evidence on the existing tax incentives that are most relevant to venture capital show that they are certainly effective in increasing the quantity of venture capital investment. This is reflected in the fact that the UK invests more in venture capital as a share of national income than do other G7 countries. However, VCTs and the EIS do little by themselves to increase the quality of venture capital investments—except insofar as a larger total quantum of venture capital funding creates a 'thicker' market, which can make the market work more efficiently (which was one of the possible reasons discussed for the superior performance of US venture capital in chapter 3). Meanwhile, the R&D tax credit as it stands is not sufficiently well targeted on venture-capital-funded start-up firms, because of rules which (no doubt unintentionally) restrict the extent to which firms with small payroll costs and zero current profits can benefit from the credit. Given the UK's poor overall performance on R&D, reforming the tax credit so that it is of more use to start-up firms should be a policy priority.

Direct funding of venture capital: public sector and public-private venture capital funds

Tax breaks are useful for encouraging increases in the volume of investment into start-ups, but they do not change the attractiveness of different stages of venture capital investment *relative to each other* (at least, tax breaks as they currently operate in the UK do not do this.) Early-stage venture capital investment funds in the UK and Europe still deliver lower returns than either later-stage venture capital funding or other classes of private equity such as buy-outs, even after tax incentives are taken into account. This means that private sector investors are understandably more reluctant to put money into venture capital—and particularly early stage funds—than other investments. As Connell puts it:

If we continue in the UK to expect venture capital firms to bear the brunt of financing early stage science and technology companies which are not 'venture ready', we will only help them deliver returns which turn off their own investors and reduce the level of genuine private sector venture capital which is available in the UK.¹¹⁸

Over the past decade, concerns about availability of seed and early-stage funding have led the UK government to establish a number of venture capital funds with a public sector component to them. In these funds, rather than using the tax system to incentivise private investment in venture capital, the public sector invests directly – either on its own, or in partnership with the private sector. There have been several different public or public-private funds launched since the late 1990s; table 7 provides a guide. It should be noted that in 2008 a new arms-length management company, Capital for Enterprise Limited (CfEL), was created to manage BIS's venture capital fund investments. CfEL is wholly owned by BIS but with an independent board of directors and management structure.

Table 7 **Summary of public and public-private venture capital funds in UK since 1997**

Name	Date set up	Focus	Funding	Administration
Challenge Funds	1999	University spin-outs.	1999-2001: £60m	Incorporated into Higher Education Innovation Fund from 2001 onwards (under management of Higher Education Funding Council)
UK High Technology Fund	2000	Provides equity to existing technology-focused venture capital funds.	£20m from government, matched with £106m from institutional investors	Dept of Trade and Industry (now BIS, through CfEL)
Regional VC Funds	2001-03	Provides funding of up to £250,000 for early stage or expansion capital.	Total: around £230m funds under management by 2006 public-private	RDAs
Early Growth Funds	2002	Provides small amounts of equity finance based on angel co-investment.	Total funds comprise £91m of investment, including £27m from government	Mixture of regional (RDAs) and national (BIS)

Name	Date set up	Focus	Funding	Administration
Carbon Trust Investments	2002	Invests between £250,000 and £3m into UK clean energy companies.	Part of Environmental Transformation Fund (total funding £400m, 2009–11)	Carbon Trust
Community Development Venture (Bridges) Funds	2002	Provides venture capital to commercially viable businesses that operate within or have links to the 25 per cent most disadvantaged areas of England.	£40m, split over two separate funds	BIS (through CfEL)
Enterprise Capital Funds	2006	Provides funds at 'equity gap' levels of investment (similar to US Small Business Innovation Company scheme ¹¹⁹), UK government invests £2 for every £1 of private money invested up to a maximum fund size of £30m.	9 funds launched 2006–08; total funding: £205m by end 2009	BIS (through CfEL)
UK Innovation Investment Fund	2009	Invests in technology-based businesses with high growth potential. Focuses: digital and life sciences, clean technology and advanced manufacturing.	£150m govt investment (with matching private investment)	BIS (through CfEL (additional funding from Dept of Energy and Climate Change and Dept of Health))

Source: National Audit Office¹²⁰

Table 7 shows a wide—some would say bewildering—array of public funding interventions in the venture capital market, which have resulted overall in an increasing presence of public funding in early stage investments in aggregate. Research by Pierrakis and Mason found that the overall proportion of early deals with public sector involvement increased from 18 per cent in 2001 to 43 per cent in 2007.¹²¹

Public sector involvement in UK venture capital investments raises a number of issues about performance, objectives and focus, which are discussed below.

