Scottish Enterprise

Investment Benchmarking Analysis

Annual Report 2017

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Highlights

UK Investment increased considerably from the previous year

From 2016 to 2017 there was a 41% increase in the number of deals (from 2,535 to 3,579) and a 95% increase in investment totals (from £5,592m to £10,883m).

The main increases were in high value deals

Deals over £10m accounted for 4% of all deal numbers in 2017, but secured 64% of the total investment.

The amount of investment in deals in the range £50m to £100m increased by 176% from 2016, and investment in deals over £100m increased by 691%.

Most of the deals over £100m were 'one-off' deals, with investors making a single investment (not regularly investing in this market).

As in 2016, the golden triangle dominated the market

The golden triangle regions – London, East of England, and South East – secured 73% of all deals, and 80% of all investment. After the golden triangle, the regions that secured the most deals were Scotland followed by North West and South West; in terms of investment levels the order was North West, Scotland and the South West.

The most active investors in the UK in 2017 were crowdfunding platforms

Closely followed by funds operated by the devolved government agencies in Scotland and Wales.

Virtually all the most active investors are UK based

With overseas investors more likely to invest in one company and not numerous in a region.

Even the most active investors participated in fewer than 20 deals

Excluding crowdfunding platforms, and the devolved government agencies, few external independent investors completed many deals. Even in the regions which saw the most deals in 2017, investors closed fewer than 20 deals each. A large majority of investors closed only one or two deals in the year.

Angels made the most investments

Angel investments (individuals and groups) participated in more deals than any other investor type across the UK as a whole (with the exception of London, where VCs and PE firms were the most active). Those regions with the lowest overall investment had proportionally fewer angel investments than elsewhere.

The digital sector had by far the most deals

This wide-ranging sector covers software businesses of all types, and accounted for 42% of all deals and 52% of all investment.

All regions had their highest number of deals in the digital sector, although in some regions the highest investment amount was in other sectors.

Fintech investments stood out

Fintech companies are included in the digital sector; this subgroup is highly concentrated in London (74% of all deals, 53% of all investment in this category). 31 out of 308 deals were for £10m or more.

Companies without a technology focus comprised a fifth of the market

The ‘other’ sector in this report covers a range of activities including food & drink, business services, and fashion and clothing. Companies in this sector secured 21% of all deals, and 25% of all investment.

Partly thanks to its role as a capital city and recognised global investment hub, London dominated the ‘other’ sector. Scotland was close to London in amount invested for food & drink companies.

IPOs remained few and far between

Seven early stage companies which had external equity investors completed an IPO in 2017, compared with nine in 2016.

Six of the seven raised under £50m (a Scottish business on NASDAQ raised a much larger sum), and four were based in London (though two of these had origins outside the capital).

Trade Sales were in evidence across the UK, but were scarce

98 companies were acquired in trade sales in 2017 across the UK, with the majority (66%) taking place in the golden triangle, reflecting the concentration of investment. This is a substantial two-thirds drop (68%) from trade sales seen in 2016, when there were 304 companies acquired.

In the 31 deals for which we have information on the acquisition price, there were there were five outliers over £100m but for 26 of these companies the median price was £25m.

The Republic of Ireland is different

2017 was not as strong a year for investment in the Republic of Ireland, with deal numbers down by 17% (deals under £100k are excluded from this report) and investment down by 20%. Total investment of £553m still placed the Republic higher than all but four UK regions (London, East, South East, and North West).

Investment in the Republic of Ireland is focused on strengths in two sectors; digital (39% of all investment, 12% of which is in fintech companies), and life sciences (34% of all investment).

VCs and corporates participate in a larger proportion of deals (31% and 18% respectively) in the Republic of Ireland than in most regions of the UK.

Scotland has greater diversity than most regions of the UK

Scotland saw investments from across all deal sizes, from all investors types, and in all sectors. Of the other regions, only London and the South East had this degree of diversity.

BACKGROUND

This report has been commissioned by Scottish Enterprise to set the performance of the risk capital market in Scotland in the context of other UK regions and the Republic of Ireland, and to provide evidence of where there are opportunities to support further market development activities. The performance of the Scottish risk capital market is the subject of a separate commission, with details published annually by Scottish Enterprise.

This report summarises and analyses data on risk capital equity investments during 2017, in companies based in the UK and the Republic of Ireland which are independent (not subsidiaries or branches of larger companies). Deals below £100k are excluded, to make the volume of deals more manageable to analyse. Data from 2016 allows comparisons to be made with the performance of the overall UK market, the UK regions and Republic of Ireland in 2016.

Scottish Enterprise has, since 2003, commissioned and published market research into the operation and performance of the Scottish early stage risk capital market. Evidence from the monitoring of the Risk Capital Market commission shows that Scotland's investment performance continues to improve year on year, both in terms of deals done and amounts invested. However, historically the availability of directly comparable data and analysis has limited the ability to set Scottish performance in a wider geographical context.

The benchmarking analysis of equity investment has been undertaken to:

- improve understanding of the scale and characteristics of the early stage risk capital market in Scotland in comparison with other UK regions and the Republic of Ireland, in particular in relation to deal numbers, amounts invested and frequency, sectors, investor types;
- help to identify where Scotland's performance sits in comparison with other regions across the UK and the Republic of Ireland. This will identify where market trends are consistent or at variance with other regions, and help to build an understanding of why this might be the case;
- provide a robust and up to date evidence base, and accompanying analysis, to inform the development and evaluation of policies to stimulate the early stage risk capital market in Scotland.

This report and data covering 2016 have helped to establish the differing characteristics of the various regions of the UK, and of the Republic of Ireland. The analysis period is still too short to suggest any long-term trends with confidence, although some conspicuous developments, such as the rise of the fintech sector, are highlighted in this report.

METHODOLOGY

YCF uses its own and third party resources for tracking risk capital equity investment deals.

In Scotland, where YCF has been recording investments in early stage companies for over 15 years, we use the following approach:

- we use YCF's lists of companies and investment deals, compiled for its publications Young Company Finance in Scotland, and the Quarterly Journals for its Spinouts UK project covering universities across the UK, and check the Companies House record for share issues in the year which would indicate a new investment round;
- we check by desk research and by direct approaches to all investors known to have invested in the companies on these lists whether they made any relevant investments which were missing from our lists;
- we check the websites of companies, investors, incubators, and organisations helping early stage companies by means of awards, grants, or fellowships (eg Shell Springboard, Royal Academy of Engineering) for news of investment deals.

For the rest of the UK, we draw substantially on the database of start-up and scale-up companies across the UK created and maintained by Beauhurst. We work collaboratively with Beauhurst.

For companies in the Republic of Ireland in this 2017 report, we adopt a similar approach using deal listings prepared for us by TechIreland, a not for profit organisation giving data and insights on Irish innovation globally. 2016 data was prepared by YCF without input from TechIreland; as a result care should be taken when making direct comparisons with this data.

For all areas (Scotland, rest of UK, Republic of Ireland) we aim to find all investments, whether publicly announced or not. To avoid investigating in detail a large number of lower value deals which do not make a major difference to overall investment totals, we have excluded deals under £100k from all the figures in this report.

Beauhurst's own publications are restricted to publicly announced deals, and include deals at all levels if announced, which means that the figures in their publications do not match those in this report.

All investments in Euros in the Republic of Ireland or US dollars in any region are exchanged to £ sterling at the rate applicable at the time of the investment; all figures in this report are the converted sterling figures.

Full details of the methodology used in this report are given in Appendix 2.

1. KEY FINDINGS

This section looks at deal numbers and total amounts invested, region by region. It also covers deal sizes; a region which sees many deals may have only a relatively modest total investment if all the deals are low in value, and the obverse is true where a region sees fewer deals but has many very high value investments.

The patterns of investment are also strongly influenced by the types of investor active in each region, and the region's market sector strengths, and these are examined in sections 2 and 3.

1.1 Total deals - 2016 and 2017 compared

Between 2016 and 2017 investment increased both in terms of deal numbers and investment amounts. There were 3,579 equity investment deals done in 2017 (a 41% increase from 2,535 in 2016) and £10,883m of investment made (a 95% increase from £5,592m in 2016).

Figure 1 shows the big increases in both deal numbers and investment amounts across the UK in 2017. The dominance of the 'golden triangle' regions – London, East of England (which includes Cambridge), and South East (which includes Oxford) – remains very much in evidence and is growing. The golden triangle accounted for 73% of deal numbers (70% in 2016), and a massive 80% of all investment across the UK (80% in 2016).

2017 saw investment totals increase substantially towards the end of the year, attributed to the number of very high value deals transacted in the last quarter.

Figure 1: Number of deals and amount invested - 2016 and 2017

	Number of deals					Amount invested £m				
	2016	*share*	**2017**	*share*	*change*	**2016**	*share*	**2017**	*share*	*change*
North East	60	*2%*	43	*1%*	*-28%*	£60	*1%*	£148	*1%*	*146%*
North West	123	*5%*	186	*5%*	*51%*	£199	*4%*	£602	*6%*	*202%*
Yorks & Humber	65	*3%*	79	*2%*	*22%*	£141	*3%*	£110	*1%*	*-22%*
East Midlands	52	*2%*	54	*2%*	*4%*	£88	*2%*	£70	*1%*	*-21%*
West Midlands	62	*2%*	102	*3%*	*65%*	£61	*1%*	£140	*1%*	*129%*
East of England	185	*7%*	243	*7%*	*31%*	£611	*11%*	£1,301	*12%*	*113%*
South East	309	*12%*	455	*13%*	*47%*	£731	*13%*	£784	*7%*	*7%*
South West	118	*5%*	183	*5%*	*55%*	£143	*3%*	£428	*4%*	*199%*
London	1,281	*51%*	1,883	*53%*	*47%*	£3,139	*56%*	£6,662	*61%*	*112%*
N Ireland	48	*2%*	40	*1%*	*-17%*	£57	*1%*	£32	*0%*	*-44%*
Scotland	160	*6%*	236	*7%*	*48%*	£303	*5%*	£509	*5%*	*68%*
Wales	72	*3%*	75	*2%*	*4%*	£59	*1%*	£98	*1%*	*65%*
UK TOTAL	**2,535**	*100%*	**3,579**	*100%*	*41%*	**£5,592**	*100%*	**£10,883**	*100%*	*95%*
Republic of Ireland	181		151		*-17%*	£692		£553		*-20%*

All figures in this report exclude deals under £100k

Figure 1 shows that the increase in investment in 2017 was not evenly spread across the regions. The 'haves' had more, and many of the 'have nots' had even less than in 2016. Despite investment increasing by over 100% in some regions from 2016 to 2017, others - Yorkshire & Humberside, East Midlands, and Northern Ireland - all saw decreases in funding. The North East would have been in a similar position except for the £113m investment in challenger bank Atom.

Of the 'golden triangle' regions, the South East stayed relatively constant in investment terms although deal numbers were up by half. Outside the golden triangle, three regions led the field; Scotland saw significant increases in both deal numbers and funding, but the North West and South West fared even better with regards to investment levels, with a tripling in both regions.

The Republic of Ireland continues to perform strongly, although there has been a decline in the value of investment and number of deals since 2016[1].

1.2 Deals over £100 million

The largest part of the growth in investment comes from the higher value deals, particularly those over £100 million, which are listed in Figure 2. 2016 data showed four deals over £100m, totalling £714m; this has now increased to 15 deals totalling £3.467 billion. Five of these deals over £100m involved a single international investor, in each case not an organisation which makes regular investments in UK companies. Although these deals are heavily concentrated in London and the rest of the golden triangle, several other regions have seen investments at this level, indicating that there are now few geographic barriers to high level deals, but as the nature of the investors indicates, these are generally outlier, one-off deals.

Figure 2: Deals over £100m (2017)

Company	Region	Sector	Subgroup	£m	Investors
BGL Group	East	Digital	Fintech	£675	Canada Pension Plan Investment Board
Improbable	London	Other	Business services	£389	Softbank Vision Fund
FarFetch	London	Digital	E-commerce	£313	JD.com
Hyperion Insurance Group	London	Other	Business services	£298	Caisse de dépôt et placement du Québec (CDPQ)
Deliveroo	London	Other		£285	Eight Roads Ventures, T. Rowe Price
Truphone	London	Digital	Internet & Mobile Applications	£255	Business angel(s), others
TransferWise	London	Digital	Fintech	£215	Institutional Venture Partners (IVP), Mitsui, Old Mutual Global Investors, Sapphire Ventures, World Innovation Lab, angels
Gryphon Group	London	Other	Business services	£180	Leadenhall Capital Partners, Punter Southall
OakNorth Bank	North West	Digital	Fintech	£154	Coltrane Asset Management, The Clermont Group, Toscafund
The Ink Factory	London	Other	Music & video technology	£136	127 Wall Productions, Archimedia, Natixis Coficiné
The Hut Group	North West	Digital	E-commerce	£125	Old Mutual Global Investors, Sofina

[1] The decline may be due in part to more accurate reporting in 2017

Neyber	London	Digital	Fintech	£115	Goldman Sachs, business angel(s)
Atom	North East	Digital	Fintech	£113	BBVA, Toscafund, Woodford Investment Management
Gigaclear	South East	Technology & Engineering		£111	Infracapital, Railpen, Woodford Investment Management
BrewDog	Scotland	Other	Food & Drink	£100	TSG Consumer Partners

1.3 Influence of high value deals

A recurring feature of the market in recent years is the occurrence of outliers, deals above £10m that can in any year strongly influence the overall investment totals. The data shows this has increased between 2016 and 2017 with 131 deals above £10m recorded in 2016, increasing to 148 in 2017. In 2016 there were 12 deals over £50m (£1,252m investment), and 2017 there were 30 deals at this level (£4,520m investment) – increases of 150% (number of deals) and 261% (amount invested).

By far the majority of the deals over £50m (20 out of 30 deals) were in companies based in London, but high-value deals (over £10 million) have been seen in many regions; seven regions had deals over £50 million, and nine regions saw deals between £10 million and £50 million. Deals above £50m in the regions included the North East (Atom Bank), North West (OakNorth Bank, Hut Group), Scotland (BrewDog, NuCana, ROVOP), and the South West (TrueSpeed).

The 2016 data showed four deals over £100m, which has now increased to 15 in 2017. Five of the 15 deals over £100m in 2017 were in the fintech category, as were four of the 15 companies raising investment rounds between £50m and £100m. In this lower group (£50m - £100m) there were four life sciences companies (Orchard Therapeutics, Cell Medica, NuCana, and Autolus), and one energy/oil & gas company (ROVOP).

Although there were increases from 2016 to 2017 across the board, Figure 3 shows that the largest increases in investment totals arise from an increase in deals with a very high value of £50m plus.

