

# THE RISK CAPITAL MARKET IN SCOTLAND 2008

**Scottish Enterprise**

Scotland's Enterprise, Innovation and Investment Agency



## ABOUT THIS REPORT

**This report provides analysis of the size, structure and nature of the early stage risk capital market in Scotland. It recognises the contribution that the market has made to business venture creation and development in Scotland.**

The report also provides the basis for the development and evaluation of policies to stimulate the market from a position of knowledge built on a rigorous evidence base.

The first Equity Risk Capital Market report was commissioned by Scottish Enterprise for the year 2003, and was followed by subsequent reports for each year up to 2007. This report continues the series to cover 2008.

Scottish Enterprise is grateful to Targeting Innovation Ltd, Young Company Finance and Professor Richard Harrison for the preparation of this report.

### Targeting Innovation Ltd

Targeting Innovation Ltd is one of the UK's leading innovation consultancies, primarily supporting public agencies in providing advice and guidance to develop successful businesses from its offices in Glasgow, Leeds and Aberdeen. The company has assisted many spin-out companies since its inception 15 years ago, and has a long history of working with technology based businesses including successful assistance with the launch of several academic spin-outs and start-up companies. Providing a comprehensive research and consultancy service, Targeting Innovation has been commissioned and delivered a broad range of projects from postgraduate analysis with the Funding Council, technology mapping and production of our own spin-out report among several other successfully delivered assignments.

George Boag, Michael McGuinness, Joe Carey, Deborah Begbie [www.targetinginnovation.com](http://www.targetinginnovation.com)

### Young Company Finance

Published monthly, YCF tracks and reports on the progress of early stage high growth companies in Scotland, from start-up or spin-out to maturity, with special reference to how they finance their development. Since it started in 1998, YCF has given detailed reports of over 750 investment deals, together with news and features about investors, major grants, funding initiatives, business awards, company pitches, and analysis and comment on the sector.

Jonathan Harris [www.ycfscotland.co.uk](http://www.ycfscotland.co.uk)

### Queen's University Belfast

Professor Harrison is Professor of Management and Director of Queen's University Management School, Belfast and Visiting Professor in Entrepreneurship and Innovation at University of Edinburgh Business School. He has 30 years academic and applied research experience in entrepreneurship, business development, regional economic policy and company strategy development and implementation. Professor Harrison's is a leading authority internationally on business angel finance and early stage venture capital markets, co-founded and edits the academic journal *Venture Capital: An International Journal of Entrepreneurial Finance*, and has worked with government bodies, agencies and trade bodies in Scotland, across the UK and internationally on research and policy in the early stage capital market.

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## 1. EXECUTIVE SUMMARY

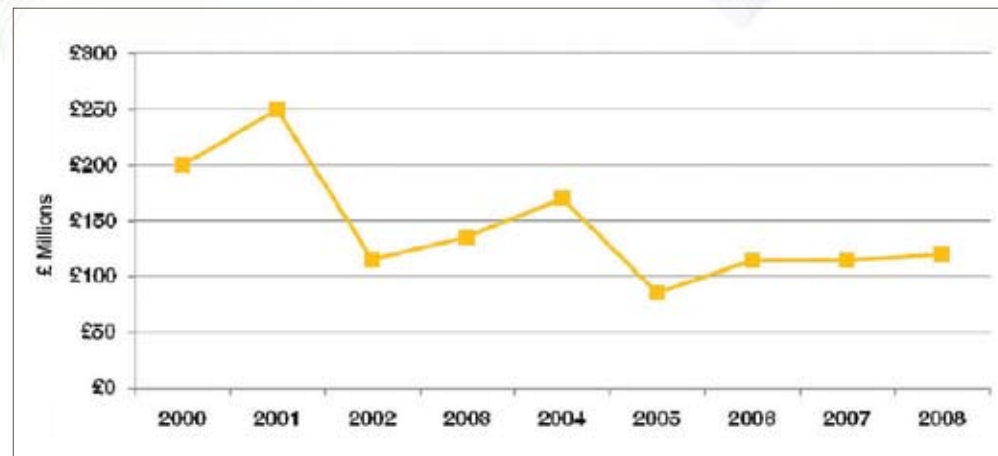
The purpose of this report is to provide a detailed and comprehensive analysis of the early stage risk capital market in Scotland for the 2008 calendar year. This report builds on previous market reports and will improve our understanding of the scale and characteristics of the early stage risk capital market in Scotland for a period when the economy experienced considerable turmoil. It identifies the contribution made by risk capital investment to business ventures in Scotland and provides evidence for the development and evaluation of policies to stimulate the market.

Full details of the methodology adopted can be observed in Appendix 1. The report utilised information on investments from a number of organisations together with a thorough search of other sources, in particular, Companies House. The report covers only external equity investments, so each deal was examined to remove investments by founders and management, and investments in the form of convertible loans.

The approach is intended to separate actual flows of funds from the so-called 'headline' investments. These are the figures quoted in press releases and other statements by investors and investees, and include the total equity commitment (which is usually invested in tranches after the investee reaches agreed milestones). These headline announcements also often include non-equity finance such as bank facilities and grant awards.

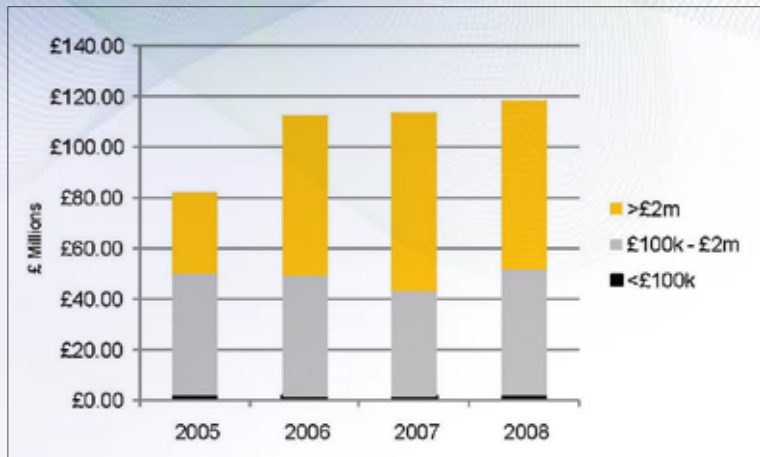
In 2008, £119 million of equity investment was made in early-stage high growth companies in Scotland in 186 deals, which is a slight increase over the previous three years, but well down on the amounts invested in period 2000/2001 which was an exceptional period for investment.

### Trend in investment value



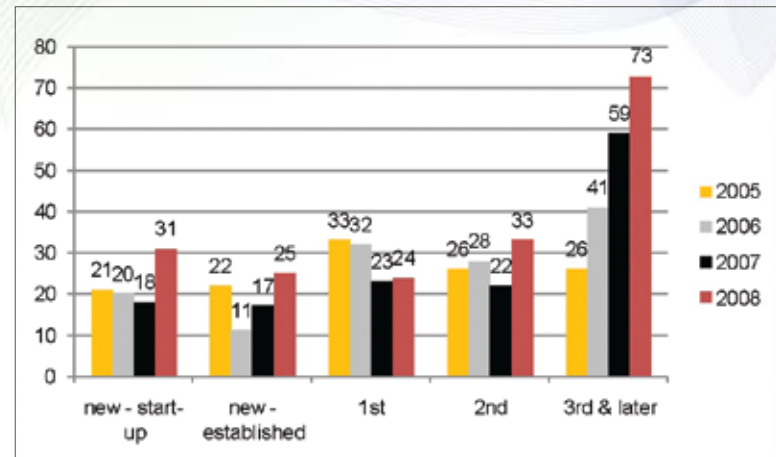
£65 million of the total was invested in 14 deals of £2 million or more. This is much the same as last year, but over a longer period there is a trend towards larger deals.

## Investments by size



There has been a marked increase in the number of later stage deals (round 3 and later) over the past four years (from 26 in 2005 to 73 in 2008), but average deal sizes in this category have declined considerably, from a high of £1.47 million in 2006 to under £700k in 2008. This supports the view that investors are increasingly compelled to make further investments in portfolio companies, partly as a result of the lack of exit opportunities.

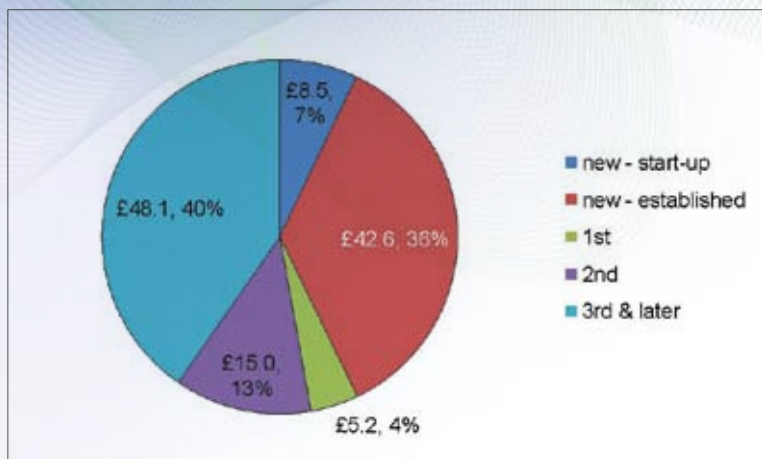
## Investment rounds by number 2005 – 2008



Investors are seeing many more applications for equity investment from established firms finding it more difficult to secure bank finance, and although they turn down the clearly distressed cases quickly, some investors are interested in balancing the risk element of their portfolios by including companies with measurable market traction. Although an unusually large amount of investment in 2008 was made into established companies which had not previously had equity funding (£42 million), four of the 25 deals were deals over £2 million accounting for £36 million of this total.

The remaining £6 million of new investment in established companies (in deals below £2 million) was close to the norm for the previous two years, but the average investment in such deals was down from around £400k to £277k.

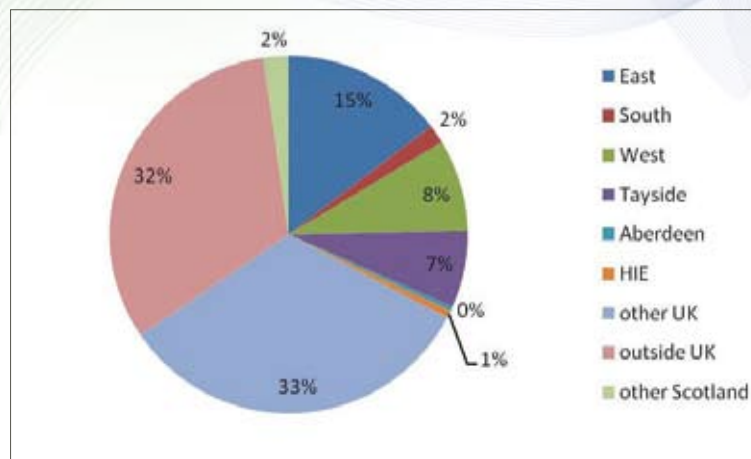
### Investments in different rounds (£ millions)



There is little indication from the 2008 data that investments in start-up companies are badly affected by the recession. The number of investments in start-ups was markedly up compared with recent years (see the Figure 'Investment rounds by number 2005-2008' above), but the average amount invested (£274k) was well below the 2007 figure of just over £1 million, which was exceptional for the four years in this sequence.

More than half the amount invested in 2008 came from outside Scotland – half of this was invested by VCs in deals over £2 million, with substantial involvement by investors in Europe (8 deals) and the USA (9 deals).

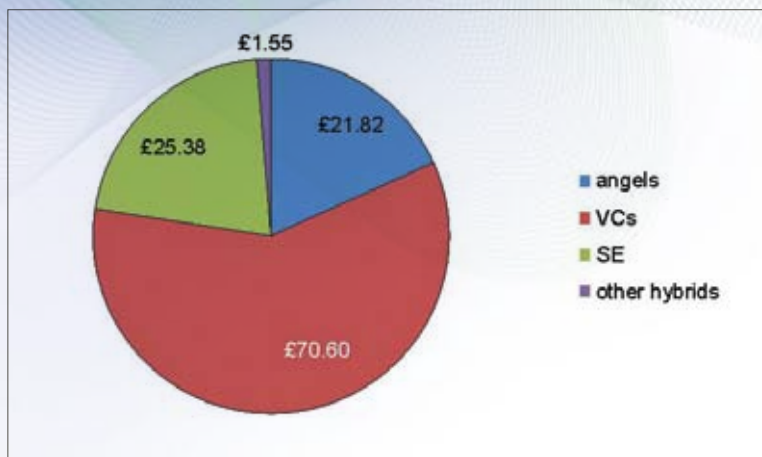
### Location of investors



Within Scotland, investors in the east accounted for almost a quarter of the sum invested. Companies in the east secured almost 40% of the amount invested.

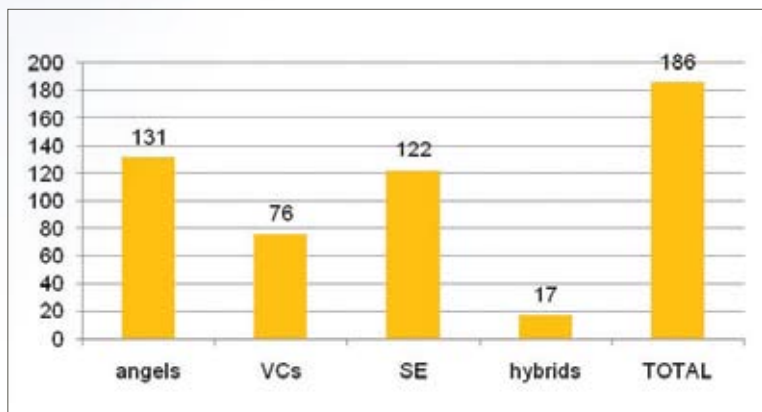
Business angels participated in 70% of all the deals in 2008, and invested 18% of the total amount (which includes deals over £2 million). VCs and institutions participated in 41% of the deals, and invested 59% of the total. Scottish Enterprise was involved in two thirds of all deals, providing 21% of total funding.

### Investment by type of investor, (£ millions)



The total number of deals includes many deals with several different types of investor and is therefore not a summation. The 2008 data show a sector which is largely continuing as in previous years, with a few features emerging such as the increase in investments in later stage businesses, but no dramatic changes which threaten any particular aspect of the sector. This conclusion was borne out in consultation interviews with investors, who are all keenly aware of the difficult trading conditions, both for their investees and for themselves, but none of whom indicated that they were contemplating any fundamental change in amounts to invest or in investment strategies.

### Number of deals by type of investor





## CONCLUSION

**As part of the current Government economic strategy a strong emerging business sector is an important part of promoting sustainable economic growth, and access to an appropriate supply of risk capital is central to that.**

This report provides a detailed micro-level analysis of the supply of early stage risk capital in Scotland, and examines the actual amounts invested as equity in early stage companies by independent third parties.

This provides signals as to the level of demand for finance, and the capacity of investors to meet the demand. The comparison on a true like for like basis with previous years in the study enables trends to be identified.

The investee companies covered by this report are in the main companies which could not exist without risk capital investment. Although some of the companies might be able to survive by growing incrementally (and some are left with no option but to follow this path), the nature of the business in most cases requires significant investment to realise the potential of their technology and market propositions.

**Overall, the early stage risk capital market in Scotland remains buoyant. There are a number of key trends emerging:**

- The number and proportion of larger and later-stage deals is increasing, suggesting that as the market develops there is an increased requirement for follow-on finance, which may increasingly constrain the availability of finance for start-up and early stage ventures.
- Reflecting the economic downturn, there is evidence of an increased number of mature companies seeking equity investment for the first time as access to bank finance becomes more constrained. As such companies can be attractive to investors (they are revenue positive, their prospects can be evaluated more easily and they offer more opportunity to take running returns through dividends etc) it is possible that they will have diverted available investment capital away from early-stage companies.

- However, the recession does not appear to have significantly affected the appetite of investors for investments – early concerns about issues of liquidity have been replaced by a sentiment that there are good investment opportunities and that deal valuations have come down to more realistic levels.
- Business angel investors dominate in terms of deals reported, and Scottish Enterprise continues to play a significant catalytic role in the market through the Co-Investment Fund and Scottish Venture Fund. While there continue to be examples of co-investment by business angels and VC funds, the segmentation of the market reported in previous years (with business angel syndicates providing the follow-on investment to their portfolio companies rather than ‘handing over’ to a VC investor) appears to remain a feature of the market. In the absence of a strong exits market, through trade sales or, more rarely, IPOs, this feature of the market may in the longer run constrain the availability of investment capital unless new investors enter the market.

**Four major implications follow from the analysis in this Report.**

First, there is no substantial evidence that the segmentation of the risk capital market identified in previous reports has reduced, nor is there any increased evidence of greater interaction between VC and business angel investors, either co-investing in deals or developing a funding pipeline. In other words, it remains the case that there is an expansion capital market characterized by VC investment in existing portfolio companies, rather than investment in new ventures (with some isolated exceptions), and a start-up and expansion risk capital market characterized for the most part by angel investors and syndicates investing in new and expanding companies.

While there have been examples of joint angel/VC investments, the small number of VCs based in Scotland, their orientation increasingly to deals outside Scotland and the episodic involvement of non-Scottish VCs in Scottish deals limits the opportunity to significantly reverse this trend. Given that angel-VC co-investment, either jointly in a deal or sequentially as the VC provides follow-on finance to an angel-backed company, relies on the development of knowledge, shared experience and trust, the withdrawal of many VCs from the market in Scotland has significantly reduced the scope to diminish this segmentation.

Second, within this there is growing evidence that within the business angel market there is an increasing reliance on a 'cradle to exit' investment model being adopted by established players in the market, who are committing to investment in the range £1m to £2.5m with the intention of seeing through the realisation of the growth potential of their portfolio companies. Accordingly, established angel investors, operating through syndicates, have been concentrating increasingly on investing larger amounts in follow-on investments in their portfolio companies; investing in start-ups has to a large extent been the preserve of new angel syndicates and other investors entering the market for the first time with new funds to invest. Under current market conditions, a continual flow of new investors will be needed to maintain the capacity to invest in high-growth potential start-up and early stage ventures.

Given the work of LINC Scotland in facilitating and supporting the development of new angel syndicates in particular, and the capacity for learning and the transfer of knowledge and experience from established to new investors, this emerging feature of the market does not appear to have constrained the availability of start-up capital. There is, however, no guarantee that this situation will continue, and widening and deepening the pool of investors remains a significant long-term challenge for the market.

Third, the various SE Funds are meeting an important need in the market and are helping both established investors and new entrants to the market meet the demand for investment that they face from portfolio and new companies. However, the shift in investment focus away from start-ups and towards larger deals in a 'cradle to exit'

model does suggest that there is a possible reemergence of an equity gap at the bottom end of the range, say below £100k, previously the preserve of individual angel investors. Based on the evidence in this report it is difficult to determine the extent to which there is an emerging problem in this domain or the scale of the issue, due to the difficulty of comprehensively identifying and tracking such deals. While few of the ventures seeking funding in this range would be classified as high-growth, support for the development of these companies is essential to ensure the overall development of an effective entrepreneurial ecosystem.

Fourth, the continued evolution of the market raises important implications for its ability to provide access to risk capital on the scale required to support the growth of high-potential ventures. If existing investors, angel syndicates in particular, are adopting a cradle to exit investment model, they will tend to concentrate their investments in ventures requiring no more than £2.5m to £5m (with support from SE's Venture Fund). In the absence of a high level of connectedness between VC and angel investors, those ventures with capital requirements in excess of this to realise their potential will face difficulties in raising the necessary capital, and will not be networked into investors outside Scotland.