Poor returns to purely public venture capital funds, but better returns to hybrid public-private funds

Evidence from Da Rin and Penas shows that the (private rather than social) returns to venture capital funds with a public component tend to be worse than for 'pure' private sector venture capital funds.¹²² 'Partnership' funds, which use private money to leverage public investments, produce better returns than purely public funds. However, research

for the UK by NESTA and BVCA¹²³ using performance data on around 800 firms in the Library House database¹²⁴ suggests that firms that had investments backed by venture capital funds with a public component initially performed worse on average than firms with pure private investment (over the first five years or so), but performed better than firms with pure private investment after this point. This suggests that hybrid public-private venture capital funds may encourage a longer time horizon for venture capital investments and better long-run performance (although the estimated effects from the NESTA/BVCA research are modest).

Evidence from Israel, where the government played a key role in helping build the largest venture capital industry (as a share of national GDP) in the world by establishing the hybrid public-private Yozma fund in 1992-93 after a previous purely public fund had failed dismally, shows that hybrid funds can work well. Yozma achieved a high number of successful IPOs between 1996 and its privatisation in 2000.¹²⁵

Multiple investment objectives

The reason for the discrepancy between pure public and private or hybrid venture capital fund returns is not clear a priori. It may be that the public funds are simply badly managed, or lack the incentives (eg bonus payments for fund managers) to produce high returns compared with the private funds. Another possibility is that public funds are pursuing objectives that go beyond attempts to maximise private returns from the investments being made, and are instead trying to maximise some measure of social return to the investments. Some evidence for this came from interviews we conducted with venture capital funds run by universities that focused on 'spinning out' innovations arising as a result of research conducted in the university. These fund managers confirmed that, although they were concerned with securing a reasonable level of private returns to the fund investments made, their main focus was on maximising the public benefits from innovations coming out of the universities. If public funds are not solely focused on maximising private returns then it is not surprising that their private returns underperform those of private sector funds.

In a recently published evaluation of the performance of the public and hybrid funds that BIS had invested in, the National Audit Office (the public body which evaluates the effectiveness of central government departmental expenditure) said that:

The Department failed to establish a robust framework of objectives, and associated baselines, to enable it to judge whether the taxpayers' investment offered value for money.

The Department has set up multiple aims for each fund but these have not been translated into clear measurable objectives or prioritised... There is evidence of informal learning between fund launches but the Department has not put in place a structured process to measure performance against its objectives.¹²⁶

A focus on seed and early stage funding

As shown in the previous chapter, private returns to seed fund and early stage venture capital investments tend to be lower than for later stage venture capital investments, although there are sound economic reasons for thinking that social returns to seed investments will be higher than for later stage investments. Public funds tend to focus on early-stage investments for two reasons: first because of the theory that public returns to early-stage investments are higher, and second because the main 'equity gap' is at the early stage. 'Incubators' — companies that provide facilities such as office space, IT infrastructure and administration for start-up companies — can also play an important role in public and hybrid venture capital funds.¹²⁷

Individual funding limits

In most public or public-private venture capital funds there are limits placed on the maximum amount of each individual investment. For example the maximum investment in any individual investment from the Challenge Funds was £250,000 (later raised to £500,000). These investment limits are designed to maximise the number of investments being made for a limited amount of private funds and also to target investments at the early stages. However, the problem is that they may lead to investments being spread too thinly and not being able to bridge the equity gap — which could be up to as much as £3 million per individual investment nowadays. This also exacerbates the problem of 'sequential funding' illustrated in chapter 3.

A proliferation of initiatives

As table 7 shows, there has been a huge proliferation of separate funding initiatives in public sector and hybrid venture capital over the last decade. Part of this is because different funds have different objectives, but in practice the objectives overlap in most cases. A more serious culprit is 'initiativitis' — the well-known tendency for government

ministers to prefer a brand-new policy initiative to the refinement, simplification or extension of an existing initiative.

The problems are exacerbated by the regional structure of the RDAs, which often pursue markedly different strategies within each region. The end outcome is a lot of funds — not necessarily bad in itself, but given that a lot of them have overlapping objectives, it begins to look as if the same outcomes could be achieved at lower cost with a simpler framework for public funding.

