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VENTURE CAPITAL, THE REGIONS AND PUBLIC POLICY: THE UNITED KINGDOM SINCE THE POST-2000 TECHNOLOGY CRASH

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11 ABSTRACT. The geography of venture capital in the UK has been shaped since 2000 by a significant increase in
12 public sector venture capital funds. Venture capital investments are now less concentrated in the South East.
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14 However, investment activity in the Midlands and North is dominated by the public sector. Deal sizes in these
15
16 regions are small. Venture capital, measured by the total amount invested, remains over-concentrated in London and
17
18 the South-East where private sector investors continue to dominate. The paper concludes by questioning whether
19
20 this increased dependence of Northern regions on public sector venture capital matters.
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25 Key words: venture capital, regions, regional policy, SMEs

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27 JEL: G2, G3, R1, R5
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32 33 1. INTRODUCTION

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35
36 Venture capital – which we define as independently managed, dedicated pools of capital that
37
38 focus on equity and equity-linked investments in privately-held, high growth companies (Lerner,
39
40 2009) – plays a central role in the emergence of new industries by funding and supporting
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42 innovative companies which come to dominate these industries¹ (Gompers and Lerner, 2001, ch.
43
44 4). Venture capital investment speeds the development of companies, enabling them to transform
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46 ideas quickly into marketable products and become industry leaders through first mover
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48 advantages (Zhang, 2007). Venture capital-backed companies aim at more radical innovations,
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50 are significantly faster in introducing their products to the market and pursue more aggressive
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52 market strategies than other start-ups (Hellmann and Puri, 2000, 2002). This, in turn, means they
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54 are younger when they achieve an IPO compared with companies that were not venture capital
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3 backed, and they sustain their success for much longer after their IPO (Gompers and Lerner,
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5 2001). Peneder (2010) finds that venture capital-backed firms grow significantly faster than other
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7 firms. Of course, venture capital firms are highly selective in the types of firms that they will
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9 invest in. Specifically, they seek to invest in businesses that have the potential to generate a large
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11 return on their investments in a five to seven year time frame through an initial public offering
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13 (IPO) or sale of their investee business to a corporate buyer. VCs therefore invest in management
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15 teams that are capable of rapidly building an enterprise, and in businesses that have a durable
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17 competitive advantage, where rapid expansion has significant payoffs, and which operate in
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19 markets that already have sizeable sales in conjunction with a large number of potential users
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21 who have not yet become customers (Bhidé, 2007). Peneder (2010) further demonstrates that the
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23 positive impact of venture capital investment on growth remains after controlling for the
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25 selection effect.
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34 However, the availability of venture capital is restricted in three key respects. First, because of
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36 the fixed costs involved in the investment process it is uneconomic for venture capital funds to
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38 make small investments. Indeed, the increasing size of funds under management has driven up
39
40 the typical size of investment (Murray, 1999; Dimov and Murray, 2008). This, in turn, has led to
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42 a shift away from investing in start-ups in favour of businesses in growth mode which have
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44 greater capital needs. As a consequence, business angels have become a more significant source
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46 of capital for new and young businesses (Mason, 2006; Mason and Harrison, 2010). Second,
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48 venture capital firms tend to concentrate their investments in just a few industries, reflecting their
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50 tendency to 'herding behaviour' which, in some cases, becomes myopia (Sahlman and
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52 Stevenson, 1986; Valliere and Peterson, 2004). Third, and the focus of this paper, research in
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3 various countries shows venture capital investments are geographically clustered, typically in the
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5 most technologically advanced regions (e.g. Florida and Kenney, 1988; Florida and Smith, 1991;
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7 Zook, 2002; Mason, 1987; Mason and Harrison, 1991; 2002; Martin et al, 2002; 2005; Chen et
8
9 al, 2010). This is attributed, on the one hand, to the spatial clustering of venture capital firms and
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11 the localised nature of the investment process, and on the other hand, to the availability of
12
13 suitable investment opportunities (Mason, 2007b).
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20 Reflecting the importance of venture capital in both innovation policy, facilitating the
21
22 commercialisation of the science base, and entrepreneurship policy, facilitating the emergence of
23
24 high growth businesses, national and state/regional governments have responded to these gaps in
25
26 the availability of venture capital with initiatives to increase its supply. In many cases these
27
28 schemes have an explicit geographical focus on under-supplied regions and localities. The aim of
29
30 this paper, which follows in the tradition of previous studies of the geography of venture capital
31
32 investing (see earlier citations), is to show how a combination of this increased government
33
34 intervention in the UK to address perceived market failures in the availability of venture capital
35
36 and a decline in private sector investing in the aftermath of the dot-com induced technology
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38 crash, has re-shaped the UK's geography of venture capital in significant ways. The paper's
39
40 contribution arises from its use of a data source not previously employed in studies of the
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42 geography of venture capital which makes it possible, for the first time, to distinguish between
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44 private and public sector investments across the UK regions.
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53 Our analysis shows that since 2000 the supply of venture capital across the UK regions has in
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55 some important respects become less unequal. This is largely an outcome of the increase in the
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3 supply of public sector venture capital, with the venture capital markets in the Midlands and
4
5 North of England, along with Wales, Scotland and Northern Ireland, now dominated by public
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7 sector venture capital. However, given the emerging criticisms of the effectiveness and impact of
8
9 public sector venture capital (Murray, 2007; Lerner, 2009; Nightingale et al, 2009) it is
10
11 legitimate to question whether such investment is able to promote entrepreneur-led economic
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13 development in the regions. We raise this debate in the concluding section of the paper.
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20 2. VENTURE CAPITAL AND GOVERNMENT POLICY IN THE UK

21
22 The UK has a long history of government intervention to fill gaps in the availability of finance to
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24 SMEs, dating back to the formation of Industrial and Commercial Finance Corporation (ICFC),
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26 the forerunner to 3i plc, the major private equity firm. Other significant, long-established policy
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28 interventions that continue to operate are the Enterprise Investment Scheme (EIS) and Venture
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30 Capital Trusts (VCTs) which offer tax incentives to private individuals who invest either directly
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32 or via managed funds in small unquoted companies.
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39 The policy regime that operated during the first decade of the 21st century was a product of the
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41 New Labour Government elected in 1997. Its 1998 Competitiveness White Paper (Department of
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43 Trade and Industry, 1998) had a strong focus on increasing the supply of venture capital
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45 throughout the UK. Indeed, one of the key objectives was to ensure that each of the regions had
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47 access to local smaller scale equity investors. These policy interventions were based on the belief
48
49 that there was a “market failure in the provision of finance in amounts below £500,000 for SMEs
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51 with growth aspirations” (Department of Trade and Industry, 1999).² This justification for
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53 intervention on the basis of filling gaps in supply in order to remove constraints on the ability of
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3 businesses to grow – which is seen as a serious impediment to the UK’s economic success – was
4 maintained in the Labour Government’s final policy paper *New Industry, New Jobs* (HM
5 Government, 2009: 10).
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12 The intervention took the following form (Table 1).
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15 • *Regional Enterprise Funds*: autonomous regional venture capital funds were established in
16 each English region. These funds were privately managed and commercially focused but co-
17 funded by government, the European Investment Fund and institutional investors (mainly
18 banks). Institutional investors were encouraged to invest by means of a structure that capped
19 the returns to government and subordinated their losses (i.e. government bore the first loss).
20 Investments were initially limited to a maximum of £500,000 but subsequently raised to
21 £660,000.
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- 32 • *UK High Tech Fund*: a national venture capital scheme to support early stage, high
33 technology businesses, operating as a "Fund of Funds" to invest in privately owned and
34 managed venture capital funds which support early stage, high technology businesses.
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- 40 • *Early Growth Funds*: a budget to provide funding for innovative proposals to develop new
41 initiatives to increase the availability of small amounts of risk capital for start-ups and small
42 businesses with growth potential. These comprised a mixture of regional and national funds
43 based on co-investing with business angels.
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51 With the exception of the UK High Tech Fund none of the funds were targeted at specific
52 sectors.
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3 In addition, eight of the nine Regional Development Agencies in England also established their
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5 own regional venture capital funds (the exception is the East of England), in some cases with
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7 funding from the Early Growth Funds. The upper limit of investments by these funds ranged
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9 from £50,000 to £250,000. The devolved nations (Scotland, Wales and Northern Ireland) also
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11 have their own venture capital schemes. For example, the Scottish Co-Investment Scheme,
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13 launched in 2003 with financial support from ERDB, invests alongside approved investment
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15 partners (mainly angel groups). Any business that an investment partner has invested in that
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17 meets the scheme's eligibility rules can access matched funding up to a maximum total
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19 investment of £1m.
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27 *TABLE 1 ABOUT HERE:*
28 *Publicly backed venture capital funds*
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31 The design of these funds reflected a fundamental shift of approach to more indirect forms of
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33 intervention alongside private investors. Previous approaches involving the creation of publicly
34
35 funded and managed venture capital funds had raised concerns about the competence of
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37 governments to undertake venture capital investments (Murray, 2007) and market distortion
38
39 through the 'crowding out' of private investors (Leleux and Surlemont, 2003). These new funds
40
41 were hybrids, with structures where government and private investors work in together as co-
42
43 investors (Murray, 2007). Three approaches are in evidence. The Regional Enterprise Funds
44
45 involved government co-investing alongside private institutional investors in funds which were
46
47 managed by private sector professionals. Government attracted private investors as co-investors
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49 in the fund by increasing their 'upside' returns, contributing to the operating costs of the fund, or
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51 underwriting some or all of the losses of the private investors (Murray, 2007). The UK High
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53 Tech Fund was a fund-of-funds which invested government money in privately owned and
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3 managed venture capital funds. The Early Growth Funds were established as co-investment
4 funds, investing alongside private investors (both business angels and private venture capital
5 funds).
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12 The launch of the scheme was delayed because of European Union ‘state aid’ concerns and so
13 only came on-stream in 2002-2003. However, as the paper will show, they quickly became
14 important players in the supply of early stage venture capital, changing the investment landscape.
15
16
17 The Regional Venture Capital Funds came to an end in 2008. The UK High Technology Fund
18 has also stopped making investments. However, new funds created under the auspices of the EU
19 JEREMIE scheme are due to come on stream in several regions³. The other funds are still
20 operational (SWQ Consulting, 2009). Using the data sources described in the next section, the
21 aim of the paper is to examine how this growth in public sector venture capital has changed the
22 geography of venture capital investment in the UK since 2000.
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36 3. DATA SOURCES