While there is continuing evidence that a small number of very large transactions are completed annually in Scotland [ten of the deals over £2m had non-UK investors] by non-Scotland based investors, there is evidence from this Report, and its predecessors that ventures requiring investment in the range £5m to £20m will find it difficult if not impossible to access that capital. As a result, it is likely that such ventures will fail to fully realise their growth potential in international markets. A commitment to the development of high-growth businesses as central to economic development policy must be accompanied by a commitment to develop access to capital on an appropriate scale. There is already evidence starting to emerge to suggest that there is a pipeline effect within the SE portfolio of funds, with companies being supported by investment through SSF, SCF and SVF as they grow. For effective economic development in Scotland the issue of how to extend that pipeline, either through new fund creation or by attracting new VC players to participate in the Scottish risk capital market is a priority.

## GLOSSARY OF KEY TERMS

Term	Definition
<b>Investment</b>	A discreet purchase of share capital in a company by one or more investors at a given time.
<b>Deal</b>	The transaction between an individual investor and a company, which may be standalone or part of an investment involving other investors. A single investment may involve deals with many investors.
<b>Underlying investment</b>	The combined value of investments each worth less than £2 million.
<b>Angels</b>	Private individuals who invest their own capital either alone or part of a syndicate, and who personally own the equity they purchase.
<b>Institutional investors</b>	Organisations which invest on behalf of others and offer guidance and advice on investment. These include Venture Capital companies, partnerships, corporations, banks and investment trusts.
<b>Hybrid investors</b>	An investor with all or part public, voluntary, academic or (occasionally) private sector investors with a policy objective in addition to financial return.
<b>Mean</b>	The arithmetic average value calculated by dividing the sum total by the number of cases.
<b>Median</b>	The mid-point average. Using the median rather than the mean average deal size removes the effect of outlying very large values, such as one-off multi-million pound investments.
<b>New investment</b>	The first significant external equity investment in a company, excluding early small scale investment by founders, friends, and family.
<b>New - start-up</b>	New equity investment in a company under three years old.
<b>New – established</b>	New equity investment in a company over three years old.
<b>First round investment</b>	The first full round of investment following start-up finance
<b>SSF</b>	Scottish Enterprise’s Scottish Seed Fund
<b>SCF</b>	Scottish Enterprise’s Scottish Co-investment Fund
<b>SVF</b>	Scottish Enterprise’s Scottish Venture Fund
<b>Second/third round investment</b>	Later stage investment typically for expansion.
<b>Spin-out</b>	An organisation that started life within an academic or other research institution and is now an independent trading company, typically with a university shareholding. A spin-out company can take assets, intellectual property, technology, and/or existing products from the parent organisation.
<b>Angel syndicate</b>	A network of business angel investors, who combine their investments in a company.
<b>Venture capitalists (VCs)</b>	Venture capitalists are specialist investors who invest on behalf of others and offer advice and guidance on investment. Unlike other institutional investors, VCs specialise in companies at an early stage in their development often with little or no track record.

## 2. BACKGROUND

### SCOTLAND IN THE GLOBAL CONTEXT

The creation and growth of dynamic new ventures is central to the development of an entrepreneurial economy. However, in some respects Scotland lags behind other regions in terms of entrepreneurial activity. According to the GEM UK (Global Entrepreneurship Monitor), covering attitudes to entrepreneurship in 43 countries, including the G7, OECD and BRIC countries, the UK has closely tracked the G7 average since 2002. However, Scotland remains behind the UK average, as the second lowest performing region in the UK, in terms of levels of entrepreneurial activity and aspiration. Furthermore, Scotland fares relatively poorly by comparison with the UK average and with other regions in terms of business start-ups<sup>1</sup>: the business start-up rate relative to the stock of businesses is slightly ahead of the UK average in 2007 (13.3% vs 13.1%) but the rate per 10,000 population is significantly lower (46.1 vs 61.5), and is lower than in all but three other UK regions.

This is only part of the story, however. Business start-ups in Scotland are more likely to be VAT-registered (76% vs 68% for the UK), suggesting that Scotland's entrepreneurs are more likely to start higher value businesses. Indeed, recent research<sup>2</sup> indicates that between 2005 and 2008 Scotland is broadly in line with the UK average for fast-growth (more than 20% annual average growth in employment over 3 years) and high-growth businesses (more than 20% annual average growth in employment over 3 years and at least 10 employees in year 1) as a proportion of the total stock of businesses and has a lower proportion of no-growth or slow-growth businesses. Other economic indicators, such as investment and innovation, suggest that Scotland lags the UK average slightly; as the UK overall lags behind most other OECD economies for investment, particularly business expenditure on research and development, and innovation, this places Scotland low on international comparisons for economic dynamism.

In short, Scotland has a comparatively small business base with lower than average business start-up rates, lower than average investment levels, lower than average innovation levels and a relatively high level of non-Scottish business ownership. However, it is not under-performing in terms of the proportion of business that are high growth, nor in terms of the proportion of start-ups that survive for three years. High growth firms contribute disproportionately to employment growth in an economy (between 2 and 4% of all firms are responsible for the majority of employment growth)<sup>3</sup>. The evidence suggests that in Scotland a shortfall in entrepreneurial capacity, reflected in lower business start-up rates and a low stock of businesses, restricts the potential to create high-growth businesses. Improving performance in creating high-growth potential start-ups and improving the conversion rate from the existing business stock are central to improving Scotland's economic position.

A key element in realising the capacity for growth in these existing businesses and supporting the emergence of high growth potential start-ups is the availability of the key resources for business development. Specifically, it has been argued that an efficient and effective risk capital market is a prerequisite for economic development: 'Developing risk capital in the European Union, leading towards the development of pan-European risk-capital markets, is essential for job creation in the UK'<sup>4</sup>. This was reflected in the commitment given at the EU Lisbon summit in 2000 to promote the creation of risk capital funds throughout the EU to address the recognised gap in the availability of equity finance for start-up and early stage ventures, and hence stimulate job creation and economic growth.

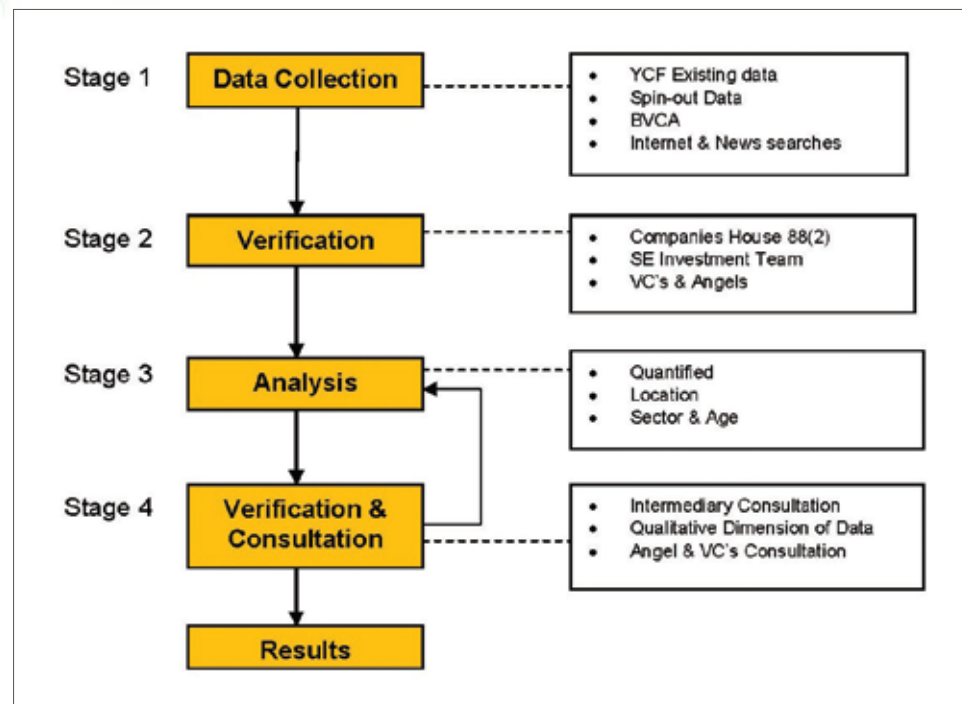
This Report is the latest in a series that examines the scale and performance of the early stage risk capital market in Scotland. The statistics on risk capital widely available for comparison normally include the full spectrum of VC and private equity funding, of which only a small proportion is aimed at early stage businesses.

However, the availability of comprehensive data on the scale of the risk capital market is limited. One of the reasons for the commissioning of this series of reports in the first place was to get behind the figures published by the British Venture Capital Association (BVCA)<sup>5</sup> and understand the dynamics of the financing of university spin-outs and similar high growth start-ups in particular.

Separating out the data for early stage investment, BVCA figures, which indeed only record activity undertaken by its members, suggest that Scotland's position has deteriorated relative to the UK in terms of the proportion of UK early stage investment reported in the region (down from almost 9% in the late 1990s to under 3% since 2005, although in terms of the number of investments, the proportion of the UK total has fallen from over 11% in the late 1990s to around 7.5% since 2005). Scotland still accounts for a higher share of the UK total than expected on the basis of the size of the economy. However, in 2008 there was something of a turnaround in relative performance. Overall UK investment in early stage companies fell sharply, from almost £1bn in 2006 to £346m in 2008. In Scotland, the BVCA reported early stage investment in 2008 of £24m in 33 companies, up from £14m in 2007 and £20m in 2006. In 2008, therefore, Scotland accounted for 7% of early stage investment measured in terms of both investment and companies.

## METHODOLOGY

Full details of the methodology adopted in the production of this report are given in Appendix 1 and a stage diagram is presented below.



In brief, existing deals listings from Scottish Enterprise, LINC Scotland, and Young Company Finance were taken as a starting point and supplemented with a thorough search of other likely sources.

The report covers only external equity investments, so each deal was examined to remove investments by founders and management, and investments in the form of convertible loans.

The approach is intended to separate actual flows of funds from the so-called 'headline' investments, which are the figures quoted in press releases and other statements by investors and investees, which include the total equity commitment (which is usually invested in tranches after the investee reaches agreed milestones), and often includes non-equity finance such as bank facilities and grant awards.

Much of the data covered by this survey is relatively difficult to find. The larger deals are quite likely to be widely reported, and the investors involved often have some regulatory obligation to report investments. However, even quite substantial deals can be elusive if the participants have no particular interest in publicising them. The law of diminishing returns applies to the lower value deals; considerable effort can be applied to discovering investments by infrequent business angels acting alone, with little significant effect on the overall description of the risk capital market.

Although it is impossible to be certain that every eligible investment has been included in the figures, the methodology adopted was intended to ensure that all the most likely sources of significant investments were researched.

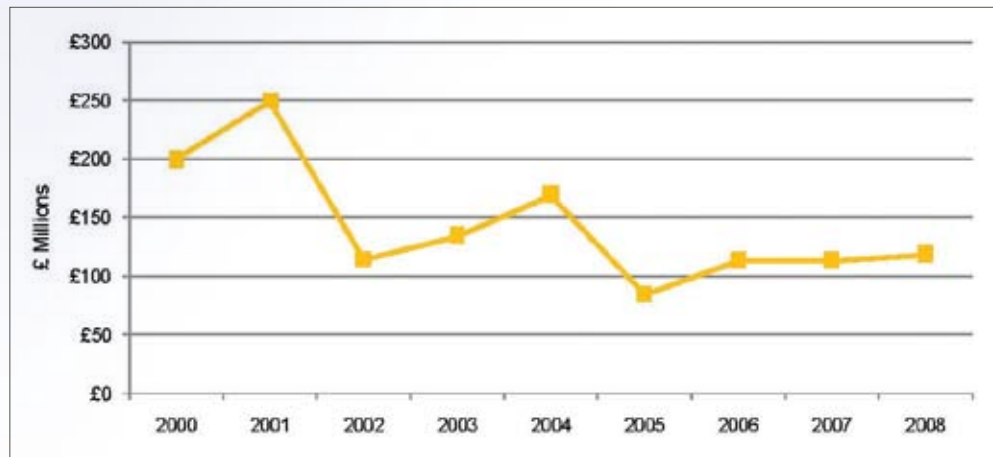
### 3. KEY FINDINGS

#### INVESTMENTS

##### NUMBER OF DEALS

In 2008 some £119 million was invested in 150 separate companies, in 186 separate deals. Just over £50 million of this total was invested in just seven companies. Approximately £67 million of the total was invested in 14 deals of £2 million or over.

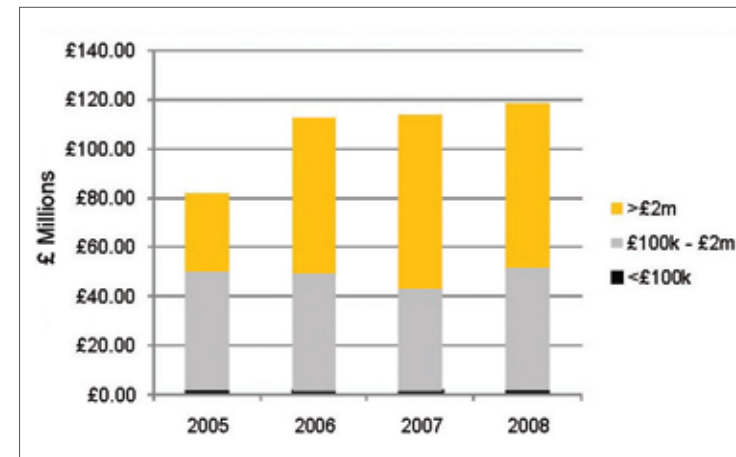
Figure 1: Trend in investment value



It is the middle range of deal values which gives the best indication of developments and trends in investment in this sector. Each deal over £2 million makes a substantial difference to the overall totals and to the detailed analysis of the data set. The smaller deals – below £50,000 – have the opposite effect, of increasing deal numbers significantly without much influence on the amounts invested. Figure 2 shows the composition of the overall investment values for the years 2005 to 2008.

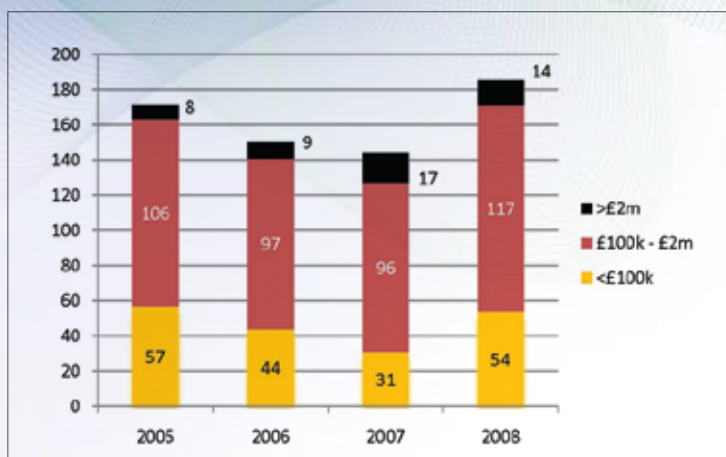
There was a sharp drop in the value of investments in 2005 which was due to a significantly lower value of £2m+ deals: the value of deals below £2 million has remained relatively stable in recent years.

Figure 2: Investments by size



Although the deals under £100k accounted for a small proportion of the investment totals, they are sufficiently numerous to affect the mean and median values, discussed below. The numbers of deals in each band are given in the following chart.

Figure 3: Investments by number



## INVESTMENTS OVER £2 MILLION

In 2008, 14 companies secured investments of over £2 million, together totaling £65 million.

Figure 4: Investments over £2 million

COMPANY	LOCATION	DEAL DATE	TOTAL (£ millions)	SECTOR
TS Marine (Contracting)	Aberdeen	24-Jan-08	£20.0	Energy
Gas2	Aberdeen	3-Mar-08	£10.7	Energy
Pelamis Wave Power	Edinburgh	21-Oct-08	£4.9	Energy
Futuretec	Aberdeen	2-Apr-08	£4.0	Energy
KeyPoint Technologies	Glasgow	12-Jun-08	£4.0	DMET
Lab901	Loanhead	18-Mar-08	£3.5	Life Science
Rapid Mobile	Edinburgh	29-Feb-08	£2.8	DMET
Enigmatec	London	14-Jul-08	£2.6	DMET
MMIC Solutions	Edinburgh	30-Apr-08	£2.4	DMET
Scotrenewables	Stromness	31-Jan-08	£2.1	Energy
Prismtech	Dunfermline	31-Mar-08	£2.0	DMET
Mobiqa	Edinburgh	30-May-08	£2.0	DMET
Elonics	Livingston	12-Feb-08	£2.0	DMET
Skyscanner	Edinburgh	28-May-08	£2.0	Tourism



To illustrate the range of different Scottish companies securing large investments, and the types of syndicates and investors active at this level, we give brief profiles below of each of these deals, using published deal reports, press releases, and the companies' own websites only.

### **TS Marine**

The biggest investment of 2008 was in Aberdeen-based TS Marine (Contracting) Ltd, with two equity investors (3i and ABN AMRO Merchant Banking) completing a deal with the headline figure of £53 million (we include here only the amount shown by Companies House records to have been invested within 2008). TS Marine was founded five years ago, and operates globally as a service contractor in the subsea rigless intervention and decommissioning market.

### **Gas2**

Gas2 was founded in 2005 and is developing a portfolio of novel 'gas to liquid' (GTL) technologies which were originally conceived at the Robert Gordon University in Aberdeen. GTL technology can release natural gas left stranded in fields that make it either physically or economically unusable. The gas is converted to liquid so it can then be used in other products. Several major oil companies have already announced plans to build GTL plants to produce low sulphur diesel. The £10 million investment was made by the US global energy-focused private equity firm Lime Rock Partners, which has an office in Aberdeen, and a group of existing individual investors.

### **Pelamis Wave Power**

Pelamis wave energy converters comprised the world's first wave farm in Portugal, and the company is now constructing a second generation wave converter for UK waters under a contract with E.ON. Its latest funding round was supported by a number of existing shareholders including Emerald Technology Ventures, Statoilhydro Venture, BlackRock, Atmos and SPG Sustainable Performance Group, together with the Scottish Venture Fund. To date Pelamis has raised £40 million to develop and deploy its technology, which can be regarded as a typical level of investment required for new technology in the offshore renewable energy sector.

### **Futuretec**

Futuretech has developed tools which enable clients in the oil & gas industry to overcome traditional problems in running and cementing in place the tubular casing and liners used to prepare a well for production. The company secured its 2008 funding of £4 million from Scottish Equity Partners and Energy Ventures III LP.

### **KeyPoint Technologies**

KPT's Adaptxt technology uses behavioural language and pattern recognition techniques to accelerate text entry on mobile devices. In 2008 the company secured £4 million from two businesses based in the Isle of Man, which represent private investors introduced to KPT through its own private networks.

### **Lab901**

Lab901's ScreenTape is an automated laboratory analysis platform which enables the convenient, rapid and cost-effective testing of minute quantities of biological samples. The company has been backed for some years by the Archangel Informal Investment syndicate, but in 2008 this group was joined by a VC, Alliance Trust Equity Partners (ATEP), in a substantial funding round of £3.5 million. ATEP invested £2 million of the total, with the balance from existing investors including Scottish Enterprise's Scottish Venture Fund, £500k from Archangel Informal Investment and £300k from Noble VCT plc.

