



The Risk Capital Market in Scotland

2012 - 2013



INTRODUCTION

The purpose of this report is to provide a detailed and comprehensive analysis of the early stage risk capital market in Scotland for the calendar years 2012 and 2013.

The report is one of a series dating back to 2003, of which the most recent, covering the years 2009 to 2011, was published in mid 2012.

The report is intended to improve the understanding of the scale and characteristics of the early stage risk capital market in Scotland as the economy started to recover from the economic turmoil in the wake of the banking collapse in 2008. 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.

As in the previous report, in the section describing different types of investor (section 3) we have included some figures for other regions, chiefly the rest of the UK and the USA, to give some comparison with the funding environment in Scotland.

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EXECUTIVE SUMMARY

THERE HAS BEEN A SHARP INCREASE IN THE TOTAL INVESTMENT IN THIS MARKET

Although deal numbers have stayed relatively constant, the total amounts invested have increased substantially, partly because more institutional capital is coming to Scotland. This trend has continued into 2014. See section 1.1

INVESTMENT TOTALS ARE DOMINATED BY A SMALL NUMBER OF LARGE DEALS

From 2009 to 2012, the top twenty deals per year accounted for two thirds of all investment. In 2013 that proportion rose to three quarters. See section 1.1, and Figure 13.

ANGEL INVESTMENT HAS STAYED AT A STEADY LEVEL

For the past five years, angels and angel groups have invested between £14m and £17 per year, with the totals fluctuating only a little within this range. See sections 1.1, 3.1

THE MIDDLE INVESTMENT BAND IS LARGELY THE DOMAIN OF ANGELS, BUT SOME INSTITUTIONAL INVESTORS ARE NOW INVESTING AT THIS LEVEL

In the middle band – between £100k and £2m – angels account for 35% of total investment (and a large proportion of the 29% of public sector investment is co-investment from SIB funds). VCs and other institutional investors accounted for 19% of the total, in part thanks to the entry of firms such as IP Group and Parkwalk Advisors which focus on early stage IP-rich technology companies. See section 1.2

COMPANIES IN THE ICT SECTOR HAVE TAKEN THE LION'S SHARE OF INVESTMENT

Although the number of deals in the ICT sector has not increased significantly, ICT companies benefited more than other sectors from some mega-investments. See section 1.3

FOLLOW-ON INVESTMENTS HAVE NOT BEEN AT THE EXPENSE OF FIRST TIME DEALS

The number and amount of investment in companies securing external equity for the first time has remained significant, in fact increasing considerably from 2012 to 2013. Although these figures include a handful of more established companies taking equity rather than other forms of finance for the first time, most are relatively new start-ups, the majority of which secure funding within two years of incorporation. See section 1.4

COMPANIES IN THE EAST OF SCOTLAND SECURE THE MOST INVESTMENT

In 2013 companies in the East of Scotland took over half (53%) of the total equity funding. The West trails well behind (despite an increase in deal numbers from 2012 to 2013, the amount of investment fell), and the pattern of investment in Aberdeen companies is very variable, largely depending upon the number of high-value deals in the oil & gas sector.

BACKGROUND

Access to a strong supply of early stage risk equity capital is important for national and regional economies due to the catalytic role that it plays in the entrepreneurial process. UK and Scottish Government policy recognises that the market does not always enable SMEs to grow rapidly because of the existence of equity gap(s) beyond the levels banks will lend and beyond the means of most informal investors and business angels, but below the level usually considered for venture capital funding.

In common with early stage markets elsewhere, the Scottish risk capital market continues to be fragmented with many parts of the market not visible in the public domain. This presents challenges when determining the extent to which it is efficient in how it functions in channelling growth finance to early stage companies.

Scottish Enterprise commissions research to identify the investment activity of all participants and to estimate the total flow of risk capital investment into early stage Scottish companies. This includes characteristics of the industry key players and beneficiary companies and the scale of the annual flow of new investment, and whether there is evidence of gaps in the supply of risk capital. From this analysis SE is able to quantify the impact on the market of its early stage equity investment vehicles (the Scottish Seed Fund, Scottish Co-investment Fund and the Scottish Venture Fund) to ensure that SE interventions remain 'fit for purpose' and able to optimise economic impact.

Approach

Full details of the methodology adopted are given in Appendix I. 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.

This report covers only equity investments by independent third party investors, omitting investments by 'founders, friends and family' or other non-independent investors prior to what the market usually terms a Series A round, meaning the first round in which independent investors participate.

The report also excludes commercial loans or other forms of debt finance. Thanks to lenders such as local authority loan funds and SE's Scottish Loan Fund and Renewable Energy Investment Fund, there are now various sources of non-bank debt available to companies which have reached a level of trading that enables them to use debt to finance growth.

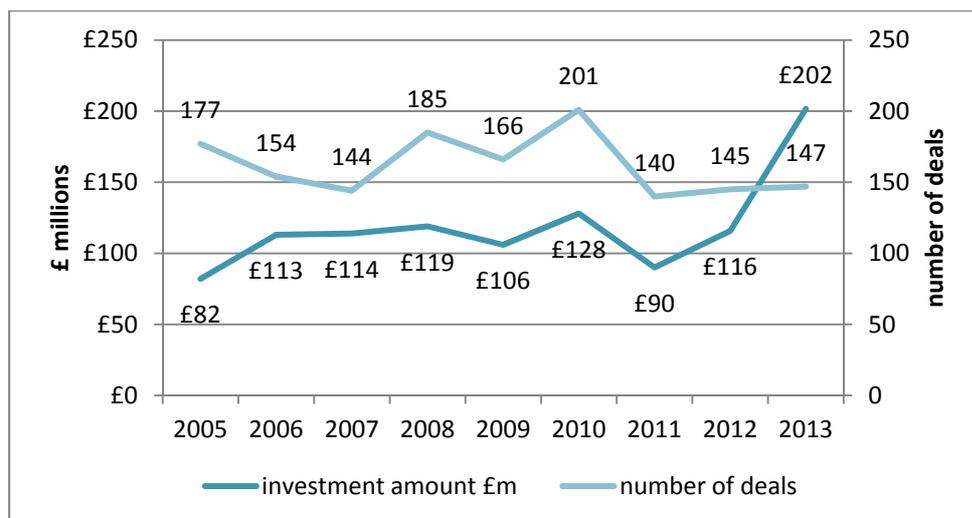
Where however regular independent investors such as angel groups make a relatively small early investment in a company in the form of a convertible loan, this is included in the figures in this report in the same way as equity investments. Such loans are not structured like commercial loans with a fixed repayment schedule, but are usually converted to equity at a relatively early stage rather than repaid.

REPORT FINDINGS

1 KEY TRENDS

1.1 Trends in investment value

Figure 1: Trends 2005-2013

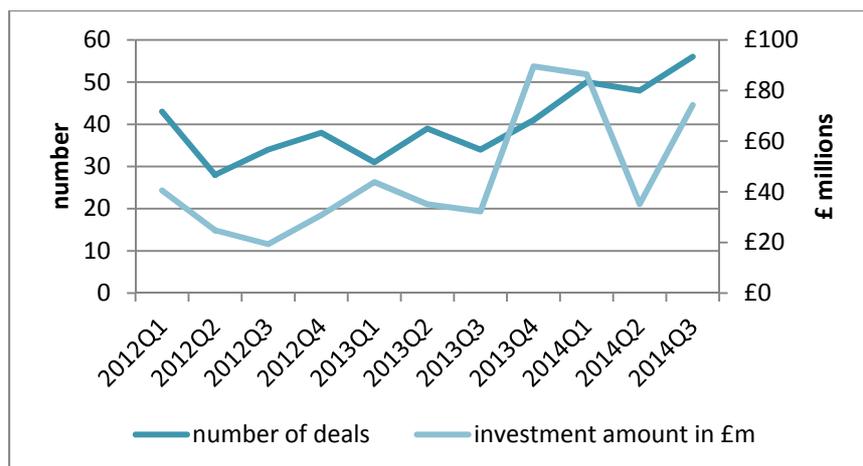


The overall picture is of a slight increase in the number of deals in 2012/2013 (although below the norm for the previous few years), but a very substantial increase in the total amounts invested. This is mainly due to a larger number of high value deals in 2012 and 2013, which are now changing the funding landscape on a regular basis. The phenomenon of a small number of deals obscuring underlying investments has been a feature of the Risk Capital Market in Scotland report series since it started, when the few outliers were referred to as 'blockbuster' deals. They seem now to have become more mainstream, partly because more institutional investment is now coming to Scotland, as illustrated in Figure 6 on page 10, and in the list of investors in Appendix 3.

This phenomenon is not restricted to Scotland, but seems to be universal; for example, CB Insights reported that in IQ 2014 the 50 largest VC deals (global) totalled \$7.6bn – Silicon Valley companies accounted for 70% of this, but just two companies (Uber, and Cloudera) took over a quarter of the total investment.

The Risk Capital Market in Scotland Report is now being carried forward on a quarterly basis, and the chart below shows the quarterly figures for 2012 and 2013, extended to include the most recently completed quarter. 2014 is showing a continuing increase in the number of deals, and a continuation of the trend for higher investment totals supported by some large individual deals.

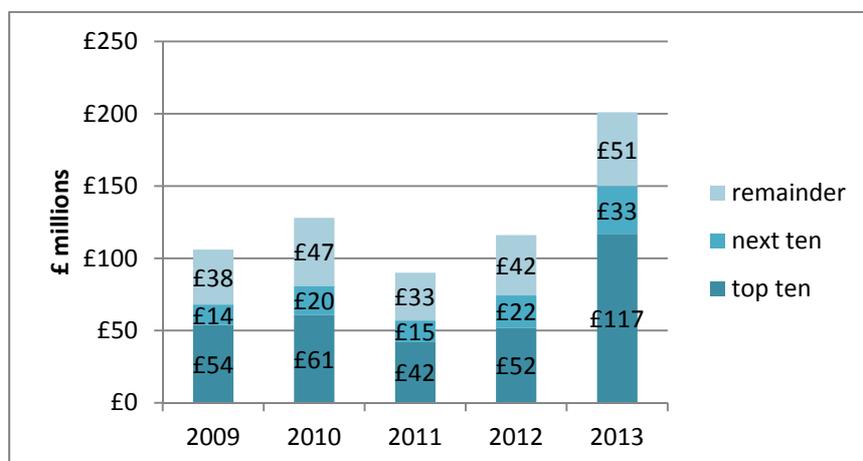
Figure 2: Quarterly trends 2012-2014



The number of deals has continued to increase in 2014, and although the amounts invested have varied considerably from quarter to quarter, it is already possible say that investment in 2014 was well up on the previous two years.