In the 2010 budget the government began to address the problem of too many initiatives by creating UK Finance for Growth (UKFG) — described by BIS as a ‘new public company... [which will] oversee all publicly funded venture capital schemes’.¹²⁸ UKFG will provide ‘oversight’ for all the public and public-private schemes listed in Table 7, incorporating Capital for Enterprise within its structure. At the time of publication of this report it was not yet clear whether UKFG would take over full responsibility for the public and public-private venture capital schemes currently administered by the RDAs and the Department of Energy and Climate Change (DECC) in addition to the CfEL schemes, or whether it would operate in partnership with these other departments and agencies.

Assessment of the effectiveness of direct funding initiatives

Direct government funding for venture capital seems to be most effective when channelled through hybrid funds that can leverage in private sector investment and expertise. It is a particularly important source of funds for the seed and early stage venture capital sectors — indeed the public sector now provides just under half the funding for these sectors in the UK. Average returns to hybrid early stage funds over the last decade have actually been slightly better than the returns to purely private early stage funds, which is an encouraging result. But the current structure of public funding is unnecessarily complex, with far too many funds with disparate objectives, leading to confusion and duplication of effort. A major simplification of public and hybrid funding structures is long overdue. I address this issue in the policy recommendations in chapter 6.

Using procurement as an alternative to equity for start-up businesses

In some countries, procurement of goods and services by the public sector is used as an alternative mechanism to venture capital to provide funds to start-up companies.

The most well-known example of this is the US Small Business Innovation Research (SBIR) programme,¹²⁹ which provides a funding mechanism whereby research contracts for US government departments (such as the Defense Department and the Department of Health) are specifically set aside for allocation to small firms via a competitive tendering process. Each year the SBIR programme makes over 4,000 awards to small businesses with a combined value of over US\$2 billion.¹³⁰ The thinking behind SBIR is that the award of research contracts to small firms can act as an alternative to equity funding in terms of providing funding for research and development. The majority of SBIR award winners are businesses with fewer than 25 employees, although businesses with up to 500 staff are eligible. No formal evaluation of the economic impact of SBIR has yet been undertaken, although the programme is generally seen as a success in channelling funding to US small businesses with an R&D focus.

The UK government introduced a programme called the Small Business Research Initiative (SBRI) in 2001 in an attempt to provide a British version of SBIR. It provided a web portal through which government departments could advertise R&D contracts. The objective was that a minimum of 2.5 per cent of government-funded R&D would be undertaken by SMEs using this mechanism. The initiative has been slow to get going, and in early years few government departments participated in it, with overall contracts channelled through the scheme totalling only around £2 million per year. However, in March 2008 the SBRI programme was substantially revised and made a lot closer to the US SBIR programme in its operation. The Technology Strategy Board (the UK non-departmental public body tasked with promoting innovation in the UK economy) was put in charge of implementation, and a larger variety of research contracts from departments like the Ministry of Defence and the Department of Health (whose participation in the earlier version of the scheme had been far from enthusiastic) was secured. The amount of funding for the scheme was increased to £20 million per year. The new version of the scheme is still in the pilot stage, however, and it is too early to draw conclusions about its effectiveness.¹³¹

In summary, while the funding channelled to venture capital through direct procurement of services is only a small fraction of the funding channelled through venture capital funds with a public component, in principle SBRI should be able to provide a useful alternative source of funds for certain kinds of start-up company. But a full

verdict on the prospects for procurement-based funding of this type must wait for empirical evidence on how the scheme is working, which will not be due for a few years.

Encouraging an entrepreneurial culture

As explained in the previous chapter, one possible explanation for the higher effectiveness of the venture capital industry in the USA compared with the UK is that there is a more entrepreneurial culture in the USA. If we accept that this is the case (which is not overwhelmingly certain given the empirical evidence examined earlier, but is certainly a strong possibility), what can policy makers do to encourage a more entrepreneurial culture in the UK?

One obvious measure is to ensure that the tax system is structured to provide reasonable levels of reward to people working and investing in businesses that take risks – we have analysed the government’s success in achieving this earlier in this section.