### **Rapid Mobile Media**

Rapid Mobile Media provides mobile advertising and mobile application provisioning software platforms. The 2008 investment was led by US venture capital firm New Enterprise Associates (NEA), who were joined by Alliance Trust Equity Partners (ATEP) as new investors in the company. Existing investors Pentech Ventures and Scottish Enterprise's Scottish Venture Fund also participated in the round.

## Enigmatec

Scottish Enterprise invested in Enigmatec to help support the establishment of a Scottish based technical centre of excellence. The Edinburgh office effectively came into existence when the funding round which included existing investors Amadeus Capital Partners, Pentech Ventures, Herald Ventures, and new investor Noble Venture Finance completed in July 2008 and the company secured an office in Appleton Towers. In September however, the company had started making redundancies in London as it became clear that the credit crunch could have an adverse effect on its ability to reach its booking targets. Enigmatec is still committed to having a product development office in Edinburgh once market and business conditions allow.

## MMIC Solutions

MMIC Solutions is a spin-out from Qinetiq, headquartered in Ledbury with subcontracted production operations in Scotland. The company supplies module and subsystem solutions for equipment makers in several markets including security imaging, high bandwidth communications, and high-resolution radar, for a range of systems operating at frequencies between 50GHz and 250GHz. New investor YFM Group and existing investor the Scottish Venture Fund participated in the 2008 funding round along with the company's other existing investors, including NESTA and AEGF.

## Scotrenewables

This company is developing an innovative tidal turbine design. The venture, which had been financed by awards from Shell (LiveWIRE and Springboard programmes), the (then) DTI, oil company Total, and the Carbon Trust, secured its first significant equity funding from the Norwegian Fred Olsen group, with a headline value of £6.2 million. The company is currently testing the system at the European Marine Energy Centre in Orkney, and expects to have a demonstration unit in operation next year.

## PrismTech

PrismTech was founded in 1992 and is a privately-held group with US operations based in Boston, and European operations in the UK, Germany, The Netherlands and France. Its global HQ is now in Dunfermline. The company specialises in productivity tools and middleware software built around open industry standards for industries including defence, aerospace, telecommunications and software defined radio. In 2008 the business obtained equity from ACT Nominees, Kleinwort Benson (Guernsey) Trustees, and Scottish Enterprise Venture Fund.

## Mobiqa

Mobiqa's technology puts tickets, vouchers, reward cards and coupons on to mobile telephones, using bar codes. In 2008, the Edinburgh-based business secured funding from Archangels, Northern Edge, and Scottish Enterprise Venture Fund.

## Elonics

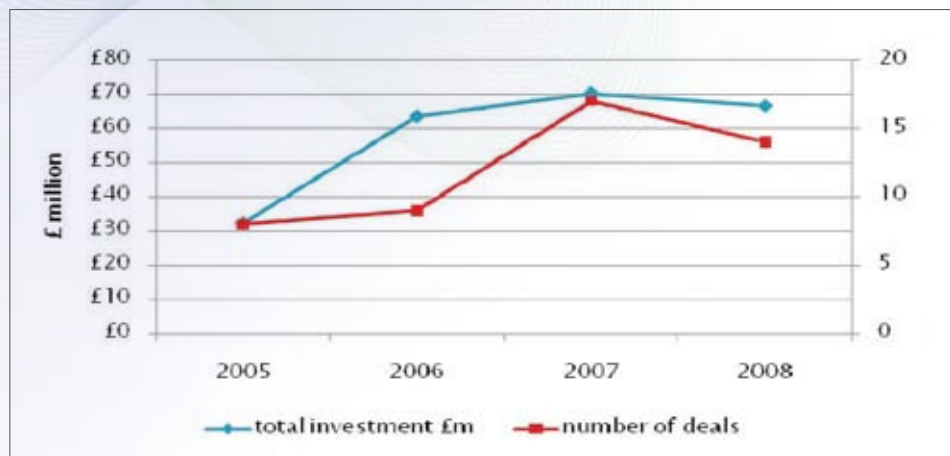
Elonics is the developer of DigitalTune™, a flexible radio tuner chip technology platform that can be configured to support different standards and frequencies for a number of applications. In February 2008 Braveheart announced that it had led a £2 million investment in the company, with other investors including the Scottish Venture Fund and private investors Sir Tom Farmer and Brian Souter.

## Skyscanner

Skyscanner is a search engine technology company which aims to provide a more comprehensive and easier to use online resource for travel information than anything currently available. The company, started by its three founders in 2001, is now based in Edinburgh. Besides the £2 million investment from Germany's European Founders Fund shown above, in 2008 the company also completed a further £1 million investment from SEP.

The following chart isolates the data shown in Figures 2 and 3 above for comparison purposes.

**Figure 5: Trend in investments over £2 million**

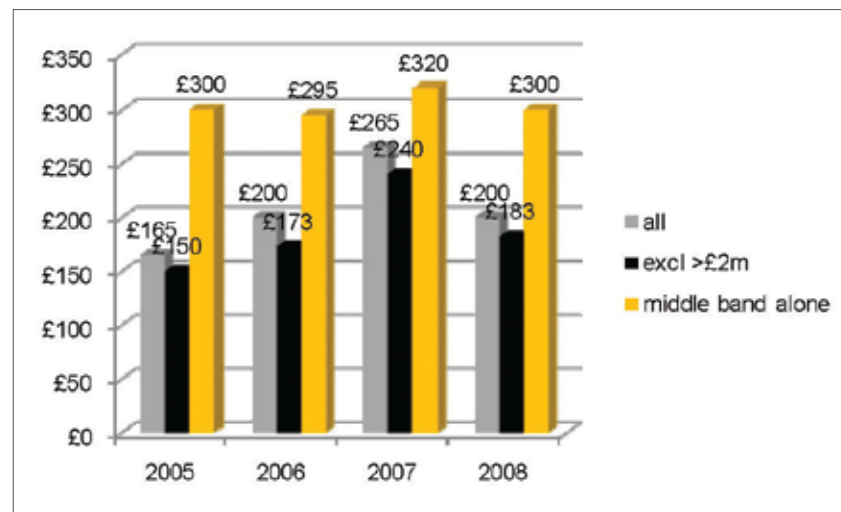


There is a clear trend since 2005 for more companies to be able to attract larger investments. Although some of the deals included in the above chart are well-established companies consolidating their position or funding some other special need, the majority are early stage high growth companies.

## MEDIAN DEAL SIZE

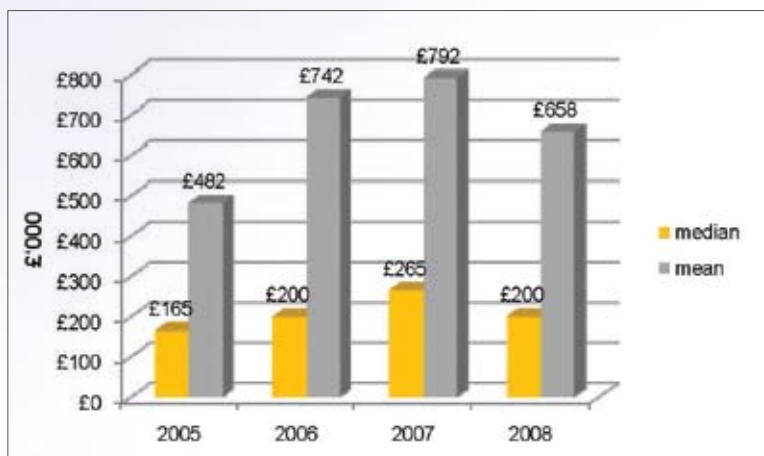
The large number of smaller deals in the survey tends to lower the mean and median measures of the data. In previous years, the Risk Capital Market reports have distinguished between deals over £2 million and the remainder, described as 'underlying investment'. In this section we take this approach one step further, and separate out the 'middle band' – deals between £100k and £2 million.

**Figure 6: Median investment size by year**



In the previous Risk Capital Market report, covering the years 2005-2007, the upward trend in median values for all investments (regardless of size) was taken to indicate an overall increase in deal size, and the much greater mean values were described as reflecting the influence of a few large investments. Both values have fallen back in 2008, but this is due to the relatively large number of smaller deals included in the figures.

**Figure 7: Mean and median values compared**



## 4. INVESTORS

### BUSINESS ANGELS - OVERVIEW

Scotland benefits from having a well-organised business angel community, which has embraced the advantages of group investing to a far greater extent than elsewhere in the UK. The advantages to an individual business angel of investing in a group include the ease of mitigating risk by constructing a balanced portfolio rather than depending upon a small number of investments, the sharing of costs such as due diligence and legal, and the opportunity to participate in larger deals.

Business angels tend to enter the market at an earlier stage than other funders, which makes their investments more risky but gives the promise of greater returns if things go well. According to LINC Scotland, 60% of angel group investments are in companies at the pre-revenue stage. From the individual angel's point of view, the asset classes which form the larger part of a normal investment portfolio – especially property, and quoted equities – have performed very badly over the past 18 months, and the risk capital arena currently promises better returns, although always with the risk that an investment can be lost entirely (which is not true for property, or indeed for the majority of quoted stocks). It might be asked whether angel investing, which has kept up well in spite of the recession, might fall off as the economy improves and traditional asset classes become more attractive once again. However, according to LINC 70% of business angels in Scotland invest from their own personal income, and with the EIS tax regime providing a helpful incentive, levels of angel investing over the longer term can be expected to stay steady or gradually increase.

It must be added that, thanks to efficient debate and communication, angels acting as a group become more conscious of the investing environment than when acting alone or in small numbers, and our consultation found a number of people concerned at possible changes to the arrangements for public sector support, and especially the Scottish Co-investment Fund (SCF).

### ANGEL SYNDICATES - OVERVIEW

The main characteristic of an angel syndicate is that the cash invested is owned by the members (i.e. the group is not generally investing funds from third parties), and the members have a say in investment strategy and in individual investments. Ascertaining when small investment groups fit this description is not always easy; organisations such as Adaptive Venture Managers in Livingston, and Longbow Capital nationwide, have been designated VCs for purposes of this report, as we understand that they invest funds on behalf of individuals who do not have any direct participation in the strategy or in particular investment decisions.

The Braveheart Investment Group is treated in this report as an angel syndicate, both for consistency with previous reports and because of its membership of LINC; the Group continues to make angel investments in the way it was originally set up to do, but also now acts as an investment manager, making investments from funds in much the same way as a VC firm. We have however assigned investments by Braveheart angels to their geographical location where this information was available.

There were 19 angel syndicates registered with LINC in 2008, and there are a further five preparing for membership. These include private investment houses often representing a wealthy family; these can join the LINC network if the individuals making the decisions are also investing. Beyond LINC, there are also many angels acting independently, some of whom are able to invest large sums.

The oldest of the syndicates are Archangel Informal Investment and Braveheart Investment Group, formed in 1992 and 1997 respectively, with each having around 100 members. In recent years there has been a steady flow of new syndicates formed, most of which have between 10 and 50 members (although a relatively small number of angels belong to more than one group). The members of a syndicate usually invest under the same terms and conditions, and often join with other syndicates to co-invest in larger deals. Some of the younger syndicates have made their mark by investing in at least one deal by themselves, or by taking the lead in a deal with other syndicates, especially when they wish to establish a local regional presence. On the other side of the spectrum, there are some small groups, including family houses, which almost always co-invest alongside an experienced angel syndicate.

## Structure

The angel syndicates associated with LINC tend to have been drawn together by an inner core of founder members, who have attracted a wider circle of high net worth individuals to join them when required. Most groups therefore have a two-ring decision process: the core group invests in all deals, and an outer group is given the opportunity to invest when the core members are unable or unwilling to cover the full amount themselves.

Most angel syndicates have a gatekeeper who is tasked with handling applications for funding and managing the screening process before selected proposals are put before an investment committee (or company representatives are invited to make a formal pitch). Most syndicates give preference to proposals introduced by known and trusted intermediaries, and it is consequently important for would-be investees to be working with a lawyer or accountant who knows the market well and has a good relationship with several gatekeepers.

## Deal flow

The different angel syndicates give a range of figures for the number of proposals seen each month, varying from half a dozen to over 20. There is doubtless some overlap, as companies seeking funding will apply to more than one group, and it is also difficult to tell to what extent the figures from each group have been through an initial screening process, either by the gatekeeper or by a third party, before the proposals are presented. There must however be several hundred applications per year which might have suitable credentials for securing equity funding, with many clearly unsuccessful.

All angel syndicates involved in the consultation for this report felt that the standard of the proposals submitted has improved in recent years, and that they have to turn away some proposals which they would like to have progressed further. Companies are generally better prepared for the investment process, have better business plans, and are looking for larger sums. This is perhaps due in part to the way in which the sector has matured and consolidated, with more angel syndicates, regularly co-investing and learning from each other, and fed by intermediaries who have got to know the gatekeepers and the investment preferences of the different groups, and what to expect when negotiating deals.

### **According to LINC, companies seeking angel investment currently fall into three categories:**

1. inappropriate applications by companies desperate to access funding because no bank funding is available to them.
2. start up / spin-out companies with better quality propositions, which angels are able to review based on growth prospects.
3. businesses that would typically approach a bank but are not in distress. These are well-established businesses with £2 - £3 million turnover and seeking £250k to £500k working capital. This is of interest to many angel investors seeking to diversify their portfolio, who want to place their funds in less risky, lower IPR deals. It is felt by LINC members that this siphons funds away from businesses in category 2.

## Syndication

There is very little syndication between VCs and Scottish business angel groups (as opposed to individual angels); in 2008 we have traced only four deals where this happened, three between Sigma and different angel syndicates (in Exerity, SFX Technologies, and Factonomy), and one between Alliance Trust and Archangels (in Lab901). There are many reasons for this, including differences in expectations, differences in the term sheets used and in the valuation and structuring of deals, and the lack of knowledge and prior working relationships which appear to underpin effective co-investment. There is little incentive for these difficulties to be addressed, as in most cases neither type of investor needs the other to be able to build deal flow on its own terms.

## VCS AND INSTITUTIONS - OVERVIEW

**In this category we include investment by organisations set up for the purpose – venture capital firms, and institutional investors – which cover a range from large international VCs to small local organisations. We have also included here trade investors and other specialist institutional investors such as Cancer Research Technology, but under a separate category of ‘other private institutions’.**

Because of the spread of different sizes and objectives of the investors included under this heading, some of the following comments are not applicable to every organisation in the list, but give a general picture of how the investments were made.

Venture capital firms tend to stress that they invest on purely commercial terms, to make a profit for their own investors. Most funds are set up on a limited timescale, which means that the fund manager must be very focused on achieving an exit (unlike business angels, who will accept dividend revenue as a good return in the short to medium term), and must be ruthless in weeding out investments which are clearly not going to realise their promise.

Like any early stage risk capital investor, VCs look to earn large multiples of the sums they invest (although the most appropriate measure of success is Return on Investment, which takes the number of years from investment to exit into account, many investors prefer the simpler measure of ‘times money’), typically at least a multiple of 10. Early stage companies start from a low base, and if successful should be able to increase earnings by many multiples more easily than a more mature enterprise, which is why the sector attracts investors, but of course the earlier the stage, the more risk that the business will be unable to implement its plans. VCs tend to invest at slightly later stage than angels, and although they will look at businesses which are pre-revenue, they like to see some clear evidence of demand from the market. Many VCs talk about investing in ‘disruptive technologies’, making the assumption that if a venture can change the way in which its market operates (and can overcome customer resistance to discarding existing infrastructure and systems), customers will have to pay for the new technology.

It follows that VCs usually concentrate on very specific market sectors, and try to build up expertise in understanding these, often by appointing advisory boards of executives and other experts from the industries involved. Unlike business angels, who like to take a ‘hands on’ approach to their investments and be closely involved with their investee companies, VCs tend to adopt a monitoring approach, challenging their investees rather than advising them directly. Ideally, VCs should be able to open doors for their investees, using their industry networks to ensure that investees can enter new markets effectively.

Even with a narrow focus, VCs receive many more applications for funding than they can invest in, and there is little need to be very pro-active in searching for new opportunities, although the process of studying a market closely also throws up leads for potential investment. Like other classes of investor, there is something of a herd mentality about VCs in the round, no doubt intensified by the usual practice of syndicating large deals amongst a number of VC firms. Certain market sectors come

in or out of favour, and fashionable sectors can see VCs vying for investment in the most prospective companies; this seems to have happened over the past couple of years with 'cleantech' (although this interest has slowed a little in recent months), and means that potential investees can have an unusually strong hand when negotiating valuations.

Most VCs are wary about co-investing with angels or angel syndicates, sometimes based on a bad experience in the past. In Scotland an exception is Sigma, which has co-invested with a number of the local angel syndicates, at an earlier stage and in lower amounts than most other VCs.

The VCs covered by this report tend to make only a small number of investments per year. One respondent in the consultation said that his firm invested usually in the £1 million - £10 million range, because transaction costs ruled out smaller deals unless there were exceptional circumstances (such as investing in a new venture started by an entrepreneur known to the firm). This VC expected to invest some £2 million over the life of a deal, although separate rounds might be much larger than this with co-investment by other VCs. Its investees had no debt, leaving them in a strong position to attract good staff and benefit from lower prices – this comment also suggests that early stage VCs like to meet all an investee's financing needs with equity, by contrast with 'private equity' deals which build large elements of debt into leveraged MBOs and similar later-stage deals.

Exits are currently taking some 8-10 years, although the sector as a whole still assumes 4-5 years between investment and exit.

## Capacity

There are conflicting reports on the current ability of VCs to continue previous levels of investment, not helped by the industry practice of lumping together true venture capital (investment in early stage high growth enterprises) and 'private equity' (comprising some 90% of the VC market in the UK) which focuses on later stage deals usually involving some financial engineering such as mergers & acquisitions, and MBOs.

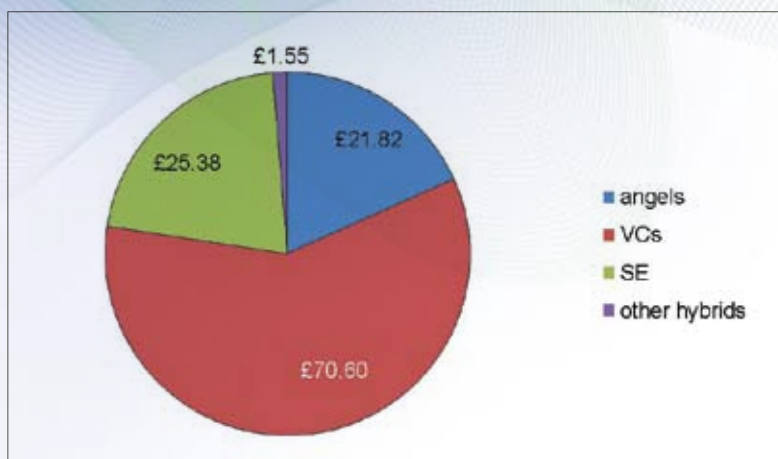
A recent report commissioned by the British Venture Capital Association (BVCA)<sup>6</sup> found that although private equity had suffered along with other financial sectors, it was still able to produce better returns than other asset classes. The amounts invested worldwide in 2008, although well down from the peak in 2007, were double the levels in the previous 20 years. Investments in technology companies at £596m in 2008 were well down on the 2007 figure of £835m, but are a small proportion of the £20,025m which BVCA's figures show as total annual investment in 2008, and less than half the technology investment was in early stage ventures. BVCA's members had been successful in raising new funds in 2008, but intended to devote 90% of the funds raised to MBOs, and 0% in deals under £10m.