As the one-off large deals tend to dominate the figures in any one period, there are a number of ways of looking at the underlying investment patterns. One is to isolate the top ten or twenty deals in each year, as follows:

Figure 3: Top twenty deals 2009-2013



This indicates that the top twenty deals have for many years accounted for the majority of the investment and that the increase in funding levels is very much dependent upon the number of large deals.

The Business Growth Fund has been influential in this respect, having made three investments totalling just under £16m in 2012, and five investments totalling just under £27m in 2013, with 2014 looking to reach the 2013 level.

Another perspective is to take the type of investors participating in the deals, and see which category accounts for the largest increases, as follows:

Figure 4: Investment by investor type 2009-2013



This shows that angel investments stayed relatively constant (see more data in section 3 below), but VC and institutional investors played a much greater role in the market in 2012 and 2013. The category SE/public includes the Scottish Investment Bank co-investment funds, plus a small number of other public sector investors, such as Finance Wales. The angel, VC, and institutional investors are listed in Appendix 3.

A further analysis, used in previous Risk Capital Market reports, is to differentiate between deals in different size bands, as follows.

1.2 Investments by band

The bands used in previous reports are: higher (over £2 million); middle (£100k to £2 million); and lower (under £100k).

The total number of deals, and the amounts invested in these bands, are as follows:

Figure 5: Number of deals by size band 2005-2013

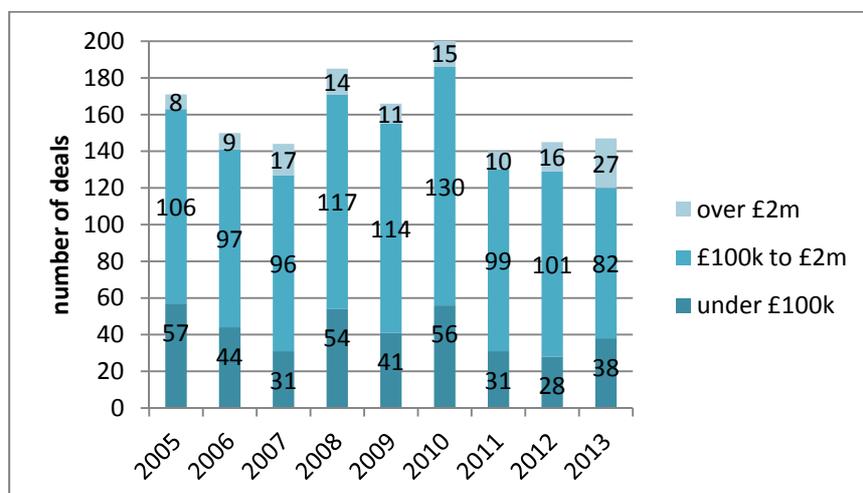
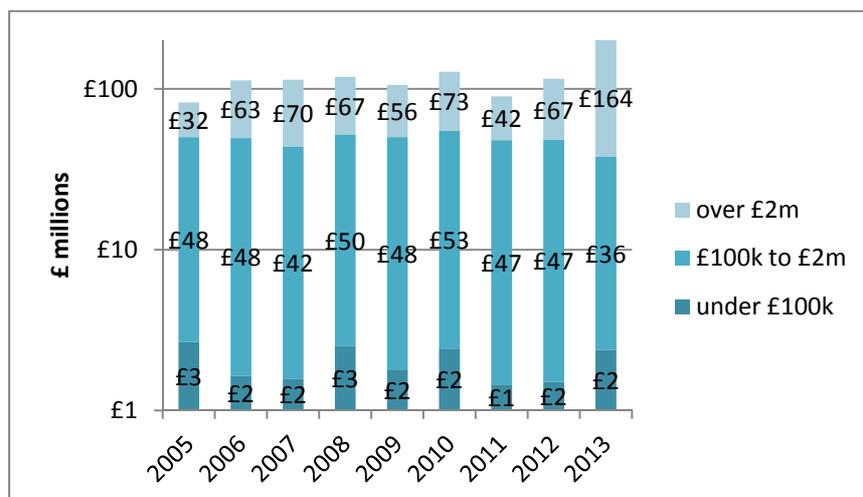


Figure 6: Investments by size band 2005-2013

NB – this chart uses a logarithmic scale



Lower band

Lower value deals have fluctuated in number over the nine years shown, but account for a very small share of total investment. As noted in previous reports, we are likely to have tracked only a small proportion of all deals in this band, as it is difficult to find details of investments by individual angels whether or not they invest on a consistent basis. However, even if we had tracked three or four times the number of deals, they would not make a substantial difference to the total investment. This is not to discredit such deals; many companies would not get off the ground without such support, and some will eventually appear in our figures when they secure larger investments in the future.

Many lower band investments are made into companies securing equity funding for the first time; this aspect of the statistics is analysed further in section 1.4 below.

Middle band

This has in previous years been the relatively constant sector of the market, typified by angel groups making very early stage investments, often as part of an ongoing commitment with future funding rounds ‘tranching’ and paid after the investee has reached agreed milestones.

This band also includes some institutional investors making relatively small investments; this includes not only the specialist IP commercialisation investors such as IP Group and Parkwalk Advisors, but also some VCs such as SEP and Pentech making relatively small investments appropriate to the early stage of the investee company. This could indicate increasing interest by some VCs and institutions in returning to early stage investment, believing that they can accurately identify high growth companies and manage the risk/reward profile. In 2012/2013 this phenomenon was more widespread than might have been expected, and will be re-examined in the 2014 report to establish whether or not this is an ongoing trend.

The range from £100k to £2 million is wide, and can be broken down further as follows:

Figure 7: Middle band, breakdown by number of deals 2012-2013

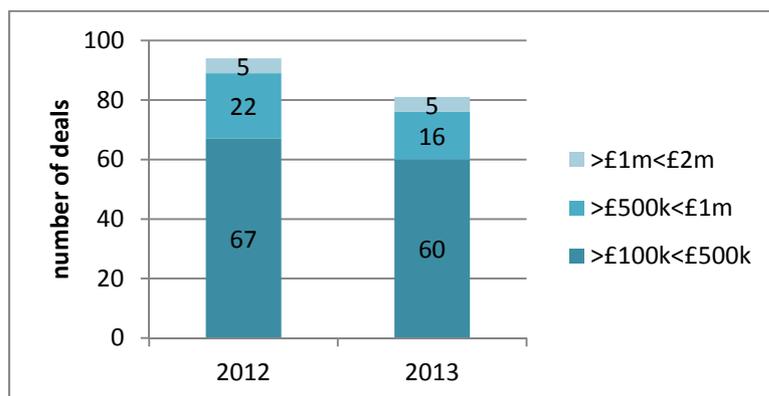
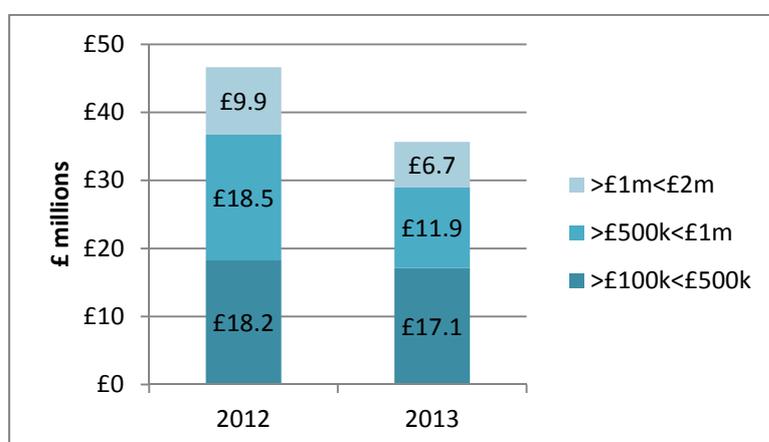


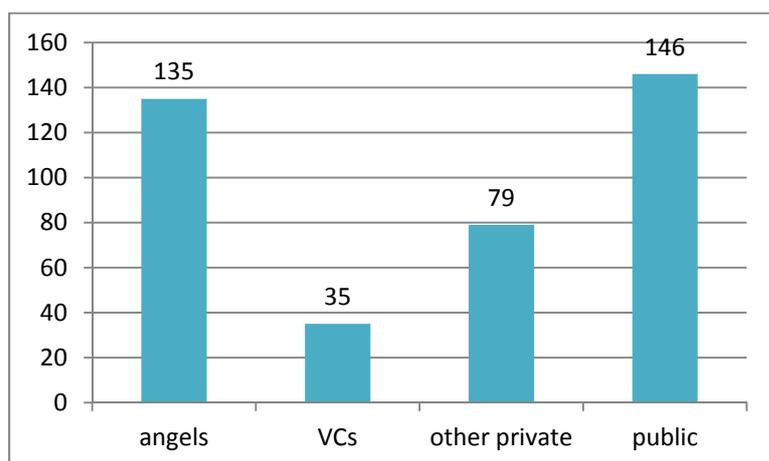
Figure 8: Middle band, breakdown by investment levels 2012-2013



There has been a decline in all segments shown, both in number of deals and in amounts invested.

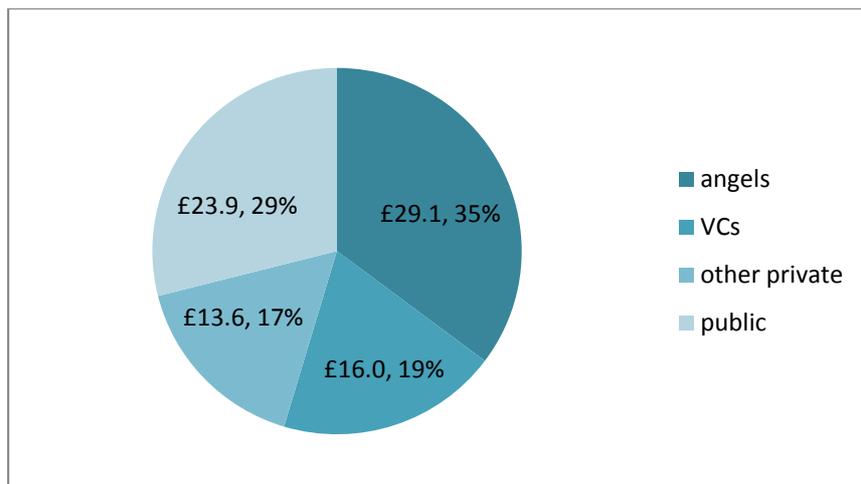
Taking the two years together, we can analyse the types of investor involved:

Figure 9: Middle band, number of investments by investor type 2012-2013



NB: Most deals have more than one category of investor, so the totals shown add up to a larger figure than the number of completed deals.