Figure 3: Changes in investment 2016-2017, by size bands

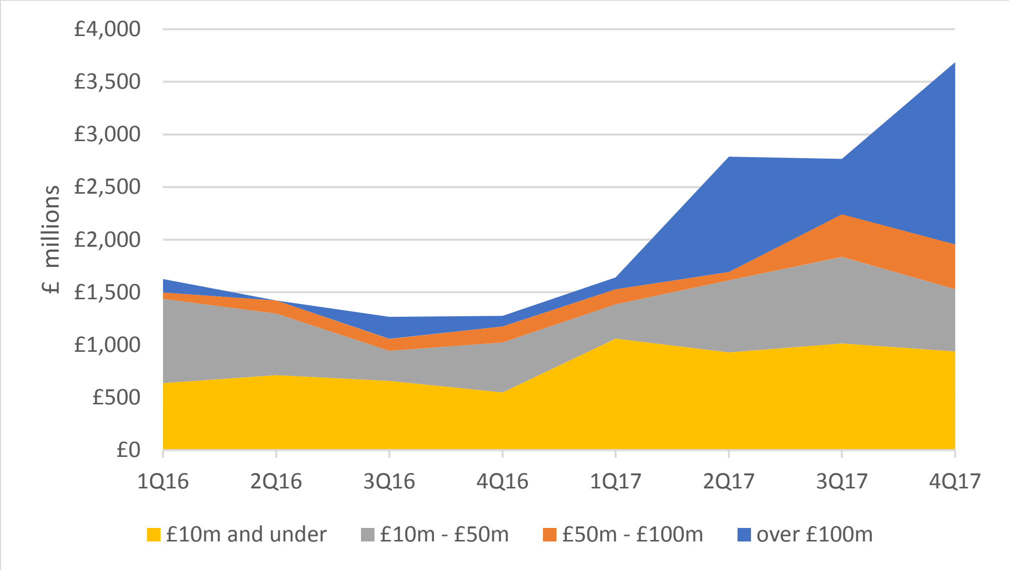
	Number of deals			**Amount invested £m**		
	2016	**2017**	***change***	**2016**	**2017**	***change***
over £100m	3	15	*400%*	£438	£3,465	*691%*
£50m to £100m	6	15	*150%*	£382	£1,055	*176%*
£10m to £50m	122	118	*-3%*	£2,143	£2,421	*13%*
£5m to £10m	125	160	*28%*	£823	£1,156	*40%*
£2m to £5m	284	373	*31%*	£820	£1,207	*47%*
£1m to £2m	336	453	*35%*	£440	£664	*51%*
£0.5m to £1m	394	629	*60%*	£265	£465	*75%*
£100k to £500k	1,215	1,816	*49%*	£280	£450	*61%*
TOTAL	**2,485**	**3,579**	***44%***	**£5,591**	**£10,883**	***95%***

Figure 4 below shows this by investment band and illustrates how this has changed in a very short space of time.

Overall, the size of high value deals has increased considerably, with deals over £50 million if not commonplace, at least not as exceptional as they once were.

These high value deals have not been at the expense of underlying investment, in deals below £10 million. This was higher in 2017 than in the previous year, with 3,431 deals (an increase of 46% over 2016) and investment of £3,942m (an increase of 50% over 2016).

Figure 4: Investment separated at the £10m, £50m, and £100m boundaries



All figures in this report exclude deals under £100k

1.4 Deal sizes by region

The breakdown of deals into more detailed size bands shows that the distribution of high value deals is highly concentrated in the 'golden triangle' regions, although even regions such as the North East, which otherwise see only lower value deals, can have companies which are able to secure investments of £100m or more.

Figures 5 and 6 below show the number of deals and amounts invested in these size bands, broken down by region.

Figure 5: Number of deals, regions by investment band 2017

	£100kto£500k	£0.5mto£1m	£1mto£2m	£2mto£5m	£5mto£10m	£10mto£50m	£50mto£100m	over£100m	**TOTAL**
North East	26	7	5	4	0	0	0	1	**43**
North West	85	37	25	23	8	6	0	2	**186**
Yorks & Humber	43	14	8	9	4	1	0	0	**79**
East Midlands	30	11	5	5	3	0	0	0	**54**
West Midlands	67	15	9	4	3	4	0	0	**102**
East of England	111	37	28	39	17	9	1	1	**243**
South East	242	85	47	59	9	12	0	1	**455**
London	909	329	264	196	92	73	11	9	**1,883**
South West	105	28	19	12	10	8	1	0	**183**
Scotland	135	44	25	16	10	3	2	1	**236**
N Ireland	20	9	9	2	0	0	0	0	**40**
Wales	43	13	9	4	4	2	0	0	**75**
UK TOTAL	**1,816**	**629**	**453**	**373**	**160**	**118**	**15**	**15**	**3,579**
Republic of Ireland	42	25	33	28	11	11	1	0	**151**

Figure 6: Amounts invested £m, regions by investment band 2017

	£100k to £500k	£0.5m to £1m	£1m to £2m	£2m to £5m	£5m to £10m	£10m to £50m	£50m to £100m	over £100m	**TOTAL**
North East	£7	£6	£8	£15	£0	£0	£0	£113	**£148**
North West	£23	£27	£36	£80	£56	£101	£0	£279	**£602**
Yorks & Humber	£10	£11	£13	£28	£35	£13	£0	£0	**£110**
East Midlands	£7	£8	£8	£22	£24	£0	£0	£0	**£70**
West Midlands	£16	£11	£14	£15	£18	£66	£0	£0	**£140**
East of England	£27	£27	£40	£125	£134	£217	£58	£675	**£1,301**
South East	£58	£63	£70	£190	£68	£225	0	£111	**£784**
London	£227	£245	£389	£627	£656	£1,550	£781	£2,187	**£6,662**
South West	£24	£19	£27	£35	£72	£175	£75	£0	**£428**
Scotland	£35	£32	£36	£50	£69	£46	£141	£100	**£509**
N Ireland	£6	£7	£13	£7	£0	£0	£0	£0	**£32**
Wales	£11	£9	£11	£14	£24	£29	£0	£0	**£98**
UK TOTAL	**£450**	**£465**	**£664**	**£1,207**	**£1,156**	**£2,421**	**£1,055**	**£3,465**	**£10,883**
Republic of Ireland	£12	£18	£50	£93	£73	£256	£51	£0	**£553**

Global context

While the UK is a very different investment market from the US, there are similar trends emerging. According to the Venture Monitor for 2017[2], prepared by PitchBook and the VC trade association NVCA, 2017 saw 8,076 deals in the USA raising a total of $84 billion, giving an average value per deal of $10.4 million (cf the UK average of £3 million, see Figure 7 below). As in the UK, mega-deals in the USA account for a large proportion of the total - $19.2 bn was raised by unicorns (companies with valuation at close of investment of $1 billion or more). The investment in the USA is also polarised between different regions and concentrated in global investment hubs; according to the Venture Monitor report cited above, companies on the West Coast (including San Francisco and Los Angeles) and Mid-Atlantic (including New York and Boston) secured three quarters of the investment, with all other regions well behind.

A major trend in the USA is the increase in deal sizes, coupled with a large decrease in deal numbers. At the angel and seed stage, the Venture report calculates a drop of 20% in deal numbers from 2016 to 2017, although investment totals increased moderately. Deal sizes had grown to a median of $1m, a 100% increase over the previous five years. Deals over $50m accounted for 65% of the total investment; that figure stood at just over 30% in 2012.

Much of this is reflected in trends in the UK market, and the same phenomena – larger deals, and a wider gap between the regions which secure investment and those which don't - apply in both markets. While there is no denying that companies should look to larger eco-systems to ensure that they make the most of their opportunities – and Scottish companies should certainly be aware of what is happening in London, and be connected to the technology groups and investor community there – the truth is that it is impossible to replicate exactly the circumstances present in a different market, and businesses need to build on the core strengths of their own communities.

In the UK at least, unlike in the USA, the increase in higher value deals in 2017 did not indicate a shift by investors away from lower value deals. In 2017, 68% of deals (2,445 deals) were below £1 million (excluding deals under £100k), compared with 65% (1,609 deals) the year before.

1.5 Average and median deal sizes

Analysis of data shows that there continues to be differences in the average and median deal sizes by region. Averages are highly influenced by the presence or absence of large 'outlier' deals, so that for example the North East, with a single deal over £100m (Atom Bank) lifts the average for investment overall. They are also heavily influenced by the number of deals in the region, so that a region with relatively small deal count such as Yorkshire & Humberside can produce an average not far short of that of a golden triangle region, the South East.

Figure 7 shows the average and median deal values for selected investment bands.

[2] pitchbook.com/news/articles/a-dynamite-year-for-vc

Figure 7: Average and median deal sizes by region 2017

	number of deals	investment £m	**average £m**	**median £m**	deals <£5m	deals £5m to £10m	deals £10m to £50m	deals £50m to £100m	deals >£100m
North East	43	£148	**£3.43**	**£0.45**	£0.82				£113.00
North West	186	£602	**£3.23**	**£0.58**	£0.97	£7.01	£16.84		£139.50
Yorks & Humber	79	£110	**£1.39**	**£0.42**	£0.83	£8.72	£13.00		
East Midlands	54	£70	**£1.30**	**£0.22**	£0.89	£8.15			
West Midlands	102	£140	**£1.37**	**£0.34**	£0.58	£6.09	£16.47		
East of England	243	£1,301	**£5.36**	**£0.60**	£1.01	£7.85	£24.07	£58.33	£675.00
South East	455	£784	**£1.72**	**£0.40**	£0.88	£7.60	£18.71		£111.00
London	1,883	£6,662	**£3.54**	**£0.54**	£0.88	£7.13	£21.23	£71.00	£242.95
South West	183	£428	**£2.34**	**£0.40**	£0.65	£7.23	£21.86	£75.00	
Scotland	236	£509	**£2.16**	**£0.42**	£0.70	£6.88	£15.23	£70.54	£100.00
N Ireland	40	£32	**£0.80**	**£0.51**	£0.80				
Wales	75	£98	**£1.30**	**£0.41**	£0.66	£5.90	£14.36		
UK TOTAL	**3,579**	**£10,883**	**£3.04**	**£0.50**	£0.85	£7.23	£20.51	£70.36	£230.97

All figures in this report exclude deals under £100k

The median figures give a better picture of investment levels as a whole in any region. London and the East of England come out well as might be expected, but the South East, the third golden triangle region, has average and median values surprisingly below those of the UK as a whole. This is accounted for by the size of deals over £50m in the region; for deals under £5m, the South East has the same average investment as London.

Scotland is in the middle of the table for overall deal averages (5th out of 12), as well as for median values (=6th out of 12), but is one of only three regions seeing deals in every band across the spectrum.

1.6 Regional comparison

As noted in section 1.1 above, the regions in the 'golden triangle' (London, East of England, South East) continued to attract the bulk of investment in 2017.

Outside the golden triangle, three regions had a relatively strong investment performance; Scotland (236 deals, £509m investment), the North West (186 deals, £602m investment), and South West (183 deals, £428m investment). Since 2016 the Scottish market has continued to grow with an increase in deals (48% increase from 2016) and investment (68% from 2016). The North West and South West also experienced strong growth, with particularly large increases in the level of investment secured. The North West saw a 51% increase in deals and a 202% increase in investment and the South West saw a 55% increase in deals and a 199% increase in investment. This has resulted in Scotland moving from being the next best performing region after the golden triangle in 2016, to the next best performing for deal numbers.

We have selected these regions, together with the golden triangle regions, for more detailed analysis when looking at the types of investor most active in each region, with the results shown in Appendix 4. Many of the regions outside these six were unable to benefit from the overall increases in UK investment, and saw declines in deal numbers or investment amounts, or both.

A very large part of the increase in investment in UK companies is due to the expansion of higher value deals (those over £10m), with the majority benefiting companies in London.

1.7 Scotland

Scotland continues to see a substantial number of deals, and these cover the full spectrum of deal sizes in this analysis. However, as the averages in Figure 7 above indicate, the country has lower deal values than several other regions (in particular the North West and South West which we have highlighted in this report as providing the closest comparisons with Scotland). This is partly due to the relative lack of very large outlier investments in 2017, with can distort some of the comparisons. There are exceptions in a couple of technology & engineering subgroups, and food & drink, discussed in section 3.

1.8 Regional inequality

The data for 2016 and 2017 demonstrated the imbalance between regions, and this imbalance, in particular the predominance of the golden triangle, is increasingly recognised as a national issue.

The following table shows the distribution of investment (using the figures in this report), and compares it with other distributions by region - population density, business population estimates (number of businesses in the private sector), and GVA (gross value added).

Figure 8: Investment compared with population, GVA, and business population

	2017 £m	%	population millions	%	investment £ per head	GVA per head	business population	%
North East	£148	*1%*	2.6	*4%*	£56.13	£19,542	142,495	*3%*
North West	£602	*6%*	7.2	*11%*	£83.38	£22,899	529,785	*9%*
Yorkshire and The Humber	£110	*1%*	5.4	*8%*	£20.27	£21,285	419,215	*7%*
East Midlands	£70	*1%*	4.7	*7%*	£14.82	£21,502	370,795	*7%*
West Midlands	£140	*1%*	5.8	*9%*	£24.13	£22,144	449,835	*8%*
East of England	£1,301	*12%*	6.1	*9%*	£212.22	£24,488	572,420	*10%*
South East	£784	*7%*	9.0	*14%*	£86.86	£28,506	928,850	*16%*
London	£6,662	*61%*	8.8	*13%*	£758.09	£45,046	1,062,285	*19%*
South West	£428	*4%*	5.5	*8%*	£77.59	£23,548	531,965	*9%*
Scotland	£509	*5%*	5.4	*8%*	£94.18	£24,876	346,180	*6%*
Northern Ireland	£32	*0%*	1.9	*3%*	£52.63	£20,435	131,715	*2%*
Wales	£98	*1%*	3.1	*5%*	£10.28	£19,200	208,975	*4%*
TOTALS/UK averages	**£10,883**	*100%*	**65.6**	*100%*	**£165.79**	**£26,584**	**5,694,515**	*100%*

GVA and population data from the latest Office for National Statistics tables, business population from Government estimates[3]

[3] The links for the data used in this table are:
www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/latest

www.ons.gov.uk/economy/grossvalueaddedgva#timeseries

www.gov.uk/government/statistics/business-population-estimates-2017

The imbalance has not decreased in 2017; rather, it has intensified. Although the UK increase in deal numbers from 2016 to 2017 was about equivalent across the regions (66% in the golden triangle, and 65% in all other regions taken together), investment in the golden triangle increased by 77%, and in other regions by 69%.

As shown above, the golden triangle regions account for 36% of the UK's population, and a rather greater proportion of the business population - 45% - mainly due to the draw of London, but 80% of overall investment. Interestingly, the South East had a relatively low proportion of investment compared with its business population.

Outside the golden triangle, only the South West had a greater proportion of the number of private sector businesses than its proportion of population, but this was not reflected in its share of total investment. In this group (regions outside the golden triangle), Scotland had a closer relationship between business population and share of investment than any other region.

This relative under-performance is highlighted in EY's latest UK Regional Economic Forecast[4]. The report states that there is "No sign of any decline in geographic imbalances … In the three years since our first regional economic forecast, little progress has been made to reduce geographic imbalances between the South and the rest of the country. In fact there has been a slight increase in the imbalance as measured by shares of Gross Value Added (GVA)."

The British Business Bank has a stated objective to redress this imbalance in the availability of growth finance and patient capital. It has already launched three investment funds outside the south east of England (supported by the European Regional Development Fund, ERDF), of which the first two are the £400m Northern Powerhouse Investment Fund (NPIF) which announced in March 2018 that in its first year of operation it had invested £31 million in 207 Northern-based SMEs, and the £250m Midlands Engine Investment Fund (MEIF). Both these Funds offer a mix of debt and equity; only the equity investments are included in this and subsequent reports in this series, but even so the NPIF was the most active investor in the North West in 2017. A further regional fund, the £40m Cornwall and Isles of Scilly Fund (CIOSIF), issued an Invitation to Tender in February 2018.