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38 The paper draws on two data sources. The first is the annual reports on investment activity
39 published by the British Venture Capital Association (BVCA). This is based on a survey -
40 undertaken by *PriceWaterhouseCoopers* - of the Association’s members which comprise the vast
41 majority of private equity and venture capital firms. It achieves a very high response rate, often
42 100%. Previous studies of the geography of venture capital in the UK have used this source (e.g.
43 Mason and Harrison, 1991, 2002). The main limitation is that the level of disaggregation is quite
44 limited, especially at the regional scale. In order to probe beyond the statistics that are reported
45 by the BVCA we utilise Library House data (now absorbed into Dow Jones Venture Source)
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3 which reports individual investments along with various additional information on the investor
4 and business which enabled customised tables to be generated.⁴ It is important to note that
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8 Library House's coverage of investment activity is narrower than that of the BVCA, and in
9
10 particular does not extend to private equity investments. In addition, its database is built up from
11 reported investments and so does not capture all the investments that BVCA reports in its annual
12
13 investments activity reports⁵. In addition, the amount of information that is provided about each
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15 investment in Library House's database is limited, which restricts the amount of disaggregation
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17 possible. In particular, only total amounts invested are provided: amounts invested by individual
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19 investors are not given. On the other hand, it does capture some investments, notably those by
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21 angel groups and high net worth individuals making large investments, which are not included in
22
23 BVCA investment statistics.⁶
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32 From the Library House database it is possible to identify three types of investments:

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34 • Those involving one or more private sector investors. This category primarily captures
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36 venture capital firms, but also includes and separately identifies investments by banks
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38 and other debt providers, charities, trusts and foundations and companies although not on
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40 a consistent basis. More significantly it also identifies investments made by *some* types of
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42 business angels, notably investor networks (e.g. angel syndicates), family offices and
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44 named and un-named high net worth individuals. On account of their size these
45
46 investments are much more visible than those of typical business angels. However, a key
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48 limitation of the data is that investments by business angels (angel groups and some
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50 named individuals) are only identified where they have co-invested with either private or
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52 public sector funds.
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- Those involving one or more publicly backed funds (e.g. Regional Venture Capital Funds). These are funds which have received some or all of their capital from the public sector, including central government departments, regional development agencies and the European Union (e.g. ERDF). They are normally managed by independent fund managers. However, the database does not differentiate between co-investment funds and other public sector funds. So, for example, investments made by the Scottish Co-Investment Fund, Scottish Seed Fund, Scottish Venture Fund and Business Growth Fund are not separately identified but simply classified as 'Scottish Enterprise'. Nor does it identify those funds that attracted investment from the UK High Tech Fund.
- Deals - which we term *co-investments* - in which one or more private sector investors has invested alongside one or more public sector funds. Investments in this category include both *ad hoc* syndications between public sector funds and private investors and also investments involving Co-Investment Funds that have been established specifically to invest alongside private investors.

The Library House database does not identify investments made using the EIS and its coverage of investments by VCTs is very patchy and so are not considered in the following analysis

4. VENTURE CAPITAL TRENDS IN THE UK SINCE 2000

4.1 Aggregate analysis

The UK boasts the largest private equity market in Europe, accounting for one in every three investments. Statistics on investment activity collected by the British Venture Capital Association (BVCA) show that there was a collapse in venture capital investing in the immediate aftermath of the tech-crash (2001-3). However, the *value* of investments trebled between 2003

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3 and 2007 from £4bn to nearly £12bn but then fell by 28% from 2007 to 2008 as the financial
4 crisis took hold (Figure 1). In contrast, the *number* of investments has remained fairly stable at
5 around 1300 over the same period.
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12 *FIGURE 1 ABOUT HERE*

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15 *Annual private equity and venture capital investment, 2001-8 (£m)*
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20 These statistics include all forms of private equity and not just venture capital. Closer
21 examination of the details behind these aggregate statistics indicates that this expansion in
22 investment activity has been in ‘private equity’ rather than ‘venture capital’, propelled by a huge
23 increase in funding for management buy-outs and buy-ins (MBOs and MBIs) (Figure 1). This
24 has had the effect of driving up the average (mean) size of investment over the period, peaking at
25 £9m in 2007, more than twice its 2001 value, dropping back to £6.7m in 2008. However,
26 reflecting the highly skewed investment size distribution, more than three-quarters of all
27 investments involve amounts of under £2m and around two-thirds are for under £500,000.
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42 *TABLE 2 ABOUT HERE*

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44 *UK early stage investments 2000-2008*
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48 The amount invested in early stage deals has recovered from the low point of the tech-crash in
49 the early 2000s but has fallen since 2000 as a proportion of the total amount invested, apart from
50 the anomalous year of 2006. The share of total investment activity accounted for by early stage
51 investments has been less than 6% in recent years (apart from 2006) (Table 2a). Numbers of
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3 early stage investments on the other hand have modestly increased since 2001, albeit erratically,
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5 from 31% to 38% in 2007, dropping back to 36% in 2008 (Table 2b). The average size of early
6
7 stage investments is now lower than at the start of the period (Table 2c).
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10 11 12 *4.2 Types of investor - Total investments*

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14 The additional dimension which the Library House database adds is evidence on changes in the
15
16 supply of venture capital since the turn of the century. Specifically, it reveals that the public
17
18 sector has become considerably more important as an investor in both absolute and relative
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20 terms. The number of deals involving public sector funds, either investing on their own or co-
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22 investing with private investors (funds or individuals), has more than trebled between 2001 and
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24 2007, although fell by 18% in 2008. This represents an increase in the share of investments
25
26 involving the public sector from 19% in 2001 to 44% in 2008 (Figure 2). Meanwhile, free-
27
28 standing private sector investments – although increasing in numerical terms from 2002 until
29
30 2006 – have declined as a proportion of the total number of investments from 81% in 2001 to
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32 56% in 2008. These trends – two sides of the same coin - underline the growth and current scale
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34 of the public sector's involvement in one form or another in the supply of venture capital.
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44 *FIGURE 2 ABOUT HERE:*

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46 *Proportion of investments by type of investor, 2000-2008*

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48 *(Note: calculated on the basis of the number of investments)*
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53 The increasing significance of the public sector has risen on account of its growing use of co-
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55 investment as an investment model. Co-investments accounted for 26% of investments in 2008
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3 compared with just 7% of all investments in 2001 (Figure 2). Indeed, public-private co-
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5 investments are now the dominant form of public sector venture capital investment, reaching a
6
7 peak of 67% of all deals involving the public sector in 2007 compared with 37% in 2001, and
8
9 since 2005 has exceeded the annual number of free-standing investments by public-sector funds
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11 (Figure 3a). One-third of private sector investments were co-investments with public sector
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13 funds in 2008 compared with just 8% in 2001 (Figure 3b), underlining that a significant
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15 proportion of private venture capital investment activity is now supported by the public sector.
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22 *FIGURE 3 ABOUT HERE*