Figure 10: Middle band, investment totals by investor type 2012-2013

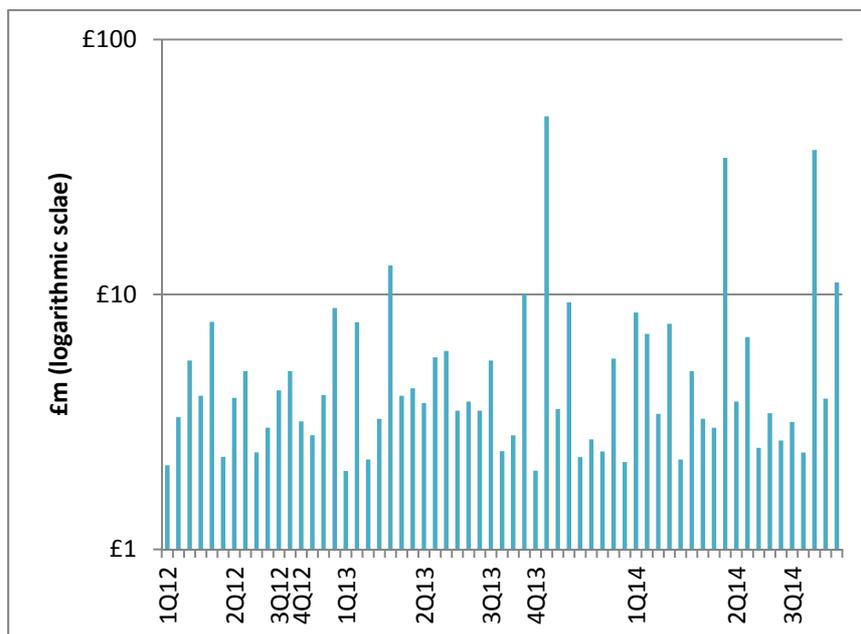


Angels dominate this sector, tracked by public sector investment (largely from the Scottish Co-investment Fund). Perhaps unexpectedly, there is a wide variety of VC and institutional investors active in this band, which is below the normal range of traditional VC firms.

Higher band

The following chart shows all deals over £2 million in date order, continuing the series into 2014 and illustrating the increasing frequency of such deals. Note that the chart uses a logarithmic scale for the deal values.

Figure 11: Higher band, distribution of individual deals 2012-2014



In previous reports we have seen large deals in energy and renewables dominate the higher band, but in 2012-2013 the distribution is more generally spread, across all sectors. The ICT sector in particular has been prominent, with just over a quarter of the deals in this band accounting for almost half the total investment – the well-publicised investment led by US VC Sequoia in Skyscanner is included in this period.

Figure 12: Higher band number of investments by sector 2012-2013

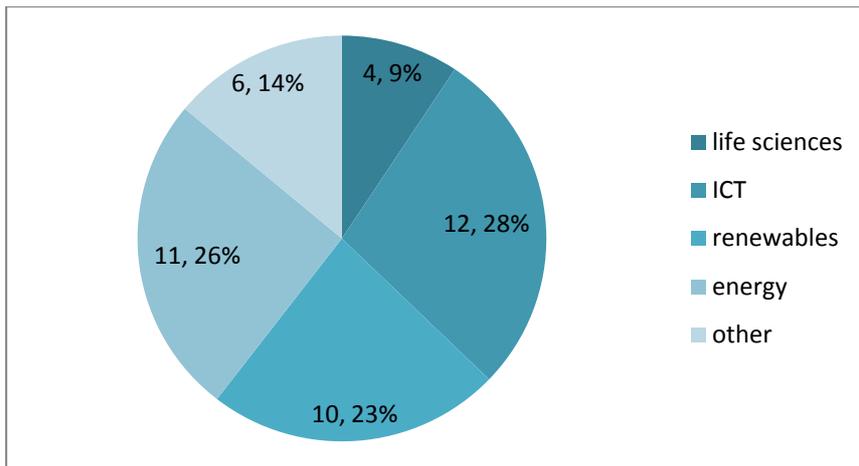
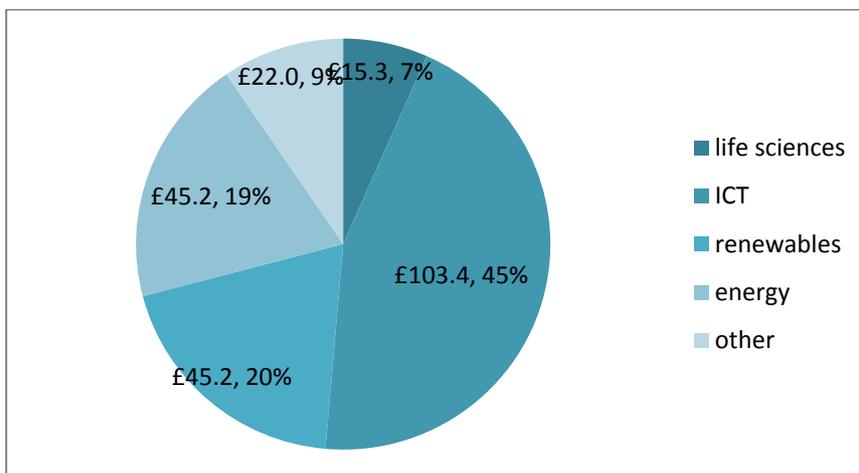


Figure 13: Higher band, value of investments by sector 2012-2013



1.3 Investment by sector

Figure 14: Number of deals by sector 2009-2013

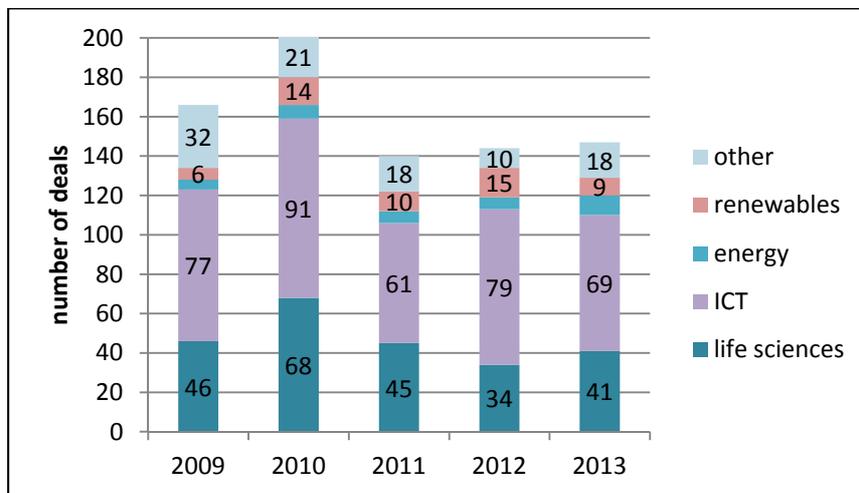
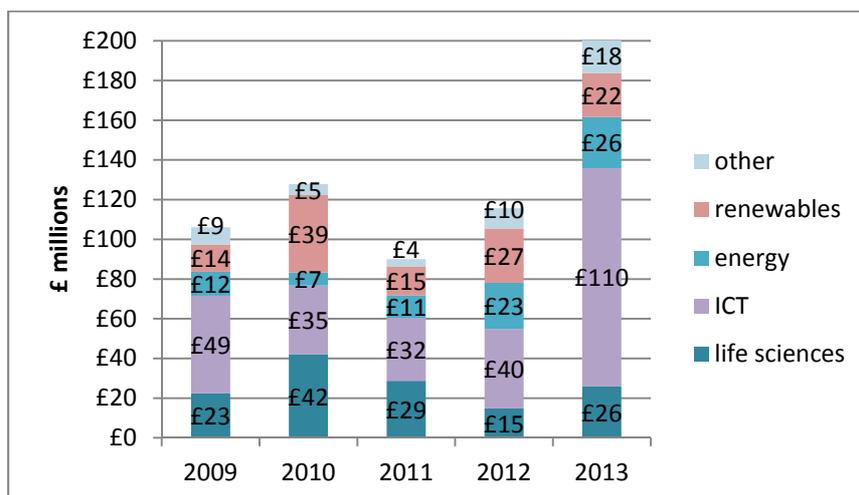


Figure 15: Investment totals by sector 2009-2013



Whereas in previous years the energy sector has attracted large investments, and life sciences has seen (and continues to see) some large deals, the dominance of ICT in 2012 and 2013 comes as something of a surprise. This category includes all forms of software, from mobile apps and computer games to enterprise applications, and hardware, from specialised lasers and sensors to electronic devices.

The average deal sizes in each sector are as follows. As the lower band constrains the averages to under £100k, and the higher band has widely differing totals as shown in section 1.2 above (a median value would be a better measure in this case), these figures are less informative than the middle band, where energy investments have a significantly higher average than the other sectors. It is noticeable that we traced no investments in the energy sector below £100k in 2012-2013.

Figure 16: Average investments by sector, lower band 2012-2013

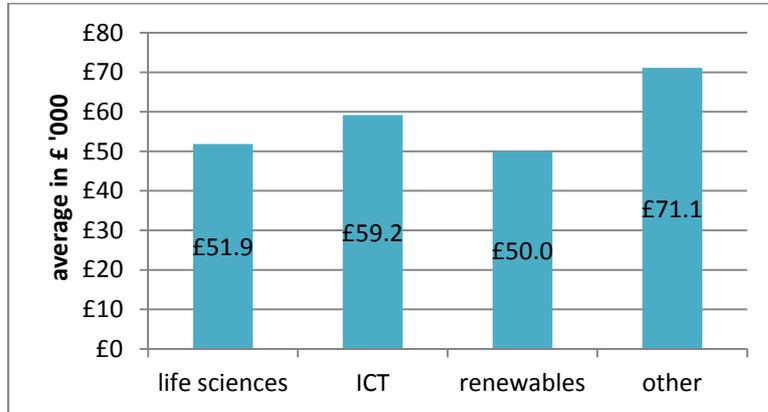


Figure 17: Average investments by sector, middle band 2012-2013

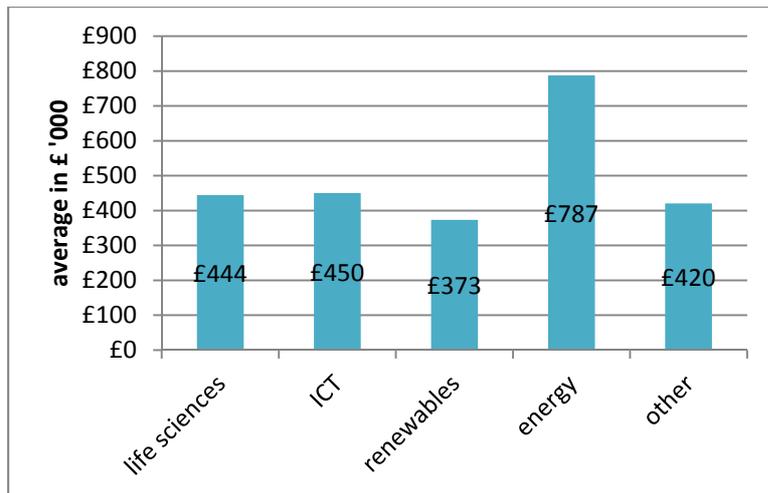
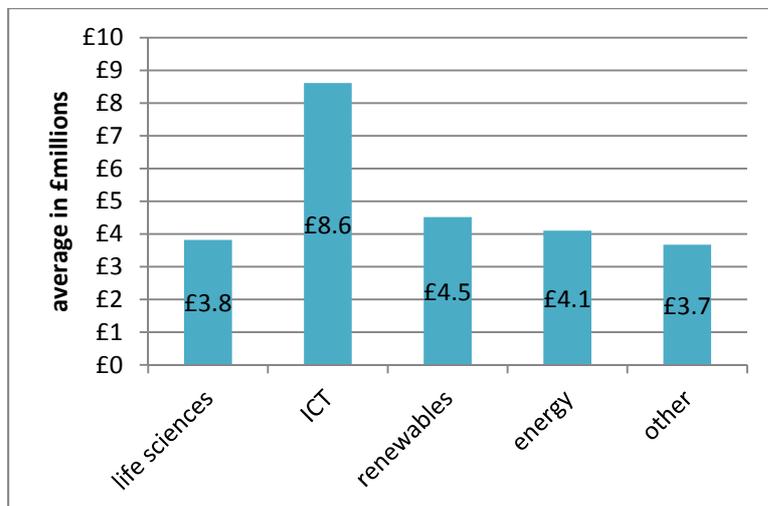