Scotland has a well-established public sector support infrastructure providing funding and financing advice to companies seeking to grow, including Scottish Enterprise's Scottish Investment Bank. SIB's remit is to support the growth and development of Scotland's early stage risk capital market operating as a market gap funder. A key part of the remit is to generate positive economic impact while investing on a commercial basis. All interventions are designed to lever significant private sector funding. The co-investment funds which have been in place since 2003 have underpinned the growth of angel investment in Scotland (alongside the work of LINC Scotland to establish business angel groups), and provided a mechanism for increased VC and corporate co-investment.

In early 2018 the Scottish Government announced a commitment to establish a Scottish National Investment Bank, a new cornerstone institution in Scotland's economic landscape, which will integrate and expand on the available financing activities. The new Bank has a vision to "provide finance and act to catalyse private investment to achieve a step change in growth for the Scottish economy by powering innovation and accelerating the move to a low carbon, high-tech, connected, globally competitive and inclusive economy". The Bank will benefit from £2bn public sector capitalisation and is expected to be fully operational by 2020, after a transition period.

Precisely because of the need to build on local strengths it is important to have a number of investor bodies of different types (ie organised groups such as angel syndicates, and VC or corporate firms) focused on the local region and making regular investments. Ideally, there would be several such investors of different types and sizes, concentrating on different market sectors, to provide the diversity which enables a range of

[4] https://www.ey.com/uk/en/issues/business-environment/financial-markets-and-economy/rebalancing---ey-uk-region-and-city-economic-forecast

companies to access the finance they need. It is to be hoped that the NPIF and MEIF regional funds will provide a nucleus around which other investors can operate, co-investing where necessary to fund larger deals in the relevant regions.

There have been previous attempts to create locally-based investment funds, but this has not proven easy. Mercia Technologies, a quoted commercialisation firm with partnerships with 19 regional universities, has made a virtue of investing outside the south east of England. Other examples are difficult to find, and anecdotally find it hard to raise money from financial firms (banks, insurance companies, pension funds) that invest in funds based predominantly in London. Specialist life sciences VC firm Epidarex brought experience from its US operations and was able to raise a c£50m fund in Scotland in 2014, in partnership with Scottish and other UK universities and Scottish Enterprise, but this example has not been followed elsewhere.

1.9 Key findings – summary

- Investment increased considerably from 2016 – there was a 41% increase in the number of deals (from 2,535 to 3,579) and a 95% increase in investment totals (from £5,592m to £10,883m).
- The main increases were in high value deals – deals over £10m accounted for 4% of all deal numbers in 2017, but secured 64% of the investment.
- Investment in deals in the range £50m to £100m increased by 176%, and investment in deals over £100m increased by 692%.
- Most of the deals over £100m were 'one-off' deals, with investors making a single investment (not regularly investing in this market). They were spread across various regions of the UK, although the majority were in the 'golden triangle' regions.
- As in 2016, the golden triangle dominated the market, taking 73% of all deals, and 80% of all investment.
- This pattern – an increase in the number of large deals, and the polarisation between regions which secure investment and those which do not – mirrors the pattern in the USA, but at a different (lower) scale. Average investment in the UK was £3m in 2017, but $10m in the USA. This implies that it is difficult to replicate conditions elsewhere across the market as a whole, although there can be outlier deals (over £100m) and unicorn companies (valued at over $1bn) in any region.
- There are several public sector initiatives attempting to mitigate the imbalances between regions in terms of risk capital investment, but other than in Scotland, they are at present too recent to affect the picture presented by this report.
- Scotland continues to see a substantial number of deals, across all ranges of investment, and increasing levels of investment.

2. Investors

The reasons for the regional differences in investment are illustrated by differences in the types of investor active in each region, and the range of sectors which generate innovative companies.

2.1 Most active investors

Figure 9 below shows all investors who participated in 10 or more deals in 2017. Virtually all are UK based, with a couple of global VCs (which have offices in London) coming in towards the bottom of the table, usually as co-investors in large deals. Apart from the investors in (or originating in) the public sector, almost all the investors are based in London, with Scotland being the only other region with locally based investors completing a significant number of deals. The total annual deal numbers for most investors is small; in the case of some of the PE/VC investors this is because they are actively investing across many countries besides the UK.

The ranking is by number of deals (the number of transactions in which each investor participated), rather than by amounts invested; a ranking by the totals contributed by each investor is not possible from the data available, because although deal totals are known, the amount from each investor participating in a deal is not usually disclosed.

Figure 9: Most active investors by deal numbers

Investor	Type	Location	deals 2017	total deal values £m	average £m
Crowdcube	Crowd funding	UK-wide	145	£162.0	£1.12
Seedrs	Crowd funding	UK-wide	133	£87.8	£0.66
Scottish Enterprise	Devolved Government	Scotland	121	£128.5	£1.06
SyndicateRoom	Crowd funding	London	57	£46.6	£0.82
Development Bank of Wales	Devolved Government	Wales	37	£38.1	£1.03
Mercia Technologies	Commercialisation Company	Midlands/UK	35	£46.1	£1.32
BGF	Private Equity and Venture Capital	UK wide	34	£241.0	£7.09
VentureFounders	Crowd funding	London	20	£32.9	£1.65
The London Co-investment Fund	Local & Regional Government	London	23	£19.4	£0.84
Par Equity	Private Equity and Venture Capital	Scotland/UK	19	£19.7	£1.04
LocalGlobe	Private Equity and Venture Capital	London	18	£85.2	£4.73
24Haymarket	Angel Group	London	18	£29.4	£1.63
Startup Funding Club SEIS Fund	Private Equity and Venture Capital	London	17	£7.4	£0.44
Parkwalk Advisors	Commercialisation Company	London	15	£69.2	£4.61
Archangels	Angel Group	Scotland	15	£18.8	£1.25
Touchstone Innovations	Commercialisation Company	London	12	£188.0	£15.67
Angel CoFund	Central Government	UK-wide	12	£22.7	£1.89
Woodford Investment Management	Private Equity and Venture Capital	UK-wide	11	£408.0	£37.09

Octopus Ventures	Private Equity and Venture Capital	South East	11	£84.6	£7.69
Maven Capital Partners	Private Equity and Venture Capital	UK-wide	11	£28.1	£2.55
IP Group	Commercialisation Company	London/UK	11	£52.3	£4.75
Index Ventures	Private Equity and Venture Capital	London, USA	11	£308.0	£28.00
London Business Angels	Angel Group	London	10	£14.3	£1.43
Accel	Private Equity and Venture Capital	USA	10	£273.0	£27.30

Apart from the crowdfunding platforms, most of the other investors on this list regularly co-invest with others, so many deals are duplicated. The 'total deals values' column shows the total deal sizes, not the amount contributed by the named investor; the 'average' column however takes total deal values divided by the number of deals in which the investor participated, to provide some scale for comparison of the investment range in which each investor is active.

2.2 Investor types – who is investing

The mix of different investor types active in a given region serves to highlight the strengths and weaknesses of the entrepreneurial eco-system there. A wide mix of investors provides more choice for companies and is a useful proxy for the strength of the equity market in a region. This report divides investors into three main groups: individual investors, institutional investors, and public sector funds. The different types of investors are described in more detail in Appendix 3.

Individual investors

Individual investors are people investing directly in a business, in their own name. This includes business angels, angel syndicates, and crowdfunding platforms.

Business angels

In most of the UK, business angels operate as individuals, often grouping together in specific deals, but it is not usually commonplace for them to combine into formal syndicates or groups[5], where all members invest on the same terms and conditions, the same documentation and procedures are used in all deals, and deal flow is filtered by a gatekeeper or lead investor. In Scotland, investments by angel syndicates comprise a major part of the market at the early stages of a company's development. Since 2003 Scotland has seen a steady increase in the number of formal business angel groups who have been able to increase their investment capacity by co-investing alongside the Scottish Enterprise co-investment funds.

While Scotland stands out, across the UK there are several indications of a growing trend towards business angel syndication (as opposed to investing by individuals), as the benefits of investing in a portfolio of companies, with like-minded individuals, on common terms and conditions, are more widely appreciated.

The UK Business Angel Association (UKBAA) confirmed that this trade association has welcomed more groups to its membership over the past year – partly a result of the increasing trend towards investing in syndicates, and partly the result of more promotional work by the Association to attract members.

[5] Although in practice the terms 'syndicate' and 'group' are interchangeable in angel investing, some commentators prefer to restrict the term 'syndicate' to cases where different organisations (eg more than one angel group, VCs, corporates) are co-investing in the same deal.

Previous data has shown that in Scotland in 2017 levels of co-investment by business angels with other investor types had increased, enabling companies in Scotland to source larger investments from consortia which include a variety of investor types. From the data available for this Investment Benchmarking Analysis report there is no sign of this trend yet being replicated elsewhere in the UK; some business angels and groups in London do occasionally co-invest with other investor types, but this is not a regular occurrence.

The recent launch of Angels Invest Wales by the Development Bank of Wales, and a commercial investment programme to be launched by the British Business Bank to support developing clusters of business angels outside London, will both accelerate the trend towards more angels working in syndicates, as will a related trend towards groups of angels congregating around lead investors, sometimes 'super-angels' with more than usual investment capacity. None of these trends is currently obvious from the data underlying the current report, but can be expected to be in evidence over the next two or three years.

The market is different in the USA, but some market trends have indirect influences on the market in the UK. As reported in the Pitchbook Venture Monitor (see Global context, section 1.4 above) in 2016 capital invested and financing at the angel and seed stage decreased by 20%. The market has now seen an increase in institutional investors active in this area, which has resulted in an increase in deal sizes. This is to some extent replicated in the UK. Many lower value deals are now headed by investors which we have categorised as PE/VC firms, which include EIS and SEIS funds and some early stage VCs, as well as commercialisation companies. This has not raised the median value of deals however, which stands at around £500k, and is reached by angel syndicates as well as institutional investors.

Crowdfunding

The strong presence of crowdfunding platforms in 2017 is not surprising. Even after removing deals under £100k for this report, these funders have opened up a route for companies in many different sectors. Take up is strong in B2C companies, to secure investment which might not be possible from other early stage equity investors, many of whom focus on businesses aiming to disrupt their target markets, and are based on technology or knowledge which can be protected as intellectual property. Crowdfunding appears to be particularly suited to companies in the clothing and fashion, food & drink, and business services categories where the competitive advantage is likely to come from quality and branding, without the need to disrupt the way in which the markets operate. We have counted 66 companies which raised £1m or more on crowdfunding campaigns in 2017, a 38% increase on the 48 companies tracked in 2016; at least 11 of the 66 were fintech companies, including challenger banks and other online financial services.

There was a 26% increase in crowdfunding investments raising over £100k from 2016 to 2017 (either as a result of successful crowdfunding campaigns or with a significant crowdfunding element) – from 258 to 324 deals; there was also an even larger increase (81%) in total investment, from £176m to £318m indicating that average funds raised were much greater (from £682k to £980k). This does however include deals such as mobile-only bank Monzo, which raised £71m in a deal including Crowdcube and other investors. The median value of the deals shown as crowdfunded in this report (which are restricted to those raising over £100k) was £490k.

Institutional investors

Institutional investors are organisations which invest funds provided for example by their own investors, or by a corporate parent. This includes venture capital and private equity firms, corporate venture funds, commercialisation companies (focused on investing in technologies arising from universities and other research institutions), accelerators, and others.

Venture Capital & Private Equity

The main type of institutional investor active in this market is the venture capital firm. Some of the terminology used in the market is inexact, with the term 'venture capital' applied to some investors which support MBOs (management buy outs), restructurings, and other financial engineering of companies which have long had revenue flows. Conversely, the term 'private equity' is often used generically to describe equity investment in private companies, although a stricter definition separates later stage private equity firms from earlier stage venture capital investors. One point is apparent, both in the UK and the USA; the clear majority of equity invested in private companies is in the later stage deals (when companies are already generating revenue on a consistent basis), with true 'venture' capital (focused on seed and early stage rounds to enable investees to prove their technology or business model) being only a small part of the whole.

The British Venture Capital Association (BVCA) uses the term 'private equity' to describe the industry as a whole, encompassing both 'venture capital' (the seed to expansion stages of investment where minority equity stakes are taken) and management buy-outs and buy-ins (usually where majority or whole equity stakes are taken). It does however give separate statistics for its members' investments at the venture stage, and its latest figures are shown below:

Figure 10: BVCA venture capital and other investment

	deal numbers			amounts invested £m		
	2014	2015	2016	2014	2015	2016
venture capital	49	44	50	£85	£104	£302
other	114	126	147	£8,558	£10,825	£14,003
TOTAL	163	170	197	£8,643	£10,929	£14,305
venture proportion	30%	26%	25%	1.0%	1.0%	2.1%

These figures demonstrate the very small proportion of investment by BVCA members in seed and other early stage rounds. The overall amount invested in VC stage companies increased substantially in 2016, but it is difficult to tell whether this represents increased investment by VC specialists, or by private equity companies lowering their barriers; anecdotally, there appear to be more PE companies making investments in the market, but the number of such deals is still low. This increase is however borne out by the data compiled for the current report; in 2016 we tracked 486 deals by PE/VC companies, increasing to 908 in 2017 (an 87% increase).

Corporate Venturing

Turning to corporate investment, in 2017 the publication Global Corporate Venturing, which tracks investments by corporate VC funds internationally, tracked "2,320 deals worth an estimated $109.23bn of total capital"[6]. This was a 6% increase on transactions for 2016 and a record for corporate venturing investment.

This has been paralleled in our figures for the UK; in 2016 we tracked 51 investments by corporate venture funds, compared with 127 transactions in 2017 (including direct corporate investments as well as corporate venture funds) – an increase of 149%. The regional breakdown for 2017 is given in Figure 11 below. Scotland had the second highest number of corporate deals done in the UK in 2017, second only to London.

[6] *www.globalcorporateventuring.com/article.php/19265/venturing-continues-to-grow?tag_id=543*

Commercialisation companies

In 2017 there was further consolidation of commercialisation companies, which are in effect venture capital firms focused on commercialising technologies emerging from the UK's universities and research institutions. In 2016 Mercia Technologies had acquired EV (Enterprise Ventures, based in Preston and managing some public sector funds as well as its own early stage funds), and at the end of the same year IP Group acquired Parkwalk Advisors (which continues to operate under its own name and is shown separately in the tables in this report). In 2018 IP Group completed the acquisition of Touchstone Innovations, begun in 2017; Woodford Investment Management was a significant investor in both organisations, and is a major influence behind commercialisation investment, through its own direct investments as well as through investments in other commercialisation funds.

In 2017 commercialisation companies participated in 42 deals, over a range of deal values, often co-investing with VCs and university funds. This was a decline from 2016, when we tracked 59 deals in which commercialisation companies participated.

Accelerators investing over £100k are currently concentrated in London, where they have participated in 29 deals, mainly in the lower value bands, but often co-investing in later stage high value rounds. There are as yet few accelerators elsewhere in the UK participating in investment rounds over £100k (the lower limit for this report).

Public sector investors

Public sector investors can be investments by central government agencies, or local or devolved government organisations, or other investors managing funds raised by government.

In Figures 11 and 12 in section 2.3, the category 'Public sector investors' covers direct funding interventions, which support initiatives targeted at specific regional or sectoral aspects of the market.