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24 *Co-investments as a proportion of deals*

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27 *(Note: calculated on the basis of the number of investments)*
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32 *FIGURE 4 ABOUT HERE*

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34 *Distribution of deals sizes by type of investor, 2007*
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39 These trends can be unpacked in two further respects. First, these various types of investors
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41 occupy different parts of the funding spectrum (Figure 4). Private investors (funds and
42
43 individuals) had an average size of £3.7m in 2007 but a very wide size distribution, with 11% of
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45 deals below £250,000 but 45% above £5m. The average public-private co-investment is smaller
46
47 at £1.5m, with 81% of investments at £2m and below. Deals involving only public sector funds
48
49 were largely confined to £500,000 and under (83%) (£378,000 average size). Second, as noted
50
51 above, the 'private sector' category comprises different types of investors, notably funds and
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53 private individuals, or business angels, investing individually or in groups. Separately identifying
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3 business angels reveals that they have become more significant in both absolute and relative
4 terms, their investments increasing more than threefold in numerical between 2001 and 2007
5 (Figure 5), but then dropped back by over one-quarter in 2008, and their share of private sector
6 investment rising dramatically from 13% to over 40%. Moreover, business angels and angel
7 groups have become increasingly prominent as co-investment partners. Since 2005 they have
8 been involved in more than 40% of all deals annually in which public sector funds participated.
9 This reflects the maximum size of co-investment funds which is typically too small to interest
10 venture capital funds. For example, at the time of its evaluation 71% of the partners in the
11 Scottish Co-Investment Fund were business angel syndicates, and they had made 82% of the
12 investments (Hayton et al, 2008).
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29 *FIGURE 5 ABOUT HERE*

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32 *Number of investments with Business Angel involvement in the UK, 2001-2008*
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36 *4.3 Types of investor - Early stage investments*

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38 The increased involvement of the public sector is even more apparent in the early stage venture
39 capital market. Unlike BVCA investment statistics, which is classified by stage of investment,
40 the Library House database categorises deals in terms of rounds. In the following discussion we
41 therefore define an early stage investment as a round 1, 2 or 3 investment that is below £2m.
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51 The involvement of the public sector in the supply of early stage venture capital has increased
52 significantly to a situation in which it accounts for the majority of such investments by number
53 (Figure 6). In 2001 public sector funds were involved in 36% of investments. By 2003, as the
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3 various funds established by the Labour Government came on stream, this had risen to 51% and
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5 by 2008 accounted for 68% of all investments.
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10 A significant proportion of this increase in public sector investment activity has taken the form
11 of co-investments which have risen from 10% of all early stage investments in 2001 to more than
12 30% since 2005.⁷ The proportion of public sector investments which are co-investment deals has
13 risen from 28% in 2001 to peak at 56% in 2007, falling back to 45% in 2008. Nevertheless
14 private sector investors remain important, both as free-standing investors and co-investment
15 partners, involved in more than 60% of all early-stage investments annually between 2001 and
16 2008 and in some years this proportion was in excess of 70%. But what has happened is that an
17 increasing proportion of early stage private sector investments have been co-investments with
18 public sector funds, rising from 13% in 2001 to more than 45% since 2005, while the proportion
19 of independent private sector investments has fallen (to 32% of all investments in 2008).
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Figure 6 ABOUT HERE:

Early stage investments by year and type of investor 2000-2008

(Note: calculated on the basis of the number of investments)

46 A further significant development has been a change in the composition of the private sector
47 category. Business angels have become increasingly significant as a source of early stage
48 investment at the expense of private sector funds which have declined. Early-stage investments
49 by business angels increased in numerical terms year-on-year between 2001 and 2007, but fell-
50 back back in 2008. Their share of total private sector early stage investments has risen from 16%
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3 to 44% over the same period. Their share of total early stage investments increased from 12% in
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6 2001 to 32% in 2007, dropping to 28% in 2008.
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10 4.4 Summary

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12 Year-on-year trends in early stage venture capital investment since the post-2000 technology-
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14 crash have been volatile. Amounts invested have increased but remain well short of their 2000
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16 peak. The number of investments has also risen, reflecting an increase in smaller investments of
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18 under £500,000. The public sector has become proportionately more significant as an investor,
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20 largely on account of the growth of public-private co-investment which is now the dominant way
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22 in which the public intervenes in the venture capital market. Private sector investors remain
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24 prominent in terms of the number of investments they make, but are now much more likely to
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26 invest alongside the public sector in co-investment deals. The composition of early stage private
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28 sector investors has also changed, with an increase in the significance of investments by private
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30 individuals (including ‘mega angels’ investing alone, angel syndicates and other forms of
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32 organised angel investing) and a decline in the significance of private sector venture capital
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34 funds.
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46 5. VENTURE CAPITAL TRENDS IN THE UK REGIONS

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48 In the remainder of this paper we extend this analysis by shifting the focus from the national to
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50 the regional scale. It addresses two empirical questions:
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1. Does the geography of venture capital investments in the UK continue to be characterised by regional inequalities, as previous studies have indicated (Mason, 1987; 2007; Mason and Harrison, 1991b; 2002; Martin 1989; 1992; Martin et al, 2005)?
2. What has been the effect of the increased involvement of government in the supply of venture capital, as described in the previous section, on the geography of venture capital investments?

It is now well established that venture capital is not equally available in all parts of a country (Florida and Kenney, 1988; Florida and Smith, 1991; Green, 2004; Langeland, 2007; Martin et al, 2005; Mason and Harrison, 2002; Schwartz and Bar-El, 2007; Zook, 2002). Indeed, some types of government intervention have specifically focused on the 'regional equity gap' with initiatives designed to increase the supply of venture capital in specific regions and localities (Murray, 1998; Sunley et al, 2005). The uneven geography of venture capital investing is typically explained in terms of a combination of both supply and demand side factors. On the supply side, venture capital funds are clustered in a small number of cities. The concentration of venture capital investing in the regions and sub-regions in which venture capital firms are clustered occurs for two reasons. First, it reflects information on investment opportunities which, especially at the early stage, are highly localised. Second, investing locally is a means by which investors can reduce uncertainty and thereby minimise risk (Florida and Kenney, 1988; Sorensen and Stuart, 2001; Mason, 2007). Venture capital firms do make long distance investments, particularly as they mature (Cumming and Dai, 2010; De Clercq et al, 2001; Sorensen and Stuart, 2001), but this is normally in the context of syndicated investments with one or more other

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3 investors, and where one of the other investors – usually the lead investor - is local to the
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5 investee business (see Rosiello and Parris, 2009 for this feature in the UK biotechnology sector).
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10 On the demand-side, the uneven geography of venture capital investments clearly reflects the
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12 uneven geography of entrepreneurial activity – and of growth potential firms in particular – and
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14 the clustering of technology-based firms. However, it also reflects spatial variations in awareness
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16 of venture capital and connections with investors which is a further consequence of the
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18 localisation of venture capital firms (Thompson, 1989). Knowledge and learning about venture
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20 capital will be high in the local business community in areas where venture capitalists are
21
22 concentrated. Thus, both entrepreneurs and intermediaries, including accountants, bankers,
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24 lawyers and advisers, will have a greater understanding of the role and benefits of venture
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26 capital, what types of deals venture capitalists will consider investing in and the mechanics of
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28 negotiating and structuring investments, and intermediaries will have connections with venture
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30 capital firms to which they can refer clients. In areas which have few or no venture capital firms,
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32 in contrast, knowledge amongst entrepreneurs and the business support network will be weak
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34 and incomplete, intermediaries will lack connections with venture capital firms and, perhaps
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36 most significantly of all, will be less competent in advising their clients on what it takes to be
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38 ‘investable’. The effect is to depress demand for venture capital (Martin et al. 2002).
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48 *5.1 The regional distribution of venture capital investments: aggregate patterns*