Figure 18: Average investments by sector, higher band 2012-2013



1.4 New and follow-on investments

The following charts show the number of investments and amounts invested in 'new' companies, being the first time that these companies have secured independent equity investment, and follow-on investments where we are aware of previous equity investments in the company.

Figure 19: Number of new and follow-on deals 2012-2013

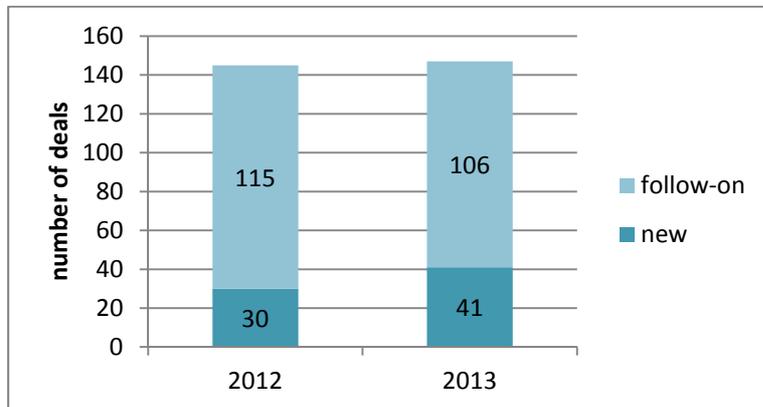
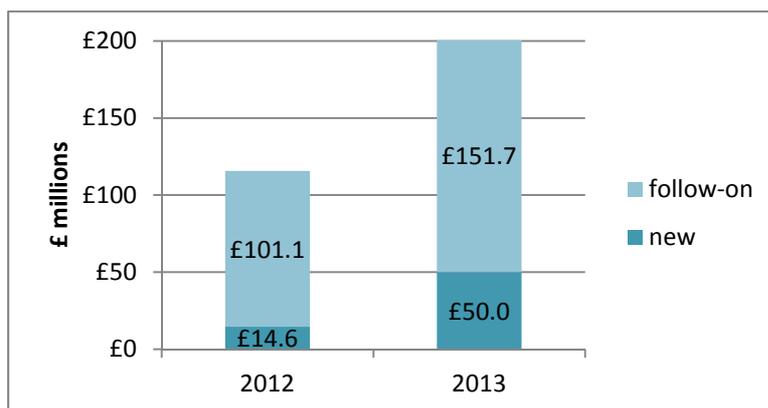


Figure 20: Investments in new and follow-on deals 2012-2013



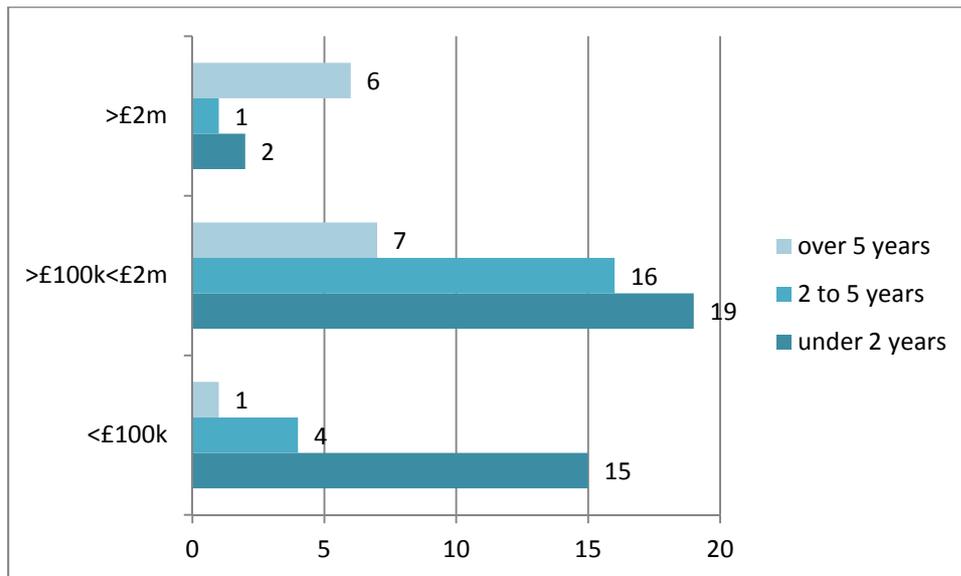
Although the amount invested in follow-on deals has increased considerably in 2013, it is not at the expense of new deals. Indeed, the figures to some extent dispel fears that investor fatigue, lack of exits, and the need to carry on supporting portfolio companies would lead to shortage of funds for first time investees.

These investments are spread across all sectors and regions, without any obvious pattern. As in the 2009-2011 report, there are several established companies which have secured equity investment for the first time after many years of trading; the average time from incorporation to first time investment in 2012/13 was approximately three years, but with outliers of 13.6 years and 22 years as examples of mature companies turning to equity for funding.

The pattern of time taken from incorporation to first investment is not unexpected, with large investments generally into companies over five years old, and smaller investments made into companies in their first couple of years. At the >£2m level, the exceptions are the three companies which achieved significant investment within five years of incorporation.

The following chart shows the number of deals in each case; for example, seven companies which completed an investment round of between £100k and £2m in 2012-2013 took over five years to reach their first investment.

Figure 21: New deals, years to investment by size bands 2012-2013



2 COMPANIES

2.1 Location

Figure 22: Number of deals by region of investee 2012-2013

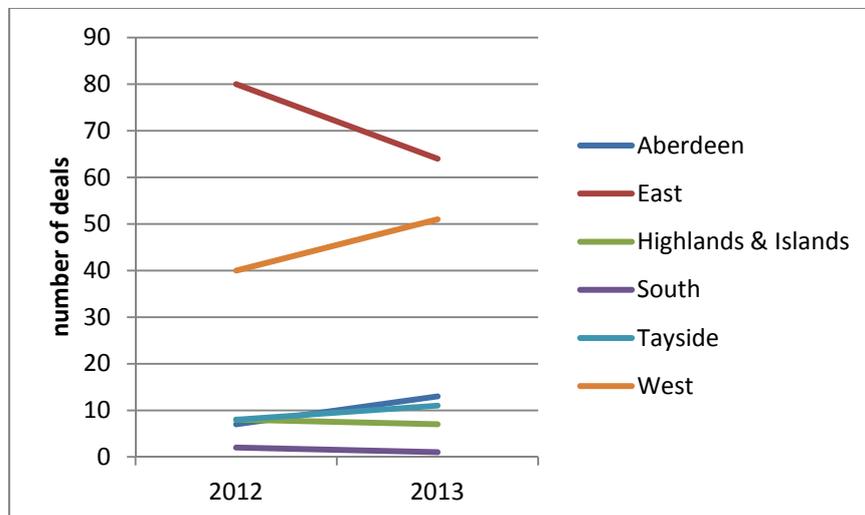
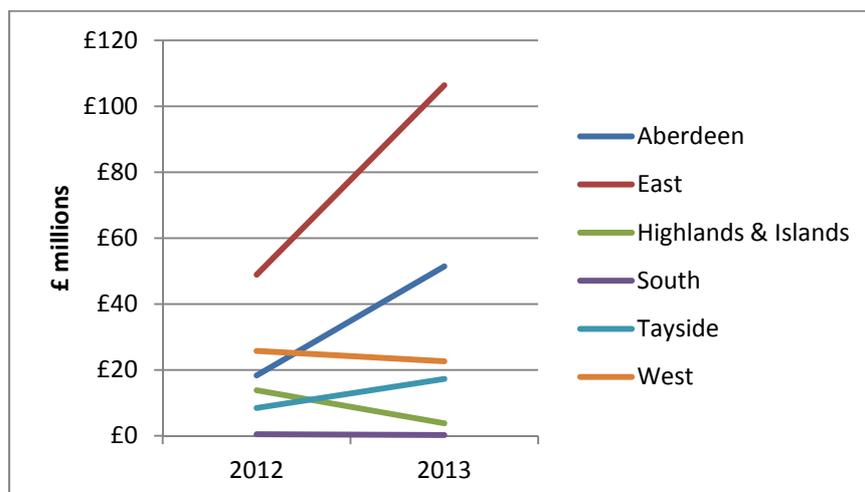


Figure 23: Investment by region of investee 2012-2013



The East continues its dominance of the market; although deal numbers were down from 2012 to 2013, investment more than doubled. As in other areas of this report, this increase is mainly due to the number of large deals. In 2012, 6 out of 80 deals in the East were over £2 million, with the proportion over £2m increasing in 2013 to 11 out of 64 deals.

The opposite is true in the West, where the increasing number of deals was not reflected in the lower overall investment.

As in previous reports, Aberdeen is affected by the number of large deals in the oil & gas industry, with a relatively small number of deals at lower valuations in life sciences and ICT.