NESTA however has claimed to have studied the VC market in the UK in some depth<sup>7</sup>. In contrast to the BVCA, it claims that in 2008 VC fundraising was down by 70%, and that existing funds have little left to invest. Specifically, of 39 funds investing in early stage businesses over the past five years, only 13 have over £5m (each) left to invest, and much of this is reserved for follow-on rounds.

Figure 8 shows the total amount invested by each different type of investor in Scotland, and demonstrates the difference in scale between VCs and angel investors. This is of course massively influenced by deals over £2 million; VCs participated in 12 of the 14 transactions over £2 million, investing £52.4 million, whereas angels participated in only 5 of these, investing £3.4 million (Scottish Enterprise was involved in 8 of these deals over £2 million, for a total £9.6 million).

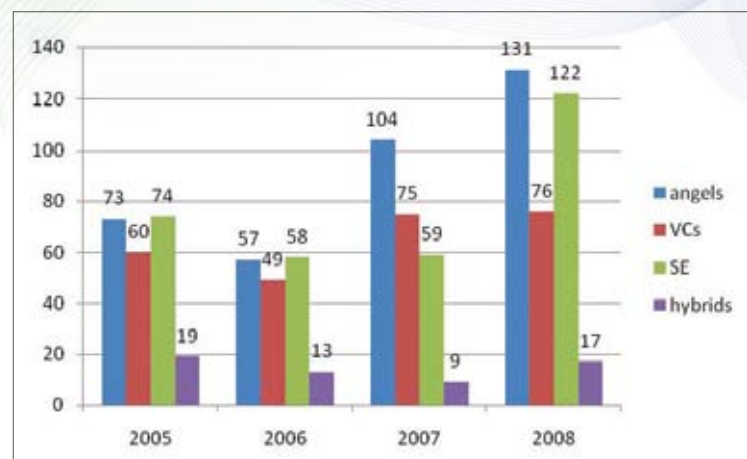


Figure 8: Investment by type of investor, £ millions



In 2008 angels participated in many more deals than VCs (see Figure 9), but there was a large number of deals completed without angel investment (55 of the total 186), indicating that there is now a higher level of involvement of institutional VC investors in the risk capital market, both as initial round investors and as investors in follow-on rounds. Scottish Enterprise and some of the other hybrids co-invest with private sector investors (Angels and VCs).

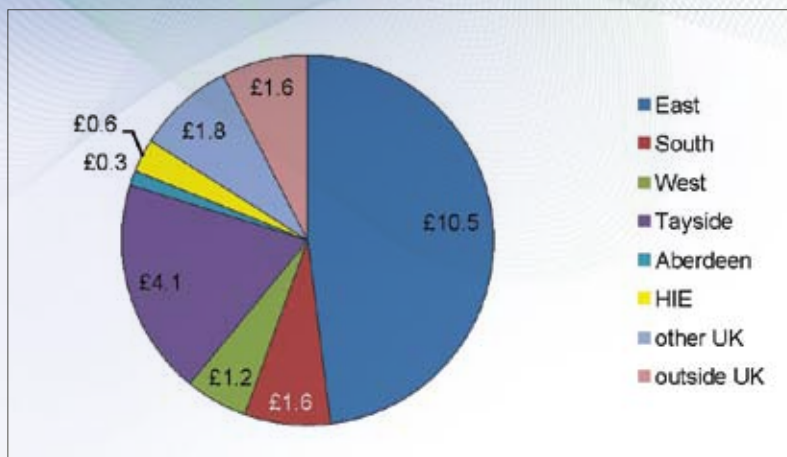
Figure 9: Number of deals by type of investor



### BUSINESS ANGELS - INVESTMENT PATTERN IN 2008

In 2008 Scotland's business angels invested almost a quarter of their total funding in companies receiving investment for the first time (35 deals, £4.7 million), divided between young companies under 3 years old (21 deals, £2.8 million) and longer established companies which had not previously secured external equity investment (14 deals, £2.0 million). Follow-on investments, which are a normal part of the funding process for companies as they grow, accounted for 96 transactions and £17.0 million of cash; although there are no separate figures for angel follow-on investments in previous years, the market as a whole (all types of investor) made many more investments in later rounds in 2008 than before (see Figure 23), but at a lower average value, suggesting that many of these deals were of a minimal amount to keep investees alive rather than larger funding to help them grow.

Figure 10: Origin of angel investments, £ millions

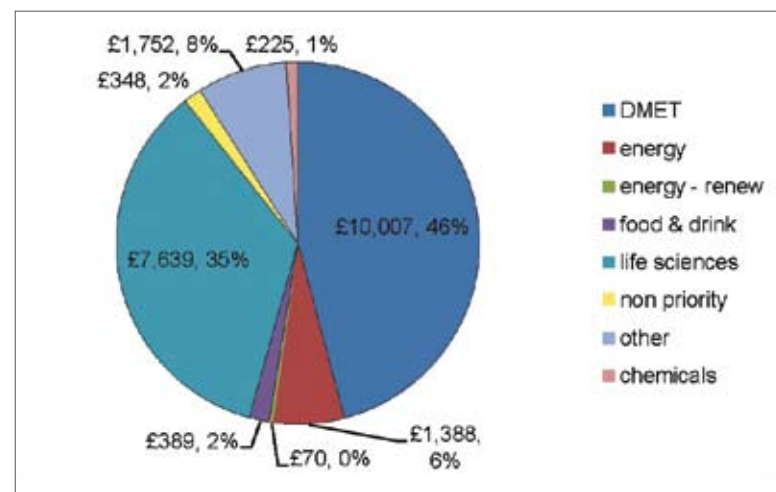


The two largest angel syndicates, Archangel Informal Investment in Edinburgh and the Braveheart Investment Group headquartered in Perth, account for the dominance of the East and Tayside in these figures, although there are several other angel syndicates active in the East. The South benefits from the presence of the TRI Capital group, and in the HIE region Highland Venture Capital has been active. In all these areas the figures include individual angels, not acting as part of a group. The larger angel syndicates have members across Scotland, and indeed across the UK and overseas; where the information was available for any deal (through the Companies House record) we have allocated the source of funds by the address given, but some part of the totals recorded for the angel syndicate as a group will have been sourced from a different location.

The West is (as in previous reports) underrepresented as a source of capital for local ventures in the region (28% of total funding was invested in companies in the West), but the recent formation of Kelvin Capital is intended to help correct this imbalance.

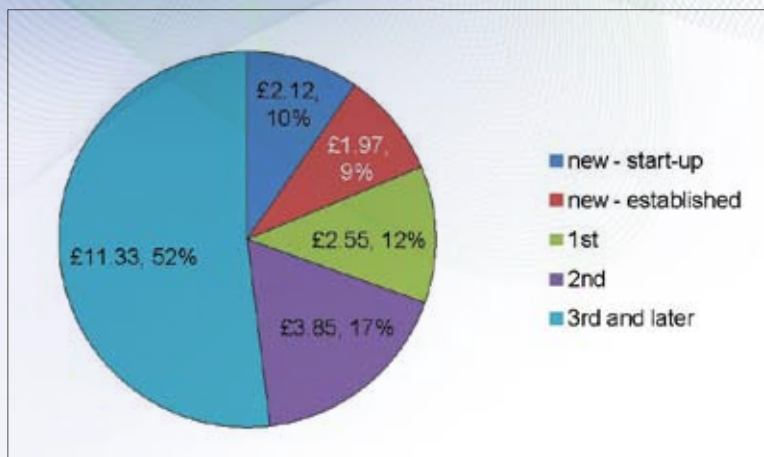
There is a significant level of investment by angels from outside Scotland. These are often associates of the founder or of a non-executive director, and the deals in the above chart have a median value of under £25,000. In these cases, while the investment is welcome it is available only to the specific transaction because of the personal connections. Much larger amounts can be raised from non-Scottish angels – the maximum figure here is £650k, from a Guernsey based group – but it has not always been possible to ascertain when such investments are by Scottish based individuals operating under a different organisational structure for tax or other reasons.

Figure 11: Angel investments by sector, in £'000



Angel investments are widely spread over many different market sectors, with the digital markets and enabling technologies (DMET) (Definitions Appendix 2) and life sciences dominating.

Figure 12: Angel investments by round, £ millions



The preponderance of later stage investments is in part due to follow-on investments required to keep portfolio companies on track, a factor in reducing the liquidity and investment capacity of investors that has been identified as a potential problem in previous reports, but it is notable that new investments in start-up companies, and first rounds (the next external investment in the sequence) nonetheless accounted for a quarter of angel investment.

The fact that investment in third and later rounds now accounts for over half of angel activity is a reflection of three factors. First, as reported in previous market reports, as the Scottish risk capital market evolves there has been an increasing segmentation of the market, with angel investors and VCs investing in different types of ventures and less evidence that VC investors come in to provide follow-on finance to angel-backed companies except in a few cases.

Second, and related to this, active angel investors have seen their portfolios mature and have faced the requirement to participate in second and subsequent rounds of finance to support the development of these companies.

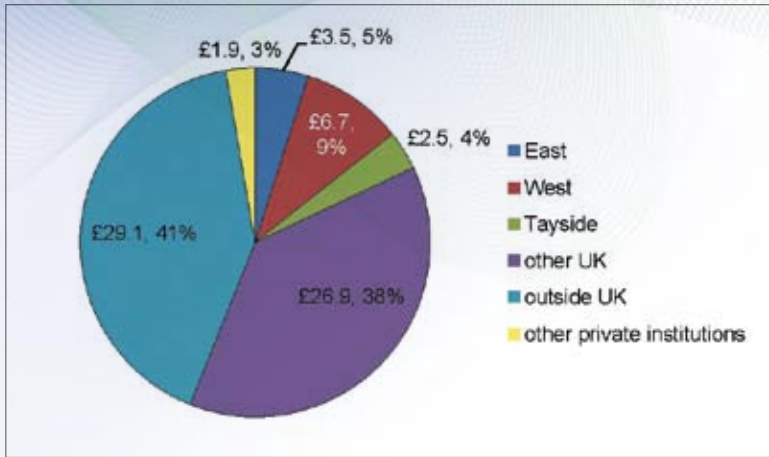
Third, specifically in the last year, one consequence of the credit crunch has been to restrict the availability of finance from traditional sources, notably the banks, with the result that existing investors have had to provide additional, often unexpected, support in the current economic downturn. Related to this, the current economic environment has also restricted exit opportunities for investors (e.g. through trade sales), requiring them to continue to fund more mature companies in their portfolios.

Angels invested in 18 of the 28 established businesses securing equity investment for the first time in 2008. In 14 of these they acted alone, with a median investment of £75k; the other four cases represent individual angels supplementing much larger deals by VCs. The pattern of investment bears out the observation that angels have been attracted by some opportunities to invest in more established businesses that might not have come their way if normal bank facilities had been readily available.

## VCS AND INSTITUTIONS - INVESTMENT PATTERN IN 2008

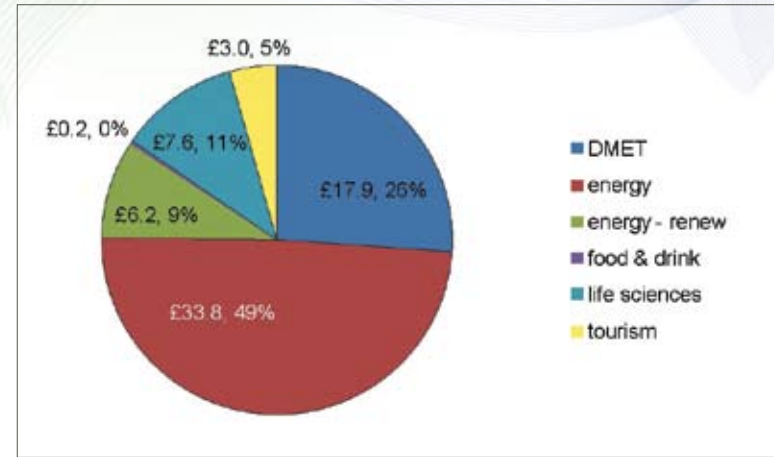
**In 2008 investment by organisations set up for the purpose – venture capital firms, and institutional investors – ran the gamut from large international VCs to small local organisations. We have also included in this category trade investors and other institutional investors such as Cancer Research Technology, but under a separate category of ‘other private institutions’ – these account for £1.8 million invested in 18 deals, from a total for VCs and institutions of £70.5 million in 75 deals. Although the largest deals of the year involved major VCs, the median investment in any one deal (i.e. including all syndicated institutions as a single figure) was under £250,000, whereas the largest was £10 million.**

Figure 13: Origin of VC investors, £ millions



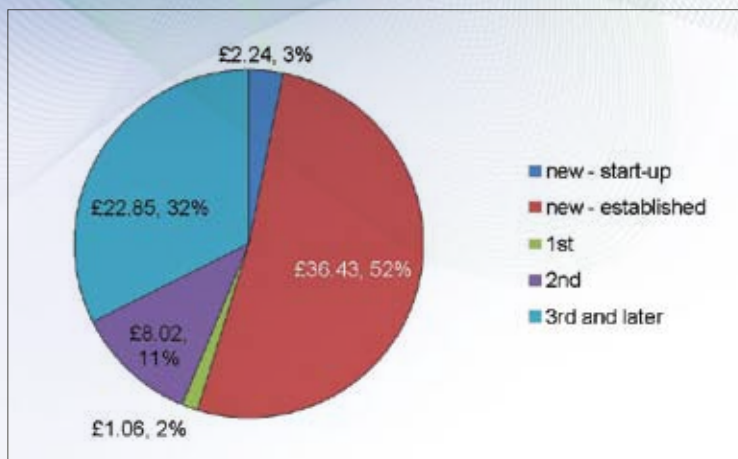
The bulk of the investment from outside Scotland comprised what might be termed 'true' or traditional VC finance, with £24 million invested in 5 deals by UK VCs including 3i and Amadeus, and £24.5 million invested in 10 deals by overseas VCs including by way of example Lime Rock Partners (Gas2) and a large consortium of VCs led by Emerald Technology Ventures (Pelamis Wave Power). The list also includes some sizable investments by institutions which might be groups of individual investors.

Figure 14: VC investments by sector, £ millions



Almost two thirds of the VC investments in 2008 were in the energy sector: this included three deals in the traditional oil and gas sector totaling £35.4 million (TS Marine, Gas2, and Futuretec), and two in renewable energy totaling £5.0 million (Pelamis Wave Power and Scotrenewables). We follow the previous Risk Capital Market report in assigning the investments in Skyscanner to the tourism sector (the only company in this sector in 2008 as in the previous report) – Skyscanner is an airline flight search and comparison website.

Figure 15: VC investments by round, £ millions



84% of VC investment in 2008 was in more established ventures, even if most of this was the first time that the ventures concerned had taken external equity. The largest VC investment in a start-up firm was Metaforic (£620k with £500k co-investment from SCF), but some of the smaller VCs in the list, including such firms as Imprimatur and Longbow, invested in start-ups, resulting in a median investment of £225k.

## HYBRIDS

These are defined as institutional investors having a policy objective in addition to financial return. Examples from 2008 include NESTA (the National Endowment for Science, Technology and the Arts), the Genomia and NESTech Funds, Partnerships UK, and UK Steel Enterprise.

Although the amounts invested are generally small and usually syndicated with other investors, evidence gathered from consultation with the community indicated that these organisations have often been instrumental in promoting and carrying through the investments in which they have been involved, in the sense that the ventures concerned would have struggled to get off the ground without the support of the hybrid investor.

## SCOTTISH ENTERPRISE INVESTMENT ACTIVITY

**Scottish Enterprise invested during 2008 from its three funds: the Scottish Seed Fund (SSF) investing from £20k to £100k on an equity basis, and often able to provide this as convertible loan stock; the Scottish Co-investment Fund (SCF) investing from £100k to £1 million; and the Scottish Venture Fund (SVF), investing from £500k to £2 million. All three funds require at least equal funding from private sector investors, and the SCF and SVF take a passive investment role, following investment partners who lead the deal.**

The SCF invested £13.9 million in 121 deals in 2008. The SSF was involved in 25 deals, for £1.6 million, and the SVF in 11 deals for £11.2 million. The figures in this present report are some £745k less than these totals, as investments in the form of convertible loan notes have been removed.

Overall, Scottish Enterprise participated in two thirds of the deals included in this report, investing a fifth of the total funding. The figures for all the years covered by this report are shown in the following table.

## Scottish Enterprise Investment activity

DEALS	VALUE £M	% OF DEALS	% OF TOTAL INVESTMENT	SECTOR
2005	74	£16	42%	24%
2006	58	£9	38%	11%
2007	59	£13	41%	12%
2008	122	£25	66%	21%

As a recent report on SCF has confirmed<sup>8</sup>, the participation of SE in the risk capital market on a *pari passu* basis with private sector investors, who undertake all the deal identification, screening, due diligence and investment negotiation, has had a major impact on the market.

First, SCF (and the other SE funds) have leveraged additional investment into deals (around £2.26 for every £1 SCF invested), providing a significant catalyst to the market. Second, the availability of SE investment has addressed the liquidity and investment appetite issues faced by investors, particularly business angel syndicates, hit by the need to provide follow-on finance to their portfolio companies.

Third, the availability of the SE Funds has deepened the pockets of investors and allowed them to consider larger deals than they otherwise had capacity for and commit to follow-on funding. As a result, this has made it more possible for companies to raise all the investment they require to support their development plans, and has supported the capacity of private sector investors to continue to invest in start-up and early stage deals. In the absence of these Funds, the level of investment in new companies would be lower than reported here, with negative consequences for the development of the high-growth potential business that a dynamic Scottish economy requires.

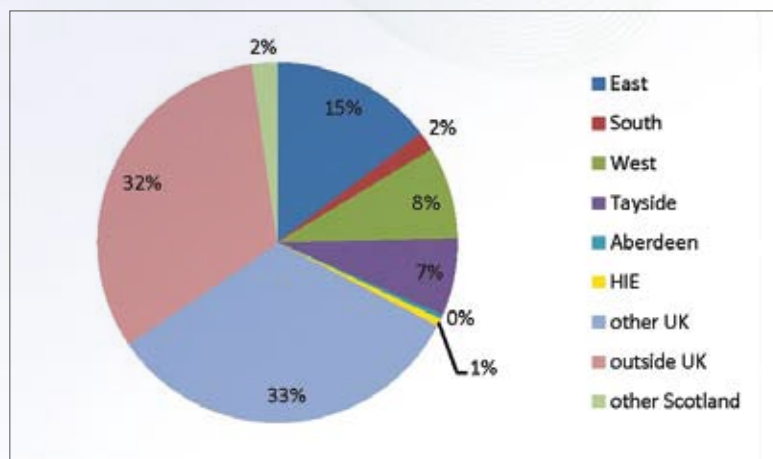
Fourth, as the SE Funds have developed during the year under review, it has become clear that there are two groups of private sector partners: those investors with larger and more established portfolios, for whom a key priority has been to fund their existing investments; and a cohort of new investors who have recently raised funds and are actively making new investments. If there has been a segmentation in the market between angel and VC investors, there is also an emerging segmentation in the current investment climate between established investors (concentrating on follow-on funding for existing portfolio companies) and new investors entering the market (investing in start-up and early stage as well as more mature companies).