These are one of the ways in which Government supports investment in innovative companies with high growth prospects. Although the investments by Scottish Enterprise (through its investment arm, the Scottish Investment Bank) and the Development Bank of Wales dominate the figures for public sector funding in these tables, public sector support may not be as obvious in other regions where there is indirect investment into funds from organisations such as the European Investment Fund (EIF), the British Business Bank (BBB), and Enterprise Ireland (see section 2.6).

UK Government tax incentives also play an important role in encouraging investment into higher risk and early stage companies. The statistics in the present report are particularly influenced by the Enterprise Investment Scheme (EIS) and Seed Enterprise Investment Scheme (SEIS), which give tax reliefs to individual investors investing in early stage SMEs. The statistics for the use of these schemes are given on the UK Government website (*www.gov.uk*), and demonstrate that there have been high levels of take up by companies and their investors, increasing in recent years. Many of the investments involving business angels and crowdfunding in the data in this report will have been in EIS/SEIS qualifying companies.

2.3 Types of investor by region and deal size

In the following two tables, the figures do not relate to the total deal numbers, and are the number of times investors of the type shown participated in deals in the region shown – for example, if three VCs participated in the same deal, this would be shown as 3 in the tables. This reflects the reality of different investors coming together around a single deal and the operation of government backed co-investment funds.

We have also shown separately the number of deals where we have no details of investors (approximately half of the total number investments). It might be assumed that in larger deals it is institutional investors who are 'undisclosed', and in smaller deals it is business angels. From the spread of undisclosed investors across different deal sizes we have concluded that the data we have for the distribution of investor types by region and by deal size is representative of the market as a whole.

Figure 11: UK investor types - participation in deals by investor types and region (2017)

	Individual investors			Institutional investors						Public sector investors				Others	
	Angels	Crowdfunding	**TOTAL**	PE & VC	Corporate	Commercialisation company	Accelerator	University	**TOTAL**	Central Government	Devolved Government	Local & Regional Government	**TOTAL**	others	no data
North East	4	4	**8**	4	0	0	0	0	**4**	1	0	10	**11**	2	25
North West	22	10	**32**	56	8	1	0	0	**65**	10	3	4	**17**	7	109
Yorks & Humber	3	6	**9**	13	5	1	1	0	**20**	7	0	3	**10**	1	47
East Midlands	2	2	**4**	16	0	0	0	0	**16**	0	0	0	**0**	1	38
West Midlands	4	14	**18**	20	2	1	0	4	**27**	0	0	3	**3**	0	66
East of England	24	24	**48**	58	7	12	0	8	**85**	1	1	7	**9**	3	162
South East	35	40	**75**	81	6	8	1	0	**96**	3	2	11	**16**	8	332
London	260	186	**446**	527	63	10	29	2	**631**	9	7	24	**40**	28	1,234
South West	12	21	**33**	41	15	3	0	3	**62**	0	4	1	**5**	2	118
Scotland	119	8	**127**	68	18	4	0	8	**98**	0	121	0	**121**	3	66
N Ireland	6	3	**9**	13	0	1	0	0	**14**	1	0	0	**1**	0	23
Wales	13	6	**19**	11	3	1	0	1	**16**	0	37	1	**38**	2	29
UK TOTAL	**504**	**324**	**828**	**908**	**127**	**42**	**31**	**26**	**1,134**	**32**	**175**	**64**	**271**	**57**	**2,255**
Republic of Ireland	41	7	**48**	72	41		4		**117**	38					26

Deals in which individual angel investors participated are in the majority in most regions, although regions with the lowest total investment had more institutional than individual investors. Outside the golden triangle, whose three regions saw most types of investor well represented, Scotland was the region where angel deals were most prevalent.

A notable feature of this list is the number of deals in which crowdfunding platforms were involved, across all regions but especially in London. In both Scotland and the Republic of Ireland, the number of crowdfunding deals is low in relation to deals by other types of investor; in both cases it is possible that local entrepreneurs turn to the types of investor known to support early stage companies (angel groups in Scotland, small VCs in the Republic of Ireland) rather than launch crowdfunding campaigns.

Private equity & venture capital firms are also represented across all regions. PE/VC investors were particularly active in the capital, but are also well represented in deals in the East of England and South East, often co-investing in deals led by university-focused funds.

The regions with the lowest deal totals and investment (North East, East Midlands, Northern Ireland, Wales) saw few institutional investors. PE/VC funds made 65 investments in companies in Scotland (compared with 119 investments by angels), and Scotland was second only to London in the proportion of corporate investors represented.

The commercialisation companies are focused in the regions where the main golden triangle universities (Cambridge, Oxford, Imperial, UCL) are based. Both Cambridge (East of England) and Oxford (South East) now have well-developed investment eco-systems, with the commercialisation companies, individual angels and angel groups, and university funds co-investing in different combinations.

Figure 12: UK investor types - participation in deals by investor types and deal size (2017)

	Individual Investors			Institutional investors						Public sector investors				Others	
	Angels	Crowdfunding	TOTAL	PE & VC	Corporate	Commercialisation company	Accelerator	University	TOTAL	Central Government	Devolved Government	Local & Regional Government	TOTAL	Others	no data
over £100m	4	0	**4**	9	3	0	0	0	**12**	0	0	0	**0**	9	0
£50m to £100m	1	1	**2**	35	1	1	0	0	**37**	0	0	0	**0**	4	0
£10m to £50m	22	0	**22**	159	32	15	0	1	**207**	0	0	3	**3**	5	26
£5m to £10m	33	3	**36**	143	19	6	1	1	**170**	0	6	2	**8**	9	55
£2m to £5m	68	19	**87**	223	30	7	4	2	**266**	4	15	14	**33**	12	154
£1m to £2m	103	60	**163**	146	17	7	7	4	**181**	11	25	11	**47**	5	238
£0.5m to £1m	109	72	**181**	77	9	4	12	9	**111**	5	40	15	**60**	5	415
£100k to £500k	164	169	**333**	116	16	2	7	9	**150**	12	78	19	**109**	8	1,367
UK TOTAL	**504**	**324**	**828**	**908**	**127**	**42**	**31**	**26**	**1,134**	**32**	**164**	**64**	**260**	**57**	**2,255**

As in Figure 11 above, the figures shown in Figure 12 represent the number of deals in which each type of investor participated, and as there was considerable syndication and co-investment there is duplication of deal numbers.

The very high value deals, over £100 million (listed individually in Figure 2 in the previous section of this report), are largely the province of specialist investors - some private equity and venture capital investors, but here we also find asset managers, banks, and private investment vehicles, not as well represented in lower investment bands.

As might be expected, investments by individual investors are weighted towards the lower deal sizes. What might not be expected is the number of deals by institutional investors in these lower bands. This is partly due to the willingness of commercialisation companies and other specialist investors to make seed round investments in companies which they expect to have a bright future. Corporates tend to be in the higher value deals, as do the commercialisation companies, often co-investing with heavyweight corporates especially in life sciences. The various public sector funds are also concentrated on lower value deals, with a few exceptions.

2.4 Most active investors by selected regions

Following the overall analysis of investor types by region in Figure 11 above, we have looked at the most active investors in the 'golden triangle', and in three comparable regions – North West, Scotland, and South West - to identify differences in the pattern of investor types. The full lists are given in Appendix 4.

When looking at the main investors in different regions, two factors are noticeable; the most active investors are locally based, and very few investors make large numbers of deals in a year. Virtually all the most active investors across the UK are UK based (see Figure 9 in section 2.1 above), which implies that no region is materially missing out to another region by the absence of large global VCs or corporates being physically present; these are more likely to participate in one-off outlier deals, and are unlikely to change this pattern by focusing resources in a single geography.

Few regions apart from London and Scotland have investors who make multiple deals in a year, and there is a long tail of those making only one or two investments. In the lists in Appendix 4 we have shown the top ten most active investors for London and Scotland, and in other regions we have included only those making three or more investments per year.

A notable feature of these lists is the number of deals in which crowdfunding platforms were involved, especially in London. Private equity/venture capital investors are particularly active in the capital, but also appear in deals in the East of England and South East, often co-investing in deals led by university-focused funds.

Figure 26 in Appendix 4 illustrates the extent to which Scotland is different from other regions of the UK. Scotland has many more investors with high activity levels than the other regions. Crowdfunding deals feature in the North West and South West, but less so in Scotland. Whereas the North West and South West regions can be characterised as based on some locally focused funds, supplemented by some VC participation and crowdfunding for lower value deals, Scotland has the very active angel groups, the majority of which regularly had the Scottish Investment Bank (the investment arm of Scotland's main economic development agency, Scottish Enterprise) as a co-investor, supporting deals in a wide range of sectors and a broad range of deal values.

2.5 Regional comparison

In summary, many of the regions which secured the least amount of investment in 2017 - North East, Yorkshire & Humberside, East Midlands, Northern Ireland, and Wales – were characterised by low levels of investment by individuals (angels, crowdfunding). These regions saw greater numbers of investments by PE/VC investors, although the fact that deal sizes were relatively low in these regions indicates that these investors were not usually the large national or global investors. These regions were supported more (proportionally) than others by funding from central and local government.

By contrast, the regions raising the most investment – the golden triangle regions, and North West, Scotland, and South West – all had funding from across a range of different types of investor, suggesting that diversity is important for increasing the funding available. Investors such as the commercialisation companies and accelerators play a relatively small role in total investment, but increase the number of contexts in which funding can be provided.

2.6 Republic of Ireland

The sources and approach to gathering information for the Republic of Ireland is different than for the UK regions, and as a result we do not have the same level of detail for investor types to allow comparisons to be made. Figure 13 summarises the information available (these are the number of times investors participated in a deal, not the number of deals).

Figure 13: Investor types, Republic of Ireland participation in deals by investor types and deal size (2017)

	angels	Crowdfunding	accelerators	VC	corporate	Enterprise Ireland	Undisclosed	**TOTALS**
over £50m	0	0	0	1	0	0	0	**1**
£10m to £50m	2	0	0	9	2	1	1	**15**
£5m to £10m	3	1	0	9	3	1	0	**17**
£2m to £5m	8	0	0	16	8	2	3	**37**
£1m to £2m	9	0	0	13	9	13	9	**53**
£0.5m to £1m	8	1	2	9	8	9	4	**41**
£100k to £500k	11	5	2	15	11	12	9	**65**
TOTALS	**41**	**7**	**4**	**72**	**41**	**38**	**26**	**229**

All figures in this report exclude deals under £100k

The proportion of investment by VCs (31%) is much higher than in the regions of the UK. As 2016 data shows, the Republic of Ireland benefits from having many indigenous venture capital firms, as well as attracting interest from several early stage US VCs. Some of the Irish VCs are of a similar scale to the large angel groups in Scotland, but operate as VC funds rather than as syndicates. Over half the deals in which VCs participated (51%) were for under £2m, against 68% for business angels. Enterprise Ireland, which co-invests with all the other categories in Figure 13 as well as in its own name, focuses on the lower end of the spectrum of deal sizes, with 89% of the deals in which it participated being for under £2m.

The Republic of Ireland, like Scotland, sees a low level of successful equity crowdfunding campaigns. This could be because innovative young companies in these regions turn first to other types of investor – angel syndicates in Scotland, local VCs in Ireland.

2.7 Scotland

Scotland is significantly different from the comparable regions of the UK in a number of respects, the chief of these being the number of angel groups in the country. Only London sees more investments by angels or angel groups than Scotland, although it is noticeable that other regions which have a well developed equity funding eco-system – North West, East of England, South East, and South West – all have relatively high levels of angel activity.

Scotland has little crowdfunding compared with other regions – we have suggested that one reason for this is the tendency of companies seeking first investment to turn to the angel groups before considering crowdfunding, as appears to happen in the Republic of Ireland where the small local VC funds are the first port of call rather than crowdfunding platforms. The types of project suitable for crowdfunding are however different from those which are the main focus of angel groups (often technology based, bringing disruption to their markets, and needing funding to demonstrate technical feasibility rather than for market access). This suggests that increasing levels of crowdfunding in Scotland could increase the number of companies securing funding, without reducing the number raising investment from angels.

2.8 Investors – summary

- We have divided investors into three main groups for the purposes of this report; individual investors (angels, crowdfunding), institutional investors (PE/VCs, corporates, commercialisation companies etc), and public sector investors, with some others shown separately.
- The most active investors in the UK in 2017 were crowdfunding platforms, and funds operated by the devolved government agencies in Scotland and Wales.
- Virtually all the most active investors are UK based, with overseas investors more likely to invest in single larger deals.
- Even in the regions (including the golden triangle) which saw the most investments in 2017, few investors completed many deals. There were more repeat investors in London and Scotland than in other regions, but even here the most active independent investors (excluding crowdfunding platforms, and the devolved government agencies) participated in fewer than 20 deals each.
- Angel investments (individuals and groups) formed the largest proportion of deals in most regions; notably those regions with the lowest overall investment had proportionally fewer angel investments than elsewhere.
- Crowdfunding deals are seen across all regions of the UK, and in 2017 increased by 26% from the previous year (campaigns raising £100k or more).
- PE/VC deals are also seen in all regions, and cover a wide range of values; EIS/SEIS funds and early stage VCs invest in some of the lowest value deals (the data in this report is restricted to deals of £100k and above), together with early stage VCs and commercialisation companies.
- Investments by corporates, whether directly or through corporate VC funds, increased by 149%, reflecting a world-wide trend.
- Scotland has a wide spread/diversity of investors and is second only to London in the proportion of business angel deals and corporate investors represented.

3. SECTORS

In this report, we use five main sector categories – energy, digital, life sciences, technology & engineering, and other. A number of deals (17% by number, but representing just 6% of all investment) could not be allocated to appropriate categories, as insufficient information was available about the investee company.

The distinction between 'digital' and 'technology and engineering' is largely that between software and hardware, but the 'technology and engineering' sector includes a number of subgroups which are not directly related to the IT world, such as aerospace and materials. The 'other' group includes such sectors as food & drink, business services, and fashion & clothing.

The sectors which are predominant in a region are a determining factor in attracting investment. Often, where there are well established industries in sectors which are perceived to have high growth potential, new innovative companies will spring up, frequently begun by entrepreneurs with practical experience in the sector, to provide operational efficiencies to the main incumbents; this is true of the oil & gas sector, and of drug discovery. Investors in the risk capital market are targeting innovative start-ups such as these, which provide services or technologies to the dominant companies in the sector, rather than investing in the larger companies themselves, or for that matter in new oil companies or new pharmaceutical companies.

Elsewhere, as in the food & drink sector, it is possible to start new stand-alone companies, usually with B2C sales channels, rather than serving the major companies in the sector. Like those in the oil & gas and drug discovery sectors, these start-ups are often begun by people with extensive experience in the sector, and are attractive to risk capital investors. A parallel can be drawn with digital companies, many of which sell to consumers rather than to other businesses; if the product has a sector focus it will benefit from having founders with strong sectoral experience, but otherwise many of these companies are started by founders with technological strengths rather than sector experience (perhaps on the B2C basis that everyone is a consumer).

Contrast these sectors with traditional engineering. There are many large incumbent businesses in the industry, but there is either a lack of start-ups bringing new approaches to the sector, or it is perceived to have lower growth potential than other sectors and is potentially less attractive to equity investors. This is reflected in the relatively low levels of risk capital attracted to the East and West Midlands.

3.1 Market sectors

Figure 14 illustrates the breakdown of investments by the main sectors. Each sector is subsequently broken down by subgroup, to show the range of different activities included in each case, and the extent to which different regions of the UK have strengths in a particular area. The data we have about companies in the Republic of Ireland uses a different sector analysis from our own, based on the main sector strengths of the country, but we have used these to allocate deals to our own groups; the details are given in Section 3.4.