2.2 University spinouts

Figure 24: Number of investments in spinouts as % of all deals 2012-2013

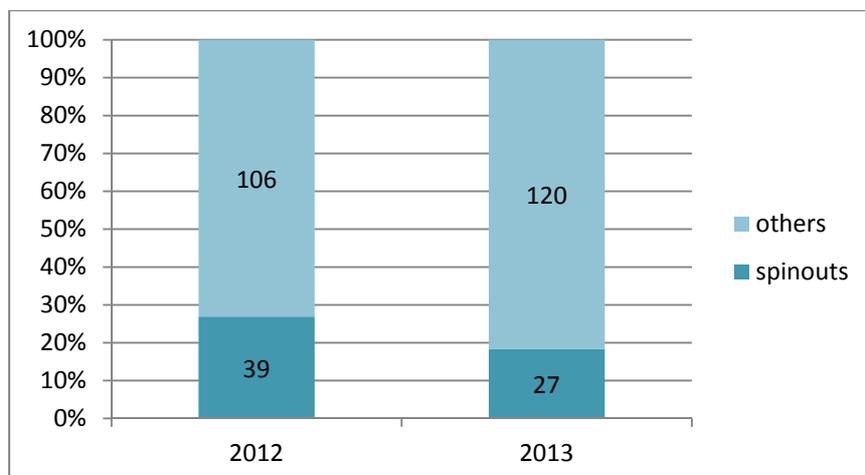
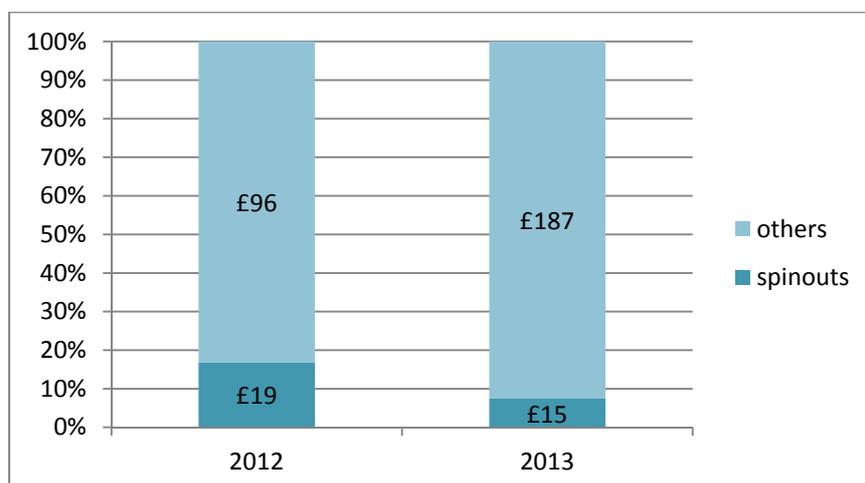


Figure 25: Value (£ millions) of all investments in spinouts, as % of total investment



The pattern of company formation initiated by universities has changed considerably in the past few years, with pure spinouts (companies formed to commercialise intellectual property owned by the university) increasingly outnumbered by start-ups (companies formed by members of staff or recent graduates that do not depend upon the university's IP) and especially by companies started by students. There has been a move towards encouraging entrepreneurship across the whole university community, rather than depending upon spinning out technologies from STEM departments.

That said, Scotland has more universities than most other regions of the UK apart from London, and continues to spin out more companies than other regions per head of population. According to figures prepared by YCF's sister publication Spinouts UK, Scottish spinouts comprised 17% of all spinouts in 2013, compared with its population of 8% of the UK total. As a region London is next in this ranking, with 15% of all spinouts in 2013 compared with 13% of the UK population.

That being the case, it is a little disappointing that the investment secured by spinouts from Scotland's universities declined from 2012 to 2013, both in number and value. Universities in the South East of England, including top-ranking institutions such as Oxford, Cambridge, Imperial, and UCL, benefit from close proximity to the investment market in London, which in turn means that investors can find deal flow nearby and have less motivation to look at companies emerging from Scottish universities, but this does not entirely explain the decline in investment. Very few spinouts featured in deals over £2 million, although this changed significantly in 2014; the commercialisation of university research (and of technology more generally) is a long term process, and the deals reported here include companies at all stages of

development, so the decline shown in these figures is not necessarily statistically significant. This will be reviewed again in the 2014 report.

2.3 Exits

Although there has been a steady flow of exits during 2012 and 2013, there is little information about values, as acquirers in trade sales are often reluctant to disclose values. YCF has tracked the following exits, several of which were of innovative suppliers in the oil & gas sector selling to large contractors, continuing a business model which has become well established in the sector. Not all of these companies had external equity investors.

Table 1: Exits by early stage Scottish companies 2012-2013

company	exit	valuation	acquirer / stock market	location
Sight Science	10-Jan-12	£375k	NovaVision/Vycor Medical Inc	USA
New Wave Broadband	22-Jan-12	>£6m	Inmarsat	UK
Nexus Oncology	14-Feb-12	"multi-million £ deal"	Ockham Oncology	USA
Codestuff	01-Mar-12		Digital Barriers	UK
OneDrum	11-Apr-12		Yammer Inc	USA
Equateq	01-May-12		BASF Pharma	Germany
Spinsight	21-May-12		Match Analysis, California	USA
Vitrology	21-May-12		SGS	Switzerland
Nessco	01-Jul-12	£31m	RigNet	USA
Extramed	16-Jul-12		Hospedia	UK
PlanForCloud	18-Jul-12		RightScale Inc	USA
Digital Goldfish	02-Nov-12		Ninja Kiwi	New Zealand
Red Spider Technologies	01-Dec-12		Halliburton	USA
Simple Audio	01-Feb-13	"multi-million \$ deal"	Corsair Components Inc	USA
i-design multimedia	07-Mar-13	Sigma profit £100k	Cardtronics UK	UK
Star Net Geomatics	10-Jun-13		UTEC Survey	USA
Argent Energy	23-Jul-13	£80m	John Swire & Sons	UK/Hong Kong
Data2Text	25-Oct-13	Arria IPO at £102m	Arria NLG	UK
Intelligent Well Controls (IWC)	27-Nov-13	"up to £20m"	Sperry Drilling/Halliburton	USA
Collbio	27-Dec-13	£7.07m	Healthcare Investment Opportunities plc	UK

Elsewhere in the UK, technology companies formed as spinouts from universities saw a sharp uptick in exit opportunities, as shown in the following table based on data from YCF's sister publication Spinouts UK:

Table 2: Exits by UK spinouts 2012-2013

company	exit date	type	university	value	acquirer / market
CamGaN	8-Feb-12	trade sale	Cambridge	n/d	Plessey
Simcyp	24-Feb-12	trade sale	Sheffield	\$32m	Certara LP
Retroscreen Virology	03-May-12	IPO	QMUL	£32.8m	AIM:RVG
Proximagen Group	13-Jun-12	trade sale	KCL	£357m	Upsher-Smith Laboratories Inc
Revolymex	10-Jul-12	IPO	Bristol	£53m	AIM:REVO
Aspex Semiconductor	01-Aug-12	trade sale	Brunel	n/d	Ericsson
BlueGnome	19-Sep-12	trade sale	Cambridge	n/d	Illumina Inc
Midaz Lasers	01-Nov-12	trade sale	ICL	n/d	Coherent Inc
Edinburgh Instruments	25-Feb-13	trade sale	Heriot-Watt	£2.9m	Techcomp Group

Cronto	20-May-13	trade sale	Cambridge	\$22m	VASCO
PolyTherics	26-Jul-13	merger	Imperial, UCL		merger with Antitope
Precos	31-Jul-13	trade sale	Nottingham	n/d	Crown Bioscience
Molecular Profiles	12-Sep-13	trade sale	Nottingham	\$26m	Columbia Labs
Astex Pharmaceuticals Inc	11-Oct-13	trade sale	Cambridge	US\$886m	Otsuka Pharmaceutical
GeoVS	11-Oct-13	trade sale	USW	£1m	Software Radio Technology (SRT) plc
IXICO	15-Oct-13	reverse takeover & IPO	ICL, KCL, UCL	n/a	AIM:IXI following takeover of Phytopharm
Kromek	16-Oct-13	IPO	Durham	£54.9m	AIM:KMK
Spirogen	21-Oct-13	trade sale	UCL	US\$200m	AstraZeneca
Data2Text	25-Oct-13	trade sale & IPO	Aberdeen	£20m	Arria NLG (AIM:NLG)
Nano-porous Solutions (n-psi)	28-Oct-13	trade sale	Bath	n/d	Norgren Group
Applied Graphene Materials	20-Nov-13	IPO	Durham	£26.2m	AIM:AGM
Oxford Immunotec	22-Nov-13	IPO	Oxford	US\$191.6m	NASDAQ:OXFD
MuOx	25-Nov-13	trade sale	Oxford	£3.3m	Summit plc

Although as might be expected Oxford, Cambridge, Imperial, and UCL figure prominently in this table, the deals are widely distributed across the UK, although Scottish spinouts have unfortunately not been able to capitalise on this trend.

The data collected for the current Report and for the Spinouts UK project can be used to calculate average time to a successful exit (trade sale or IPO), see Figure 26. The number of records is relatively small, and probably incomplete, so not too much weight should be attached to the results, but in very general terms in recent years it has taken successful companies longer to reach an exit than it did some five to ten years earlier. The fact that the Spinouts UK and YCF figures show diametrically opposite trends from 2012 to 2013 illustrates the danger in reading too much into this chart.

Figure 26: Years to successful exit



The USA tends to lead the rest of the world in the timing of trends in a number of areas, including the commercialisation of technology. The following charts based on data from the National Venture Capital Association (NVCA) in the USA show the values of exits by VC backed companies.

Figure 27: Exits by venture backed companies in the USA 2011-2014

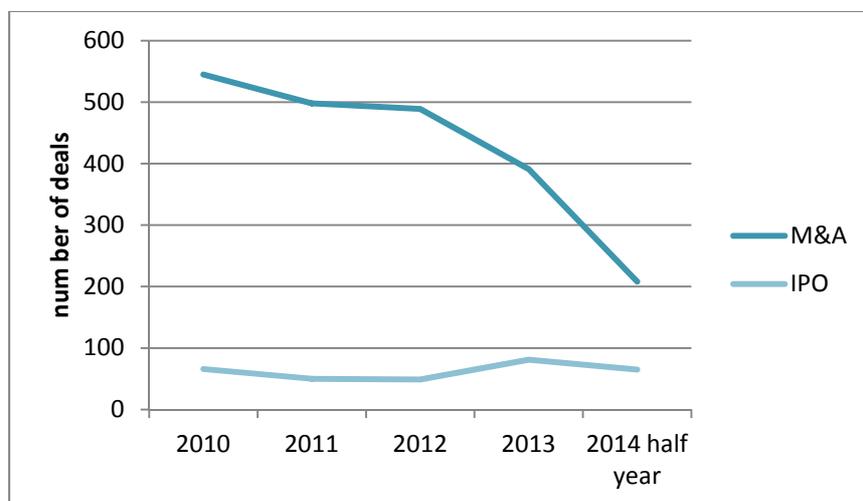
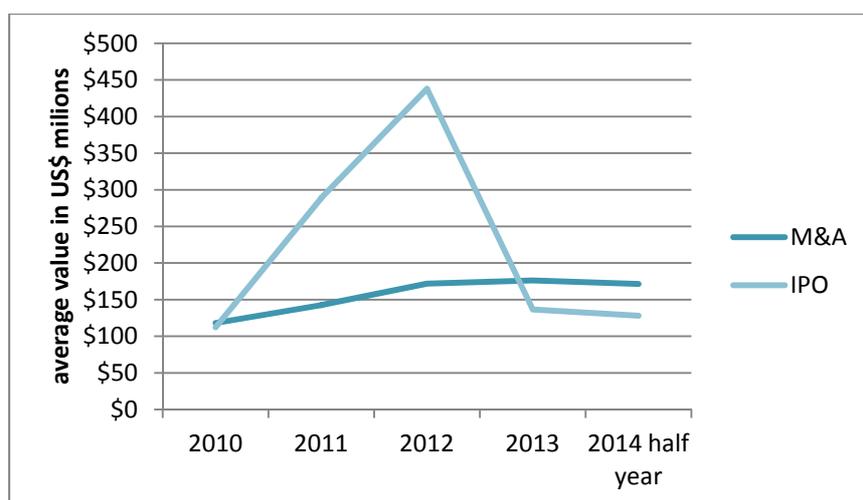