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50 BVCA statistics on investment activity are disaggregated by region and, as noted earlier, have
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52 been used in previous studies to examine the uneven geography of venture capital investments.
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55 There are various ways in which to measure the regional distribution of venture capital
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3 investments. Essentially there are three critical decisions. First, are venture capital investments
4 measured in terms of number of investments or amount invested? Second, what types of venture
5 capital investments are included? Investment statistics are disaggregated by stage of investment
6 (start-up, other early, expansion and MBO/MBI). Third, should venture capital investment in
7 each region be compared with that region's stock of companies, new firms, employment or
8 population? Different conclusions may arise depending on the choices made. In what follows we
9 present the regional distribution of venture capital in the form of *location quotients* which
10 indicate each region's share of *early stage* (i.e. start-up and other early stage) venture capital
11 investments (both number and amount) as a ratio of that region's share of national business
12 activity (measured by the number of VAT-registered companies). A value of over one indicates
13 that a region has more than its expected share of venture capital investments based on that
14 region's share of the national business population whereas a value of less than one indicates that
15 its share is less than expected. The analysis is presented for four separate time-periods which
16 conform to aggregate investment trends. This also has the advantage of smoothing some of the
17 year-on-year fluctuations in investment activity that are apparent at the regional scale.
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41 *TABLE 3 ABOUT HERE.*

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43 *Distribution of early stage investments in the UK: number and region*

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45 *TABLE 4 ABOUT HERE.*

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48 *Distribution of early stage investments in the UK: amount invested and region*
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53 The regional distribution of early stage venture capital investments (Table 3) contrasts sharply
54 with the regional distribution measured in terms of amounts invested (Table 4). For the period
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3 2005-7, regions with more than their expected share of venture capital investments *by number*
4 included both the core regions of London, the South East and East of England and also several
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6 peripheral regions (North East, North West, Scotland). Regions with fewer than expected
7
8 investments included Yorkshire and The Humber, the East Midlands, West Midlands, South
9
10 West, Wales and Northern Ireland. In 2008, when the onset of the financial crisis resulted in a
11
12 downturn in venture capital activity, London and the South East continued to have more than
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14 their expected share of venture capital investments, along with the North West, North East and
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16 also the East Midlands and Northern Ireland (Table 3).
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25 However, a rather different picture emerges when *the amount invested* is considered. For both
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27 the 2005-7 and 2008 periods London and the South East each had more than their expected
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29 shares of early stage venture capital. The East of England, East Midlands and Yorkshire and The
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31 Humber also had more than their expected shares of investment activity in the 2005-7 period, but
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33 in the latter two regions (which both had lower than expected shares of venture capital
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35 investments by number) this is an outcome of one atypical year and in the other years their
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37 location quotients were less than one.⁸ In 2008 the regional distribution of early stage venture
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39 capital by amount was dominated by London which attracted almost half of the total. Only
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41 London and the South East, along with the North East, attracted more than their expected shares
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43 of early stage venture capital by amount (Table 4).
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51 Several regions have significantly more venture capital investments than expected but
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53 significantly less than expected shares of venture capital investment by value. This group
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55 comprises North West, Northern Ireland (both 2005-7 and 2008), the North East, Scotland (both
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3 2005-7 but not 2008) and the East Midlands (2008 only). The greater than expected number of
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5 venture capital investments in these regions clearly reflects a situation in which a large number
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7 of small scale investments have been made, a point that we return to later.
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12 How stable is this geographical distribution of venture capital investment over time? Comparing
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14 the boom period of the late 1990s, the post 2000 downturn, the mid-decade recovery and the
15
16 onset of the financial crisis (2008) reveals some contrasting trends for different regions:
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20 • London and the South East have both consistently attracted more than their expected
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22 shares of early stage venture capital (both number and amount) across all four periods.
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24 They both continue to attract significantly more than their expected shares of venture
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26 capital, particularly in terms of the amounts invested (Mason and Harrison, 1991; 2002).
27
28 However, whereas London's share of early stage venture capital in terms of amount
29
30 invested has steadily increased over the past 10 years, from 22% in the boom years to
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32 48% in 2008, the South East's share of both the number of investments and amount
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34 invested has fallen over the same period.
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38 • East of England attracted more than its expected investment in the crash (2001-3) and
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40 recovery (2005-7) periods
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44 • Scotland's position has deteriorated over the four periods in terms of its share of venture
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46 capital investment by value, having more than its expected investment in the boom of the
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48 late 1990s but less than its expected share in subsequent periods. This may be linked to
49
50 the privatisation of Scottish Enterprise's venture capital division at the turn of the century
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52 (Hood 2000). However, until 2008 it consistently had more than its expected share of
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54 investments by number, reflecting the active role of Scottish Enterprise in the venture
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3 capital market and, in particular, the launch of its very successful co-investment scheme
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6 in 2003 (Haydon et al, 2008).

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8 • The North East and North West have significantly improved their positions since 2001 in
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10 terms of having had more than their expected shares of venture capital investments, but
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12 only in terms of numbers of investments.
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14 15 16 17 18 *5.2 The regional distribution of venture capital investments: types of investors*

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20 Using Library House data we are able to decompose the types of venture capital investors in each
21
22 region (Figure 7). Looking at the entire 2000-8 period, and only considering early stage
23
24 investments (as defined earlier: round 1-3 investments under £2m) it is apparent that there is a
25
26 clear distinction between, on the one hand London, the South East and East of England and, on
27
28 the other hand, the rest of the country in terms of the proportion of deals involving private and
29
30 public sector investors. Looking at the period as a whole, deals exclusively involving private
31
32 investors accounted for more than 70% of all investments in London, nearly two-thirds in the
33
34 South East and 60% in the East of England. In the South West and East Midlands the proportion
35
36 of free-standing private sector investments was around 40%, dropping to 32% in Scotland,
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38 around one-quarter in Yorkshire and The Humber, the North West, North East and Wales, and
39
40 around 15% in West Midlands and Northern Ireland. This means that the public sector is
41
42 involved in upwards of three-quarters of early stage venture capital investments in northern
43
44 regions. Moreover, the proportion of deals involving the public sector has risen over time,
45
46 reaching over 90% in several regions in 2008 (Figure 8). However, the form of public sector
47
48 intervention varies. In Northern Ireland, Scotland and the North East co-investments between the
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50 public and private sector dominate, accounting for 64%, 52% and 42% respectively of all
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3 investments, whereas in the other regions with high proportions of public sector involvement –
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5 notably the West Midlands, Wales, Yorkshire and The Humber, and the North West – free-
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7 standing public sector investments account for 50% or more of all investments.
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13 *FIGURE 7 ABOUT HERE.*

14 *Proportion of different types of investors in early stage deals in the UK regions 2000-2008*
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18 *FIGURE 8 ABOUT HERE*

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20 *Proportion of investments involving the public sector by year by region*
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22 *FIGURE 9 ABOUT HERE:*

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24 *Proportion of early stage deals involving business angels by region*
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29 The Library House data also provides some insight into regional variations in the relative
30
31 significance of business angels. However, as noted earlier, the data are partial, with business
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33 angels only identified in deals where they have invested alongside venture capital funds. With
34
35 this important caveat, business angels are most prominent in Scotland, accounting for over one-
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37 third of early stage investments, and the North East where they account for 30%. They are least
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39 significant in Yorkshire and The Humber, North West, Northern Ireland and Wales (Figure 9).
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43 One way in which this regional pattern might be interpreted is in terms of the dominant form of
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45 public sector intervention (fund or co-investment), discussed in the previous paragraph. Based on
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47 the Scottish experience, a well-developed business angel market in which angels are members of
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49 angel syndicates is a pre-requisite for the successful operation of co-investment funds. The
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51 Scottish experience also suggest that the successful operation of a co-investment fund provides a
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53 further boost to the development of new angel syndicates (Hayton et al, 2008). In contrast, in
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3 regions where public sector venture capital funds dominate this could either be a response to the
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5 lack of organised angel groups or because such funds have crowded out business angels from the
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7 market.
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10 11 12 6. CONCLUSION