The government can also take an approach based on providing education and information rather than fiscal incentives. Encouragement of this type operates at several levels and stages of life in the UK, for example:

- Education programmes that encourage school children and university students to consider starting businesses after they leave full-time education, and parallel programmes to make adults already in work more aware of the potential of starting one’s own business. In the public sector in England, most of these programmes are coordinated through the RDAs. Voluntary sector organisations such as the Prince’s Trust also run programmes to encourage entrepreneurship among disadvantaged young people. To date there has been little formal evaluation of these programmes.¹³²
- Many university departments run initiatives to promote awareness of the commercial potential of innovations and inventions that arise in the higher education sector. For example, Cambridge Enterprises (the University of Cambridge’s spin-out fund) runs regular events with Cambridge Networks (which is a network of business angels and representatives of venture capital funds based in and around Cambridge) to demonstrate to academics and other researchers working in the university what the potential outlets for bringing research to commercial fruition – either through licensing innovations to an existing company, or creating a start-up to bring a product to market – might be.

Education and awareness programmes may play a useful role in increasing the demand for start-up capital (the supply of entrepreneurs), although formal evidence on this issue is thin on the ground. In the end, two factors not directly under the government's control may have a larger impact on the popularity of entrepreneurialism as a career choice. One is the popularity of *Dragon's Den* and similar TV shows, where budding entrepreneurs pitch ideas to an audience of business angels. The other is the economic recession, which is likely to lead to an increase in the number of self-employed people in the UK labour market (as occurred in the previous most severe post-war recession of the early 1980s) as the prospects of securing reasonably paid jobs with employers decline.

Clusters, networks and the regional development agencies

As indicated in the previous chapter, one of the important factors driving the success of the US venture capital industry is the existence of geographic concentrations of venture capital activity — clusters — which provide a 'thick' and competitive venture capital market and encourage the growth of easily accessible ancillary services which start-up firms and venture capital funds need (patent lawyers, etc). Additionally, the concentrated nature of the clusters promotes the existence of networks of 'start-up minded' individuals. In economics terms this decreases the cost to entrepreneurs of accessing funding and of finding employees (CEOs, finance officers, technical specialists etc).

The economic benefits of venture capital clusters seem fairly clear, and the most successful private-sector venture capital activity in the UK has tended to congregate around a few 'high-tech' business centres (though at a smaller scale than the USA) — most obviously Cambridge, but also Oxford, London, Norwich, the towns in the 'Thames Corridor', Manchester, and the cities in the North East of England (Newcastle, Durham and Sunderland). Venture capital funds tend to set up in these locations because of the (relatively) high preponderance of entrepreneurs with ideas for start-ups. Over time, networks of business angels have also established themselves in each area.

Since 1999 the Labour government has pursued an explicitly regional approach to state support for business development through the RDAs. The start-up firm and venture capital fund representatives whom we interviewed for this report had mixed views on the effectiveness of the

RDAs as a vehicle for promoting business start-ups in the UK. On one hand, the regional level does not seem to be the right level to operate institutional support for the venture capital industry. Depending on which way you look at it, the venture capital industry in Britain is a national (or in fact, a multinational industry, given that there is a fair amount of cross-border venture capital investment); it is also a locally concentrated industry, naturally grouping into localised clusters. However, by no stretch of the imagination is it a regional industry. So, the regional focus of the RDAs would seem to fall between two stools.

However, RDAs do manage to promote local networks within the constraints of their regional remit. For example, the East of England Development Agency (EEDA) is a highly active grant and seed funder in the university spin-out networks that exist around the University of Cambridge, the University of East Anglia (near Norwich) and the University of Essex (near Colchester). It recently secured funding from the European Regional Development Fund for a £40 million public-private coinvestment fund focused on low-carbon innovation.¹³³ So, although the RDA format is almost certainly not the best way to structure government support for the venture capital industry, RDAs nonetheless manage to be quite innovative within the constraints that the format imposes.

Policies to encourage cleantech venture capital

As things stand, the government has policies to encourage cleantech investment (such as carbon pricing through the EU Emissions Trading Scheme, support for renewable energy provision via the Renewables Obligation, and tax incentives to discourage carbon-heavy activities (eg the Climate Change Levy, Air Passenger Duty and excise duties on motor fuels), and policies to encourage venture capital investment (discussed earlier in this chapter), but the extent of policies specifically aimed at *cleantech venture capital* is limited. There are good economic reasons for this; as explained in chapter 4, although venture capital has a key role to play in achieving a low carbon economy, it is a very specific role (focused on cleantech R&D in start-up companies), and most of the major investments required to meet the target of an 80 per cent reduction in greenhouse gas emissions by 2050 will take place *outside* the venture capital sector.