Figure 28: Average valuation of exits by venture-backed companies in the USA 2011-2014



NB: values are disclosed for only approx 1/3 of all M&A deals; the average above is for those companies where valuations are known

Bearing in mind that the figures for 2014 cover just six months, IPO values have decreased significantly over the past few years, whereas M&A values have remained largely static. There is an increasing disconnect between the amounts currently being invested by VCs in the USA (see below) and the value of exits currently being achieved, which will be examined further in the 2014 Risk Capital Market in Scotland report. As mentioned above, what happens in the USA tends to affect later developments elsewhere in the world, and if US venture capital is creating a bubble (as over 50% of correspondents in a recent PE Hub poll believe), this could have positive consequences for the availability of venture funding in the UK and Europe as US VCs look for more realistically priced deals beyond their home market.

3 INVESTORS

3.1 Business angels

Angel investing continues to be a major part of the early stage investment environment in Scotland. The national business association LINC Scotland has some 20 angel groups and a number of individual angels as members. Investment by its members over the past three years (incorporated in the results reported here), and for the first three quarters of 2014, can be summarised as follows:

Table 3: Angel investing by LINC Scotland members 2011-2014

	2011	2012	2013	Q1-3, 2014
number	78	68	82	60
amount total £m	£34.8	£26.3	£31.2	£22.3
angels alone £m	£12.2	£11.5	£13.8	£13.1

There are several angel groups (and many other individual angel investors), which are not members of LINC but whose investments, where known, are included in the results in this Report. The LINC figures show that investing by angel syndicates continues on a slightly increasing trajectory, with the partial figures for 2014 to date indicating that the increase in investment by the angels groups was rapidly accelerating. The total investment figures are highly influenced by the few transactions in which other much larger investors participated, but the underlying pattern for the core angel groups is one of growth.

Very few parts of the world have reliable quantitative data on angel investing for comparison.

UKBAA has no hard data on angel investments in the UK. However, in 2013 the UKBAA published a report, *'Taking the pulse of the angel market'*, prepared by Deloitte, which examined 262 deals by 62 angels worth £137m in total made between April 2012 and March 2013. The Report gave a chart of investments by UK region (which despite the UK in the UKBAA's name did not include any data for Scotland), showing that businesses in London and the South East attracted 54% of angel investment; as the survey was based on a sample, it is difficult to know whether this figure is valid across the country (or RUK at least), but there is little doubt that these regions exert a strong centralising attraction for all activity in this sector.

At its summit in July this year, UKBAA commented on a number of key market trends, which are reproduced below with a note on how they apply in a Scottish context:

UKBAA comment	Scottish context
Angel deal size growing: £100k to £500k first round, but increasingly £1.5m+ deals in syndication	<i>already a feature of the market in Scotland</i>
Syndication: angels increasingly investing in groups to pool their finance, risk, skills – enables further follow-on rounds	<i>a feature of the angel investing environment in Scotland for a decade or more now</i>
Angels co-invest alongside other angel groups, VCs, PE – according to Nesta research 41% of early stage VC deals in the UK were syndications with angels	<i>while there has always been co-investment between angel groups, there is little co-investment with VCs or PE in Scotland. The Nesta figures may include enterprise agency funds as VCs</i>
Entrepreneurial angel groups – “super angels” setting up angel funds and accelerators, often replacing VCs	<i>little sign of this in Scotland</i>
Accelerators – angels as mentors, angels operating accelerators and taking equity shares	<i>UP Accelerator is probably the first real example of this in Scotland</i>
Equity crowdfunding platforms – angels investing into platforms, on platforms, and with platforms	<i>Braveheart's deal with Crowdcube is one of the few UK examples of this</i>
Angel deal platform and online showcasing – angels are increasingly finding deals and doing deals online	<i>starting to happen in Scotland</i>

In the USA the Angel Capital Association (ACA), the official business angel representative body for business angels, does not report statistics for numbers of deals or amounts invested by its members, presumably for reasons of confidentiality. Instead, its HALO Report series, prepared by the Angel Resource Institute, gives median and mean figures for deal sizes, the size of angel groups, valuations, and other metrics to illustrate trends in the sector. Its 2013 Report made a number of points:

- the US market was heating up
- mobile and internet start-ups were leading the way, with a rebound of healthcare – these three sectors accounted for 80% of the investment in the year
- round sizes reached a 3 year high, thanks to co-investing with non-angels
- although California and New England had strong angel investing, they accounted for only 30% of the total, which was widely distributed across the US

Specific data on angel investing in the USA is however provided by the Center for Venture Research (CVR) at the University of New Hampshire, which can be summarised for recent years as follows:

Table 4: Angel investing in USA 2011-2014

	2011	2012	2013	Q1Q2 2014
investees	66,230	67,030	70,730	30,270
amount \$bn	\$22.5	\$22.9	\$24.8	\$10.1
active investors	318,480	268,160	298,800	143,140
yield rate (successful applications)	18.3%	21.3%	21.6%	21.2%

The 'yield rate' is currently at a high level, with the historic norm according to CVR being around 15%. This is not far from the rate of one in ten successful pitches (10%) reported anecdotally by angel groups in Scotland, but is subject to a number of definitions and assumptions.

Judging by these figures, the market had indeed heated up in 2013 compared with the previous year, but as yet there is little indication of a strong upturn.

In all, the angel investors in Scotland appear to play much the same role as in other areas of the world with well-developed risk capital markets; making many more investments than VC or institutional investors, but at an earlier stage and in smaller amounts. Angel groups are much more a feature of the investment landscape in Scotland than elsewhere, and with co-investment from the Scottish Investment Bank are able to complete larger deals, with more follow on capacity.

3.2 Venture capital

Worldwide, the number of companies which secure investment from venture capital firms is an order of magnitude smaller than those winning angel investment, although the totals invested are not dissimilar. As indicated above, it is difficult to find reliable data on angel investing in most parts of the world, but figures from the NVCA (National Venture Capital Association) in the US can be compared with CVR figures for angel investing, repeated from the previous section:

Table 5: VC investing in USA, comparison with angel investing 2011-2014

	2011	2012	2013	Q1-3, 2014
number of VC deals	4,020	3,904	4,134	3,154
VC investment \$bn	\$29.8	\$27.5	\$29.8	\$33.2
number of angel investees	66,230	67,030	70,730	30,270
angel investment \$bn	\$22.5	\$22.9	\$24.8	\$10.1

The NVCA figures show the number of deals – if they include any cases where a company has completed more than one investment round in the period, then the difference with the angel figures is increased.

In the UK, the BVCA (British Venture Capital Association) publishes comprehensive data on investments by its members. A comparison of VC investments across the UK with those in Scotland is as follows:

Table 6: VC investing in UK, all stages 2011-2013

	2011	2012	2013
companies all UK	803	820	674
companies Scotland	45	37	17
<i>Scotland as % of all</i>	6%	5%	3%
amount all UK £m	£6,544	£5,767	£4,150
amount Scotland £m	£334	£159	£47
<i>Scotland as % of all</i>	5%	3%	1%

However, only 10% of this investment is into companies at the venture stage (seed/start-up/early stage/late stage VC), but this covers 49% of the companies receiving investment, as the deal sizes are much smaller than in the later stages. The bigger investments are into companies at the expansion stage (expansion/growth), or into replacement and MBO/MBI financings. The picture for investments at the venture stage alone is as follows:

Table 7: VC investing in UK and Scotland, venture stage 2011-2013

	2011	2012	2013
all companies UK	405	431	374
all companies Scotland	18	24	11
<i>Scotland as % of all</i>	4%	6%	3%
all companies UK, £m	£347	£343	£406
all companies Scotland, £m	£9	£9	£3
<i>Scotland as % of all</i>	3%	3%	1%

Our own figures show 38 and 37 deals by VCs in Scottish companies in 2012 and 2013 respectively, more than those given in the BVCA statistics, but the BVCA figures are for investee companies rather than separate deals, and cover just BVCA members, whereas the YCF figures include other institutional investors such as corporate venturers, university funds, the Business Growth Fund and others (the investors are listed in Appendix 3), and exclude replacement and MBO/MBI investments. Nonetheless, the BVCA figures indicate that Scottish companies are substantially underrepresented in terms of accessing VC finance.

In the USA the ratio of angel to VC investment fluctuates widely but averages at approximately 10:1. The YCF figures for this report are closer to a 3:1 ratio, much the same as the projection for the UK made by the UKBAA, using BIS/Nesta research which indicates that only 70% of angel investments are made through EIS to claim that angels invests some three times more than early stage VCs.

3.3 Corporate venturing

A large number of global corporate businesses now have a corporate venturing unit, and activity in this sector has increased dramatically in recent years. Global Corporate Venturing (GCV, www.globalcorporateventuring.com) now tracks over 1,000 corporate venturing units worldwide, of which 181 have over a decade of experience. New units were being created at the rate of below 50 per year from 2005 to 2009, but then increased to over 100 new units in 2011 and 2012 before falling back a little in 2013.

According to CB Insights, these organisations were investing in around 120 deals per quarter through 2012 and 2013, with levels of investment ranging between \$1.5bn and \$2bn. In the second quarter of 2014, the latest quarter reported by CB Insights, this had increased to 187 deals investing over \$4bn.

Corporate venture units are interested in long term partnerships with SMEs which have the innovation, energy, and flexibility which are difficult to capture and sustain in very large organisations. Accordingly, their interests go beyond straight equity investment and include strategic partnerships, licensing, acquisition, and in many cases incubation.