Finally, in providing additional liquidity for the investment partners in the Funds, SE's involvement in the risk capital market is helping to extend the funding pipeline, rather than replace existing investors. As the risk capital market in Scotland continues to segment between angel investors (and a small number of early stage institutional VC funds) and VC investors who invest in different sets of deals, the presence of the SE Funds plays an increasingly important role in the development of companies that would not be candidates for institutional VC investment.

## LOCATIONS

More than half the finance invested in early stage Scottish companies in 2008 came from outside Scotland itself. £48 million (almost 40%) of this comprised investments by VCs in 12 of the 14 deals over £2 million.

Figure 16: Location of investors



The origins of investors from outside the UK in terms of the number of deals in which they were involved were:

Europe	USA	Asia	ROW
8	9	1	5

Looking at Scottish based investors (see Figure 17), the domination of the East of the country is clear, based chiefly on the activities of the angel syndicates located in the capital. We have tried to allocate investments by individual business angels to appropriate locations, but where data is not available or there is doubt, we have included the investment under the angel group leading the deal; this is particularly true in the case of investments by Archangel Informal Investment and by Braveheart Investment Group.



As discussed above, there is some difficulty in categorising small institutional investors, and the VC figures here include some of these organisations; however, VCs in the three main locations were Pentech and Scottish Equity Partners in the West, Sigma in the East, and Alliance in Tayside. Investments by VCs such as 3i and Aberdeen Asset Management have been allocated to the office which reported the deal. Although there were some substantial investments in energy companies, none of them seems to have been led by Aberdeen based investors.

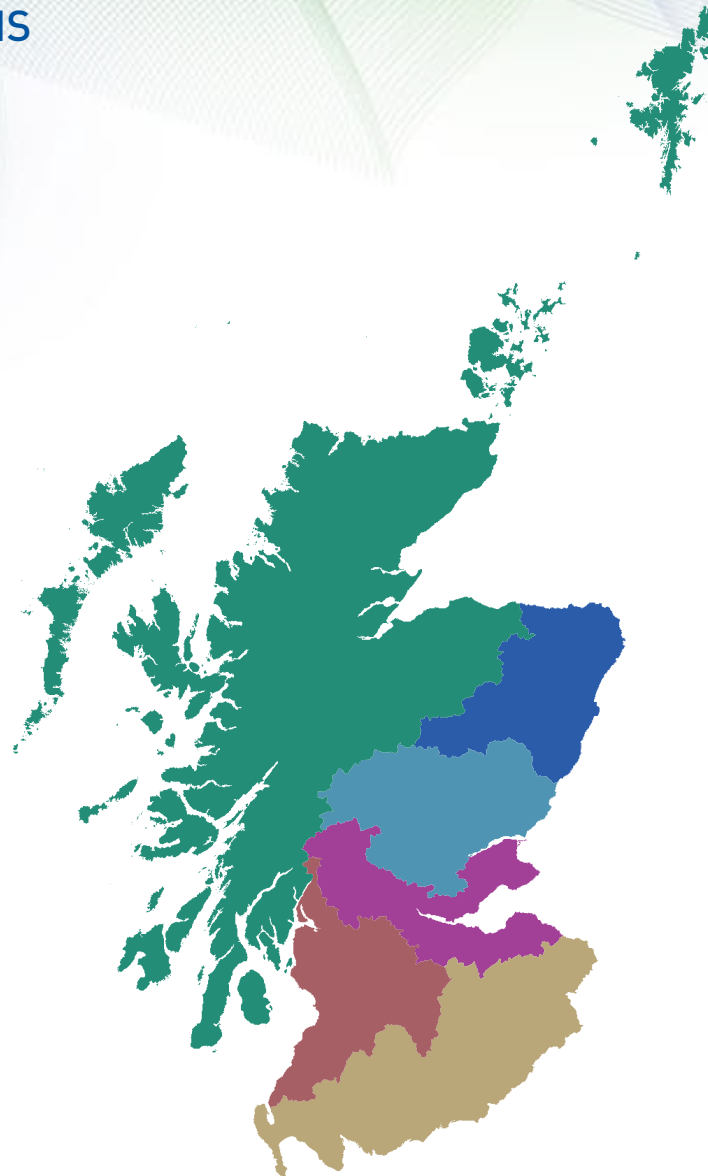
Figure 17: Investors in Scotland



## SCOTLAND'S ENTERPRISE REGIONS

### Enterprise Regions

-  Aberdeen City & Shire
-  East of Scotland
-  Highlands & Islands Enterprise
-  South of Scotland
-  Tayside
-  West of Scotland



Source: SE GIS Team  
Contact: [kmap@scotent.co.uk](mailto:kmap@scotent.co.uk)  
Date: 02/05/2008



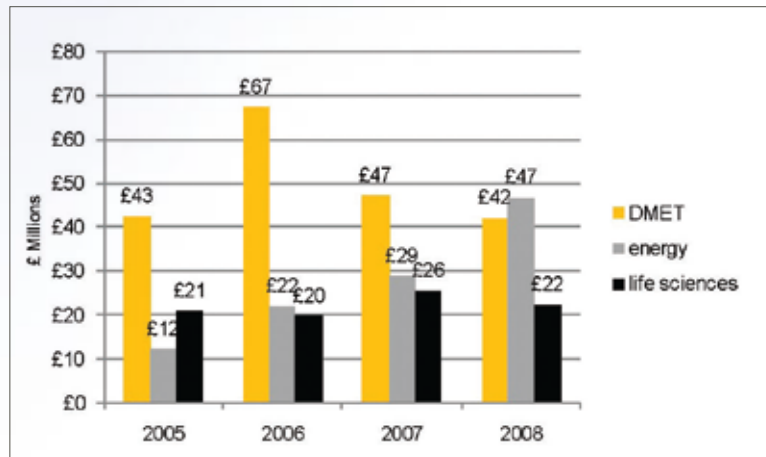
## 5. INVESTEEES

### INDUSTRY SECTORS RECEIVING INVESTMENTS

This report uses the industry sector classifications defined by Scottish Enterprise. The three sectors consistently securing the most equity funding are Digital Media and Enabling Technologies (DMET), energy, and life sciences. The definition of the DMET sector and its further breakdown is given in Appendix 2.

We give more complete reports on these three sectors in the 'Market sectors' section below.

Figure 18: Value of investments in priority industries (1)



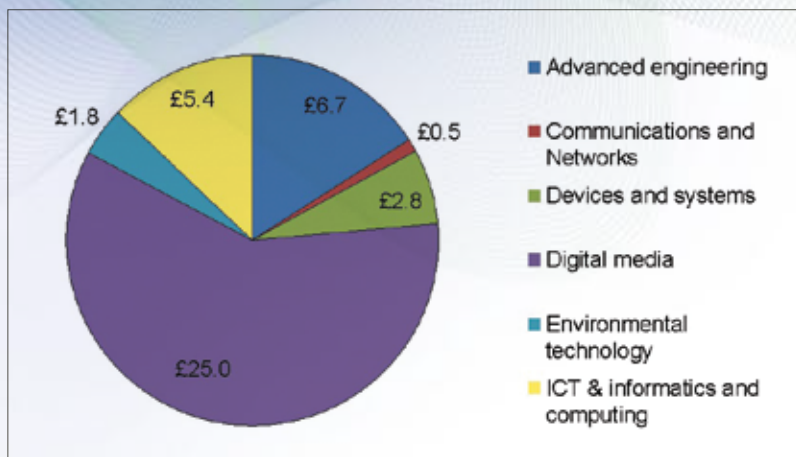
There has been a large increase in funding for energy ventures. This is a sector where a few large deals can make a big difference to the pattern, both in the traditional oil & gas sector, and in the renewable energy and cleantech sector. For example in 2008 there were five investments over £2 million (accounting for £42 million in total), and the following chart shows that the apparent trend in energy investment in fact shows a very inconsistent progress with single large investments in any one year distorting any real trend. This is not to say that the increase in finance for the sector is without significance, but the figures in this report cannot be extrapolated in a straight line.

Figure 19: Breakdown of energy investments 2005-2008



In the DMET category, which includes a large number of subsectors, digital media attracted almost 60% of investment with Advanced Engineering and ICT & Informatics and computing representing approximately 16% and 13% respectively.

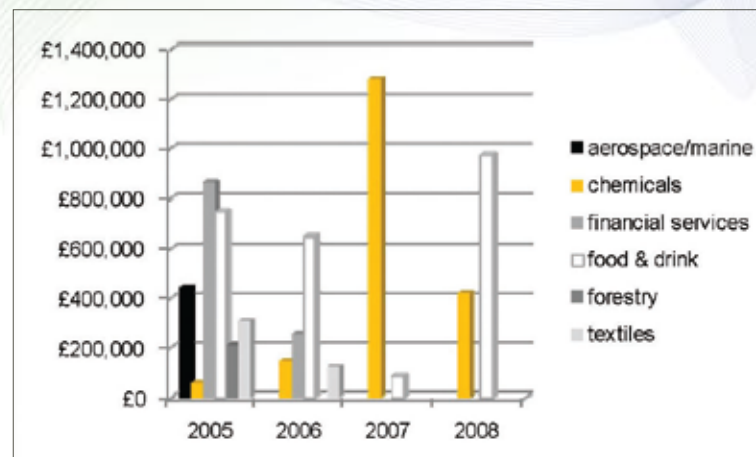
Figure 20: Breakdown of DMET investments (Millions) 2008



The level of investment in life sciences has stayed fairly constant over the four years reported here, in the £20 million - £26 million range. The pattern of investment has also remained consistent, with approximately 40 deals each year, with the top seven or eight securing over £1 million, led each year by a more substantial investment (2005: Cyclacel £5m; 2006 Microsulis £5.2m; 2007 Aquapharm £4m; 2008, Lab901 £3.5m). A wide range of investors of different types and from different locations invested in the life sciences sector in 2008.

The food and drink sector received just under £1million in 2008 and although this is an increase from previous years no real scale or pattern exists from which to draw any conclusions or trends.

Figure 21: Value of investments in priority industries (2)



This chart omits the category 'tourism' which includes over £3.5 million invested in 2007 and 2008; these investments were all made into one company, Skyscanner.

None of the other priority sector industries identified by Scottish Enterprise has secured consistent levels of equity funding, and different columns in the chart above all refer to a small number of one-off deals. In 2008 for example, the chemicals sector was represented by three deals, two in the same company (Advanced Microwave Technologies) accounting for £380k out of the total £420k, and food & drink was represented by five deals in different companies totaling £970k with a median of £167k.

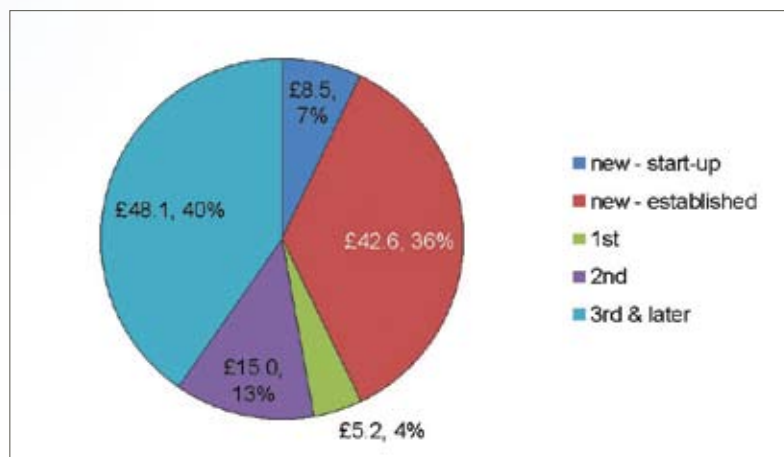
## INVESTMENT STAGE

The categories used for allocating investments by round start with 'new', when a company receives significant external investment for the first time, excluding early small scale investment by founders, friends, and family. Successive funding rounds are numbered sequentially, 1st, 2nd, then 3rd and later.

A feature of the investments in 2008 was the number of deals involving 'new' rounds for well established companies. In view of this phenomenon, we have broken down the 'new' category to distinguish between investment in start-up companies (under 3 years old) and more established firms. 'New' deals in the data for 2005-2007 were broken down in the same way, but gave some anomalous figures; accordingly, the authors of the previous report re-analysed the data to correct the allocation by investment rounds, which had the effect of increasing the number of start-up investments identified in 2005-2007. The corrected totals are given in Figure 23 below.

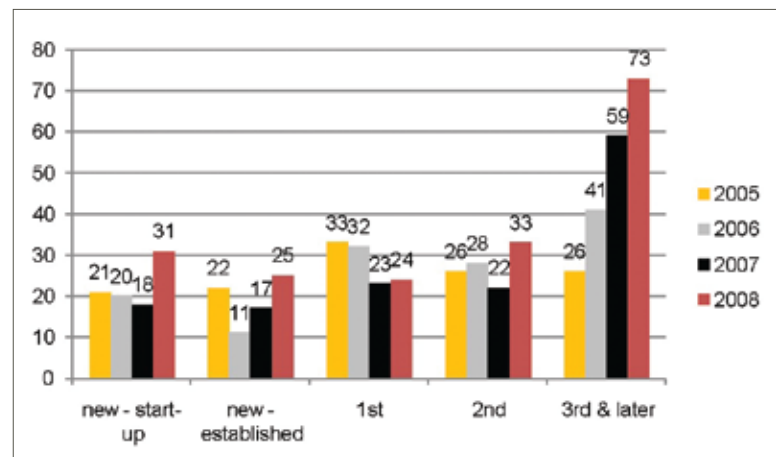
Although later rounds took almost a half of all investment in 2008, first-time investment was a significant feature of the market:

**Figure 22: Investments in different rounds (£ millions) 2008**



There were 32 deals involving first time investment in more established companies (15% of the total), and the median age of the companies in this set was just over 5 years. However, this category includes five of the deals over £2 million (for a total of just under £40 million), and some companies around 20 years old (Scottish Electronics International, Visible Ink TV).

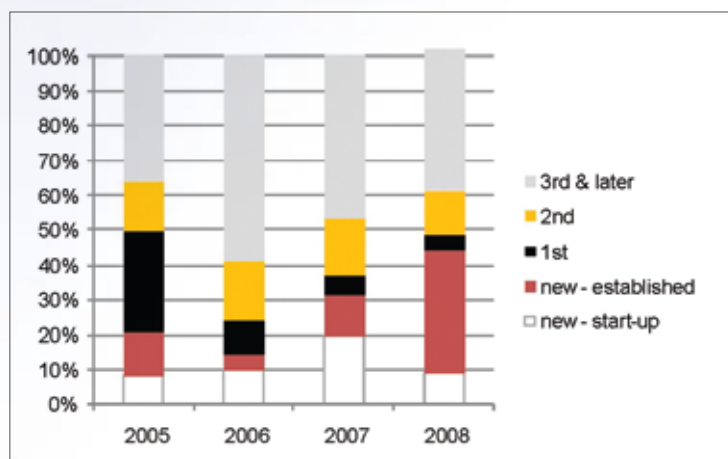
**Figure 23: Investment rounds by number 2005 – 2008**



This chart shows a continued increase in later stage deals over the four year period covered, with 2008 having almost three times as many third or later round deals as 2005<sup>9</sup>. There is no evidence that investment in later rounds was at the expense of investment in start-ups.

This can be seen even more clearly in the figures for total values, expressed as percentages of the total investment for the year (Figure 24). Deals in third or later rounds count for roughly half of the totals, varying from year to year, but the amount invested in established businesses as the first external financing for these companies has had a considerable effect on the breakdown for 2008. That said, start-up companies did not miss out on finance, securing 7% of total funds, only a little lower than in 2005 and 2006. If anything 2007 seems to have been an anomaly for investments in start-up companies, which secured twice as much of the total funding as in the previous or following year.

**Figure 24: Investment rounds by value 2005 - 2008**



## SPIN-OUTS

Over the past four years, investment in university spin-outs has been a significant feature of the Scottish risk capital market. Although the number of spin-out transactions is around the same in 2008 compared with previous years (32) the value of these deals has fallen by over 25% to £22m (Figure 25), and their share of the overall risk capital market has fallen to around 15% of the total (Figure 26).

**Figure 25: Investment in university spin-outs**

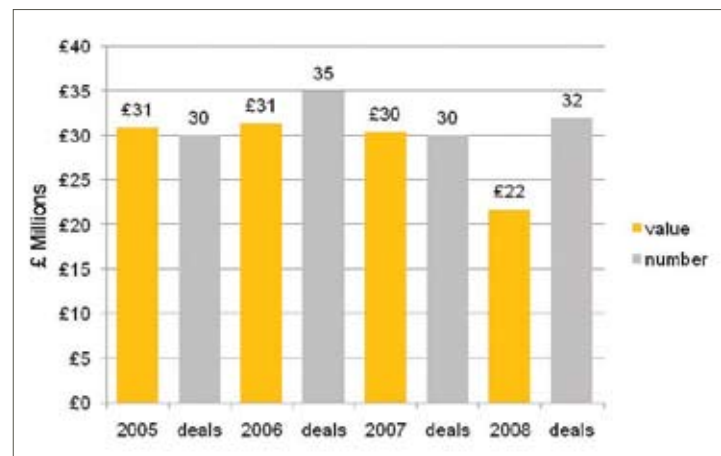
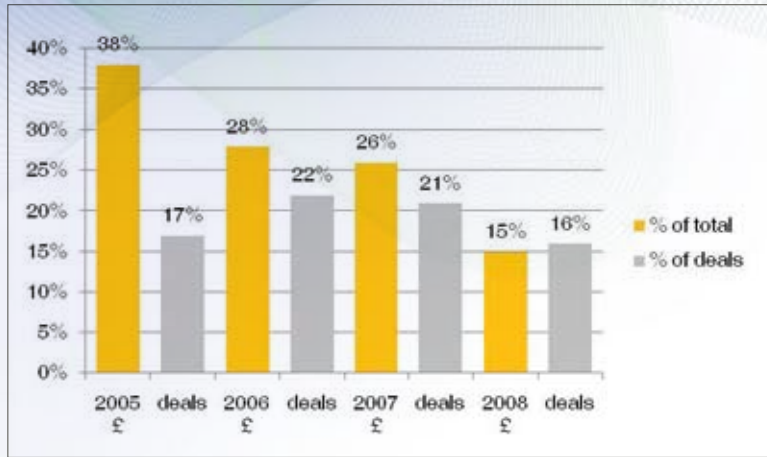


Figure 26: University spin-out totals as share of total

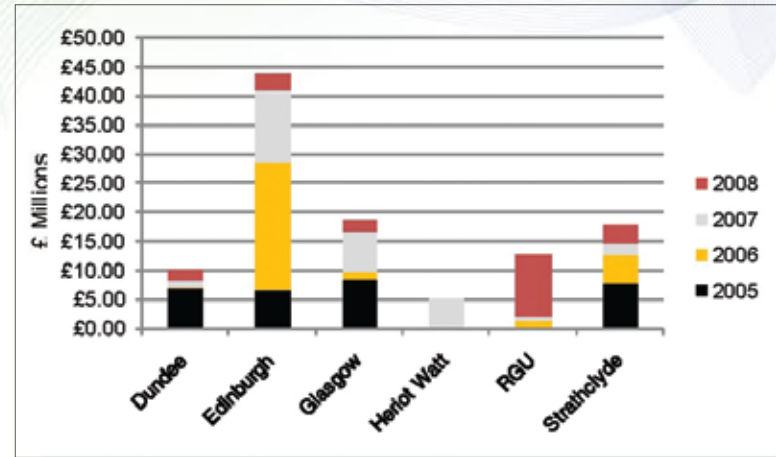


2005 was an exceptional year; there were several deals in university spinouts around the £1m level, but there were also three unusually large investments – Intense £8m, Vibtech £5.2m, and Cyclacel £5m.