Figure 14: Main sectors by region, deal numbers and amounts invested £m (2017)

	Number of deals							Amount invested £m						
	energy	digital	life sciences	technology & engineering	other	unallocated	**TOTAL**	energy	digital	life sciences	technology & engineering	other	unallocated	**TOTAL**
North East	1	16	4	3	9	10	**43**	£1	£126	£8	£1	£7	£4	**£148**
North West	11	67	29	7	41	31	**186**	£19	£432	£47	£16	£55	£32	**£602**
Yorks & Humber	4	26	7	6	18	18	**79**	£5	£46	£3	£14	£35	£7	**£110**
East Midlands	2	15	5	8	10	14	**54**	£1	£22	£15	£7	£7	£19	**£70**
West Midlands	2	29	14	12	18	27	**102**	£0	£51	£41	£12	£20	£15	**£140**
East of England	9	77	49	23	32	53	**243**	£4	£946	£203	£39	£56	£53	**£1,301**
South East	12	149	57	57	77	103	**455**	£12	£283	£174	£96	£128	£91	**£784**
London	38	953	76	75	423	318	**1,883**	£115	£3,376	£445	£211	£2,171	£343	**£6,662**
Scotland	31	75	57	33	40	0	**236**	£92	£82	£147	£37	£152	£0	**£509**
South West	9	61	13	17	45	38	**183**	£3	£216	£32	£81	£44	£52	**£428**
N Ireland	0	19	8	3	6	4	**40**	£0	£18	£6	£3	£3	£1	**£32**
Wales	5	28	7	8	17	10	**75**	£16	£15	£24	£5	£32	£5	**£98**
UK TOTAL	**124**	**1,515**	**326**	**252**	**736**	**626**	3,579	**£270**	**£5,614**	**£1,146**	**£522**	**£2,709**	**£623**	**£10,883**
Republic of Ireland	5	61	47	15	23		**151**	£48	£215	£190	£69	£30		**£552**

There is considerable overlap between sector definitions, and many companies could be assigned to more than one sector. This is a particular difficulty when dealing with companies which use digital technology to a large extent in creating and/or delivering their products and services. A case in point is a challenger or online bank (several of which raised significant investments in 2017); their purpose is to provide a financial service to customers, not to write software, although their businesses will be heavily dependent upon a strong IT framework. However, as 'fintech' has become a main focus of investor attention over the past year, in order to illustrate the scale of activity in this category in this year's report we have followed other analysts and commentators in grouping online banks with other types of fintech company in the 'digital' sector above, rather than as business services in the 'other' sector. Elsewhere we have attempted to separate companies providing business services, whether digital or not, from those developing digital technologies as their main business activity.

This approach is reflected in the figures in Figure 14, where 'digital' now accounts for by far the largest number of deals and the most investment. London, largely thanks to fintech, now dominates this sector.

Life sciences deals are concentrated in the expected regions – the golden triangle, plus Scotland and the North West, although (as in 2016) investment levels in Scottish life sciences companies are below that of the other regions, proportional to the number of deals. The Republic of Ireland also has a strong life sciences sector, with relatively high levels of investment in relation to deal numbers.

Scotland has a proportionately higher number of investment deals in three of these sectors (energy, including oil & gas and renewables; technology and engineering; and other, mainly food & drink). Average investments in all sectors except food & drink are below those of the other regions which have significant deal numbers. The following breakdowns by sector subgroups give further details.

3.2 Breakdown by subgroups

Energy

Figure 15: Energy investment, breakdown by subgroup

	Number of deals								Amount invested £m							
	energy efficient technologies	environmental technologies	oil & gas	renewable	storage	recycling & waste management	others	**TOTAL**	energy efficient technologies	environmental technologies	oil & gas	renewable	storage	recycling & waste management	others	**TOTAL**
North East	0	0	0	1	0	0	0	**1**	£0	£0	£0	£1	£0	£0	£0	**£1**
North West	4	1	0	6	0	0	0	**11**	£7	£7	£0	£6	£0	£0	£0	**£19**
Yorks & Humber	1	1	0	0	0	1	1	**4**	£3	£1	£0	£0	£0	£1	£0	**£5**
East Midlands	0	0	0	1	0	0	1	**2**	£0	£0	£0	£1	£0	£0	£0	**£1**
West Midlands	1	0	0	1	0	0	0	**2**	£0	£0	£0	£0	£0	£0	£0	**£0**
East of England	6	0	0	1	0	1	1	**9**	£3	£0	£0	£1	£0	£0	£0	**£4**
South East	3	0	1	5	0	2	1	**12**	£5	£0	£1	£3	£0	£3	£0	**£12**
London	10	4	3	7	6	1	7	**38**	£41	£16	£1	£13	£41	£1	£1	**£115**
South West	3	0	0	2	0	3	1	**9**	£1	£0	£0	£1	£0	£1	£0	**£3**
Scotland	6	0	10	11	1	3	0	**31**	£7	£0	£77	£6	£1	£2	£0	**£92**
N Ireland	0	0	0	0	0	0	0	**0**	£0	£0	£0	£0	£0	£0	£0	**£0**
Wales	0	3	0	0	0	1	1	**5**	£0	£15	£0	£0	£0	£0	£0	**£16**
UK TOTAL	**34**	**9**	**14**	**35**	**7**	**12**	**13**	**124**	**£68**	**£39**	**£79**	**£31**	**£42**	**£9**	**£2**	**£270**

As elsewhere, we have grouped companies into broad categories for the sake of simplification; for example, we have put waste management companies in with recycling.

London covers all the bases, and has by far the highest level of investment, followed by Scotland, although the average investment in Scotland was much lower than in London. Few other regions had anything other than low level investment in the sector; in the North West the environmental technologies and renewables subgroups did better than elsewhere, and in Wales a £14.7m investment in environmental technology business Hydro Industries comprised almost all the total overall investment in the region.

There are not many high value deals in the energy sector, in comparison with the other sectors, but Scotland's position in the table is enhanced by two large deals in the oil & gas subgroup; £56m in ROVOP (which has a fleet of ROVs, underwater remotely operated vehicles), and £13m in upstream services group FrontRow Energy Technology, the main investor in both cases being BGF.

The renewables sector saw a large number of deals, but only a relatively modest investment total. Scotland accounted for the largest number of deals (11), but this included two separate deals in 3F BIO (aggregate £460k), and three separate deals in Scotrenewables (aggregate £1.2m), and the overall average investment was just over £0.5m. By contrast, the seven investments in renewable energy firms in London averaged £1.8m, helped by a £7.4m investment in plug-and-play solar system manufacturer BBOXX. The seven renewables deals in the North West had an average value of just over £1m.

Digital

The difficulty of separating companies into subgroups is most pronounced in the digital sector. There is considerable overlap between categories, and a difficulty in distinguishing between the technology used by a company (eg AR/VR, or machine learning and AI), and the application of the technology to an end user (eg B2C, B2B, marketing, education). Where possible we have tried to identify companies which can be categorised unambiguously, such as games developers and data/analytics companies, and allocated to the more general categories those companies which might have some connection with these activities but for example also have applications in other sectors.

Tables 16 and 17 below show the number of deals in the digital sector, and the investment in the sector.

There is a relatively large number of deals not assigned to specific subgroups (in the 'others' column); many of these are low value investments in companies in London (118 deals), which could be categorised in detail but would not make a significant difference to the table.

The following examples illustrate the difficulty of a) understanding what the company does and b) assigning it to a single subgroup:

- Zynstra (South West, £4.2m) intelligent infrastructure transforming edge computing for retailers
- Spectral Edge (East, £4.1m) combining patented image fusion with machine learning
- Exaactly (Yorks, £100k) an addressing system that is solving delivery problems around the world
- Thalia Design (Wales, £100k) a semiconductor electronic design automation company

The general category 'internet and mobile applications' has by far the largest number of deals. This category includes a large number of companies which have created websites for their own particular operations, or mobile apps. Although the category includes some high value deals, the average investment level is relatively low, as many companies in this category do not need large investments in order to reach their markets.

The fintech category dominates the sector in terms of investment, and here there are many large deals – 31 companies secured investment of £10m or more, with the largest shown in Figure 2 in section 1.2 above.

The fintech sector is very highly concentrated in London. Other digital groups are more widely spread, but it is interesting to see that in the 'golden triangle' the East of England had only about half the number of deals as in the South East; the investment levels are reversed, largely due to the high value of fintech investments in the East, in particular the £675m from the Canada Pension Plan Investment Board in BGL Group, a financial services company based in Peterborough.

Scotland had more deals in the digital sector than most other regions, but a lower level of investment. The comparison with the North West is stark; Scotland saw 75 deals for a total investment of £82m (average £1.09m), whereas the North West had 67 deals generating £432m of investment. However, the top two deals in the North West - £154m for challenger bank OakNorth from Singapore-based Clermont Group, Toscafund Asset Management, and Coltrane Asset Management, and £125m for e-commerce business The Hut Group from asset management firm Old Mutual Global Investors – comprised over half the total investment. Even without these two deals, the average investment for digital companies in the North West was £2.3m.

Figure 16: Digital investment, breakdown by subgroup, deal numbers

	Number of deals											
	AR & VR	data & analytics	e-commerce	edtech	fintech	games	internet & mobile applications	machine learning, AI, automation	software development	telecomms	others	TOTAL
North East	2	0	0	0	2	1	4	0	1	1	5	16
North West	3	7	3	0	11	3	23	1	4	2	10	67
Yorks & Humber	1	2	2	1	3	0	7	1	1	4	4	26
East Midlands	0	0	0	2	3	0	4	0	1	1	4	15
West Midlands	0	3	1	3	3	0	9	1	1	0	8	29
East of England	1	8	2	2	16	3	17	2	12	3	11	77
South East	1	12	2	3	18	3	54	0	17	2	37	149
London	7	78	49	20	228	12	335	15	83	8	118	953
South West	1	4	3	0	9	0	17	0	8	3	16	61
Scotland	0	9	0	1	10	3	36	0	14	1	1	75
N Ireland	0	5	0	0	2	0	5	2	2	0	3	19
Wales	0	1	3	0	3	0	11	0	2	0	8	28
UK TOTAL	16	129	65	32	308	25	522	22	146	25	225	1,515

Figure 17: Digital investment, breakdown by subgroup, investment in £m

	Amount invested £m											
	AR & VR	data & analytics	e-commerce	edtech	fintech	games	internet & mobile applications	machine learning, AI, automation	software development	telecomms	others	TOTAL
North East	£4	£0	£0	£0	£113	£2	£2	£0	£0	£0	£5	£126
North West	£5	£12	£126	£0	£211	£21	£45	£1	£2	£3	£7	£432
Yorks & Humber	£0	£16	£7	£1	£5	£0	£7	£1	£1	£6	£2	£46
East Midlands	£0	£0	£0	£4	£1	£0	£10	£0	£0	£5	£1	£22
West Midlands	£0	£1	£2	£1	£40	£0	£3	£0	£1	£0	£3	£51
East of England	£0	£34	£5	£0	£712	£9	£46	£0	£88	£34	£16	£946
South East	£0	£26	£12	£3	£24	£1	£48	£0	£29	£112	£28	£283
London	£20	£167	£408	£24	£1,273	£26	£981	£80	£266	£22	£110	£3,376
South West	£0	£6	£1	£0	£7	£0	£41	£0	£71	£76	£14	£216
Scotland	£0	£28	£0	£1	£12	£7	£25	£0	£8	£0	£1	£82
N Ireland	£0	£7	£0	£0	£0	£0	£3	£1	£5	£0	£1	£18
Wales	£0	£1	£1	£0	£2	£0	£4	£0	£4	£0	£4	£15
UK TOTAL	£30	£298	£563	£34	£2,400	£65	£1,216	£84	£475	£258	£192	£5,614

Life sciences

Figure 18: Life sciences investment, breakdown by subgroup

	Number of deals								Amount invested £m							
	agritech	diagnostics & therapeutics	drug discovery & testing	healthcare	medical devices	regenerative medicine	others	**TOTAL**	agritech	diagnostics & therapeutics	drug discovery & testing	healthcare	medical devices	regenerative medicine	others	**TOTAL**
North East	0	2	0	2	0	0	0	**4**	£0	£7	£0	£1	£0	£0	£0	**£8**
North West	2	8	3	5	9	1	1	**29**	£2	£10	£5	£14	£15	£1	£0	**£47**
Yorks & Humber	0	1	1	4	0	0	1	**7**	£0	£1	£0	£1	£0	£0	£0	**£3**
East Midlands	0	1	1	2	1	0	0	**5**	£0	£0	£0	£10	£5	£0	£0	**£15**
West Midlands	0	3	0	7	4	0	0	**14**	£0	£27	£0	£11	£3	£0	£0	**£41**
East of England	2	13	17	6	7	0	4	**49**	£1	£38	£120	£5	£38	£0	£2	**£203**
South East	0	16	8	14	9	2	8	**57**	£0	£77	£51	£4	£31	£8	£3	**£174**
London	1	14	11	37	6	3	4	**76**	£3	£207	£136	£33	£8	£55	£2	**£445**
South West	0	2	2	6	2	0	1	**13**	£0	£29	£1	£1	£1	£0	£0	**£32**
Scotland	4	12	16	14	6	2	3	**57**	£13	£106	£9	£10	£6	£2	£1	**£147**
N Ireland	0	0	2	3	3	0	0	**8**	£0	£0	£2	£1	£2	£0	£0	**£6**
Wales	0	3	2	1	1	0	0	**7**	£0	£5	£13	£1	£5	£0	£0	**£24**
UK TOTAL	**9**	**75**	**63**	**101**	**48**	**8**	**22**	**326**	**£19**	**£506**	**£338**	**£93**	**£117**	**£66**	**£8**	**£1,146**

The 'agritech' group here includes crop related technologies, as well as animal husbandry. 'Diagnostics and therapeutics' relates to companies providing products or services which help to diagnose or treat illnesses, while the 'drug discovery and testing' category is reserved for companies which are specifically taking pharmaceutical candidates through the regulatory steps to market approval.

Although the more general category 'healthcare' had the most deals in 2017, the 'drug discovery' sector saw the most investment, with London and the East of England taking the major share.

Scotland saw deals in all of these subgroups, but in comparison with some other regions the total investment was lower. The North West is again a case in point; with 29 deals against Scotland's 57, the North West secured £47m of investment versus £147m in Scotland (which includes the investment of £85m in NuCana). Apart from NuCana, both regions had a single deal of £10m or more; £12.9m for medical device company eLucid MHealth, from Catapult Venture Managers' Greater Manchester and Cheshire Life Sciences Fund, and £10m for agritech commercialisation business Roslin Technologies, from The British Innovation Fund. Removing the three deals over £10m leaves an average of £1.28m in the North West, and £0.86m in Scotland.