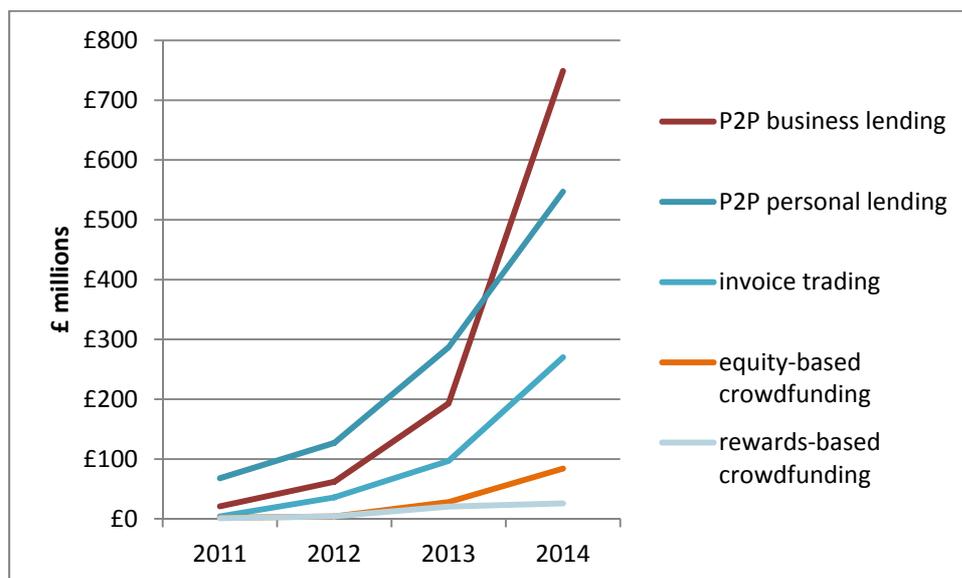
Corporate venture investors in Scottish companies have included Tate & Lyle Ventures, SSE, DC Thomson, Siemens, ABB, Saudi Aramco, ConocoPhillips, Statoil, and more recently IKEA Greentech and NBC Sports. In this market they tend to operate in the same way as VCs, with one-off investments in single companies and little repeat investment. However, given the broad range of corporates now active in this space, there must be opportunities for many emerging Scottish technology companies to investigate appropriate partners and make approaches, not just for funding but for company development in general.

3.4 Crowdfunding and alternative finance

A report by Nesta in December 2013, *'The rise of future finance: The UK Alternative Finance Benchmarking Report'*, highlighted the growth of this part of the funding environment, and gave, probably for the first time, some reliable measures of its growth. This report was followed by a more detailed study by Nesta and the University of Cambridge, *'Understanding alternative finance: The UK Alternative Finance Industry Report 2014'* which brings the figures up to date, giving quantitative figures for the first three quarters of 2014 and predictions for the final quarter.

In the public mind, crowdfunding is largely associated with relatively small projects and businesses on rewards-based platforms, some of which (mainly in the USA) have raised very large sums. In Scotland, a notable case, remarkable partly because it is exceptional, is that of RunRev (Runtime Revolution), which raised almost £0.5 million in February 2013 on the Kickstarter platform to fund an open source version of its educational coding software. However, rewards-based crowdfunding is dwarfed by the amounts being raised in equity and loans for companies. The following figures from the Nesta reports do not include all the forms of alternative finance which they analyse, but instead contrast the standard business funding methods – equity, debt, invoice trading – with rewards-based crowdfunding and loans to individuals.

Figure 29: Growth in alternative finance investments 2011-2014



In respect of equity crowdfunding, the 2014 Nesta document reports that “54% of businesses sought expansion capital, 46% sought seed or start-up capital”, and that “since securing funding 70% of businesses have increased turnover, 60% have increased employment”. It also states that the average amount raised in successful equity crowdfunding campaigns was £199k, compared with an average £73k for P2P business lending and £56k for invoice trading.

According to Nesta, 4% of successful equity fundraisers in 2014 are based in Scotland; this compares with the massive concentration of such funding in London (51%) and the South East (11%).

YCF has to date tracked just three equity crowdfunding deals in Scotland, all in 2014, and totalling ~£300k, well short of the £3.3m (4% of £84m) which the Nesta figures imply. This will be re-examined

for the 2014 Annual Report. There is at present a low success rate for companies on equity crowdfunding sites (of 11 campaigns reported by Nelson Gray in February 2014, YCF is aware of only one success).

In summary, despite the very high year on year growth figures and the high concentration of the sector in South East England (which is an issue in its own right, across several funding options), equity crowdfunding as yet plays a small part in the overall funding landscape for entrepreneurs in Scotland. This will no doubt change as the market matures, and as some of the difficulties associated with this form of funding (such as its short history, investors not yet faced with company failures or calls for further capital, large shareholder registers, etc) are tackled.

4 THEMES ARISING FROM RESEARCH

4.1 Angels and VCs

The data collected for this report shows little interaction between angels and VCs – only 9 of the deals in 2012 and 2013 included both angel and VC investors (and a couple of these were institutional investors rather than VC firms). Data from other sources suggests a high level of co-investment by private investors and VCs, but because these figures often treat institutional investors such as regional enterprise agency funds or other publicly funded bodies as VCs, sometimes with a specific remit to co-invest, this can be misleading. Separate research is being carried out for a short ‘thought piece’ under the auspices of the Risk Capital Market reporting series, to test the assumption that VCs and angels only co-invest when the VC has its own known group of private investors, who can perhaps contribute to an investee’s development, and are prepared to join a VC round on equal terms and conditions. While this is a sensible practice, it does not indicate any way forward for helping early stage companies to access more capital.

It is tempting to see angel and VC investing as two separate tracks with little interchange between them. If this is the case, young companies are faced with the challenge of deciding which of these tracks to choose. Business angels invest at a much earlier stage, so if a company needs funding at the earliest stage angels might be the best option (although self-financing is desirable to take the company as far as it can go without external investment). The possible downside is a lack of capacity to take the company as far as it aspires to go; a majority of correspondents to a recent survey by YCF for the Scotland REAP team felt that their current investors would be unable to fund them to exit, but only a couple felt that their angel investors were preventing them from exploring other options such as VC or crowdfunding. As companies develop, further options including debt finance open up.

The question of funding early stage companies is different from the question about helping companies to scale up. It is becoming accepted wisdom that there is little pattern to companies achieving high growth; companies of different sizes, sectors, and stages of development can all experience high growth spurts, but few manage to sustain such growth for extended periods of time, and the cohort of high growth companies in one period is different from that in another (*BIS – UK Innovation Survey: Innovative Firms and Growth, March 2014*).

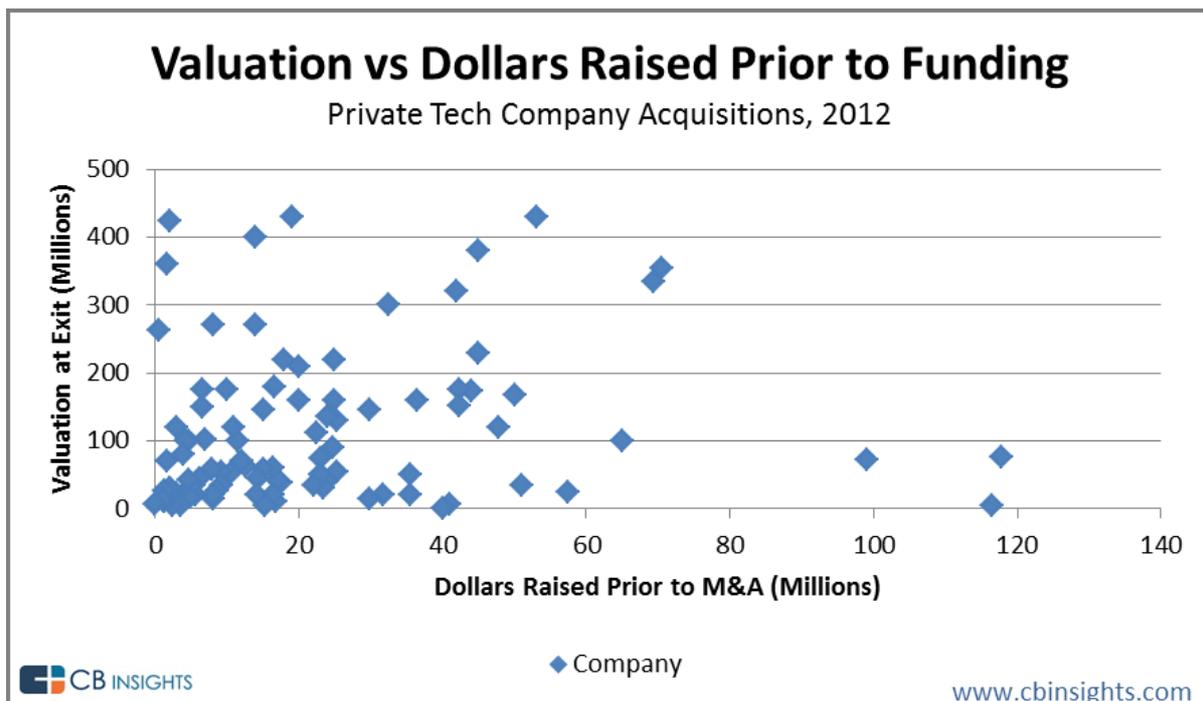
4.2 Investment and scaling up

1) Scaling up is not solely dependent upon investment

In the report published in November 2014, *The Scale-Up Report on UK Economic Growth* by Sherry Coutu CBE, it is stated that “99 per cent of the fastest growing 500 businesses do not choose VC funding”. The report identifies talent and leadership as significant factors in scaling up businesses, reporting that “151 of the 203 scale-up CEOs ranked access to talent you can hire as the 1st, 2nd or 3rd most important issue, against 44 of the 203 who ranked access to VC as the 1st, 2nd or 3rd most important issue”.

2) High levels of investment are no guarantee of high levels of return

The following chart shows the correlations in 2012 between aggregate VC investment and the valuation on exit. A large proportion of the companies exiting at a valuation of \$100m or more had secured under \$30m of investment. If a nominal 10x investment is the theoretical target for returns on early stage investment, a line drawn at 45° from the zero point on the chart would separate those that meet this target from those that do not, with the former in the minority. Investors will point out that the chart simply demonstrates the high risk nature of the sector, with the some of the highest ‘bets’ resulting in little or no return. The chart does however indicate that success is possible at relatively low levels of investment.



3) The 'funding escalator' model is misleading

The theory that companies could grow by securing investment from business angels, who then 'handed the baton' to VC firms, who took the companies to an IPO to the benefit of all concerned, was only ever applicable to a very small number of companies for a very short period of time, but became part of a mantra for academic analysis of the sector. In the USA in 2013 for example, there were 70,730 companies which secured angel investment, but only 4,134 VC deals (see Table 5). In the same year there were just 222 technology IPOs in the USA, of which only 56 were in VC-backed companies.