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14 The aim of this paper has been twofold: first, to update earlier evidence on the uneven geography
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16 of venture capital investing in the UK (Mason and Harrison, 2002) and second, to use deal
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18 specific information to reveal regional variations in the composition of venture capital
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20 investments. At the national scale there have been three significant changes in composition of
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22 early stage venture capital since 2000. First, the public sector has become a much more
23
24 significant source of early stage venture capital, following the various funds announced by the
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26 Labour Government in their 1997 Competitiveness White Paper coming on-stream in the early
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28 2000s. Second, the form of intervention has shifted in its emphasis from public sector venture
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30 capital funds making direct investments in companies to co-investment funds which invest
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32 alongside private investors (business angels and private sector funds). Third, the composition of
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34 private sector investors has changed, with funds declining in significance and various types of
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36 business angels (high net worth individuals and angel groups) becoming more important.
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46 At the regional scale early stage venture capital, measured in terms of the amount invested,
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48 continues to be over-concentrated in the core regions of Greater London and South East England
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50 as it always has been (Mason, 1987; Martin, 1989; 1992; Mason and Harrison, 1991; 2002).
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52 However, several northern regions have more than their expected shares of early stage venture
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54 capital investments, measured by number of deals. This is largely a function of the activities of
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3 public sector agencies, either investing on their own or in conjunction with private sector
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5 investors. Indeed, over the period as a whole the public sector has been involved in more than
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7 three-quarters of the early stage investments made in the Midlands and North, rising to more than
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9 90% in some regions in 2008. The proportion of free-standing private sector deals in these
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11 regions is correspondingly low. Moreover, the average size of these investments is small because
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13 of the upper limit on the size of investment that such funds can make in a single business
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15 (typically £500,000). As a consequence, the high level of investment activity does not translate
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17 into significant amounts being invested in these regions.
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24 The upshot is that the UK now appears to have two early stage venture capital markets. In
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26 London, the South East and, to a lesser extent, the East of England, private sector investors
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28 dominate investment activity, investing for the most part on their own rather than with public
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30 sector co-investors. This contrasts with Northern regions where the early stage venture capital
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32 market is under-pinned by extensive public sector investment activity, much of which takes the
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34 form of co-investments with the private sector. In these regions free-standing investments by the
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36 private sector account for only a minority of investments and private sector investors are more
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38 likely to invest alongside the public sector in co-investment deals than to invest on their own.
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41 Moreover, this gap between London and the South East and the rest of the country in terms of
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43 the significance of public sector investments has widened since 2001, during periods of both
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45 declining and expanding venture capital investment activity.
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53 This leads to the obvious concluding question: does it matter that the Northern regions of the UK
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55 are increasingly dependent on the public sector to supply venture capital? We argue that it does.
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3 Certainly, firms in receipt of finance from public sector funds report benefits, primarily in terms
4 of enabling them to start or grow more quickly (NAO, 2009). However, Nightingale et al (2009:
5 20) report that “companies that are recipients of funding under one or more of the government’s
6 hybrid funding schemes examined do not yet exhibit significantly better performance” than
7 similarly matched companies that have not received such funding. This conclusion is reinforced
8 by evidence from the National Audit Office (2009) that the interim financial performance of both
9 the UK High Tech Fund and Regional Venture Capital Funds were both negative.⁹ Many
10 criticisms have attributed this to the poor design of the schemes (NAO, 2009: Pierrakis and
11 Westlake, 2009), notably (i) the focus of such funds on specific geographical areas which
12 restricts the supply of suitable investment opportunities, particularly in smaller regions, and (ii)
13 the maximum size of investment as imposed by government (under £500,000) which is typically
14 too small to meet the funding needs of high growth firms, and high-tech firms in particular
15 (SQW Consulting, 2009), and are generally too small to have the capacity to make significant
16 follow-on investments which, in turn, puts them at risk to punitive dilution. Others have argued
17 that public sector venture capital funds may not be as ‘smart’ as their private sector counterparts
18 in terms of adding value (Schafer and Schilder, 2009).
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43 The growth of public sector venture capital in the UK has reduced the uneven regional
44 geography of venture capital in the UK. However, this is only in terms of number of investments,
45 not amounts invested. Thus, it remains questionable whether companies located outside of the
46 Greater South East and which require significant amounts of finance can raise the amounts that
47 they need. Second, the effectiveness of public sector venture capital in creating fast growth
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entrepreneurial businesses remains questionable. Hence, there continues to be a need to rethink how to develop venture capital in the UK regions.

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NOTES

SEE END OF TEXT

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Table 1. Publicly backed venture capital funds

Scheme name	details	Size of fund	Government commitment	Contribution (percentage) from other investors	Year commenced	End of investment period	Upper investment limit	Geographical focus
Regional Venture Capital Funds (RVCFs)	Hybrid funds in each RDA (nine funds in total)	Range from £12m-£46m (total £226.5m)	£74.4m	£512.1m (67.2%)	2002-2003	2007-2008	£500,000 (£660,000)	regional
UK High Technology Fund	A fund-of-funds	£126.1m	£20m	£106,1m (84.1%)	2000-2002	2006	No limit	national
Early Growth Funds	Six free-standing funds	Range from £3m to £5m (total £91m)	£26.5m	£70.9m (70.9%)	2002-2004	2014-2016	£100,000	regional

Source: National Audit Office (2009)

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TABLE 2 UK early stage investments 2001-2008

(a) Amount invested (£m)

Finance stage	2000	2001	2002	2003	2004	2005	2006	2007	2008
Start-up	175	163	99	73	96	160	531	190	172
Other early stage	528	227	196	190	188	222	415	244	187
Total early stage	703	390	295	263	284	382	946	434	359
Early stage as a % of total investment	11.0	8.2	6.6	6.5	4.2	5.6	9.3	3.6	4.1

Source: BVCA Report on Investment Activity (various years)

(b) Number of investments

Finance stage	2000	2001	2002	2003	2004	2005	2006	2007	2008
Start-up	153	190	165	185	190	208	245	207	170
Other early stage	256	218	233	242	264	285	255	295	285
Total early stage	409	408	398	427	454	493	500	502	455
Early stage as a % of total investment	35	31	33	34	35	38	38	38	36

(c) Average size of early stage investments

year	2000	2001	2002	2003	2004	2005	2006	2007	2008
					£000				
Average size of investment	1,719	956	741	616	626	775	1,892	865	789

Source: BVCA Report on Investment Activity (various years)

TABLE 3. Distribution of early stage investments in the UK: number and region

region	1998-2000 (‘boom years’)			2001-3 (‘crash years’)			2005-7 (‘recovery years’)			2008 (‘financial crisis’)		
	No.	%	LQ*	No.	%	LQ	no.	%	LQ	No.	%	LQ
London	252	27.70	1.86	217	17.60	1.14	289	19.36	1.15	78	17.14	1.08
South	190	20.90	1.36	233	18.90	1.20	282	18.89	1.18	74	16.26	1.03
East												
South	36	3.96	0.41	56	4.54	0.48	106	7.10	0.79	25	5.49	0.58
West												
East of	107	11.76	1.17	205	16.63	1.66	161	10.78	1.06	29	6.37	0.63
England												
West	39	4.29	0.51	57	4.62	0.56	92	6.10	0.73	45	2.42	0.35
Midlands												
East	28	3.08	0.45	31	2.51	0.37	60	4.02	0.59	11	9.89	1.20
Midlands												
Yorkshire	37	4.07	0.55	44	3.57	0.50	49	3.29	0.46	28	6.15	0.86
& The												
Humber												
North	56	6.15	0.63	117	9.49	1.00	212	14.20	1.40	79	17.36	1.81
West												
North	22	2.42	0.95	40	3.24	1.29	45	3.01	1.11	22	4.84	1.88
East												
Scotland	106	11.65	1.59	101	8.19	1.15	110	7.37	1.17	33	2.86	0.67
Wales	15	1.65	0.35	57	4.62	1.28	50	3.35	0.85	13	7.25	1.04
N Ireland	22	2.42	0.72	75	6.08	1.83	38	2.54	1.01	18	3.96	1.21
TOTAL	910			1233			1493			455		

Source: calculated from BVCA Report on Investment Activity (various years)

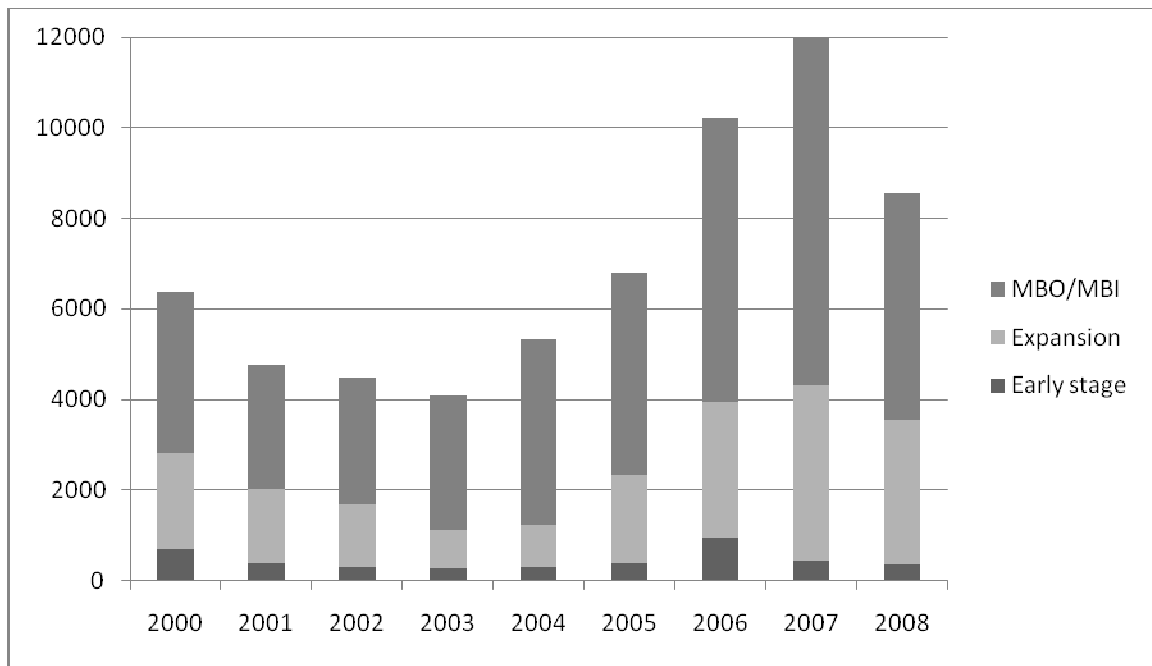
TABLE 4. Distribution of early stage investments in the UK: amount invested and region