Technology & engineering

Figure 19: Technology & engineering investment, breakdown by subgroup

	Number of deals								Amount invested £m							
	aerospace	materials & chemicals	electronic devices & systems	engineering & manufacturing	robotics	sensors	others	**TOTAL**	aerospace	materials & chemicals	electronic devices & systems	engineering & manufacturing	robotics	sensors	others	**TOTAL**
North East	0	1	0	0	0	1	1	**3**	£0	£0	£0	£0	£0	£1	£0	**£1**
North West	0	0	4	2	0	0	1	**7**	£0	£0	£8	£8	£0	£0	£0	**£16**
Yorks & Humber	0	2	2	0	0	0	2	**6**	£0	£12	£2	£0	£0	£0	£1	**£14**
East Midlands	0	3	1	0	0	0	4	**8**	£0	£4	£1	£0	£0	£0	£2	**£7**
West Midlands	0	1	3	4	0	0	4	**12**	£0	£0	£2	£7	£0	£0	£2	**£12**
East of England	1	3	9	4	1	3	2	**23**	£0	£5	£10	£9	£10	£4	£0	**£39**
South East	4	11	7	17	1	5	12	**57**	£6	£16	£22	£31	£1	£12	£8	**£96**
London	7	5	22	28	3	0	10	**75**	£5	£9	£77	£90	£26	£0	£4	**£211**
South West	1	1	9	2	2	1	1	**17**	£10	£0	£48	£2	£20	£0	£0	**£81**
Scotland	0	2	21	7	1	2	0	**33**	£0	£1	£18	£17	£0	£1	£0	**£37**
N Ireland	0	1	0	1	0	0	1	**3**	£0	£2	£0	£1	£0	£0	£0	**£3**
Wales	0	0	1	4	1	0	2	**8**	£0	£0	£0	£3	£0	£0	£1	**£5**
UK TOTAL	**13**	**30**	**79**	**69**	**9**	**12**	**40**	**252**	**£22**	**£51**	**£188**	**£167**	**£57**	**£18**	**£19**	**£522**

As in other sectors, we have grouped together companies under some broad headings, for example bringing together 'materials and chemicals', and 'engineering and manufacturing'.

The sector is dominated, in both deal numbers and investment amounts, by the 'electronic devices and systems' category, in effect the hardware converse of the software subgroup in our 'digital' sector.

As always, the golden triangle regions have the most deals and investment (62% and 66% of the totals respectively), but Scotland compares particularly well in this sector with the remaining regions (13% of all deals, for 7% of all investment), especially in the electronic devices and engineering/ manufacturing categories.

As in other respects, variety is a strength in terms of the range of activities covered by the subgroups above. Scotland's companies in the above table include several different types of business. Five of the companies in the electronic devices subgroups secured over £1m in 2017, in one or more deals: NC Tech, 360^0 imaging systems (£3.75m); Optoscribe, 3D photonic integrated circuits (£1.8m); Pyreos, thin film pyroelectric sensors (£3.17m), Shot Scope, wearable devices for golfers (£1.6m); and UnikLasers, continuous wave single frequency lasers (£1.02m). In the engineering category, two later stage companies secured large investments - Ace Winches (Balmoral, £10m), and Walker Precision Engineering (BGF, £4m) – while innovative compressor manufacturer Vert Rotors secured £1.3m from business angels and the Scottish Investment Bank.

Other

Figure 20: Other investment, breakdown by subgroup

	Number of deals							Amount invested £m						
	business services	fashion & clothing	food & drink	leisure	music & video technology	others	**TOTAL**	business services	fashion & clothing	food & drink	leisure	music & video technology	others	**TOTAL**
North East	2	0	2	1	0	4	**9**	£1	£0	£5	£0	£0	£2	**£7**
North West	16	2	11	3	0	9	**41**	£36	£5	£10	£1	£0	£3	**£55**
Yorks & Humber	5	2	7	1	0	3	**18**	£14	£1	£13	£5	£0	£1	**£35**
East Midlands	0	1	6	1	0	2	**10**	£0	£0	£6	£0	£0	£1	**£7**
West Midlands	9	1	2	1	0	5	**18**	£15	£0	£2	£1	£0	£2	**£20**
East of England	12	0	8	3	0	9	**32**	£37	£0	£9	£7	£0	£3	**£56**
South East	36	7	13	4	1	16	**77**	£58	£55	£5	£3	£2	£4	**£128**
London	184	53	89	12	11	74	**423**	£1,736	£104	£139	£17	£153	£23	**£2,171**
South West	13	1	9	4	0	18	**45**	£16	£1	£12	£8	£0	£7	**£44**
Scotland	11	5	19	2	1	2	**40**	£11	£1	£133	£0	£0	£5	**£152**
N Ireland	3	0	0	0	0	3	**6**	£2	£0	£0	£0	£0	£1	**£3**
Wales	5	2	0	1	2	7	**17**	£20	£1	£0	£1	£8	£2	**£32**
UK TOTAL	**296**	**74**	**166**	**33**	**15**	**152**	**736**	**£1,945**	**£169**	**£334**	**£43**	**£163**	**£54**	**£2,709**

The 'business services' category here is by far the largest subgroup, and even with 'fintech' companies removed to the digital sector it still encompasses a wide range of different types of business, from call centres to gyms, and from insurance brokers to recruitment agencies.

Food and drink is the next most important category, and includes a more cohesive group of companies, from food producers, brewers and distillers, through to food delivery and catering businesses. Scotland is strong in this sector, in terms both of deal numbers and amounts invested.

In both the business services category and food & drink, the south east corner of the UK benefits from the location in or near the capital of group head offices; companies may have significant operations in other regions but for the purposes of this analysis are allocated entirely to their head office region.

In Scotland, the large deals in BrewDog (£100m) and Innis & Gunn (£15m) accounted for most of the £133m total, and a further ten investments in brewing and distilling companies added £3m more. The eleven business services companies in Scotland securing funding were headed by contact centre business Ascensos (£6.6m), and included betting (Betsold), interior design & furnishing (Houseology), training (Stream Marine Training), and compensation management systems (Curo Compensation).

3.3 Regional comparison

In virtually every region of the UK, the digital sector accounts for the largest proportion of total investment. In the North East, North West, and East of England companies in the digital sector secured three quarters or more of all equity funding in 2017.

The predominance of this sector makes it difficult to characterise regions by particular sectors or subgroups, although special strengths are apparent within some of the subgroups.

As in other respects, the regions in the golden triangle are strong across the whole spectrum of market sectors. London benefits in particular from its strong position in fintech (74% of all deals across the UK, and 53% of investment in the sector), and its role as England's capital city makes it the natural location for business in subgroups such as food & drink, and business services – London saw 58% of all deals in the 'other' category, and 80% of all investment.

In all regions, a relatively strong performance in the investment level in a given sector is heavily influenced by high value deals. This was especially true in the North West, where large deals in the renewables, environmental technology, and medical devices contributed to the results, and was also true in the fintech category where London saw the most high value deals.

Scotland and Wales had a high number of deals in the digital sector in 2017, but this did not result in high levels of investment when compared with other regions.

3.4 Republic of Ireland, market sectors

We have given figures for investment deals in the Republic of Ireland in Figure 14 above, by the main sectors used in this report.

The data we have for the Republic of Ireland uses a different classification, which follows the strengths of the sector locally rather than our more generic categories. The breakdown is given in Figure 21, together with the broader categories to which we assigned each group in Figure 14.

Figure 21: Republic of Ireland, investments by market sector

		2016		2017		*change*	
		number	£m	number	£m	number	£m
Agri/ Food	life sciences	3	£1.10	10	£31.7	*233%*	*2773%*
Consumer/ eCommerce	digital	10	£31.23	7	£8.1	*-30%*	*-74%*
Education	digital	4	£25.02	3	£26.3	*-25%*	*5%*
Enterprise Solutions	digital	32	£101.31	20	£48.2	*-38%*	*-52%*
Entertainment/ Sport	other	21	£17.28	18	£24.9	*-14%*	*44%*
Fintech	digital	20	£53.26	17	£69.0	*-15%*	*30%*
Green/ Energy	energy	12	£80.32	5	£47.8	*-58%*	*-40%*
Health/ Medical	life sciences	42	£310.29	37	£158.6	*-12%*	*-49%*
Industrial Technologies	technology & engineering	5	£5.15	10	£61.5	*100%*	*1094%*
Security/ Safety	technology & engineering	4	£18.76	5	£7.0	*25%*	*-63%*
Social Media/ Advertising	digital	9	£11.00	5	£7.5	*-44%*	*-31%*
TelecomTech	digital	11	£30.84	9	£56.2	*-18%*	*82%*
Travel	other	8	£6.83	5	£5.4	*-38%*	*-20%*
TOTALS		**181**	**£692.40**	**151**	**£552.29**	*-17%*	*-20%*

As in the regions of the UK, the largest number of deals in the Republic of Ireland were in the digital sector, although in the Republic the most investment was in life sciences. The Republic has more clear-cut sectoral strengths than in most UK regions, and this extends to the subgroups such as agriculture/food, and education. This makes it easier to build an economic strategy closely focused on specific sectors, rather than supporting all sectors at the same level, and although the Republic of Ireland, like most other regions, provides for early stage companies across the board, there are signs that it is able to do more for favoured sectors.

3.5 Scotland

Investments in Scottish companies cover a wider spectrum of sectors and subgroups than in other regions.

Scotland has specific strengths in several areas, including energy (both oil & gas, and renewables), food & drink, and electronic devices and systems.

The average level of investment in all sectors in Scotland is below that of the North West and South West (the regions selected in this report as giving the closest comparison with Scotland), although this is much affected by the size of the deals in each case. The number of deals in most cases is too small to make positive or adverse comments, although it can be observed that although Scotland has as many deals over £5m as the other top five regions by size of investment (see Figure 6 in section 1.4 above), it has a lower median deal size (see Figure 7 in section 1.5)

3.6 Sectors – summary

- We have allocated companies into five broad sectors – energy, digital, life sciences, technology & engineering, and other – and broken down each sector into subgroups for further analysis.
- The digital sector had by far the most deals (42% of the total) and investment (52% of the total). This sector, which is a wide-ranging category, covers software businesses of all types.
- All regions had their highest number of deals in the digital category, although in some regions the highest investment was in other sectors.
- Fintech companies are included in the digital sector; this subgroup is highly concentrated in London (74% of all deals, 53% of all investment in this category).
- London, and to a lesser extent the East of England, the South East, and Scotland, have investments in all sectors across the board.
- Investment in life sciences companies is concentrated in the golden triangle regions, plus Scotland and the North West.
- The most investment in the energy sector went to companies in London and in Scotland (particularly in the oil & gas and renewables sectors).
- The golden triangle regions had the most deals and investment in the technology and engineering sector (which covers hardware of all types, including electronics, materials, and machinery), but Scotland compared well with a particular strength in electronics devices & systems.
- The ‘other’ sector covers a range of activities including food & drink, business services, and fashion and clothing. Partly thanks to its role as a capital city, London dominated this sector. Scotland was close to London in funding for food & drink companies, but only three deals accounted for 90% of the investment.
- The Republic of Ireland has particular strengths in the digital and life sciences sectors, with higher average deal levels than most other regions.
- Scotland had lower than average deals in most sectors, although in some subgroups the small number of deals and the presence of one or two high value deals makes direct comparison difficult.

4. EXITS

The fact that a company can raise a large sum of money is not in itself a measure of the success of the market; not until all the investee companies have progressed to an exit for their shareholders can this be judged, and even then, the success of any company will ultimately be based on other factors as well as the return to the investors. This section looks at the record in 2017 of investors achieving a return on their investments, and compares it with the position in 2016.

Although there can be other motives and rewards from investing than solely the prospect of financial gain, all investors need to see some return from their investments to make it worth continuing this activity. The main routes by which a return can be achieved are a sale of the company to a trade buyer, or a listing on a publicly quoted stock exchange – an IPO (initial public offering).

The term 'exits' applies to the investors rather than the investee companies. In the case of a trade sale, the acquired company will be merged into the larger entity, sometimes retaining its branding and many of the team which built the business, but sometimes being reduced to the minimum aspects of the business which appealed to the acquirer. From the point of view of entrepreneurial founders, there is usually some financial return, and the reward of seeing their project move to a new level, benefiting for example from the acquirer's more extensive sales channels and administrative back-up. In the case of an IPO, the founders will be required to stay with the business for a period, and the increased visibility for the company will bring advantages in terms of growth potential, together with challenges for meeting compliance and other obligations while under intense public scrutiny.

Very few of the companies which secure risk capital investment go on to give their investors a worthwhile exit. This is true globally; NVCA, the VC trade association in the USA, reports in its Venture Monitor for 2017 cited in section 1.4 above, that their members achieved a ratio of one exit for every 11 investments they made, having hovered around the 1:10 mark over the past ten years. For US VCs the average time to exit is reported as six years. For earlier stage investors this time line is likely to be even longer. Globally we are therefore seeing a reduction in the number of exits and an increase in the time to exit.

It is possible for investors with a portfolio of companies to show returns on investment which reflect the high risk/high reward nature of the market, but there is still little publicly available information on the performance of the market as a whole.

There are two other points to be made when contemplating the low number of exits by trade sale or IPO:

- there is value to the economy as a whole in having innovative young companies started up and taken as far as they can go. Such companies generally provide high value jobs, and returns to the Exchequer by way of income tax and VAT; and
- secondly, there is very limited available evidence on what happens to companies which secure investment but fail to reach an exit (and do not cease trading). There may be ways of working with such companies to help them either reach a level of activity which provides value to the economy even though at a lower level than originally planned, or to unwind in such a way as to retain whatever was of value, including the learning experience for the founders and employees.

4.1 IPOs

Figure 22, which lists IPOs in 2017, omits companies which floated on AIM in 2017 but were over 25 years old at the date of admission. It also excludes three companies - two in the North West (Footasylum and K3 Capital Group) and one in Scotland (Beeks Financial Cloud) - which are not known to have external equity investors. The table therefore represents exits for the investors in these companies, mainly angel groups and VCs specialising in the early stage technology sector, and in the case of pawnbroker chain Ramsdens acquisition finance from the Clydesdale Bank.

Figure 22: IPOs in 2017

Company	region	IPO date	raised millions	market cap millions	exchange & symbol	age in yrs
Ramsdens	North East	15-Feb-17	£15.6	£26.5	AIM:RFX	21.9
Eve Sleep	London	15-May-17	£35.0	£140.0	AIM:EVE	2.6
NightstaRx	London	10-Oct-17	$76.9	$900.0	NASDAQ:NITE	4.3
Destiny Pharma	South East	04-Sep-17	£15.3	£65.4	AIM:DEST	21.5
NuCana	Scotland	27-Sep-17	$114.0	$463.0	NASDAQ:NCNA	20.7
Keystone Law	London	27-Nov-17	£10.0	£50.0	AIM:KEYS	14.8
Mirriad	London	08-Dec-17	£26.2	£63.2	AIM:MIRI	11.4
Fusion Antibodies	Northern Ireland	18-Dec-17	£5.5	£18.1	AIM:FAB	17.1

Three of these companies (Nightstar, Mirriad, and Fusion Antibodies) are university spinouts; Nightstar, although shown as London based, started life as a spinout from the University of Oxford, and Mirriad is a spinout from the University of Surrey. The prevalence of companies in London in this list marks a change from 2016, when there was a wider spread across different UK regions. The average amounts raised by the IPOs were (as last year) in most cases relatively modest; of the nine companies which we tracked in 2016, six raised under £50m, as did six of the eight companies in this year's list. By comparison, according to the NVCA Venture Monitor cited earlier, VC-backed companies in the USA completed 58 IPOS in 2017 raising a total of $10 billion, giving an average of $172m.