4) Cumulatively, Scottish companies secure more investment than is often recognised

Most press reports on investment quote figures for single deals. When these are very high numbers, as currently is often the case with VC investments in the USA, there is a tendency to compare investments in Scotland unfavourably. As this report shows, there has been an increase in the number of high value deals in recent years. However, that is only part of the story.

Figures produced by YCF for a report in June 2014 entitled *'The Supply of Growth Capital for Emerging High-Potential Companies in Scotland'*, by a working group of Royal Society of Edinburgh with Scottish Financial Enterprise and ICAS, showed that 125 companies had secured £2 million or more of investment from 2005 to the beginning of 2014. This figure was felt to be a reasonable proxy indicator of emerging growth companies, as distinct from startup or seed-stage investment. The number of companies in this category is higher than many observers anticipated, and all have the potential to grow further.

5) US VCs are focusing on companies with high volume sales

Although much press comment covers new technologies such as wearable tech or robotics (with a current interest in drones), much VC investment in the USA is into companies in traditional sectors with high consumer numbers. This is perhaps an extension of an approach which saw technical B2C products such as digital games and mobile apps as promising areas for investment. Businesses presently securing large amounts of VC funding such as food delivery companies, online greetings cards, taxi services and the like will succeed if they can reach large numbers of consumers, but are displacement businesses competing with well-established existing providers, so no doubt also need some 'disruptive' element. This is often in the form of the business model, which is why Uber has attracted so much investment.

Such companies can often scale up very rapidly by being near large centres of population, which is why VC investment is also concentrated in Tier 1 cities across the world. In the UK this means London, and according to a survey carried out by YCF for Informatics Ventures this year, the companies which had participated in the series of annual EIE pitching events were clear for the need for Scotland's start-up communities to have closer links to London, with 85% agreeing with this statement. Interestingly, almost half these companies (46%) were very confident that they could scale their business from a base in Scotland, with a further 44% being moderately confident. 20% were very confident that the funding

environment exists in Scotland to take their companies to the next level, with a further 40% moderately confident.

This suggests that there is a clear distinction between companies that can build a B2C business benefiting from a large local population, and the more IP-rich 'technological' B2B businesses located away from large conurbations, such as medical device developers, or opto- and micro-electronics hardware companies. The former often have low start-up and development costs, and attract VC funding for rapid market penetration, whereas the latter need significant funding just to reach market.

6) Job creation

As a generality, when looking at the early stage company sector governments are likely to rank job creation as a top priority (although investors are likely to rank revenue, or rather profit, from sales more highly).

MIT, whose activity in company formation generates some spinouts, but many more start-ups by staff, students, and alumni, is clear that the creation of high value jobs is a main objective. However, one of the criteria for an Innovation-Driven Enterprise (IDE) – the sort of company that MIT wishes to help create, differentiated from other forms of SME – is that it has 'tradable jobs' that do not have to be performed locally.

Any company that can scale up will inevitably create many jobs, but the high value of the jobs created by IDE start-ups, whether the companies survive for a long period or not, is an important contributor to the economy.

According to the BIS UK Innovation Survey in March 2014, "Firm growth is a short run phenomenon in which firms move in and out of growth in a largely erratic way". The implication here is that job creation by high growth companies should be differentiated from the job creation achieved by a steady flow of IDE start-ups.

APPENDICES

Appendix 1: Glossary of key terms

Term	Definition
angels	Private individuals who invest their own capital either alone or part of a syndicate, and who personally own the equity they purchase.
angel syndicates	Networks of business angel investors, who combine their investments in a company. Also referred to as angel groups.
B2B, B2C	business to business, business to consumer – terms used to distinguish between those companies which sell to other businesses, and those which sell to the general public. These two categories normally have very different business models and different routes to market.
deal	The transaction between an individual investor and a company, which may be standalone or part of an investment involving other investors.
EIS	HM Revenue & Customs' Enterprise Investment Scheme, designed to help smaller higher-risk trading companies to raise finance by offering a range of tax reliefs to investors who purchase new shares in those companies.
ERDF	the European Union's European Regional Development Fund
institutional investors	Organisations which invest on behalf of others and offer guidance and advice on investment. These include Venture Capital companies, partnerships, corporations and corporate venture firms, banks and investment trusts.
ICT	information and communications technology
IDE	Innovation driven enterprise (MIT's definition of the type of company on which a strong entrepreneurial eco-system is based)
investment	A discrete purchase of share capital in a company by one or more investors at a given time.
IP	intellectual property
LINC Scotland	The national association for business angels in Scotland, with a membership network of hundreds of investors including those operating individually, many groups and syndicates, and some private offices.
LS	life sciences
new investment	The first significant external equity investment in a company, excluding early small scale investment by founders, friends, and family. Often referred to in the industry as a Series A round.
others	The category 'others' refers to individual investors who are not part of an angel group (and are not 'founders, family, or friends'), but also includes investors whose identity it has not been possible to determine.
P2P	person to person, a term used to describe crowdfunding operations targeted at individuals rather than at businesses.
PE	private equity, a term sometimes used to encompass all investment firms which seek to invest funds from other partners. The term sometimes includes venture capital firms (see VC below), but is sometimes used to distinguish later stage deals involving financial reconstruction from the early stage venture activities of VCs.

public	Public sector investments include those by the Scottish Investment Bank funds and by Highlands and Islands Enterprise.
REAP	Regional Entrepreneurship Acceleration Program, a program devised and run by MIT to help regions from around the world to develop their entrepreneurial eco-systems
SCF	The Scottish Investment Bank's Scottish Co-investment Fund
SE	Scottish Enterprise
SEIS	Seed Enterprise Investment Scheme, a special extension of the EIS (see above) to encourage investment in companies at the start-up stage
SIB	Scottish Investment Bank, a division of Scottish Enterprise that provides investment funds to support company growth in Scotland.
spinout	a company set up to exploit IP owned by a university or other research institution.
SSF	The Scottish Investment Bank's Scottish Seed Fund
SVF	The Scottish Investment Bank's Scottish Venture Fund
syndication	Investment by two or more groups or firms, investing under the same terms and conditions in order to increase the total deal size.
VC	Venture capital, or venture capital firm
VCF	Venture capital firm, specialist investors who invest on behalf of others. Typically, VCs are investing funds with a specified time scale, often ten years, within which they aim to generate returns on the investments of the fund's LLP (limited liability partner) stakeholders.

Appendix 2: Methodology

Stage 1: Data collection

Companies

The project started with the compilation of a list of known investment deals over the period 2012-2013. This data was prepared from deals listings from YCF, LINC Scotland, and the Scottish Investment Bank.

The resulting list of investee companies was supplemented by others which are similar in origin or nature, but were not known to have secured investment. This included companies from the previous Risk Capital Market reports and previous YCF deals listings, winners of SMART awards, presenters at pitching events such as Connect Scotland and Informatics Ventures' EIE, tenants of science parks and incubators, and Scottish companies supported by NESTA, the Technology Strategy Board, and other relevant early stage support organisations. These companies were approached, by telephone and email, to establish if they had secured external investments which were not on the first list.

The Companies House database was also checked for all these companies, to establish the dates of any returns indicating the issue or allotment of shares. SH01 forms were used to verify the dates and actual amount of investments.

Investors

In addition to checking the investments made by those investing organisations included in the SIB, LINC, and YCF lists, other key early stage investors were researched to establish whether or not they had made investments in Scotland in 2012-2013. The organisations for which we were able to identify investments in Scottish companies in 2012-2013 are listed in Appendix 3.

Stage 2: Analysis

The raw investment data (deal date, amounts by investor) was supplemented by company details (date of incorporation, location, sector) and further information such as the location of the investors.

For all the metrics covered in this report, formulae were created to count the number of deals and give total investment amounts, with the resulting information charted in order to have a visual representation of patterns and trends as the basis for commentary.

Appendix 3: Investors by type

The following investors all made investments in Scottish companies in the period 2012-2013.

Angel groups

Alida Capital	ChimaeraBio	Kelvin Capital
Archangel Informal Investment	Discovery Investment Fund	London Business Angels
Aurora	Equity Gap	Par Equity Syndicate
Barwell plc	ESM Investments	TRI Capital
Bradenham Partners	Grampian BioPartners	West Invest Syndicate
Braveheart Investments	Highland VC	
	Jeanfield	

VCs and institutional investors

Scotland

DC Thomson	Par Equity	SSE Venture Capital
Glasgow University	Pentech	Strathtay Ventures
Maven Private Equity	Robert Gordon University	University of Edinburgh
Old College Capital	SEP	University of Strathclyde
Panoramic Growth Equity	SgurrEnergy	

other UK

Albion Ventures	Goodmark Medical LLC	Low Carbon Innovation Fund
Aquarius Equity Partners	Growth Capital Partners	Northstar Ventures
Berti Investments	Highgate Tech Fund	NovusModus
Bridges Community	Invesco	Parkwalk Advisors
Development Venture Fund	Invotec/ Anglo Scientific	Piton Capital
Business Growth Fund	IP Group	Seraphim Capital
Capricorn Investment Group	IQ Capital	Tate & Lyle Ventures
Catapult Growth Fund	Jenson Seed EIS Fund	Triple Point Income VCT
DeepOcean UK	Lanza Technologies	
Foresight	Longbow Capital	

outside UK

ABB Technology Ventures	Energy Ventures	Saudi Aramco
Andromeda Capital	Fred Olsen	Energy Ventures
Bullpen Capital	Herald Ventures	Sequoia Capital
Calculus Capital	Leopard Rock Capital	Siemens Technology
Chrysalix SET	Lime Rock Partners	Accelerator
(SET Venture Partners)	Lundbeckfond Ventures	Statoil Technology Invest
Comcast Ventures	NBGI Ventures	TOTAL
Comerica	New Wave Ventures	ZAG
ConocoPhillips	Robert Bosch VC	

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Jonathan Harris is editor of Young Company Finance (www.ycfscotland.co.uk), a monthly publication which 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 1,000 investment deals, together with news and features about investors, major grants, funding initiatives, business awards, company pitches, and analysis and comment on the sector.

Since February 2011, the operations of YCF Scotland have been licensed to LINC Scotland, the national business angel association.

Outside Scotland, YCF initiated and runs the Spinouts UK project, an online database of spinouts and start-ups from all universities across the UK (www.spinoutsuk.co.uk). A Quarterly Report gives details of new spinouts and start-ups, recent exits by way of trade sale or IPO, and major investments in spinout companies, together with news and analysis on the sector, and helps ensure that the database is up to date.

During the years covered by the current report, Jonathan Harris was a member of a team led by Highlands & Islands Enterprise and Scottish Enterprise participating in the Regional Entrepreneurship Acceleration Program run by the Massachusetts Institute of Technology (MIT). The Scotland team was in the first cohort to take part in this programme, together with teams from New Zealand, Hangzhou, Finland, Andalucia, Istanbul, and Mexico. The REAP Scotland team Report can be downloaded from the YCF website.