region	1998-2000 (‘boom years’)			2001-3 (‘crash years’)			2005-7 (‘recovery years’)			2008 (‘financial crisis’)		
	£m	%	LQ*	£m	%	LQ	£m	%	LQ	£m	%	LQ
London	329	22.0	1.43	229	24.9	1.56	524	29.74	1.76	172	47.8	3.02
South East	522	34.9	2.10	238	25.8	1.64	353	20.03	1.25	64	17.8	1.13
South West	67	4.5	0.50	26	3.9	0.42	144	8.17	0.91	12	3.3	0.35
East of England	111	7.4	0.76	216	23.5	2.32	228	12.94	1.28	20	5.6	0.55
West Midlands	62	4.1	0.50	17	1.8	0.22	28	1.59	0.19	12	3.3	0.41
East Midlands	45	3.0	0.44	22	2.4	0.35	144	8.17	1.20	9	2.5	0.36
Yorkshire & The Humber	76	5.1	0.72	10	1.1	0.16	137	7.76	1.07	5	1.4	0.19
North West	103	6.9	0.76	54	5.9	0.61	99	5.62	0.56	23	6.4	0.67
North East	15	1.0	0.40	6	0.7	0.26	16	0.91	0.34	10	2.8	1.08
Scotland	129	8.6	1.19	64	6.9	0.99	49	2.78	0.44	24	6.7	0.13
Wales	14	0.9	0.20	31	3.4	0.78	29	1.65	0.42	2	0.6	0.95
N Ireland	24	1.6	0.48	25	2.7	0.85	11	0.62	0.25	7	1.9	0.60
TOTAL	1497			921			1762			360		

Source: calculated from BVCA Report on Investment Activity (various years)

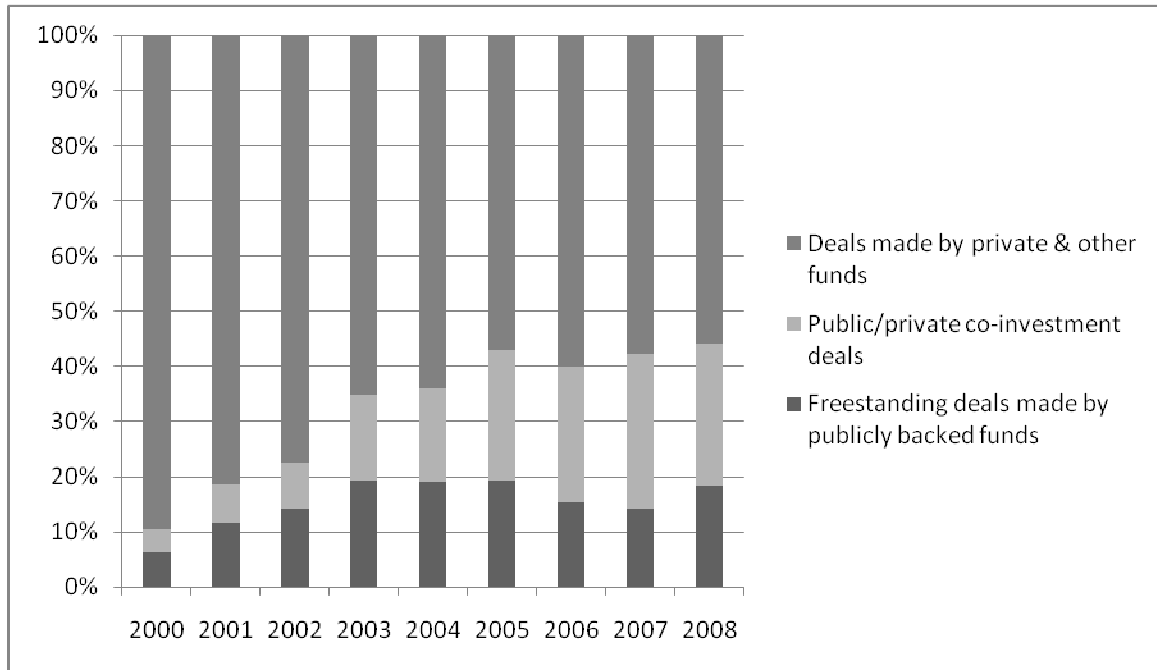
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Figure 1



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Figure 2



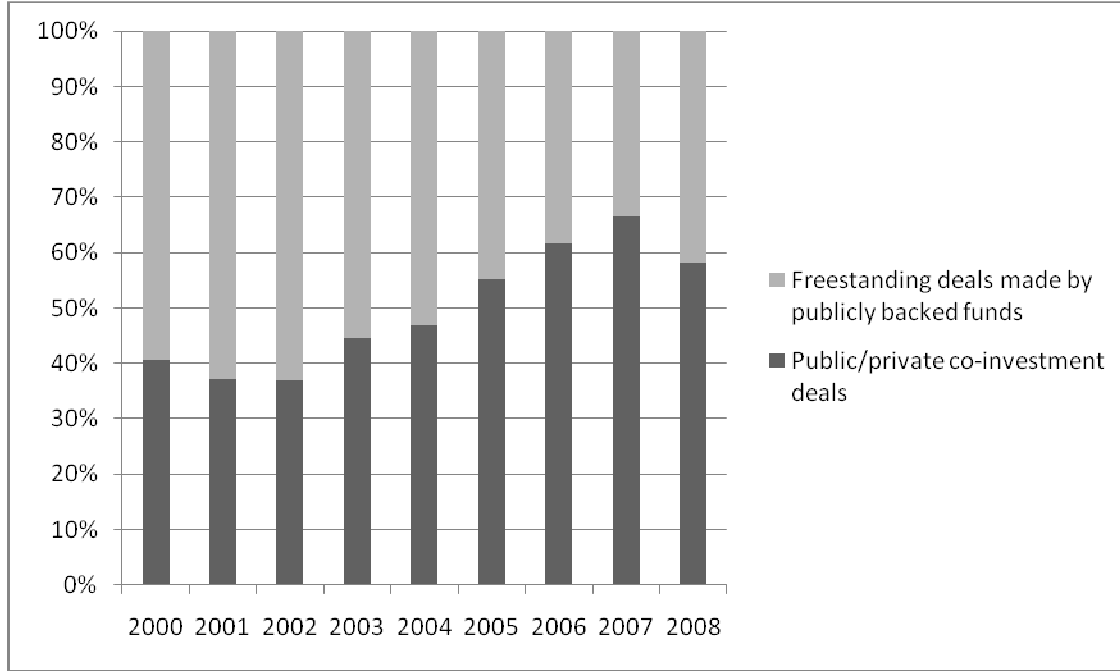
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Figure 3: Co-investments as a proportion of deals

(a) Public private co-investments deals as a proportion of all deals involving public sector



(b) Public private co-investments deals as a proportion of all deals involving private sector