4.2 Trade sales

Figure 23: Trade sales in 2017

Region	count	average age	with values	total value	average value
North East	4	24.0	0	£0.0	
North West	8	11.3	6	£265.0	£44.2
Yorks & Humber	4	12.0	1	£6.8	£6.8
East Midlands	4	15.3	2	£350.0	£175.0
West Midlands	3	47.2	1	£45.0	£45.0
East of England	6	11.5	3	£22.2	£7.4
South East	14	11.5	3	£970.4	£323.5
South West	2	9.1	0	£0.0	
London	45	9.2	12	£695.2	£57.9
N Ireland	0	n/a	0	£0.0	
Scotland	5	13.2	1	£27.0	£27.0
Wales	3	12.9	2	£60.3	£30.2
UK TOTAL	**98**	**11.8**	**31**	**£2,441.9**	**£78.77**

In this summary of trade sales, we have not been able to differentiate between companies which had external equity investment and those which did not, due to the numbers involved. However, the table gives a good picture of the M&A market available to companies looking for an exit for their investors.

The high average exit value for companies in the South East is heavily influenced by the largest deal in the year, the sale of outsourced clinical research service company Chiltern to LabCorp for $1.2bn (£912m). There were four further exits for over £100m (blinds manufacturer Hillarys Blinds, mobile music discovery app Shazam, cycling accessories business Rapha, and energy management software company Utiligroup), but the average for the remaining 26 trade sales with data is just £25 million.

Trade sales in 2017 were substantially down on 2016, when we found 304 deals, of which we had values for 45. The range of values covered two exits at £400k at the lower end, and Skyscanner, sold for £1.4 billion, at the top, and had a median value of £34.8 million.

By far the majority of trade sales in 2017 were for under £100m, with the median for the 31 deals for which valuations are available (approximately one third of the total) being £27m.

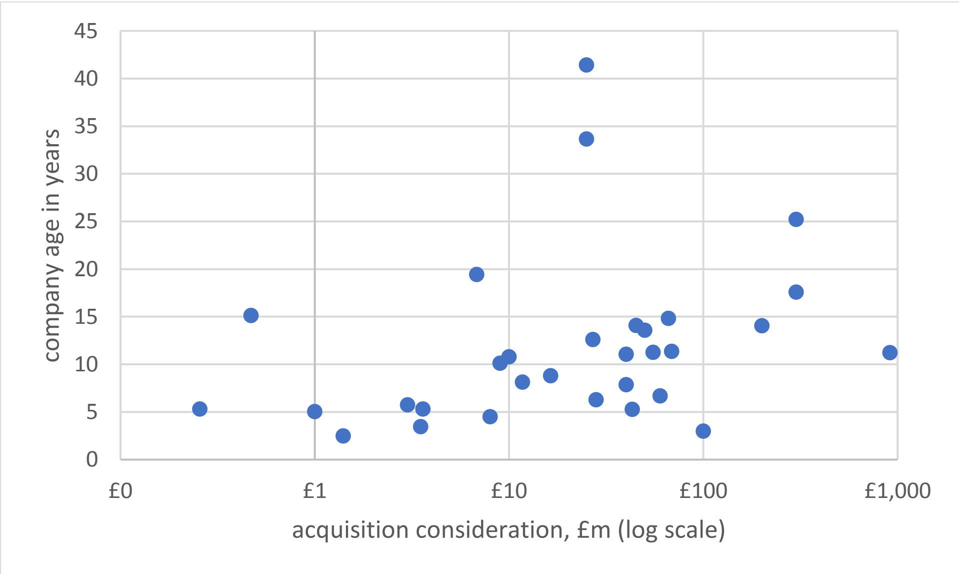
The correlation of exit value and the age of the company at the date of exit follows an expected trend, with older companies generally securing higher prices, with a small number of outliers. As illustrated in Figure 23, and reflected in the chart in Figure 24 below, the average time it takes for companies from incorporation to exit is well over 10 years (for the companies for which we have valuations on exit, the median time was 10.8 years). The UK average for all companies achieving a trade sale exit in 2017 was 12.6 years.

According to the *Crunchbase Mind the Bridge – Startup M&As 2017 Report*, which has tracked over 15,500 startup exits worldwide since 2010, the median acquisition price is slightly below $70m. These companies have on average between 10 and 50 employees at time of exit; the majority (53%) are acquired between 5 and 15 years after founding, and have raised over $50m.

However, there is a major imbalance between companies in the USA and elsewhere in the world. Exits by US companies account for approximately three quarters of the M&A value of startups, and European companies make up most of the remainder. The same report gives the following data on European startups exiting between 2010 and 2017:

- they make an exit a bit later (on average they are 9 years old at the time of the acquisition, compared with 8 from the US)
- they are smaller at the time of the exit, both in terms of headcount and capital raised - $113m raised versus $145m of the American peers.
- they sell for less: average (median) selling ticket is $46m vs $100m for US startups.
- they return on average more capital than US startups (or more properly lose less capital).
- they show an average (median) ratio between acquisition price and capital raised of 0.6 versus 0.35 of US exited startups.

Figure 24: Age and value of acquired companies



4.3 Regional comparison

The low numbers of IPOs mean that the figures for any one year might tell a different story from other periods before or after, but do appear to suggest IPOs are possible for companies from any region, given the right stage of company development and market conditions. The concentration of IPOs in 2017 on London companies is slightly exaggerated, as two of the spinouts which reached flotation were from universities outside the capital.

As in the previous year, trade sales in 2017 followed a similar distribution to that of overall funding, with the golden triangle regions accounting for a large proportion of the total (65%). Outside the golden triangle, trade sales were spread fairly evenly, and the average deal values, from the extremely limited information available, do not point to significant differences between regions.

4.4 Scotland

Scotland saw few exits in 2017. There is little in common among the trade sales to suggest any particular pattern.

4.5 Exits – summary

- Seven early stage companies which had external equity investors completed an IPO in 2017, six on AIM and one on NASDAQ.
- Four of these were based in London (though two of these had origins outside the capital).
- This compares with nine IPOs by early stage companies in 2016, more widely spread across the UK than in 2017.
- The average amounts raised by the IPOs were (as last year) in most cases relatively modest; in both years six companies raised under £50m (the NASDAQ flotation raised a much larger sum).
- 98 companies were acquired in trade sales in 2017 but we were unable to differentiate between those with external equity financing and those without. This is a significant reduction on the 304 deals recorded in 2016
- The acquired companies were from regions across the UK, but the majority (65%) were in the golden triangle, reflecting the distribution of investment.
- In the 31 deals for which we have information about the price paid, there were a couple of outliers over £100m but for 26 of these companies the median price was £25m.
- The average time from incorporation to exit was 12.6 years; this time has been increasing over recent years, but the sample size is small.

5. SUMMARY

Market observations

Globally, 2017 was a strong year for risk capital investing, and this is reflected in the market trends across the UK. Overall, the UK saw a 41% increase in deal numbers and a 95% increase in the total investment made between 2016 and 2017. The UK 2017 total reached £10.9bn of investment across 3,579 deals.

Much of the increase in investment was due to the presence of mega-deals (deals over £10m) in the market. A large proportion of the activity in the UK was highly concentrated in London, South East and East of England, collectively known as the 'golden triangle'. This concentration (73% of deals and 81% of investment) is even more significant when set against the area's share of the UK population (36%) and the business population (45%).

Outside of the 'golden triangle' the next best performing regions (North West, Scotland and the South West) have all seen significant increases in deal numbers and investment amounts from 2016. The North West and South West had significant increases in investment in 2017, with investment tripling in both regions. In contrast, the regions with the least risk capital investment – the North East, Yorkshire & Humberside, West Midlands, Northern Ireland, and Wales – have less diversity of sectors receiving investment and investor types. The Republic of Ireland continues to have a strong investment market, although overall investment levels fell in 2017 by 20% from 2016. Nevertheless, investment is still higher than in many of the UK regions, with only the 'golden triangle' areas and the North West having secured more investment than the Republic of Ireland in 2017.

Overall, one of the most noticeable features of the market is the large amount of investment that is flowing into single deals. This, combined with the concentration of activity in specific regions, is a trend seen elsewhere. PwC and CB Insights' Venture Capital Funding Report observed a 3x increase in quarterly mega-deals of over $100m+ since late 2016. This increase in the number of high value deals corresponded to an increase in investment levels overall, and like the UK this activity is focused on international investment hubs (San Francisco, New York, and Boston).

Across the UK, London saw most of these exceptionally large deals, but even the areas with the least risk capital investment had some large outliers in 2017. This increase in the number of very large deals is widening the gap between the regions. Overall performance is increasingly influenced by these outlier deals which contributes massively to investment totals. The volume of deals and amounts invested above £50m has increased substantially from 2016. The 15 deals above £100m in 2017 marked a step change compared with 4 deals at this level in 2016.

In Scotland, there has been a large number of deals across a full spectrum of deal sizes and a diverse group of investors. Based on past performance it is likely that Scotland will see more deals at this higher level. However, this will be influenced by a strong pipeline of opportunities and is likely to depend very much on individual companies, their ambitions and investor preference, with deals of this scale often involving a single investor which has not yet invested in any other company in the region. This would imply that it is not just a case of increasing the number of high value deals by attracting more investors willing to lead rounds of this size, but also about how to help even more companies to realise their potential and raise ambition to justify investment at this level.

Investor trends

When looking at the main investors active in different regions, two factors stand out; the most active investors are locally based, and very few investors make more than one to two deals in a year.

Virtually all the most active investors in the UK are UK based, with large global VCs and corporates more likely to participate in larger one-off outlier deals. Investors that are based overseas tend to only make very targeted single investments. This phenomenon of "single shot" investing is becoming an even stronger feature of the market, and shows the importance of being able to identify these investors as well as developing strong investment propositions to appeal to them.

There was a substantial increase in corporate investment in the UK, again a reflection of a wider global trend. In 2017 these deals were more likely to be found in London than any other region of the UK, although Scotland had a good number of corporate investors active in the market, with the second highest number of corporate deals. Of the 15 deals above £100m across the UK, five involved a single international investor, and in each case not an organisation which makes regular investments in UK companies. Although these larger deals are heavily concentrated in London and the 'golden triangle', several other regions have seen an increasing number of larger investments. This highlights the niche focus of many investors who globally seek to source the very best opportunities.

Outside of London, Scotland has the largest amount of angel investing. Increasingly angel groups are co-investing and syndicating with each other to undertake larger investments. The Risk Capital Market in Scotland 2017 report (Scottish Enterprise 2018) also concluded that syndication between formal angel groups and with others has been rising while warning that as angel finance has been regarded for some time as such a fundamental component of the Scottish investment scene, more so than elsewhere in the UK, there is a danger that a continuation of angel investment is taken for granted.

Crowdfunding activity in the UK continues to grow and the existing equity platforms have seen more deals over £1m than in previous years. Scottish companies (and companies in the Republic of Ireland) have turned to equity crowdfunding less often than those in other regions, possibly seeing business angel syndicates in Scotland and indigenous VCs in the ROI as a more visible first port of call.

Crowdfunding is still a relatively new form of funding, and no regular pattern has emerged for coping with calls for follow-on rounds, dilution of the original investors' stakes, and company failures. It is not certain that crowdfunding platforms would be in any better or worse position for providing substantial follow-on funding (usually required by companies starting to grow quickly) than the angel syndicates. It is important therefore for companies to understand the strengths and limitations of all types of investor that they may consider approaching, and in policy terms this is a further argument for more awareness raising and education on appropriate funding routes.

Across the UK, the risk capital market has seen the emergence of specialist investors, which focus on entrepreneurial early stage companies, often based on the commercialisation of new technology, particularly ventures arising from universities. These include IP Group and the investors it has acquired (Parkwalk, Touchstone) as well as Mercia Technology (active as a point of principle outside the golden triangle), and Epidarex Capital. These investors are all set up to have a good understanding of the sectors in which they invest, and where appropriate the procedures for dealing with universities on the transfer of IP, and they take a necessarily long term view on the exit horizon for the companies in which they invest. In an ideal world there would be more specialist investors, able to support technology companies through the long route to profitability, but it has proven difficult to attract investment into these funds. This is partly a question of the need for 'patient capital' but also a question of the risky nature of the market; the combination of high risk and long-deferred maturity has discouraged many LLP investors, but from a policy point of view any actions which can be taken to promote such funds must be helpful. This reinforces the message that companies need to look at a wide cross section of investors, beyond the local ecosystem, when seeking investment in order to identify specialist investors in their sector, and ascertain their appetite. This highlights the importance of having access to information and specialist advisers who have experience of working with, and knowledge of, this type of investor. The Republic of Ireland stands out as having a distinct market, and independent VCs transact larger deals but also operate in the deal spaces where we see business angels and crowdfunding operating across the UK.

Companies and sectors

Different company characteristics and sectors often have different funding requirements and investor types and preferences. For example, one reason why the risk capital investment in energy companies was relatively low in 2017 may have been due to the fact that much of the sector is either dominated by major oil and utility companies, or (as in the case of the renewables sector) is based on project financing and special purpose vehicles (SPVs) rather than equity. In the oil & gas sector, risk capital supports the lower funding needs of entrepreneurial companies with new products and services, who typically have direct experience of the market needs, and the knowledge and contacts to become revenue-generating quickly.

A further example is the growing business services sector, where companies aiming to disrupt markets can reach revenue generation quickly, but need substantial funding to secure market share, and in some cases to dominate the market and put competitors out of business. Uber and AirBnB are well known examples, and in 2017 Deliveroo is another that secured substantial investment (£285m). These companies depend upon rolling out their services in areas with large populations. In the USA, there are many large cities which make this possible for services such as food delivery, or even dog walking; this is not the case in the UK, and comparisons with such companies in the US can give only a part of the picture.

Within the UK the digital sector secured more investment than any other sector. Digital covers a wide range of businesses across software, including FinTech. FinTech in particular had a very strong year in 2017 for attracting investment, and saw a large number of deals at high values. This means that there is a large number of institutional investors taking the same view on the market potential for this sector, on the level of disruption investee companies might bring to the sector, and on the resulting risk/reward balance. While Scotland does not yet have a strong record of companies in this sector securing investment, a new initiative FinTech Scotland has been established, to encourage companies and investors to make the most of the opportunities which the sector presents.

As well as a number of early stage companies successfully securing investment, more established companies, often not in high tech sectors, are turning to equity to fund their growth. From a policy perspective, it is difficult to anticipate which sectors and companies may be attractive to investors in the future and already established companies may want or need funding, but even more difficult to encourage innovative companies or individual entrepreneurs to start new ventures in such sectors. This again comes down to awareness raising and highlights the importance of tracking trends in London and globally to help anticipate new opportunities and changes in investor appetite.

Policy implications

The data and findings in this report present a number of policy implications to be considered. Evidence suggests that companies based in the golden triangle are very successful at securing investment. For regions outside the golden triangle it is necessary to continue to increase the awareness of the range of available finance options and investors with an appetite to invest in international deals, ensuring that companies are well informed to access appropriate finance.

Much of the evidence shows that the overwhelming majority of investors make single deals. Multiple deals are, on the whole, the province of locally based investors. For companies seeking later stage (£2m plus) funding, most of the VC and corporate investors do not tend to make multiple investments in particular regions. Companies will need to look beyond the firms making current investments and look to a much wider group of investors to obtain the funding they need.