In aggregate, it is clear that spin-outs from the University of Edinburgh dominate in fund raising (Figure 27): this reflects a number of possible factors, including the strong general relationship between the size of the research base of the university and the total number of spin-outs generated and the close and longstanding relationships established between east of Scotland based investor groups (notably Braveheart and Archangel) and the university technology transfer office.

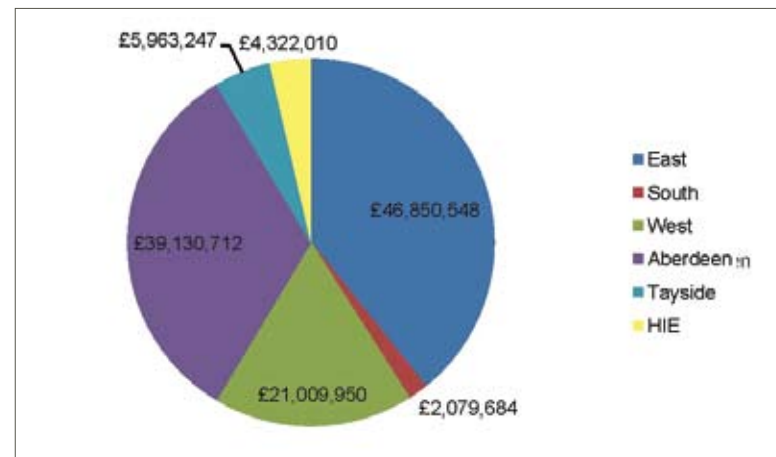
The University of Strathclyde set up the Strathclyde Innovation Fund in partnership with Braveheart Ventures at the end of 2008 to invest in new technologies from the University, and the University of Glasgow has established a partnership with the IP Group to support its commercialisation opportunities.

Figure 27: HEI spin-outs raising over £5 million investment in 2005 - 2008



## LOCATION OF DEALS

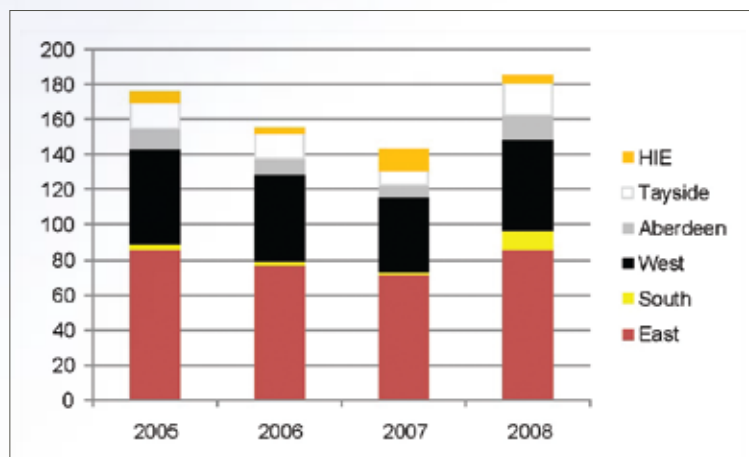
Figure 28: Investments in Scottish Enterprise regions by value 2008



The Aberdeen region features strongly in this chart thanks to three deals over £2 million, accounting for £35 million of the £39 million total. A similar pattern applies to other regions: almost half the total invested in the Highlands & Islands was in one deal over £2 million (Scotrenewables), with the remainder of the large deals in the East, where they accounted for a little under half the total.

Both East and West region had one investment each over £2m, of £2.4m and £2.0m respectively. Average investments in companies in these regions (including the two large deals) were £545k in the East and £404k in the West.

**Figure 29: Investments in Scottish Enterprise regions share by number of deals 2005 - 2008**



## AGE OF COMPANY AND STAGE OF DEVELOPMENT

The following table measures the age of companies at the time of an investment round and lists the number of deals in 2008 according to the time between a company's incorporation and the date of the deal.

AGE	NEW-START	1	2	3+	NEW-EST
less than 1 yr	15	2	1	1	
1-2 yrs	9	5	3	0	
2-3 yrs	7	7	4	3	6
3-4 yrs		6	9	7	3
4-5 yrs		3	4	12	3
over 5 yrs		1	12	50	1

The 'new' deals are defined by the age of the investee company (new-startups are under three years old, new-established are over three years) – there is an overlap in the 2-3 yrs row in this chart depending upon the precise timing of the company's formation and the date of the deal.

Of the thirty one new start businesses identified six were identified as being spin-out new starts from university establishments.

In general, the table shows a predictable spread, with an occasional anomaly (the third round investment in a company less than one year old is in fact a newly restructured business). The 'new' investments in established firms include a number of companies which might have been applying for funding for some time (from 2 to 5 years), but the 13 first-time deals which were completed more than five years after the companies' formation have a median value of 9.3 years; in other words, these are genuine examples of companies which have survived up to now with other forms of funding but in 2008 turned to the equity market.

## 6. INTERPRETATION OF FINDINGS

This section looks at the interpretation of the findings where consultation with key players in the investment community has been very helpful.

### DEMAND

**It is difficult to measure the level of demand for early stage investment. For one thing, companies will typically approach a number of different funders, so aggregating the number of proposals made to each investor would result in some duplication. It was speculated during the consultations for this report that some companies are not approaching banks for funding at present, as they judge that the time and effort involved would be wasted, and this might equally be the case for approaches to business angels and VCs. Some of the companies turned down for funding, or not applying in the first place, may well be able to reach their objectives by different means, perhaps by combining R&D with consultancy work, or making initial sales and growing organically, but there are many companies which cannot begin to make progress without significant external funding.**

There was some evidence from investors that businesses that would normally seek finance from banks, and more traditional businesses that would not normally seek equity funding, are turning to the investment community for funds (often looking for deal conclusion within weeks rather than months, which is impractical for most early stage investors). Investors however generally felt that many quality opportunities exist from their usual sources, and that they will only look at more mature businesses if they fit their existing portfolio well, or represent an exceptional opportunity to balance the portfolio risk.

The figures for investment in university spin-outs suggest that the commercialisation of university research, an essential component of the development of a knowledge-based economy, is being supported significantly by Scotland-based investors.

However, while some spin-outs are successful in raising successive rounds of finance to support R&D and market development activities, others fail to secure sufficient growth funding in Scotland to underpin successful business development and either fail (e.g. MicroEmissive Displays) or are sold (e.g. Haptogen), often to non-Scotland based companies. Still other companies (e.g. Wolfson Microelectronics and Optos) take a very long time to realise their potential; from spin-out to flotation Wolfson took eighteen years and Optos thirteen years from foundation to flotation. It remains the case that while Scotland punches above its weight in terms of the development of international class technology it lags in the availability of experienced managerial talent and in finance to support sustainable venture development. As a result, according to a recent spin-out report<sup>10</sup> produced by Targeting Innovation, only around 10% of university spin-outs in Scotland have grown to any level of scale.

The evidence, from consultation with the investment community, of this analysis is that the funding environment for university spin-outs with strong identifiable commercial potential is probably stronger now than it has ever been. However, the environment to support the development of these spin-outs and technology companies in general into world-class ventures is still lacking: the challenge, in terms of risk capital, is to identify a means of providing the £15m-£50m development capital (depending on sector) that such companies will need to fully realise their potential. This capital may come from investors based within Scotland, but is more likely to have to come from investors outside the region, including international investors. The major challenge in responding to the needs of these companies is the development of effective linkages with VC and corporate investors, and their involvement at an early stage in the investment process. Without this, the potential of the knowledge-creating sector to the economic performance of the Scottish economy will not be fully exploited.

## CAPACITY

**Although in this report we track and record actual investment activity, which is created by the interaction between the supply of and demand for investment, investment capacity in the market does seem to be increasing, based upon evidence gathered from the investment community.**

First, our market consultations indicate that active investors, particularly business angel syndicates, do not see shortage of capital as a constraint on their investment activity; rather they have tended to point to a shortage of strong investable propositions as the issue. It is, of course, a feature of the early stage risk capital market in Scotland as elsewhere that investors invest in businesses that meet their investment criteria, and there will be potentially investable businesses that are turned away on this basis. In a strong mature risk capital market, these ventures will have opportunity to pitch to other investors where the fit between the opportunity and investor preferences is closer. Scotland therefore needs to see not just an increase in the amount of risk capital available in the market but an increase in the number of investors across the range. In this respect, the emergence of new business angel syndicates and the continued evidence that non-Scotland investors continue to participate in deals here, albeit in small numbers numerically, are encouraging signs.

Second, additional angel investors are entering the market: there are currently nineteen identified business angel syndicates and family offices registered with LINC, and a further five are in the process of formation. This expansion in the number of groups (there were fewer than twelve such groups five years ago) is bringing new investors and their capital to the market, an essential process if this market is to continue to meet the demand for investment capital in the longer term.

Third, there is significant VC investment coming into Scotland, supplementing the investment capital provided by institutions based in the region. While most of this VC investment is attracted into specific deals, it does confirm that if sufficiently attractive

investment opportunities are created and if they can be brought to the attention of investors in the UK and internationally with deep sector expertise, then VC investment can be attracted into Scotland.

Fourth, the introduction to the market of Scottish Enterprise investment through the SSF, SCF and SVF has significantly added to the investment capacity of the market: on the basis of this additional capital, private sector investors have been able to invest in more start-ups and growth expansion deals.

However, there are emerging issues for business angel syndicates and smaller scale VC investors in particular in managing their investment portfolios. The opportunity to exit from investments is still lower than in the past and industry experts both in the UK and North America see a continuing weak IPO and acquisition/trade sale market well into 2010, if not beyond.

This has two consequences. First, in the absence of exit options, existing investors will have to commit additional investment and time to portfolio companies, reducing the resources available for investment in new opportunities. Second, as the size of investors' portfolios increases, their capacity (in terms of the time necessary to undertake investment prospecting, evaluation, due diligence, negotiation, and post-investment monitoring) to take on new deals will be reduced – time (and the size of the investment team) is the emerging constraint. As a result, investors may find themselves more restricted in their ability to undertake new investment activity, and we may see a tightening of the risk capital market as a result.

Over the past four years the supply of capital has become more strongly concentrated in business angel syndicates, and as initiatives such as the Scottish Co-Investment Fund have facilitated these groups (and other investors) to make larger investments, there has been a tendency for deal sizes to increase. This has two implications. First, it suggests that firms are now more readily able to attract funding on a scale that will make a substantial contribution to their realising their growth potential. Second, for ventures at earlier, pre-revenue stages with much lower capital requirements at start-up there is a danger of an emerging equity gap at the bottom end of the investment range.



As the GEM results for Scotland have consistently shown, Scotland has a lower rate of investment from friends and family (which is excluded from our analysis) – the emergence of a gap between personal and family sources of investment and the ‘mainstream’ investors making investments of over £100k (who are restricted by the transaction costs involved in making smaller investments) represents an emerging constraint on the support for and development of a platform of smaller companies that are necessary to underpin a successful economy. The Scottish Seed Fund does, of course, make an important contribution in supporting investments in this range, many of which then progress to benefit from further funding for growth from other investors. Nevertheless, there remains a concern that as the Scottish risk capital market matures, there is a reemergence of the equity gap at the bottom end of the investment range.

The availability of investment capital is not the only relevant issue; the lack of growth potential beyond a certain level in the investee businesses, due to limitations of technology, of market access and development and of managerial capacity, weakens the demand for investment. In part, this also reflects the structure of the risk capital market in Scotland: previous reports have pointed to the emerging divisions of the market into a market served primarily by business angel investors (individually or in syndicates, and supported by SCF and SVF), with an appetite for investments where the overall funding commitment across multiple rounds is not more than £5 million, and one served by VC investors with an appetite for much larger deals. In the absence of a significant level of co-investment and complementarity in the market (i.e. angel investors and VC investors for the most part invest in different deals) there is a break in the funding pipeline that would take a company through successive funding rounds to the level required to become a major company in international markets.

## DEBT AND EQUITY

**As a result of the worldwide reduction in bank lending - the credit crunch - there is no doubt that companies which are unable to secure or extend bank loans and overdrafts are looking at equity as a substitute, and also little doubt that some early stage investors welcome the opportunity to balance the risk profile of their portfolios by investing in some more established businesses. Consequently, it is suggested that cash which might have been available to early stage high growth businesses is being diverted to later stage companies.**

The present study certainly found that there was increased investment in 2008 in later stage companies turning to the equity markets for the first time (see charts 23 and 24), but the evidence that this is at the expense of early stage companies is less clear-cut, in particular without the detailed analysis necessary from 2005-07 data.

The effect of the credit crunch on early stage ventures can be overstated. In general, the types of early stage business which are the most likely contenders for equity finance (those needing investment to complete products and services for market entry, and with high growth potential) are not usually good candidates for bank debt. They have few assets and little or no trading history, and bank lenders are often unfamiliar with the markets they intend to address, or the business models appropriate for success. Consequently, although most firms will have some level of bank overdraft facility and maybe a business loan, these will typically be far too small to support rapid growth. Entrepreneurs would often like greater levels of bank finance, as equity is considered 'expensive' finance and dilutes the founders' stakeholding in the business, but they may not be able to grow their companies in this way.

Some respondents in the consultation interviews carried out for this report considered that "equity is the new debt". While this may be true for those firms unable to secure debt who have managed to obtain equity funding, it obscures the fact that debt and equity have different roles in the financing of a business through its various stages of development. In their different ways business angels and VCs both profess to help investee companies to achieve their goals, but because of the high risk involved in investing in any one company they tend to seek all possible

ways of mitigating their exposure, sometimes by co-investment, sometimes by a mix of funding (equity, debt, grants), and usually by adopting a portfolio approach. There are some examples of companies funded entirely by equity from a single investor from start-up to maturity, and one VC in our survey stated that all his firm's investees are debt free, but many equity providers would be uncomfortable with 100% commitment of this sort. On the other side of the fence there is pressure from entrepreneurs, as described above, to limit the level of equity investment.

Bank finance becomes more appropriate as a business expands, and has assets to use as security, and a proven trading record. Several investors interviewed felt that advisers to young companies tended to prepare them for bank finance, which they felt was not always the best option (this was influenced to some extent by the availability of finance under the Small Firms Loan Guarantee scheme, which was widely held to be beneficial to young companies). To a degree, this is what one might expect equity investors to say, but it also implies an inefficiency in preparing investees for the most appropriate form of funding. Investors would like to see account managers and advisers to early stage growth companies offering a more rounded view of the funding options available to young companies.

It must be true that cash invested in later stage companies is not available for investment in early stage high growth ventures, but it does not follow that this is directly to their detriment, as investors may not have elected to invest in more of this type of business. In terms of the number of deals completed the figures for 2008 show an increase in the number of investments in start-up companies, with roughly the same proportion of total funding as in previous years (but lower average deal sizes). This is reflected in comments by interviewees, who are seeing a large increase in the number of applications from established firms. Interviewees sometimes mentioned the supposed effect of funds being diverted from early stage businesses, but usually referred to their own investment patterns in terms that suggested they continued with the same focus as before. This rings true, as although there may be some temptation to de-risk a portfolio with a few later stage deals, in fact the investors in the early stage market are used to picking out the growth opportunities in the submissions they see, and are set up in such a way as to realise these opportunities. Whatever they may sometimes say, they are certainly not being pushed into later stage investing by any lack of deal flow from early stage ventures.

## EXITS

**Investors are aware that exits, their traditional means of realising the value of their investments, have slowed considerably. Patience has become the watchword, and most investors accept that a broad portfolio will bring returns in due course, even if it causes short term problems.**

Historically, a stock market flotation has rarely been the exit for investors in young Scottish companies, and this route has more or less disappeared completely for companies of all sizes. A trade sale is the standard means for founders and investors to achieve a return, and these too have slowed. Although some cash rich companies are using the recession to grow by acquiring other companies, they are in the minority, and most enterprises which might consider purchasing a young high growth venture are now looking for targets with some market traction, not just intellectual property or a product or service whose potential is still entirely untested.

This means in effect that young companies financed with risk capital are going to have to survive several more years before becoming candidates for a trade sale. Investors and intermediaries interviewed in the consultation for this report varied in their estimates of how long it might take in today's business climate to reach an exit by trade sales, but several indicated a timescale as long as 8-10 years.

It was also suggested that young companies and their advisers have not yet taken this on board, and are still preparing business plans on the basis of an exit in 4-5 years. Of course, if the recession runs its course very quickly this approach could be vindicated, but it is possible that we are witnessing a 'paradigm shift', and that purchasers in trade sales will not revert to the previous position of acquiring companies for their promise alone.

For the present at least, the longer timescale to an exit by trade sale has a number of repercussions. It means principally that investors must be prepared to support their investees for a longer period, devoting resources to follow-on rounds that might otherwise be available for investment in newcomers to their portfolios. It will also no

doubt mean that young companies are under additional pressure to get to market quickly, which in turn might have a bearing on the strategies adopted for selecting products for fast-tracking.

It might also have the effect of deterring high net worth individuals from joining business angel syndicates if they feel their cash could be tied up for a ten year period without any return. However, the longer established angel syndicates are now receiving some dividend revenue from portfolio companies and this could be a more frequent outcome in the future. Although risk capital investors will always need an exit rather than dividends to give returns commensurate with the risk taken, dividend income is a welcome half-way house and factoring this into investment decisions could again intensify the focus on 'market readiness', which is no bad thing.

Venture Capital firms are less likely to welcome dividend income as a half-way house, if it means that the exit is delayed. Because of their structure they are dependent upon exits to generate returns for their own investors. If trade sales continue to be elusive, it is possible that this could lead to renewed interest in flotation. This in turn might lead venture capital firms to concentrate even more on companies which can scale up rapidly, and pass over smaller ventures.

## ANGELS AND VCS

**The two main private sector sources of risk capital are business angels and venture capital firms (VCs). As a generality, angels tend to invest smaller amounts than VCs, at an earlier stage of a company's development.**

In Scotland, much more than elsewhere in the UK, business angels have congregated into syndicates, investing together under common terms and conditions. Investing as a member of a syndicate gives an individual business angel the opportunity to invest in more deals (thus increasing his or her portfolio, and spreading risk), to invest in larger deals (thus extending the range of interesting opportunities), and to benefit from sharing the transaction costs such as legal fees and due diligence.

The increasing number and size of angel syndicates in Scotland is changing the characteristics of the market. As seen by a young company seeking funds, the larger syndicates look very much like VCs, with a nominated representative reporting the proposal back to final decision makers, committee structures, the return on investment expected, and 'house' terms and conditions which leave little scope for negotiation. However, angels and VCs differ not only in amounts and stages of investment, but also in the period they are prepared to run with an investment, the way they interact with an investee, and the different drivers (including stock exchange reporting for VCs, and EIS tax relief for angels).

In an ideal world, angels would be able to fund companies to a certain stage of development then 'pass the baton' to VCs with deeper pockets who could help them with rapid market penetration to ensure a profitable exit. In practice this happens rarely and it is fair to say that there is a degree of mutual wariness between the two communities. While one might see this as a 'market failure', both categories of investor are too independently minded to welcome any attempt by a third party to try and correct it.