That said, there is one part of venture capital policy which is specifically aimed at cleantech: the Environmental

Transformation Fund (listed in table 7). This is a £400 million venture capital fund, which brought together a number of existing public and hybrid start-up funding schemes including the Carbon Trust venture capital fund and various grant and loan programmes aimed at low-carbon and renewable energy technologies. The ETF 'aims to accelerate the commercialisation of low carbon energy and energy efficiency technologies in the UK... focusing on the demonstration and deployment phases of bringing low carbon technologies to market'.¹³⁴

The ETF has been criticised for being too small to achieve a sufficient acceleration of low carbon technologies in the UK¹³⁵ and for being too narrowly focused on renewable energy technology, while denying funding to other low-carbon technologies.¹³⁶ Both of these are valid criticisms. They are symptoms of a wider point: that the failure to provide a funding stimulus of sufficient size to develop a cleantech R&D sector that can invest at the scale necessary to stand a chance of developing the technologies necessary to facilitate the UK's transition to a low carbon economy is the main failing of cleantech venture capital policy – and cleantech policy for other parts of the UK economy as well. We return to this theme in chapter 6.

Policies to encourage 'social business': relevant to venture capital?

Unlike the cleantech sector, where venture-capital-funded companies are an important and integrated component of total cleantech business activity, the social enterprise sector in the UK is dominated by businesses that are funded by a combination of grants, loans, charitable donations and public sector procurement contracts. Venture capital and other equity funding is a tiny proportion of total funding for 'social' businesses in the UK, however one wishes to define the term. Thus, it is no great surprise that current government interventions aimed at the social business sector do not have any specific focus on venture capital.

Reacting to criticism that its investments in supporting the development of low carbon technologies have so far been insufficient, in the 2010 budget the Labour government announced plans to set up a green investment bank, with initial public funding of £1 billion, which would 'invest in the low-carbon sector where the equity gap is expected to be most crucial'.¹³⁷ The Conservatives have also outlined plans for a similar green investment bank should they win

the forthcoming general election. In chapter 6 I assess the potential role for the green investment bank – which will probably operate more like an investment fund than a bank – in boosting green venture capital investment.

That said, the existing tax breaks which are available for venture capital are, of course, open to social venture capital funds along with other types of venture capital. However, the social venture capital fund managers whom we interviewed mentioned that venture capital trusts were not particularly well designed for the social venture capital sector, because of the time limit of five years for investment of funds raised. Committing funds to deals in the social venture capital sector tends to take longer than in the ‘mainstream’ venture capital sector because of the need to balance the ‘social pay-off’ from an individual investment with the private pay-off to investors, and the fact that each investment tends to be idiosyncratic and unique, making the range of investments more difficult to compare with each other than in other venture capital markets like cleantech. The general view from social venture capital fund managers we interviewed was that support for social venture capital through the tax system needed to be more carefully tailored to the specific circumstances faced by social venture capital funds and the firms that they were investing in.

6 conclusions and policy recommendations

The next few years will be a crucial and testing time for the UK venture capital sector. In terms of the quantity of venture capital funding that has been invested each year (as a proportion of national output), the UK's performance compares well with our leading international competitors — even compared to the USA. If we had been writing this report a couple of years ago, the main message to policy makers would have been 'worry about quality, not quantity'. However, since 2007 new fundraising in venture capital has collapsed as a side-effect of the 'credit crunch' and the ensuing global recession. Similarly, new listing activity in AIM has 'fallen off a cliff'¹³⁸ cutting off the most profitable exit route for venture capital investments.

In the current circumstances policy makers and the venture capital industry alike cannot assume that investment will recover to the kind of levels seen earlier in the decade any time soon, without policy action to bring forth additional investment. Hence, the policy recommendations outlined below include a large short-term boost to venture capital funding, mainly through direct investment by a restructured public sector funding apparatus. We make no apologies for the fact that this is an ambitious package. But, as one venture capital fund manager told us, 'the current situation is dire, and if we do nothing we risk losing a whole generation of entrepreneurs'.

In terms of the *quality* of venture capital funding, it is clear from our review of the comparative evidence on UK and US performance and from the interviews we conducted with participants in the UK venture capital industry that there is a substantial performance gap between the USA and the UK. The USA's advantage arises from a number of factors, including funds which are larger in absolute size, more effective clustering and networking, and a greater depth of experience. There is no simple policy lever that the UK government can pull to eliminate the performance gap in one fell swoop, but the measures we suggest in this report are steps in the right direction.