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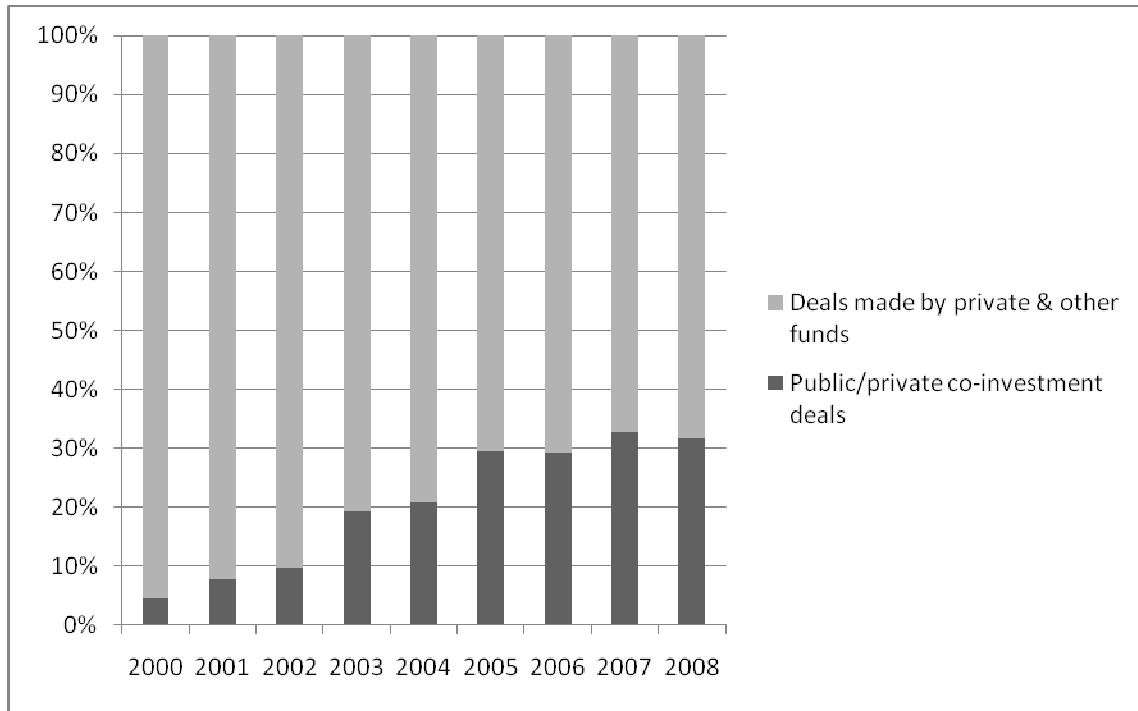
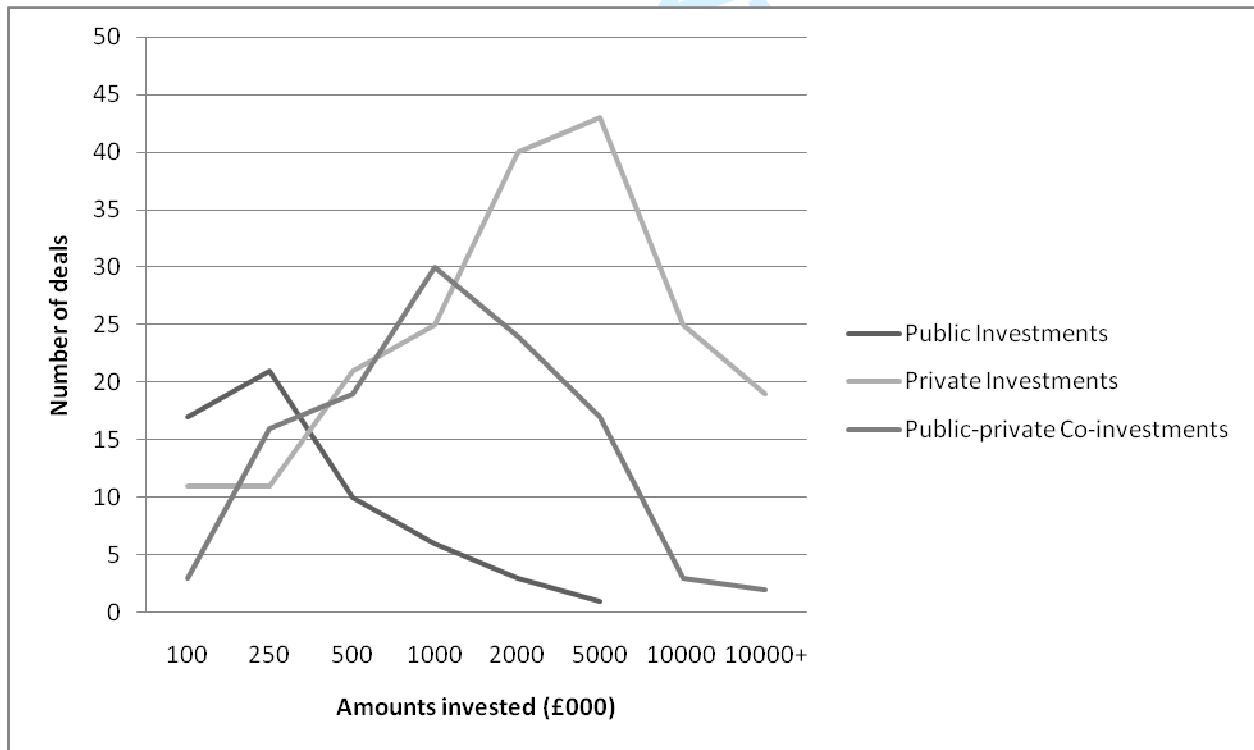
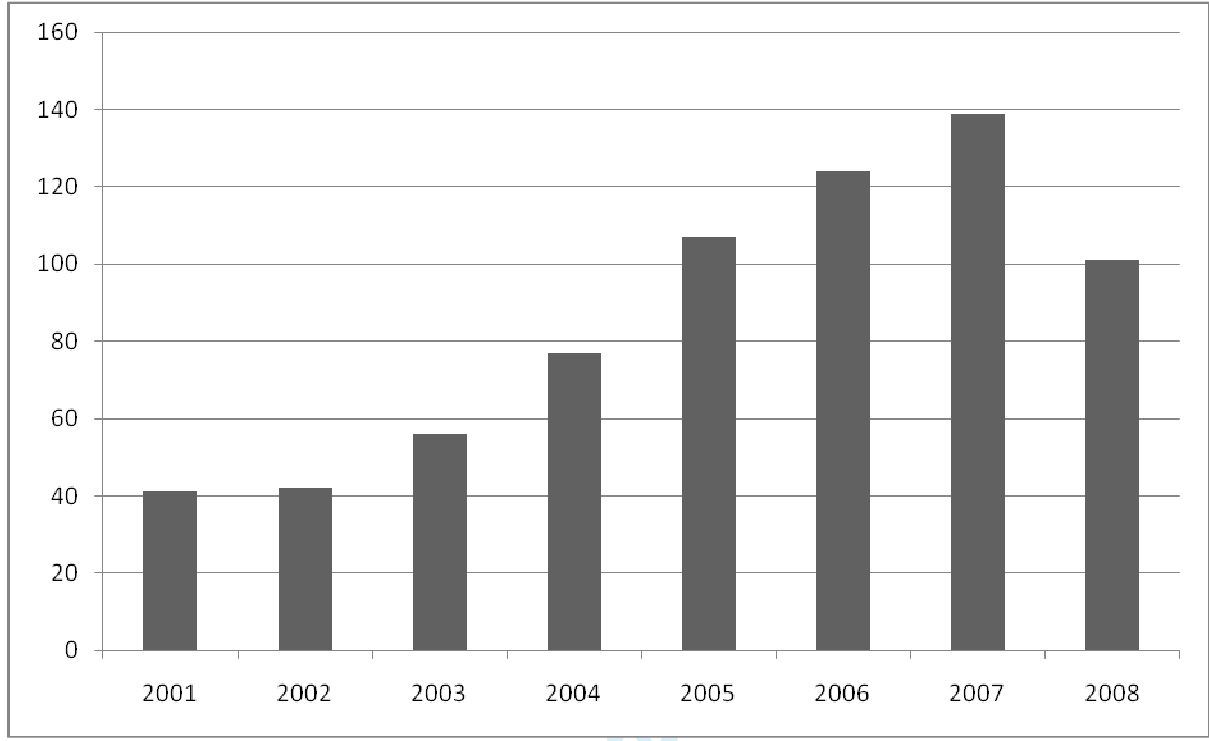