The attraction of significant VC investment from outwith Scotland (£57m) is a significant addition to the risk capital market and business development ecosystem.

However, detailed examination of non-Scotland based VC investment suggests that the majority of these investors are invested in only one company; they are not regular participants in the market but are attracted by the very specific opportunities in which they invest. It may be beneficial going forward for Scottish Enterprise to monitor VC activity more closely.

The challenge therefore is, first, to develop companies in Scotland based on a compelling market and technology proposition with the demonstrable capacity to exploit that opportunity, and then to bring companies to the attention of would-be investors by showcasing these investments internationally and providing opportunities to bring potential investors to Scotland to see emerging technologies at an early stage, long before the final deal has been shaped and is seeking finance. The ability to involve potential international investors in shaping how the commercial exploitation path for leading edge technologies develops could be a major spur to the effective exploitation of these technologies to the benefit of the Scottish economy.

## PUBLIC SECTOR

**Scotland is now estimated to have the most generous and effective framework for the support of risk capital investment in early stage companies in the UK, such is the impact of SSF, SCF and latterly SVF on the market. There are widespread concerns that public sector interventions in the risk capital market are counter-productive and tend to distort the market (in terms of investment criteria, lower returns expectations and subsidised operating costs). However, in the case of Scotland, independent evidence suggests that Scottish Enterprise involvement, as a co-investor following private sector due diligence and investment decisions, has had a positive impact on the risk capital market<sup>12</sup>.**

As discussed earlier in this Report, overall, Scottish Enterprise Funds participated in two thirds of the deals included in this report, an increase over the figures noted in previous reports (41% in 2007), investing 21% of the total funding (12% in 2007). As a result, the SE funds have leveraged additional investment into deals, providing a significant catalyst to the market. Specifically, the availability of SE investment has addressed the liquidity and investment appetite issues faced by investors, particularly business angel syndicates, hit by the need to provide follow-on finance to their portfolio companies. It has also allowed investors to consider larger deals than they otherwise had capacity for and commit to follow-on funding. As a result, this has made it more possible for companies to raise all the investment they require to support their development plans, and has supported the capacity of private sector investors to continue to invest in start-up and early stage deals. In the absence of these Funds, the level of investment in new companies would be lower than reported here, with negative consequences for the development of the high-growth potential business that a dynamic Scottish economy requires.

In providing additional liquidity for the investment partners in the Funds, SE's involvement in the risk capital market is helping to extend the funding pipeline, rather than replace existing investors. This positive assessment of the role of the SE Funds

is confirmed from other analyses. For example, an evaluation of all ERDF supported risk capital schemes in Scotland<sup>13</sup> concluded that the risk capital schemes have additionality (in the case of SCF over 90%), when considered from both the investment partner and the investee business. In addition, the SCF model has helped develop the local financial community by increasing the deal capacity of investment partners and attracting investment partners not previously involved in company finance in Scotland. It also concluded that the structure of the funds, with investment partners bringing deals to the fund, ensures that there is no displacement of private sector finance providers.

Similarly, Scottish Enterprise-commissioned evaluation of SCF<sup>14</sup> concluded that over half of SCF investee companies felt that their chances of raising capital elsewhere would have been 'poor' without SCF and 78% stated that the fund had been 'vital' to their business survival; the SCF has had and is forecast to continue to have an economic impact on the companies that have been supported, in terms of identifiable increases in turnover, gross value added and employment; and the majority of sales of SCF investee companies are outside Scotland, suggesting that the displacement of other economic activity in the region will be low.

Overall, therefore, it appears that the role of the public sector in the Scottish risk capital market has been positive. The design and operation of the funds avoids the common criticisms of public sector intervention in venture capital markets, in that it removes the public sector from the decision making and fund management processes, relying instead on the private sector to make all investment decisions, and it avoids introducing distortion into the market. As such, SCF and SVF help mobilise investment capital in Scotland from existing investors, by enabling them to do more and larger deals, attracting investment capital from investors outside the region.

## SEGMENTATION AND MARKET STRUCTURE

**It is clear from this Report that the Scottish risk capital market continues to evolve and develop. Overall, the early stage risk capital market in Scotland remains buoyant, with the amounts invested holding up despite the effects of the credit crunch on the global economy.**

There are a number of key trends emerging:

- By comparison with the recent BVCA data on VC and private equity investment in the UK, the early stage risk capital market in Scotland has been relatively buoyant, reflecting both the increased supply of locally-managed investment capital as new investors enter the market and a continued flow of attractive investable start-up and expanding businesses.
- The number and proportion of larger and later-stage deals is increasing, suggesting that as the market develops there is an increased requirement for follow-on finance, which may increasingly constrain the availability of finance for start-up and early stage ventures, unless the entry of new investors into the market continues.
- Reflecting the credit crunch, there is evidence of an increased number of mature companies seeking equity investment for the first time as access to bank finance becomes more constrained. As such companies can be attractive to investors (they are revenue positive, their prospects can be evaluated more easily and they offer more opportunity to take running returns through dividends etc) it is possible that they will have diverted available investment capital away from early-stage companies.
- However, the recession does not appear to have significantly affected the appetite of investors for investments – early concerns about issues of liquidity have been replaced by a sentiment that there are good investment opportunities and that deal valuations have come down to more realistic levels.

- Business angel investors dominate in terms of deals reported, and Scottish Enterprise continues to play a significant catalytic role in the market through the Co-Investment Fund and Scottish Venture Fund. While there continue to be examples of co-investment by business angels and VC funds, the segmentation of the market reported in previous years (with business angel syndicates providing the follow-on investment to their portfolio companies rather than ‘handing over’ to a VC investor) appears to remain a feature of the market. In the absence of a strong exits market, through trade sales or, more rarely, IPOs, this feature of the market may in the longer run constrain the availability of investment capital unless new investors enter the market.
- As the SE Funds have developed during the year under review, it has become clear that there are two groups of private sector partners: those investors with larger and more established portfolios, for whom a key priority has been to fund their existing investments; and a cohort of new investors who have recently raised funds and are actively making new investments. If there has been a segmentation in the market between angel and VC investors, there is also an emerging segmentation in the current investment climate between established investors (concentrating on follow-on funding for existing portfolio companies) and new investors entering the market (investing in start-up and early stage as well as more mature companies).

However, there remain a number of issues in the operation and development of the market that may continue to constrain the ability of the Scottish economy to seed and grow internationally competitive high-growth potential businesses.

First, there is no substantial evidence that the segmentation of the risk capital market identified in previous reports has reduced, nor is there any increased evidence of greater interaction between VC and business angel investors, either co-investing in deals or developing a funding pipeline. In other words, it remains the case that there is an expansion capital market characterized by VC investment in existing portfolio companies, rather than investment in new ventures, and a start-up and expansion risk capital market characterized for the most part by angel investors and syndicates investing in new and expanding companies. While there have been examples of joint

angel/VC investments, the small number of VCs based in Scotland, their orientation increasingly to deals outside Scotland and the episodic involvement of non-Scottish VCs in Scottish deals limits the opportunity to significantly reverse this trend. Given that angel-VC co-investment, either jointly in a deal or sequentially as the VC provides follow-on finance to an angel-backed company, relies on the development of knowledge, shared experience and trust, the withdrawal of many VCs from the market in Scotland has significantly reduced the scope to reduce this segmentation.

Second, within this there is growing evidence that within the business angel market there is an increasing reliance on a 'cradle to exit' investment model being adopted by established players in the market, who are committing to investment in the range £1m to £2.5m with the intention of seeing through the realisation of the growth potential of their portfolio companies. Accordingly, established angel investors, operating through syndicates, have been concentrating increasingly on investing larger amounts in follow-on investments in their portfolio companies; investing in start-ups has to a large extent been the preserve of new angel syndicates and other investors entering the market for the first time with new funds to invest. Under current market conditions, a continual flow of new investors will be needed to maintain the capacity to invest in high-growth potential start-up and early stage ventures. Given the work of LINC Scotland in facilitating and supporting the development of new angel syndicates in particular, and the capacity for learning and the transfer of knowledge and experience from established to new investors, this emerging feature of the market does not appear to have constrained the availability of start-up capital. There is, however, no guarantee that this situation will continue, and widening and deepening the pool of investors remains a significant long-term challenge for the market.

Third, the various SE Funds are meeting an important need in the market and are helping both established investors and new entrants to the market meet the demand for investment that they face from portfolio and new companies. However, the shift in investment focus away from start-ups and towards larger deals in a 'cradle to exit' model does suggest that there is a possible reemergence of an equity gap at the

bottom end of the range, say below £100k, previously the preserve of individual angel investors. Based on the evidence in this report it is difficult to determine the extent to which there is an emerging problem in this domain or the scale of the issue, due to the difficulty of comprehensively identifying and tracking such deals. While few of the ventures seeking funding in this range would be classified as high-growth, support for the development of these companies is essential to ensure the overall development of an effective entrepreneurial ecosystem.

Fourth, the continued evolution of the market raises important implications for its ability to provide access to risk capital on the scale required to support the growth of high-potential ventures. If existing investors, angel syndicates in particular, are adopting a cradle to exit investment model, they will tend to concentrate their investments in ventures requiring no more than £2.5m to £5m (with support from SE's Venture Fund). In the absence of a high level of connectedness between VC and angel investors, those ventures with capital requirements in excess of this to realise their potential will face difficulties in raising the necessary capital, and will not be networked into investors outside Scotland. While there is continuing evidence that a small number of very large transactions are completed annually in Scotland (typically no more than two or three) by non-Scotland based investors, there is evidence from this Report, and its predecessors that ventures requiring investment in the range £5m to £20m will find it difficult if not impossible to access that capital. As a result, it is likely that such ventures will fail to fully realise their growth potential in international markets. A commitment to the development of high-growth businesses as central to economic development policy must be accompanied by a commitment to develop access to capital on an appropriate scale. There is already evidence starting to emerge to suggest that there is a pipeline effect within the SE portfolio of funds, with companies being supported by investment through SSF, SCF and SVF as they grow. For effective economic development in Scotland the issue of how to extend that pipeline, either through new fund creation or by attracting new VC players to participate in the Scottish risk capital market is a priority.

# APPENDICES





## APPENDIX 1: METHODOLOGY DETAIL

### Stage 1: Data collection

The study started with data from three sources: Scottish Enterprise's listing of investments made from its three funds (Scottish Seed Fund, Scottish Co-investment Fund, and Scottish Venture Fund); LINC Scotland's listing of investments made by its angel syndicate members; and Young Company Finance's Deals Monitor listing for 2008. As expected, there was considerable overlap between these sources, and a high degree of correspondence between the factual data for each deal.

In addition to this 'top down' approach, a 'bottom up' was possible, with a rigorous search of other sources, including:

- Angel network and VCs in Scotland: portfolios, news, internet search
- BVCA: approximately 200 VC firms checked: portfolios, news, internet search
- 14 Scottish universities: spin-out data accessed where provided
- Trade Associations – members' lists searched: BIA Scotland, Scotland IS, Scottish Optoelectronics
- Incubators – tenant lists searched: EPIS, Stirling, Hillington/Alba/Wireless Innovation, Edinburgh Technopole, West of Scotland Science Park
- TIL Spin-out companies list
- Young Company Finance's list of some 1,800 companies which had been reported previously in the pages of Young Company Finance. This included companies which had previously secured funding, spin-outs from universities, presenters at Connect Scotland conferences, winners of SMART awards and other early stage grants, winners of appropriate business awards, and tenants of science parks in Scotland.

All companies identified in this way were checked against the Companies House records to see whether or not they had made new share issues in 2008, indicative of an equity investment.

### Stage 2: Data verification

The Risk Capital Market report includes only equity investments by independent third parties. This meant that all investments by founders and management, and all funding in the form of convertible loan stock or similar, had to be removed from the data (ten of the deals in the starting list, amounting to £2.8 million, were excluded as they comprised only loan stock). This was done by checking the relevant Companies House returns (the 88(2) forms, which record the issue of new shares) for each deal, and by extensive queries to Scottish Enterprise and LINC, and in a couple of cases directly to the investee.

Deals reported in the press, including reports of investments in Young Company Finance, generally quote the 'headline value' which usually includes the total package of equity investment, grants, and loan finance, and gives the total commitment by equity investors, which is normally divided into tranches payable at the completion of agreed performance milestones. The present report includes only the investment tranches paid within 2008, and for that reason, plus the deduction of capital by founders and managers and non-equity finance, gives much lower totals than the headline figures in media sources.

One example will suffice: we traced an investment by a prominent business angel in a company for £500k, but in 2008 only some £250 of this was paid in cash, and the balance of £475k was in the form of convertible shares. We have included just the £250 in the data in this report, and expect the remainder to be reported in a future year if and when the conversion is made.

There can be some difficulty in differentiating between tranches of a single deal, and new investment rounds. In general we had guidance from the Scottish Enterprise and LINC listings to decide when investments at different dates should be aggregated as a single round, and when they should be separated as different rounds. In other cases, we generally judged any separate investments over a three month period to be part of a single round, and investments separated by six months or more to be separate deals, with doubtful cases decided by intuitive judgment. Later tranches of deals reported in the 2005-2007 study are of necessity treated as separate deals.

There are several transactions for which Companies House showed no 88(2)s; as the procedure for submitting these forms is not rigorously monitored by Companies House, and there are no penalties for late submission, this can sometimes arise simply because the legal firm handling the documentation has not yet done it. In these cases we took the Scottish Enterprise and LINC records as sufficient corroboration of the deal.

### **Stage 3: Analysis of investments**

**The Companies House records were used as the prime evidence for analysing investments by amount, identities of investors, and location (investors and investee). The stage of each investment was determined in part by looking at the records from the previous report covering 2005-2007, and in part by looking for significant share issues in previous years in the Companies House records. Companies were assigned to the same industry sectors as in the previous report where relevant.**

The age of the investee companies is calculated by reference to their date of incorporation. This is in some ways unsatisfactory, as companies may be formed a long time before they start trading, and in other cases (particularly some university spin-outs) they may have developed their business venture extensively before taking the formal step of incorporation. However, the date of incorporation is the only objective factual marker to indicate the age of a company. We took the view that the exceptions would cancel out, and that for analysing the investment data en masse the date of incorporation gives a sufficiently useful measure of company age.

### **Outputs from the stage 3 analysis included:**

- Quantification of the size and shape of the market;
- Location of investments;
- Identification of deal sizes and equity gaps; and
- Key characteristics of beneficiary companies including sector and age.

### **Stage 4: Verification of findings and consultation with investors & intermediaries**

**A series of consultation interviews with a range of investors, intermediaries, and investee companies was held to give qualitative dimension to the quantitative data.**

#### **The output of these discussions included:**

- A description of the venture capital and private equity market in Scotland;
- A description of characteristics and capabilities of investors (angels, VCs, corporate ventures, hybrids);
- A commentary on various aspects of the market which are subject to changing trends;
- Characteristics of the investment process, and timescales for raising private equity;

## APPENDIX 2: DIGITAL MEDIA AND ENABLING TECHNOLOGIES DEFINITION

### Advanced engineering

Advanced engineering is defined as “a wide sector covering companies operating in many of Scottish Enterprise Priority Industries but primarily focused on Energy, Shipbuilding and Marine, Aerospace and Chemicals. However active niche applications exist in Life Sciences, Food and Drink, Textiles and Construction”.

It is broken down into the following sub categories:

- Advanced Sensors
- Design and Product Development
- Nanotechnology
- Materials inc, composites, ceramics and polymers
- Precision Engineering
- Automation, metrology, instrumentation, control systems
- Production technologies in extreme environments e.g. offshore, downhole, clean room, high vacuum
- Printing and Packaging (esp. drinks industry)
- Industrial equipment design and production (inc. transport)

### Communications and networks

Communications and Networks is defined as “the management and transfer of data and voice for telecommunications, broadcast and other channels. It is a subset of ICT, it provides the connectivity between users and devices (computers, handsets etc) enabling organisations to get the real efficiency and productivity gains.”

It is broken down into the following sub categories:

- Next Generation Networks
- Protocols and Security
- Network Management and administration
- Location Specific Services
- Telecommunications
- Super computing

### Environmental technology

Environmental Technology is defined (in Wikipedia) as “the application of the environmental sciences to conserve the natural environment and resources and to curb the negative impacts of human involvement. Sustainable Development is the core of environmental technologies. When applying sustainable development as a solution for environmental issues, the solutions need to be socially equitable, economically viable and environmentally sound.”

## ICT & informatics and computing

ICT is defined in Wikipedia as being “an umbrella term that includes all technologies for the manipulation and communication of information.

ICT in fact encompasses any medium to record information (magnetic disk/tape, optical disks (CD/DVD), flash memory etc and arguably also paper records); technology for broadcasting information – radio, television; and technology for communicating through voice and sound or images – microphone, camera, loudspeaker, telephone to cellular phones.”

Informatics and Computing generally encompasses “a wider view of information to include the cognitive and social aspects.”

ICT and Informatics and Computing is broken down into the following sub categories:

- IT Services
- Fixed, Wireless, Mobile Communications
- Modelling & Simulation
- Embedded Computing
- Computer Systems
- Drug Discovery
- Human Machine Interface
- Information Assurance
- Planning and Workflow
- Data Management

## Digital media

Digital Media is defined as electronic media that works on digital codes.”

It is broken down into the following sub categories:

- Advertising/PR/Marketing
- Animation & Illustration
- E-business/ E-commerce Solution Providers
- E-learning/Training
- Film, TV, Radio Production
- Games and Electronic Entertainment Developer
- Graphic Design/Publishing/Printing
- ISP, Telecommunications
- IT Hardware/Software & Consumables Suppliers
- Mobile Platform Development
- Music/Audio Production
- Photography
- Web Design & Development
- Transportation
- Security

## Security

Security can be divided into National Security, coping with terrorist threat and activity and Resilience, coping with natural and non –terrorist emergency. The key aspect of homeland security is the identification of the three major threat domains (airport, seaports and borders) and the technologies that will increase the effectiveness of security procedures.

## Devices and systems

Devices and systems groups elements into the following sub categories:

- **Devices (including lasers)** “A component level building block of a functional system. This component may utilise technology drawn from microelectronics, bioelectronics, photonics, nanoelectronics and micro-electro-mechanical systems.”
- **System Integration** “The design, development, manufacture and procurement of functional end-user systems. This involves the integration of enabling technologies from a number of sources to meet end-user requirements, where technology includes both hardware and software aspects.”
- **Sensing and Instrumentation** “A control and monitoring system, comprising sensor or transducer components devised to detect a physical quantity or parameter.”
- **Design** “The creation of products, sub-assemblies or components utilising the above technologies.

## APPENDIX 3: MARKET SECTORS

In this section, we have sought the views of industry experts on the patterns and trends which are influencing developments in the three main sectors which attracted investment in 2008.

### DIGITAL MARKETS AND EMERGING TECHNOLOGIES (DMET)

The DMET industries cover a wide range of sectors and activities that produce and offer a diverse range of products and services, and address a broad market landscape. Hence, the DMET grouping is seldom thought of as a sector by the investors, intermediaries or companies within the grouping. For this reason the DMET sector is broken down into a number of subsectors for analysis purposes:

**DMET-AE** Advanced Engineering

**DMET-C&N** Communications and Networks

**DMET-D&S** Devices and Systems

**DMET-DM** Digital Media

**DMET-ET** Environmental Technology

**DMET-ICT&IC** ICT & Informatics and Computing

A full definition of the DMET sector is included in Appendix 2.