Specifically as regards environmental and cleantech venture capital, it is logical that any policy to boost the level of venture capital funding in the UK should focus

heavily on cleantech – as we know that the UK (along with other industrialised countries) will need a huge increase in investment in environmental innovations to stand a chance of meeting the stringent greenhouse gas emissions targets set for 2020 and 2050. Cleantech venture capital has been growing strongly as a proportion of overall venture capital even in the absence of the policy measures set out here, so the additional stimulus to cleantech funding that we set out below goes with the grain of market forces rather than seeking to override them.

Our recommendations for the social venture capital sector reflect the fact that the sector is in a much more embryonic state than cleantech, with only a few key players involved at present. We believe that, given time, social venture capital can become an important part of the funding nexus for social enterprises, ethical trading and other socially orientated SME activity in the UK, but this will take longer than for cleantech, as the sector is starting from a much lower base. Hence our recommendations in this area are aimed largely at raising awareness of the sector and improving information flows between budding social entrepreneurs and potential investors, which is an essential prerequisite for the sector to grow.

Recommendations

Promote an integrated funding system for high-growth SMEs

The UK venture capital industry does not operate in a vacuum, but as part of a funding ‘escalator’ for start-up companies running from angel and seed funding through start-up and expansion venture capital funding, all the way to exit via a trade sale or IPO. Venture capital policy needs to be structured so as to maximise the synergies between the different parts of the high-growth business funding architecture. This involves action both at the top and the bottom of the funding system.

At the bottom end, it is essential that the move towards a smaller number of larger-scale public-private funds does not jeopardise the networks and links which existing public funds – particularly the regional venture capital funds – have built up with business angel communities. Angels tend to be highly localised and specialised in key sectors – for example computer software or medical technology. The super-funds should establish a dialogue with local angel communities in local areas and sectors where each fund has a particular depth of expertise.

Angels can play an important role in feeding promising start-up company funding opportunities up to each fund, and a selection of the most experienced and knowledgeable angels should be invited to sit on the advisory board for each super-fund.

The role of the university and HE sector in encouraging seed funding and incubators, and nurturing embryonic start-ups, is also crucial. Each super-fund should establish working relationships with spinout funds in leading universities, building in links that have already been set up by the existing regional venture capital funds and other funds. Super-funds should be encouraged to use universities as a conduit for seed funding.

At the top end of the scale, the IPO market in the UK is currently suffering from the global recession and the current collapse in listing activity on AIM and other markets. As discussed in chapter 3, one reason for the success of the venture capital industry in the USA is the presence of a high value exit mechanism — NASDAQ. A well-functioning public equity market allows companies to raise funds and for early stage venture capital investors to exit their investment. Action which policy makers can take to restore some vibrancy to AIM would be welcome. Abolishing stamp duty on transactions of AIM-listed shares would be a useful reform here, as governments in other countries do not levy equivalent taxes on share transactions — so there is a strong argument that stamp duty erodes the competitive position of AIM as a potential market for young high-tech companies. Our recommended changes to venture capital trust (VCT) rules to allow secondary trading of AIM stocks (outlined above) would also help increase investment activity and liquidity for small-capitalisation shares on AIM, which should help improve the IPO prospects for venture-capital-backed companies looking to float on AIM.

Because the new super-funds will have much larger levels of funding than public venture capital funds currently in existence, they will in many cases be in a position to back companies all the way from the start-up stage to an IPO. Developing good links with AIM and other potential IPO sites will ensure that the super-funds are able to advise the companies they are funding on the most attractive exit options.

A public stimulus for venture capital funding

The key priority for UK venture capital in the short run is to address the collapse in the amount of venture capital funding being raised from private investors in the wake of the current economic crisis. Between 2004 and 2007, total venture capital investment (public plus private) in the UK was running at about £3 billion per year (except for 2006, where investment was much higher, but this seems in retrospect to be the symptom of an unsustainable spike caused by the pre-crisis financial bubble). In 2008, investment dropped to just £1 billion, and it is likely that figures for 2009 will be just as bad if not worse. New fundraising in the sector has also dropped markedly over the last two years.