Figure 4



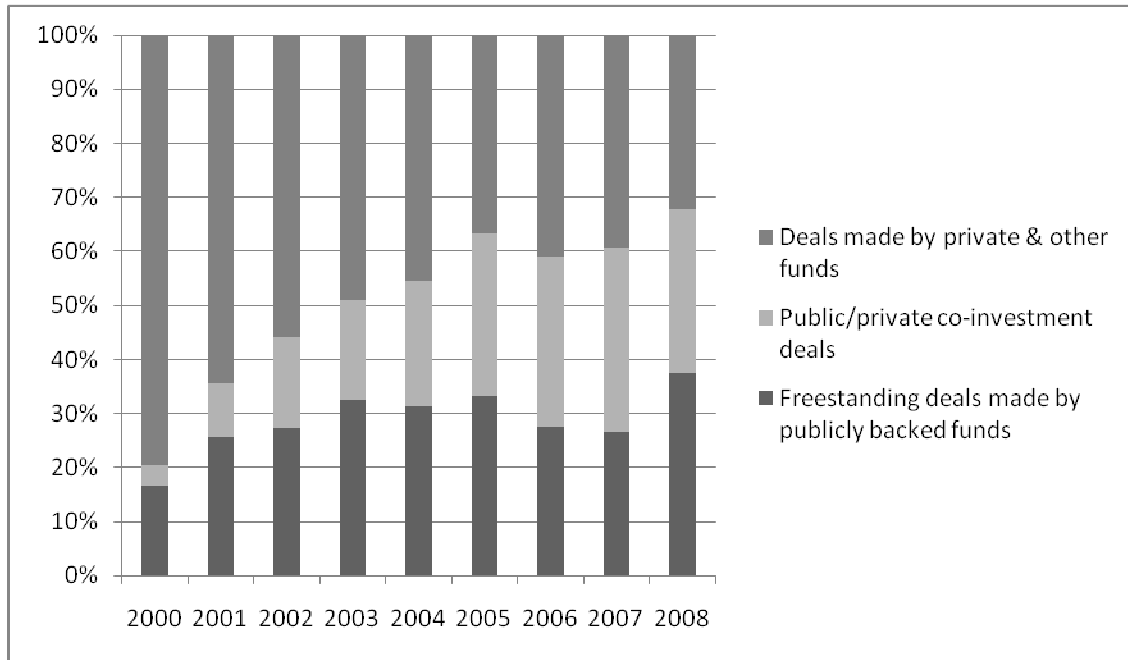
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Figure 5



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Figure 6

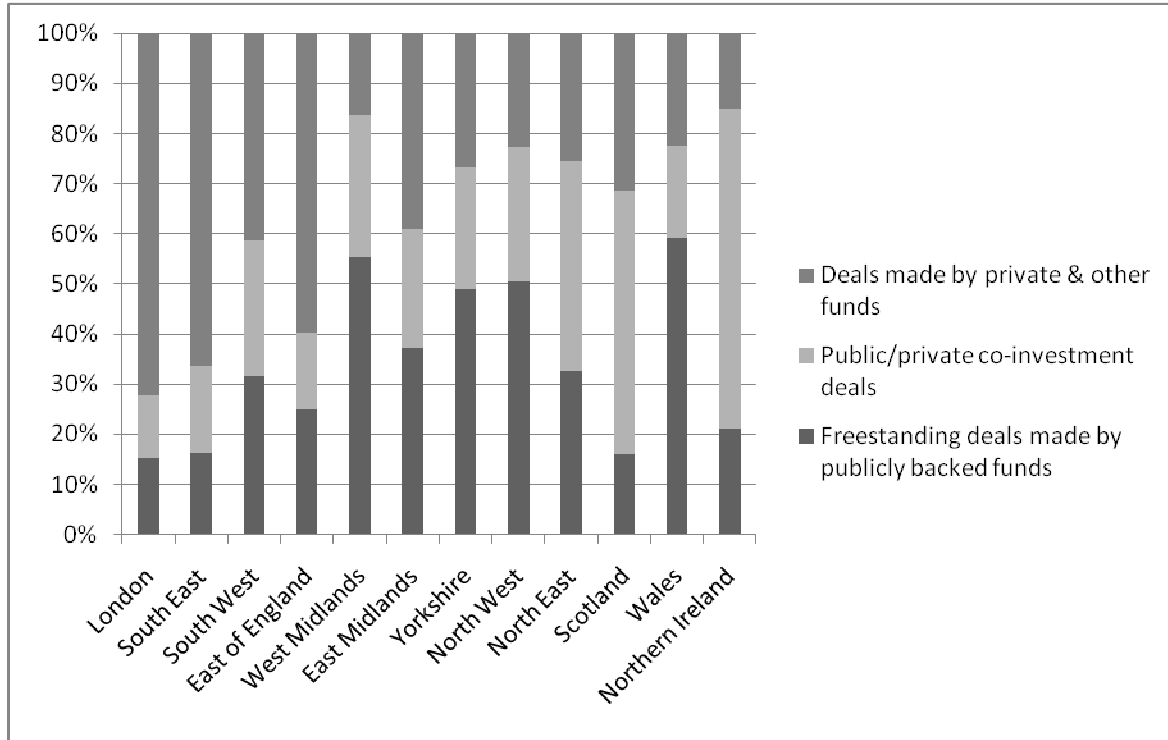


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Figure 7



Figures 8 and 9 in separate files.

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NOTES

¹ We make an important distinction between venture capital and private equity. Venture capital focuses on investing in new businesses whereas private equity focuses on restructuring, management (leveraged) buyouts and other forms of ownership change in established companies.

² See Mason and Harrison (2003) for an early critique of the scheme.

³ See www.onenortheast.co.uk/page/jeremie/index.cfm for details of the funds to be established in the North East.

⁴ This source was also used by Pierrakis and Mason (2008). Some of the figures reported here may differ slightly from those cited by Pierrakis and Mason (2008): (i) the Library House database is live and so is continually being updated; (ii) further cleaning of the data by the authors. However, these changes do not change the observed trends and the argument made by Pierrakis and Mason (2008).

⁵ Investments of £50,000 or more reported by Library House as a proportion of those in the BVCA statistics have risen from 33% in 2000 to over 50% since 2005

⁶ However, there is no source which provides a comprehensive coverage of angel investments (Mason and Harrison, 2008)

⁷ Unfortunately the data does not enable us to differentiate between investments made by public sector co-investment funds and ad hoc co-investments made by other types of public sector venture capital funds.

⁸ Yorkshire's location quotient was 0.49 in 2005, 1.62 in 2006 and 0.38 in 2007. East Midland's location quotient was 2.41 in 2005, 0.57 in 2006 and 0.64 in 2007.

⁹ The pooled interim rate of return across the nine funds that were recipients of the UK High Technology Funds in June 2008 was minus 9.7% (net of fund management costs), with only one of the funds showing a positive rate of return. Comparable private technology funds show a pooled average return of minus 5.2% at that date. The pooled rate of return across the nine funds at December 2008 was minus 15.7%, with all funds showing negative returns.

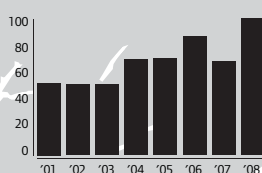
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Private funds of a similar size and vintage show a minus 0.4% return. However, these funds are subject to fewer investment restrictions (NAO, 2009).

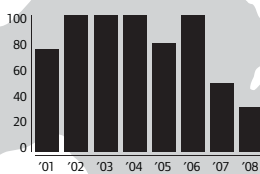
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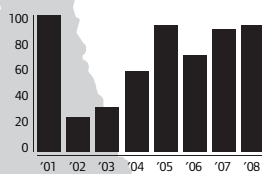
Scotland



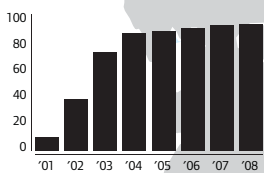
Northern Ireland



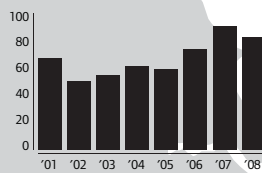
North East



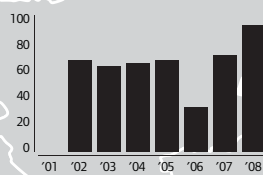
North West



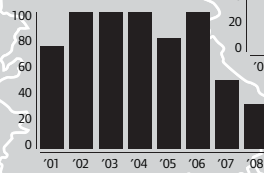
Yorkshire



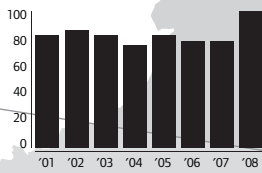
East Midlands



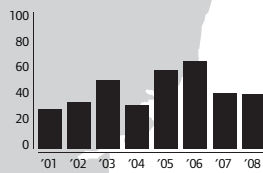
West Midlands



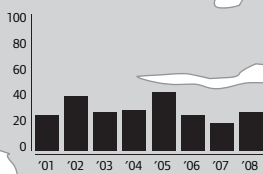
Wales



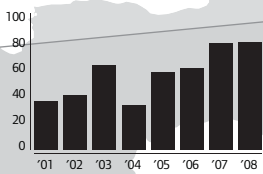
East of England



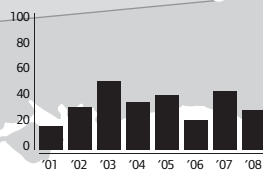
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South West



South East



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