A recurring theme in this benchmarking analysis is the challenge of replicating the conditions that contribute most to improving the performance of the risk capital market. For example, the presence of many international investors in London and in the ‘golden triangle’ regions, and the presence of some of the country’s most prestigious universities, have helped build up eco-systems where people connected with the universities have started angel syndicates or VC funds. Given the diversity of investment markets in local areas it is important to build on local strengths and to encourage and support a diverse investor base alongside a growing pipeline of ambitious companies. Scotland has benefitted from a strong and well organised business angel market and the existence of formal groups that are visible to companies seeking investment. This, combined with the Scottish co – investment funds and co-ordination of organisations in Scotland which support early stage companies and their growth, has undoubtedly contributed to the relatively strong performance of the market. With a robust evidence base, there is the opportunity to continue to build on shared experience across the public and private sector of how companies can raise investment successfully.

Even in the two years that we have been collecting benchmarking data we have seen changes in the market, acceleration of earlier trends, and new developments. This emphasises the importance of having a robust and timely evidence base to inform the development of interventions that seek to have a positive influence on these emerging challenges and opportunities.

APPENDICES

Appendix 1: Definitions

Regions

We use the NUTS classification (Nomenclature of Territorial Units for Statistics), a hierarchical system for dividing up the economic territory of the EU for statistical purposes widely used in UK Government reports. The regions are:

- North East
- North West
- Yorkshire & Humberside
- West Midlands
- East Midlands
- East of England
- South East
- South West
- London
- Northern Ireland
- Scotland
- Wales

plus the Republic of Ireland.

Sectors

Investee companies are assigned to broad market sector categories; where companies are involved in more than one category, for example developing a website e-commerce platform for use in a specific sector, we make a 'best fit', generally prioritising the market where the product or technology will be used over the means of producing it (eg website or digital platform).

The broad sector categories, and the subgroups they include, are as follows.

- **digital & IT**
  - AR & VR
  - data & analytics
  - e-commerce
  - edtech
  - fintech
  - games
  - internet & mobile applications
  - machine learning, AI, automation
  - music & video technology
  - software development
  - telecomms
  - others
- **energy**
  - energy efficient technologies
  - environmental technologies
  - oil & gas
  - renewable
  - storage
  - recycling & waste management
  - others
- **life sciences**
  - agritech
  - diagnostics & therapeutics
  - drug discovery & testing
  - healthcare
  - medical devices
  - regenerative medicine
  - others
- **technology & engineering**
  - aerospace
  - materials & chemicals
  - electronic devices & systems
  - engineering & manufacturing
  - robotics
  - sensors
  - others
- **other**
  - business services
  - fashion & clothing
  - food & drink
  - leisure
  - music & video technology
  - others

Appendix 2: Methodology

Although there is some publicly available information about risk capital investments in the UK, it is often inconsistent and incomplete. Some investors or investee companies make announcements about deals, but many more do not. There is often a difficulty in establishing whether an announced investment includes grants or loans as well as equity.

Again, it is not always evident whether the announced amount is the total committed deal size (the 'headline' amount), which will typically be divided into separate tranches payable after the investee reaches agreed milestones, or whether it is one of these separate tranches.

The actual amount going into the investee company at the time of the investment can be checked on the Companies House records, where companies must post details of new share issues on SH01 forms (which indicate equity investments in the business). However, there is no penalty for late or incorrect submissions.

This report aims to include the separate tranche amounts rather than the full 'headline' figures, since the total announced amount might not be paid in full if the investee fails to meet deadlines. It is not always possible to make this distinction, for example in the case of investments by overseas VCs, late filings of forms to Companies House, or the use of convertible instruments which are not straight equity and are therefore not covered by new share issues.

YCF uses the following procedure for tracking risk capital equity investment deals:

- we start with YCF's list of companies, compiled for its monthly publication Young Company Finance in Scotland, the Quarterly Journals for its Spinouts UK project covering spinouts and start-ups from universities across the UK, and the more detailed listings prepared for the Risk Capital Market in Scotland commission from Scottish Enterprise;
- we check the Companies House record for these companies to ascertain if there were any share issues in the year which would indicate a new investment round;
- we check by desk research and by direct approaches to all investors known to have invested in the companies on these lists whether they made any relevant investments which were missing from our lists; and
- we check the websites of companies, investors, incubators, and organisations helping early stage companies by means of awards, grants, or fellowships (eg Shell Springboard, Royal Academy of Engineering) for news of investment deals.

This approach aims to find investments whether publicly announced or not. To avoid investigating in detail a large numbers of lower value deals which do not make a major difference to overall investment totals, we have excluded deals under £100k from all the figures in this report.

For the data in this 2017 report, we have drawn substantially on other resources, in particular the databases of Beauhurst (for investments in UK companies) and TechIreland (for investments in companies in the Republic of Ireland). Beauhurst is the developer of a database of start-up and scale-up companies across the UK; TechIreland is a not for profit organisation whose mission is to become the definitive source of data and insights on Irish innovation globally. Both organisations track unannounced investments as well as those in the public domain; Beauhurst's own publications are restricted to publicly announced deals, and include deals below £100k, which means that the figures in their publications do not match those in this report.

All investments in Euros in the Republic of Ireland or US dollars in any region are exchanged to £ sterling at the rate applicable at the time of the investment; all figures in this report are the converted sterling figures.

Appendix 3: Types of investor

Individual investors

This category includes the following:

Individual business angels

Business angels are High Net Worth individuals who invest directly into private companies. They may also invest as members of one or more angel groups or syndicates, or on crowdfunding campaigns.

Angel syndicates and networks

These consist of groups of business angels investing together in a deal, on the same terms and conditions. Such groups may consist of just three or four people, but the larger longer established groups can have more than a hundred members, not necessarily all investing in the same deals, but benefiting from the shared administration which includes screening and due diligence on deals, legal documents and forms, and the industry knowledge available from other group members. There is a wide range of different structures, from loose collaboration on single deals through to organisations which are managed in a similar way to venture capital firms (except that in the angel group all individuals are making separate investments in their own names).

When tracking investment deals, it can be difficult to differentiate between individual angels and angel groups. The larger groups list deals on their websites and often make public announcements about completed deals, but on other cases when it is known that individuals have invested in a round, it is not clear whether they were doing so as members of an established angel group.

Family offices and private investment vehicles

These are similar to angel groups, with the difference that they invest funds from a single individual or from a family. These groups are sometimes organised in the same way as angel groups (with the individual investing in his or her own name), but are more usually incorporated so that the fund is owned by the individuals, and it is the fund that makes the investment. Because of the close similarities with angel groups, we have included family offices and private investment vehicles under the generic heading 'Angels' in Figures 10 and 11 in section 2.3 above.

Crowdfunding platforms

Crowdfunding platforms enable members of the public to make investments, usually smaller than those by high net worth business angels, in companies which post fundraising campaigns on the platforms, with a stated target investment and a closing date. The platforms provide the structure and administration for operating the campaigns.

Institutional investors

This includes the following types of investor:

Venture Capital and Private Equity

Venture Capital firms manage funds raised from other investors - LLPs, limited liability partners, which can include insurance companies and pension funds, and other financial institutions entrusted with other people's money. VC funds are usually time-constrained, typically set up for a 10 year period in which the manager will attempt to complete all investments from the capital in the fund in the first five years, then focus on pressing investee companies to an exit (IPO or trade sale) in the subsequent five years; companies in the portfolio which do not show promise of a profitable exit will be shut down. Most VC firms manage a number of funds, and aim to produce high returns for their own investors in each fund, to enable them to seek support for further funds.

Private Equity firms are similar in many ways to VC firms, with the difference that they focus on investing in later stage companies with a proven cash flow, and aim to help them to a profitable exit within a shorter timescale than that of VCs.

The British Venture Capital Association (BVCA) observes that “Some commentators use the term ‘private equity’ to refer only to the buy-out and buy-in investment sector. Some others, in Europe but not the USA, use the term ‘venture capital’ to cover all stages, ie synonymous with ‘private equity’. In the USA ‘venture capital’ refers only to investments in early stage and expanding companies. To avoid confusion, the term ‘private equity’ is used . . . [by BVCA] to describe the industry as a whole, encompassing both ‘venture capital’ (the seed to expansion stages of investment) and management buy-outs and buy-ins.”

Corporates and corporate VC

This includes corporations which have set up specialised VC funds to invest in companies or technologies which are important for the parent company’s development strategy, and corporations investing in their own name rather than through a corporate VC fund.

Commercialisation companies

Over the past decade a number of investment vehicles have been set up to focus on research and technology being developed in the UK’s universities and research institutions, investing in companies which spin out from or start-up at these establishments (the term spinout indicates that the company was set up to commercialise IP – intellectual property – owned by the university or institution)

Several of these investors have partnerships with specific universities, either to manage investment funds (as Parkwalk Advisors does for the universities of Cambridge, Oxford, and Bristol), or by way of partnership agreements with universities to help with the commercialisation process and some initial funding (Mercia Technologies has such agreements with 19 universities across the UK). Touchstone Innovations has a different model; originally set up to manage investments in spinouts from Imperial College London, the fund now invests in university companies elsewhere in the ‘golden triangle

’, including Cambridge, Oxford, and UCL, often co-investing with other university funds and major corporate investors (especially in the life sciences sector). Both Parkwalk Advisors and Touchstone Innovations are now owned by IP Group, which is also a commercialisation company investing in its own name.

Accelerators

Traditionally, universities and other organisations based on research and development have created science parks to attract tenants of all sizes and backgrounds with a shared technology focus, and incubators, where spinout and start-up companies can be hosted and provided with specialist support for company growth. More recently, accelerators have been set up, often in an incubator, to ensure that the emerging companies are spurred to achieve results. Accelerators have a number of defining features:

- time -limited
- competitive
- participants are funded for the duration of the programme
- participants are helped to pitch for further funding at the end of the programme

Universities

Some investments by universities are managed by the Commercialisation companies described above. Others, such as Old College Capital, the investment vehicle of the University of Edinburgh, and the University of Birmingham Innovation Fund, make direct investments.

Public sector investors

In the tables presented in this report, the category 'Public sector investors' covers direct funding interventions, which support initiatives targeted at specific regional or sectoral aspects of the market. These include the following:

Central Government

This includes the Angel CoFund, a £100m fund set up with funding from the British Business Bank to invest between £100k and £1m, alongside syndicates of business angels, and the Northern Powerhouse Investment Fund, mentioned in section 1.8 above in the context of regional imbalances in investment for SMEs with high growth potential.

Devolved Government

The deals reported in 2017 include investments by funds set up by the devolved governments of Scotland and Wales. In Scotland, this comprises investments by the Scottish Investment Bank (the investment arm of national enterprise agency Scottish Enterprise), including its Scottish Co-investment Fund and Scottish Venture Fund. In Wales, it comprises investments by the Development Bank of Wales, including its Start-up and Early Stage Capital Fund, and Wales Technology Seed Fund.

In some cases, these funds have invested in companies which have an operating presence in Scotland or Wales, but due to their origins and other operations have been assigned to other regions in the dataset underlying this report.

Local and Regional Government

There are several funds set up by local government agencies to support local innovative companies, including a suite of funds in the North East (Proof of Concept Fund, Accelerator Fund, and Growth Plus Fund), Finance Birmingham, Finance Durham, and the London Co-investment Fund.

Others

This includes a number of investor types making a small number of investments, or co-investments with other types of investor, but which do not fit easily into the other categories. This group includes asset managers, banks and merchant banks, and charities and other not for profit organisations.

Appendix 4: Most active investors – top six regions

The following two tables look at the top investors in the 'golden triangle', and in three other comparable regions, to identify differences in the pattern of investor types. Few regions apart from London and Scotland have investors who make multiple deals in a year, and there is a long tail of those making only one or two investments. In the case of London and Scotland we have listed the top ten most active investors, and in other regions we have included only those making three or more investments per year.

Golden triangle

Figure 25: Top investors - golden triangle regions

Investor	deals	type
East of England		
Crowdcube	9	Crowd funding
SyndicateRoom	8	Crowd funding
Cambridge Innovation Capital	7	Commercialisation Company
Seedrs	5	Crowd funding
U of Cambridge Innovation Fund	5	University
Amadeus Capital	4	PE & VC
Parkwalk Opportunities EIS Fund	4	Commercialisation Company
Touchstone Innovation	3	Commercialisation Company
London		
Seedrs	82	Crowd funding
Crowdcube	66	Crowd funding
SyndicateRoom	22	Crowd funding
London Co-investment Fund	20	Local & Regional Government
Local Globe	17	PE & VC
Seedcamp	13	Accelerator
Startup Funding Club EIS	12	PE & VC
VentureFounders	12	Crowd funding
Index Ventures	11	PE & VC
Accel	10	PE & VC
South East		
Crowdcube	15	Crowd funding
Seedrs	11	Crowd funding
Parkwalk Opportunities EIS Fund	7	Commercialisation Company
24Haymarket	4	Angel Group
Mercia Fund Managers	4	PE & VC
U of Oxford Innovation Fund	4	Commercialisation Company
+ 7 others with 3 deals each		

North West, Scotland, South West

Figure 26: Top investors - North West, Scotland, South West

investor	deals	type
North West		
NPIF Equity Finance (Maven)	7	Central Government
Greater Manchester & Cheshire Life Sciences Fund	6	PE & VC
Mercia Fund Managers	6	PE & VC
Crowdcube	5	Crowd funding
Foresight Regional Investment Fund	3	PE & VC
Seedrs	3	Crowd funding
Scotland		
Scottish Investment Bank	121	Devolved Government
Par Equity	16	PE & VC
Archangels	15	Angel Group
Equity Gap	11	Angel Group
TRI Capital	9	Angel Group
Old College Capital	8	University
Barwell	7	Family Office
Kelvin Capital	7	Angel Group
EOS Tech Investment Syndicate	6	Angel Group
London & Scottish Investment Partners	5	Angel Group
Strathclyde Investment Fund	5	PE & VC
South West		
Crowdcube	13	Crowd funding
Bristol Private Equity Club	4	Angel Group
Seedrs	4	Crowd funding
SyndicateRoom	4	Crowd funding
Amadeus Capital	3	PE & VC
U of Bristol Enterprise Fund	3	University

Appendix 5: Author

Jonathan Harris

Editor, Young Company Finance

Jonathan Harris is the publisher and 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 was started by Gavin Don in 1998, YCF has given detailed reports of over 2,000 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 in Scotland have been licensed to LINC Scotland, the national business angel association.

Jonathan has carried out many independent research projects focused on the early stage company sector, for clients including amongst others the Connect networks in Scotland, Midlands, and Yorkshire, Informatics Ventures (University of Edinburgh), and Scottish Enterprise. Together with other organisations he carried out research for Scottish Enterprise's Risk Capital Market in Scotland reports from 2005 to 2011, and in 2012 YCF was awarded a contract to continue this series into 2017, reporting detailed information about investment in young companies in Scotland on a quarterly and annual basis. In partnership with Beauhurst, YCF has been awarded the continuation of this Risk Capital Report commission through to 2020.

In 2012 Jonathan was invited to join the team representing Scotland on the first Regional Entrepreneurship Acceleration Program (REAP), run by MIT (Massachusetts Institute of Technology). Teams from Scotland, New Zealand, Finland, Hang Zhou in China, Andalucia in Spain, and Veracruz in Mexico, participated in four workshops over a two year period to develop ways in which to build their entrepreneurial eco-systems. The report from the Scotland REAP team was taken up by Scotland CanDo, which is implementing its recommendations as part of a wide-ranging programme to boost innovation and entrepreneurship in Scotland.

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 kept up to date.

Prepared by Young Company Finance for Scottish Enterprise

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