In the short run there is little prospect of the private sector being able to fill the funding deficit in the venture capital sector. This means that without additional government support, there will be a much-reduced flow of investment into start-up firms over the next few years at least. The consequences for innovation and business growth in the SME sector are likely to be disastrous unless action is taken to provide additional funding. The current funding drought also threatens to undermine the prospects for a substantial increase in cleantech innovation in the UK, which is an essential part of the investment necessary to make the transition to a low carbon economy.

We therefore recommend that the government invests an additional £2 billion per year into venture capital in the financial year 2010–11. This would be on top of existing public funding commitments for venture capital. Investment on this scale would be enough to reverse the decline in investment that took place during 2008, and restore a healthy flow of funds to the industry. The simulations carried out in chapter 4 suggest that if at least 40 per cent of this additional funding can be spent on research and development by firms in the venture capital sector, this should provide an increase in national income of around £3 billion per year by 2020.

Given the current fiscal constraints we propose that the government find most of the extra £2 billion investment into venture capital without needing to expand overall public spending or raise more tax. Half of the additional spending can come from directing the £1 billion earmarked by the Labour government for the new green investment bank (discussed in chapter 5) into venture capital. Of the remaining £1 billion, a proportion can be achieved by re-routing a proportion of the £1.8 billion in support for the low-carbon sector announced in budget 2009 towards

venture capital. Another option is a modest increase in environmental taxation - for example a half pence increase in fuel duty can raise an extra half a billion pounds. Alternatively, presuming that the SBRI initiative proves effective, the gap can be made up by diverting a higher proportion of the enormous procurement budget into venture-capital based innovation to deliver the products and services that government needs.

Rationalise the current structure

In terms of how the funding stimulus should be delivered, it is clear that the current institutional arrangements for public-private venture capital funds are far too complex. There are dozens of funds, mostly with overlapping remits and objectives. We recommend rationalising the current structure into a handful of funds – perhaps structured so that the size of each fund is on a par with the leading US venture capital funds. Subsuming the current myriad of public and hybrid funds into a simplified arrangement of perhaps four or five public-private ‘super-funds’ would allow each fund to manage a portfolio of high-risk investments in the way that the leading US funds are able to do, rather than being forced into a ‘safety first’ investment strategy through lack of funds. It would also enable the funds to make sequential investments in individual companies in the way that happens successfully in the USA, which should reduce the need for venture-capital-backed firms to return to the market again and again.

The Labour government’s proposal to create UK Finance for Growth as an umbrella organisation to manage the variety of existing public-private funds (announced in the 2010 budget) is a welcome step towards rationalisation. If UKFG helps simplify the arrangements for delivery of public funding into venture-capital-backed firms this will be a very welcome development. However, I would argue that it is better to have more than one ‘super-fund’ rather than routing all funding through one organisation, as this will encourage competition and benchmarking of funds against each other.

The super-funds should be able to hire top quality managers to manage their portfolios of investments. The current dire state of the venture capital industry implies that now is a good time for public and public-private funds to hire experienced and able fund managers at competitive salaries. As the private sector recovers, some of these managers will choose to make the transition back into the private sector after a period of managing a fund in the

public sector. Public support for venture capital can play a role in preventing talented executives having to quit the sector entirely.

More ambitiously, public venture capital funds should be looking to augment the pool of UK management experience by hiring first class fund managers from the USA if possible. Our research found a gap in management experience and quality between the best performing US funds and the rest of the world—including the UK. One way of bridging the gap in performance is to apply US fund management techniques to the UK—and an obvious way of doing this is to entice key US managers ‘across the pond’. To the extent that US venture capital fund management techniques really are better than usual practice in the UK, the resulting increase in competitive pressures on UK-run venture capital funds should result in good management practices driving out bad, leaving the UK in better shape for the future, even if American fund managers can only be enticed to stay for short periods of time. As with the UK’s private venture capital industry, the current dire state of the US venture capital market should make it easier to hire management from the USA, at least in the short run.

The super-funds should be looking to match public investment with private investment wherever possible, as recent research shows that this has worked better than a purely public funding approach in recent years (as discussed in chapter 5).¹⁴⁰ However, a lack of availability of private matching funding should not be used as an excuse for not investing public funds—the aim is very much to ‘plug the funding gap’ in the short run. As the level of private sector funding recovers, public funding can be scaled back. If the private venture capital market recovers to a sufficient extent, it may be possible for some of the super-funds to become pure private funds—in the same way that Israel privatised its Yozma venture capital fund in 2000. However, this should not be done at the expense of areas of investment where the public sector got involved in the first place because of a poor private sector funding record—for example, early stage and seed investments.