Whilst the context of each industry and industry sector has to be taken into account in terms of accessing funding, there are key issues and challenges that at one level can be treated as generic throughout. These issues were raised during interviews with stakeholders, and companies from the sector and are of particular relevance to the future prosecution and development of the DMET industries in Scotland:

Raising finance takes longer than expected. A number of intermediaries and companies in the sector commented on the funding taking between 3 and 6 months longer than they expected. This tends to put additional stress on the cash flow, diverts the energy of the principals in the business and has implications for planning future funding rounds.

Companies commented about the lack of tactical advice that would allow them to optimise the deal structure and terms, in line with the business requirements. Many of these companies commented positively about the support from the Scottish Enterprise High Growth Team but emphasised that this was only forthcoming after the funding was secured. Determining if the timing of support available or indeed the company's awareness of support available was not evident.

In many cases, the funding secured is a lot less than is actually required. This can be a direct result of the extended timescales to secure finance but is also related to companies underestimating the resources and timescales to bridge the gap to market.

Very few of the deals are significant in either UK or global terms and results in fewer companies growing to significant scale. Only 12 DMET companies raised funds of over £1 million and 53 of the 79 companies secured less than £500k of funding.

Investors, companies and stakeholders all remarked that debt funding was very difficult to secure in the current economic climate and consequently more DMET companies were seeking equity finance.

SCF is considered a major success, and many companies indicated that they recognised that access to funding was more straightforward because of the scheme. However, one or two intermediaries commented about the restrictions imposed by SCF presenting barriers to some of the larger deals and implications for follow on rounds.

Many commented that exits were difficult in the current economic climate. The preferred route for many is through securing significant licence deals that generate the profitability to buy back equity.

In respect of raising finance, 79 Scottish DMET companies raised just short of £46 million during 2008 from a combination of private and public sources. Notable deals across the sub sectors include; **Nessco Group Holdings** (Communications & Networks) who raised £796k, **Elonics** (Devices & Systems) who raised £2.25 million, **MMIC Solutions** (Advanced Engineering) who raised £2.4 million, **Environmental Building Partnership** (Environmental Technologies) who raised £.95 million, **KeyPoint Technologies** (Digital Media) who raised £4 million and **Sumerian Europe** (ICT, Informatics & Computing) who raised £1.5 million. The Digital Media sub sector was responsible for 60% of the funding and punched well above its weight in comparison with the other sub sectors within DMET:

Sector	No of Companies in DMET obtained from SE	DMET Breakdown by Number of deals	Deals	Value (£M)	Share
Advanced Engineering	580	26.1%	21	£6.7	15.2%
Communications and Networks	152	6.8%	1	£0.8	1.8%
Devices and Systems	353	15.9%	7	£2.75	6.2%
Digital Media	377	16.9%	43	£26.6	60.3%
Environmental Tech	87	3.9%	4	£1.8	4.1%
ICT Info & Com	587	26.4%	17	£5.45	12.3%

The Digital Media sub sector contains 8 of the 12 DMET companies that raised over £1 million including **KeyPoint Technologies** (KPT) who raised the largest funding of £4 million. KPT's second round of funding raised £4 million through private investors based in the USA and India. The funds were required to expand the development across a range of mobile platforms and strengthen the sales and marketing activities.

A number of the other companies who raised significant funding are also in the mobile telecommunications area which is in the midst of a transformation. Ongoing innovations by the major players such as Apple, Nokia, Google, RIM and others is creating opportunities, on and across specific platforms and in areas such as applications, security, user interface enhancement and interoperability. The current economic climate is also forcing many larger companies to pay more attention to their mobile offerings to stimulate revenue. Dow Jones recently reported how companies such as Kraft Foods Inc, MTV, Ebay, Bank of America and Facebook are all seeing a surge in customer activity from mobile devices. **Rapid Mobile** who provide a mobile advertising and service provisioning platform and **Mobiqa** with their mobile ticketing solutions both raised funds to accelerate their commercial opportunities as the market evolves.

The majority of DMET deals are focused on the central belt of Scotland with Edinburgh and Glasgow accounting for approximately 94% of the DMET activity.

SECTOR	ABERDEEN		EAST		HIGHLANDS		SOUTH		TAYSIDE		WEST		TOTAL £	
	£	#	£	#	£	#	£	#	£	#	£	#	£	#
DMET - AE	£10,000	1	£5,403,589	9	£356,918	1	-	-	£125,000	1	£830,909	9	£6,726,416	21
DMET - C&N	£476,086	1	£0	0	-	-	-	-	-	-	-	-	£476,086	1
DMET - D&S	-	-	£2,435,000	3	-	-	-	-	£168,977	3	£150,004	1	£2,753,981	7
DMET - DM	-	-	£18,424,302	28	-	-	-	-	£400,000	1	£7,789,014	14	£26,613,316	43
DMET - ET	£948,098	1	£150,003	2	-	-	-	-	£357,000	1	-	-	£1,815,101	4
DMET - ICT&IC	-	-	£3,296,214	14	-	-	-	-	-	-	£2,150,000	3	£5,446,214	17
<b>GRAND TOTAL</b>	<b>£1,434,184</b>	<b>3</b>	<b>£30,069,108</b>	<b>56</b>	<b>£356,918</b>	<b>1</b>	<b>£0</b>	<b>0</b>	<b>£1,050,977</b>	<b>6</b>	<b>£10,919,926</b>	<b>27</b>	<b>£43,831,113</b>	<b>93</b>
%	3.27%		68.60%		0.81%		0.00%		2.40%		24.91%			

The geographical activity mirrors the breakdown of DMET companies across Scotland, although Tayside with its larger population of Digital Media companies is underrepresented with only 2.4% of the activity.

Through the co-investment, Scottish Enterprise contributed £13 million of the £44 million capital raised by the sector, representing 30% of the total DMET funding. Their largest investments of £1 million were in each of Elonics, Rapid Mobile, Prismtech, and Mobiqu. Private angel investment within the sector totaled £10.16 million representing 23% of the total capital investment while £19 million was raised from VCs representing 43% of the total. Founders, friends and family contributed £3 million to 32 of the 94 deals, accounting for 5% of the funding secured.

SECTOR	Deals	Spin-out	SMART	Total	Founders			Angels			VC			SE		
					£	#	%	£	#	%	£	#	%	£	#	%
DMET - AE	21	5	5	£6,726,416	10	11	£755,295	18	31	£2,094,786	8	31	£2,106,318	13	26	£1,745,310
DMET - C&N	1	-	-	£796,086	1	40	£320,000	1	8	£67,504	2	34	£271,051	2	17	£137,531
DMET - D&S	7	1	1	£2,753,981	4	15	£404,993	5	43	£1,187,500	4	10	£265,002	7	47	£1,301,479
DMET - DM	43	7	5	£26,613,316	8	1	£361,008	34	21	£5,610,783	19	43	£11,448,141	30	34	£8,956,477
DMET - ET	4	3	-	£1,815,101	2	2	£44,070	2	20	£367,000	2	74	£1,348,101	1	6	£100,000
DMET - ICT&IC	17	3	-	£5,446,214	7	7	£397,057	6	15	£830,841	12	65	£3,540,357	7	15	£818,016
<b>GRAND TOTAL</b>	<b>93</b>	<b>19</b>	<b>11</b>	<b>£44,151,113</b>	<b>32</b>	<b>5</b>	<b>£2,282,423</b>	<b>66</b>	<b>23</b>	<b>£10,158,414</b>	<b>47</b>	<b>43</b>	<b>£18,978,970</b>	<b>60</b>	<b>30</b>	<b>£13,058,813</b>



The funding profile based on investment for DMET shows more of a bias towards VC and SE than many of the other sectors. Based on activity the bias swings towards angels, who participated in 66 (70%) of the DMET deals. The VC and Scottish Enterprise investment bias is a direct result of the significant number of larger deals in the Digital Media sub sector.

Nineteen of the DMET companies who received funding are spin-outs, and this is therefore strong precedent for new company formation and university spin-outs continuing to be a key driver for DMET. The Scottish Government and support agencies such as Scottish Enterprise are aware of emerging companies through initiatives such as the Proof of Concept programme and need to continue to ensure that such opportunities are appropriately nurtured and their development is synergistic with validated market opportunities. In this respect, the work of ITI's Foresight Programme helps to qualify new markets and ensure that the sector is aligned in order to maximise the commercial potential of new ventures. To endorse this, **Metaforic** raised £1 million of first round funding in 2008, underpinned by intellectual property which was licensed from ITI Techmedia based on a key element of the technology from its Online Games Development R&D Programme. Metaforic's MetaFortress armours applications from the inside out, preventing and protecting against all forms of tampering, piracy and the most sophisticated hacking attacks.

## LIFE SCIENCES

**The global life sciences sector has suffered least in the economic downturn as there is still a big appetite for innovative research solutions from big pharmaceutical and medical device companies who view the current climate as an opportunity to acquire under-valued assets. Scotland is no different in this respect. Hence while exit options through IPOs have stalled, the global market is seeing a higher number of mergers and acquisitions (M&As) where there is a clear strategic or cost benefit.**

In respect of raising finance, Scottish life science companies raised in excess of £22.3m during 2008 from a combination of private and public sources. Notable deals included; **Aquapharm Bio-Discovery** who raised £1.65m, **Big DNA** who raised £1.4m, **CXR Bioscience** who raised £1.32m, **Lab901** who raised £3.55m, **Lumicure** who raised £1.5m, **Omega** who raised £1.0m and **Touch Bionics** who raised £1.07m. It is not surprising that most of the Scottish life sciences sector is spread across the Glasgow, Edinburgh, and Dundee regions where there exists a vibrant cluster of universities and supporting infrastructure such as incubator, legal and financial services.

Through its Co-investment Fund, Scottish Enterprise contributed £6.97m of the £22.3m capital raised for the sector, representing 31% of the total. Its largest investments of £750k was in each of Big DNA and Lab901 followed by Touch Bionics in which it invested £465k. Private angel investment within the sector totalled £7.15m representing 32% of the total capital investment while £7.96m was raised from VCs representing 36% of total capital. Of the VC funds, Lab901 raised £3.55m in its latest equity funding round. The financing syndicate was led by Alliance Trust Equity Partners (ATEP), together with existing investors, Scottish Enterprise's Scottish Venture Fund, Archangel Informal Investment and Noble VCT plc. The funding will enable Lab901 to expand its sales efforts and introduce new products or RNA and protein electrophoresis.

If Lab901 is taken out of the sample group, then the investment profiles for the life sciences companies shows a bias toward angel funding as opposed to VC-backed; this is a consequence of the lower levels of funding involved which, apart from Lab901, are all below £2m. For example some VCs such as 3i no longer make investments below £100m given the same level of due diligence and post-deal management is typically involved for a small investments and a large investment. It is also tax advantageous for private individuals to still make angel investments and offset losses against their personal tax liability; this provides a reduced risk and provides valuable early stage capital. It is also noteworthy that many of the companies within this study have leveraged angel investments to secure capital from development agencies and other government-backed initiatives.

The Scottish biotech sector is also fortunate to have a relatively large number of contract research organisations (CROs) that include **XstalBio**, **Encap Drug Delivery**, **Giltech**, and **Vitrology** that generate their income through undertaking paid contract work for other organisations. Hence their reliance on fundraising is less critical to survival. In addition larger global pharmaceutical companies such as AstraZeneca are outsourcing more development work as they streamline internal resources that are non-core. Such CRO companies are well placed to capitalise on these opportunities and diversify into drug development or capitalise on the application of their technologies in other markets.

Drug delivery companies such as **Syntropharma** are narrowly focused (topical drug delivery and repositioning of older, poorly bio-available drugs) and will be attractive M&A targets as their development candidates hit key inflection points and thereby reduce risk for potential investors. In respect of discovery-based companies, **Aquapharm Bio-discovery** has been successful in progressing its product pipeline and is currently raising its next round of venture capital; its management remains positive in securing capital given the company is able to demonstrate progress and an increasingly valuable asset base. US-listed, **Cyclacel** has scaled down its UK R&D activity in order to focus resources on near-to-market opportunities that if successful

will propel the company into a medium sized oncology player and allow 'on-hold' programmes to be moved forward.

Within its global venture capital insights and trends report 2009<sup>15</sup> Ernst & Young quotes Alex Barkas, MD of Prospect Venture Partners. "We think for example that there is going to be real excitement in the whole area of genetics and genomics again. You may remember in the 2000 time frame, there was huge interest in the human genome, and that was very exciting to people. Since then, there have been a dozen or so additional genomes sequenced, and we are now going to move into a period when, over the next five years, there may be a million genomes sequenced. Obviously, the companies that are involved in doing that, at all levels, are going to push forward the frontiers of our understanding of the genetic basis of disease enormously." Scottish universities such as Edinburgh have considerable capability in genomics and are well placed to capitalise on this growing market. Barkas goes on to say, "There are going to be multiple winners in that space: the people who are providing the technology for sequencing, the people who are interpreting the results and the people who are applying that to new generation of interventions or therapies. So we think that is an important area in medicine going forward."

There is therefore strong precedent for new company formation and university spin-outs to continue and arguably be increased if the quality threshold can be demonstrated, which continues to be the key driver for early stage and seed investment in the current climate. In this respect, the work of ITI's Foresight Programme helps to qualify new markets and ensures that the sector is aligned in order to maximise the commercial potential of new ventures.

At Scottish Enterprise's Venture Capital Forum held in March 2009 and organised by Targeting Innovation Limited, Dr Jonathan Tudor, Investment Director from Cody Gate Ventures LLP, commented that there is still enough capital available for new investments, only that the milestone payments are now more aggressively aligned to ensure companies achieve more challenging inflection points.

In addition investors today appear more likely to exit early where companies fail to deliver. The situation is unlikely to improve until the capital markets begin to recover and relax their risk thresholds; however it is unlikely to revert to situation that existed 2-3 years ago.

Within the medtech sector there is an increasing number of acquisitions. For example, US-based Medtronic has announced some acquisitions of development-stage companies, and similar cash-rich organisations will continue to shop for opportunities as price-tags remain low.

The Scottish life sciences portfolio of companies is well balanced in that the sector does not have excessive exposure to one or a few specific disease or technology areas, there is a complementary combination of support and innovative, research focused organisations. The sector should continue to grow, especially at the front-end where there is an ample supply of innovative new technologies emerging from a vibrant and world-class university infrastructure. The continued support of this part of the pipeline will drive future success given that there continues to be an increasing appetite from large pharmaceutical and medical device companies to fuel their own pipelines and introduce new products to the market.

## ENERGY

**Scotland has benefited substantially from the development of offshore oil and gas, and stands poised to capitalise on what First Minister Alex Salmond has called a “second energy windfall” in the form of renewable energy, particularly marine (tidal and offshore wind).**

Both these sectors are massively capital intensive, leading to markets dominated by global corporate players. Both however are dependent upon new technologies, and Scottish universities and businesses have shown that they can respond to the technological challenges that emerge from new energy sources, whether these are offshore oil fields in deeper and more exposed waters, or renewable sources such as wind, wave, tide, sun, or biomass and biofuels.

There are a number of main roles within these sectors: the producer (‘operator’ in oil & gas terminology) who takes the risks of exploration or exploitation; the distributor, who must have access to a network of large numbers of energy consumers; the contractor, or implementer in the renewables sector, who might not develop in-house technology, but is skilled in advising on suitable systems and sourcing and installing them; and the supplier, who provides the others with the wide range of products and services needed to do the job. The first two roles usually demand companies of considerable scale, which are unlikely to be the subject of the risk capital market covered by this report (some small exploration and production companies have secured VC funding, notably from 3i, but are usually quick to proceed to a flotation). However, the producers, distributors, and contractors/implementers need the technological solutions, and the cost and time savings which smaller innovative companies can bring. Although the timescales for winning recognition for a new technology and for having it tested and adopted can seem agonisingly slow to young companies, many have made a success from doing exactly this.

The companies in the energy sector which secured risk capital finance in 2008 fit this pattern. In the mainstream energy industry (offshore oil & gas), **Gas2** and

**Futuretec** are good examples of suppliers with technology which can make a big difference to the bottom line for operators; Gas2 is developing gas to liquid (GTL) technology which will enable operators to recover hydrocarbon resources which would otherwise be inaccessible, and Futuretec is an excellent example of a pure engineering solution to persistent oilfield problems (how to install the casing of an oil well efficiently and effectively). **Pelamis** and **Scotrenewables** are good examples of new technologies for the renewables sector, developing devices for harnessing wave and tidal energy respectively, while **Proven Energy**, which attracted £800k funding from the specialist investor Low Carbon Accelerator, is a longer established example of a wind turbine designer which has addressed a particular market niche (turbines which can cope with a wide range of wind energies).

The role of contractor or implementer is interesting, as it gives relatively small companies the opportunity to establish a significant presence based on knowledge and expertise rather than on new product development, which can be costly. That said, the largest investment in 2008 was in an archetypical offshore contractor, **TS Marine**, which carries out operations on subsea installations such as wellheads and risers. In the list of renewable energy companies securing finance in 2008, **Logan Energy**, with its European HQ in Edinburgh, offers independent solutions based on fuel cell technology, and **Green Highland Renewables** has created an interesting business model installing micro run-of-river (or more accurately run-of-burn) hydro systems for landowners. Both companies have secured funding from Scottish & Southern Electricity (SSE) Ventures which like many energy utilities is investing in interesting renewable technologies with an eye to the future.

**Smarter Grid Solutions**, which is developing its Active Network Management and analysis systems for generators and distributors of electricity, is a further example of a business funded by SSE Ventures in 2008, this time in the field of improving the efficiency of energy generation and transmission rather than new (renewable) energy resources.

Within the Risk Capital Market study, investments in energy companies display little pattern, as most are of significant amounts, and therefore a small change in the

number of transactions in a year will distort any discernible trends. In 2008, five of the 14 deals over £2 million were in energy companies; three in oil & gas, and two in renewables (described briefly in the 'Investments over £2 million' section above). The size of the investment required to support such deals is reflected in the type of investor – angels participated in five of the 14 energy deals, investing £1.5 million, whereas VCs participated in nine deals, providing £42 million.

This is a headache for business angels who can well see the opportunities presented by the development of renewable energy resources in Scotland, but are discouraged by the normal level of investment required. They have been able to participate in the energy sector in companies such as **Spark Energy** which services the residential tenancy and housing association market as a niche utility company, and **Flexitricity**, which is developing technology to enable organisations which have capacity to generate electricity for their own internal purposes to export any spare capacity to the national grid. Scottish universities have recognised the potential of the renewable sector in Scotland, and are very active in developing new technologies and creating business networks to respond to these opportunities, so there will no doubt be plenty of scope for local angels to participate in relatively small scale investments as the sector develops.

The renewables sector in Scotland stands on the threshold of an exciting period of development. Scotland has the energy sources, in the form of wind, waves, and tides (but perhaps not of sun), and the technological and engineering skills to meet the demands of the market. Denmark conspicuously made the most of its opportunities to develop a world-leading wind turbine industry; Scotland, as its political masters continually stress, must not miss the opportunity to benefit from being in the right place at the right time as the world works to avert the consequences of climate change. At present, there is a sense of waiting, while the political and infrastructure barriers, such as the planning system, and the grid transmission issues, are tackled. The present report shows that there are Scottish companies ready and able to respond to the opportunities; the challenge will be to ensure that more companies put themselves in this position, and that some of them are able to convert the opportunities into operations of global scale.

## FOOTNOTES

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