The super-funds could be based in different geographical areas—perhaps corresponding to the current clusters and ‘hotspots’ for venture capital in the UK. As existing Regional Development Agency funds would be subsumed into the super-funds, the existing venture capital funding expertise in the RDAs could be relocated to the new funds. However, none of the funds should be geographically

constrained in where they can invest, except for the stipulation that investments must be in the UK rather than abroad.

Cleantech

Rather than having a specific low-carbon venture capital fund along the lines of the current Carbon Trust fund, every super-fund should have a focus on ‘cleantech’ investments, broadly defined as investments which include innovative aspects which can contribute to lowering carbon emissions. That does not mean that every single investment made by a fund has to be cleantech-orientated. But it does mean that potential contributions to the low-carbon economy should be taken into account as a factor determining investment decisions, alongside potential profitability.¹⁴¹ Remember from chapter 4 that the UK needs to be spending at least £1.7 billion per year on cleantech R&D to stand a reasonable chance of meeting long-run climate change targets (in conjunction with a large range of other climate-focused investments). A total public funding stimulus of £2 billion per year, when combined with existing cleantech R&D spending, should ensure that this target is met.

Likewise, each fund could use social investment criteria alongside conventional profitability criteria for a certain subset of its investments – in the same way that privately run social venture capital funds such as Triodos and Bridges Ventures currently do.

Reform the tax treatment of venture capital

Chapter 5 showed that VCTs and the Enterprise Investment Scheme (EIS) perform very useful roles in encouraging investment through the tax privileges they convey on investment into venture capital funds and direct investment into start-ups by high net-worth individuals. However, their success has been diminished by the reduction in generosity of the schemes which occurred in the 2006 budget. Given the current collapse in private funding, it is important to incentivise private investment where possible. Therefore, we recommend that the government reverses the 2006 reforms so that the rate of tax relief on VCTs returns is increased to 40 per cent and EIS investors are allowed to invest in businesses with more than 50 employees and with assets of up to at least £15 million.

We also recommend that the rules on qualifying investments for VCTs should be relaxed to allow secondary market trading in equity in start-ups and AIM-listed companies between VCTs, which would improve liquidity and make VCTs

a more attractive asset class to investors. Special provision should be made for social venture capital funds in the VCT system — due diligence often takes longer for these funds because the prospects for social investment opportunities are harder to evaluate than for standard profit-maximising investments, and the rules should be flexible enough to allow social venture capital funds to use the VCT provisions effectively.

The R&D tax credit scheme should be reformed to make it more useful to start-up companies. Specifically, the scheme should be made equally generous for firms that are not in profit as it is for firms that are in profit — up to 39 pence per pound of qualifying R&D expenditure. The restriction that firms can only claim up to the value of their combined PAYE Income Tax and National Insurance liabilities should be dropped, as it discriminates against firms with a small payroll or those that outsource their R&D. And the claim procedure for small firms should be simplified and made less onerous.

Fund social information networks

Specifically as regards the social venture capital sector, there is a case for funding an information network to bring together stakeholders in the sector — along the lines of the ‘hub’ proposed by Social Finance.¹⁴² In a nascent market such as this, improving the flow of information between potential investors, funds and potential entrepreneurs could have major benefits. Funding for this measure could be allocated from the Office of the Third Sector via a competitive tendering process.

notes

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Until the economic crisis of 2008, the UK invested a relatively high proportion of national income in venture capital—a form of finance for small and growing businesses where funders invest at an early stage in exchange for a stake in the business. But since the crisis, investments into venture capital have dropped very sharply. Over a longer period, the returns available to venture capital investors in the UK and Europe have consistently been lower than equivalent returns in the United States (the acknowledged ‘market leader’).

This report looks at the current performance of the UK’s venture capital industry, its prospects for helping the UK confront the key economic, environmental and social challenges of the next few decades, and the effectiveness of existing policy initiatives to encourage venture capital in the UK and other leading industrialised economies. Our policy recommendations are designed to help the venture capital industry play a bigger role in driving innovation in the UK economy, particularly with regards to the investments in environmental technologies which will be essential to transform the UK into a low carbon economy.

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