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Intra- and interregional flows of business angel investment: mapping the winners and losers across UK regions and core urban economies

Marc Cowling^a  and Ross Brown^b 

ABSTRACT

Hitherto, the literature has largely overlooked the important role business angel finance plays in shaping different regional economies. Using a novel UK dataset, this paper calculates interregional inflows and outflows of business angel investment to identify the net winners and losers in terms of both the number of deals and the cash value of investment flows. We establish that only three regions were net beneficiaries while the other 11 UK regions and cities examined were net losers. The reduction in 'home bias' in angel investments may undermine the efficacy of policies aimed at stimulating localised investment and calls for greater demand stimulation policies to help alleviate the problem of 'thin' regional markets.

KEYWORDS

business angels; informal risk capital; interregional flows; policy

JEL G11, G40, L23, L26, R10, R11

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1. INTRODUCTION

Pervasive regional inequalities permeate all layers of the UK's socio-economic landscape (Carrascal-Incera et al., 2020). The determinants of these disparities are in part shaped by the relative performance of the respective business populations across different regions, particularly differences in the creation of new technology-intensive businesses (McCann, 2020). This explains why innovative high-tech industries are frequently invoked as central components in many economic development strategies (Lee & Clarke, 2019). One of the key constituent elements in this equation comprises business angels (BAs) who provide informal risk capital for young innovative technology-driven firms (Kerr et al., 2014; Shane, 2012).¹ BAs are high-net-worth individuals providing finance along with their time and expertise to help nurture nascent entrepreneurial ventures (Bonini et al., 2018; Grilli, 2019). Therefore, it follows that BAs have the potential to play a prominent role in regional rebalancing the business sector of the UK's economy (Harrison, 2018; Jones-Evans & Thompson, 2009).


Despite its central importance for generating start-ups (Cassar, 2004), scholars examining regional drivers of

entrepreneurship have somewhat overlooked BAs as enablers of entrepreneurial activity (Alvi & Ulrich, 2023; Grilli, 2019). Yet most advanced regions consist of a variegated mosaic of different financial actors intimately bound together in a tight web of networks, relational connections and institutional affiliations (Nguyen et al., 2023; van Rijnssoever, 2020). Indeed, a key attribute underpinning the vitality of local economies is having a rich and extensive constellation of financial actors such as banks, venture capitalists (VCs), BAs, equity crowdfunding platforms, business accelerators, science and technology parks, university-affiliated seed funds, etc. (Bonini & Capizzi, 2019). BAs are thought to play an instrumental role in this funding landscape, not least because they constitute the largest source of external funding across Europe for newly established ventures, after family and friends (Eban, 2020). Angels therefore represent a 'much-needed piece' of the regional financial 'puzzle' (Grilli, 2019, p. 621) because inter-actor relational connections between these investors and other entrepreneurial actors are pivotal (Rocha et al., 2021), especially as they enable them to 'meet and mate' with potential investee start-up firms (van Rijnssoever, 2020).

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While angels are widely held to contribute to ‘regional economic development, innovation and job creation’ (Capizzi et al., 2022, p. 306), what marks out these key entrepreneurial actors is their multiple, complex and munificent functions they fulfil in the entrepreneurial process within local economies. This is crucial for start-ups in need of seed funding and mentoring they can obtain from BAs. Indeed, angels exemplify both the systemic and multifaceted nature of the local start-up milieu because many are themselves ‘cashed out’ so-called ‘habitual entrepreneurs’ (Wright et al., 1998, p. 5) who then subsequently become investors in other start-ups via a process known as ‘entrepreneurial re-cycling’ (Bahrami & Evans, 1995; Walsh et al., 2023). This dual function is important and encompasses multiple roles including the provision of finance, strategic business growth assistance, relational peer support and signalling.

Due to the lack of a bona fide track record coupled with an unverified market demand or untried technology, entrepreneurial signalling in the context of angel investment hinges on transmitting signals based on subjective and noncertifiable claims (Maxwell et al., 2011). Through a process of signalling, equity investors such as BAs and VCs are able to help attract larger scale follow-on investment for their portfolio of investee firms which further enhances the process of expansion and upscaling of local start-ups (Colombo, 2021). It is this multifunctional and connectivity-spanning role which angels play which marks them out as key actors within the systemic process of entrepreneurship.

BAs are particularly relevant in the UK context as it has the most developed angel market in Europe (British Business Bank, 2018). Yet, to date, BAs remain a relatively under-researched topic partially due to their somewhat ‘hidden’ (Shane, 2012; Wetzel, 1983) and ‘invisible nature’ (Mason et al., 2016). The literature has also noted a relative paucity of research on spatial factors associated with BA investments, especially compared with VC investments (Cowling et al., 2021; Tenca et al., 2019). This paper therefore aims to fill a significant gap in our knowledge about where BAs make their investments across the regions of the UK and also abroad by following the deals and the money from the domicile region to the investment location. Using a rich UK BA dataset from 2019, this will provide another piece in the complex jigsaw of the UK’s regional inequality.

The paper also enables us to disentangle some of the complex spatial interlinkages of entrepreneurial finance to help build a more complete picture of this important funding source in different spatial contexts. This is also salient for policymakers who often proactively intervene to induce more angel investment despite limited evidence of the efficacy of these interventions (Harrison et al., 2020a; Solodoha et al., 2023). By way of preview, a key finding from our analysis is that of the estimated £2.6 billion of new BA investments in 2019, only three regions saw a net inflow of BA investment. The findings demonstrate the highly spatially skewed nature of the UK’s informal risk capital market. Another key finding identified is

the complex nature of interlinkages dissecting different UK regions in terms of BA investments, signifying a reduced localised bias in terms of angel investment patterns (Cowling et al., 2021).

The rest of the paper is structured as follows. Next, we review literature on the geography of finance and the spatial dynamics angel finance. The third section outlines the data and methodology. The fourth section reports the results. The fifth section discusses the findings. The sixth section examines the policy implications. The final section briefly concludes.

2. RELEVANT LITERATURE

2.1. The geography of finance

We now shift our focus to the individual angel investment decision-making process and the types of firms they invest in and how this is affected by geography. We set this review firmly in the context of how place and geography shape and influence these key financial decisions. Since the global financial crisis, the importance of locational matters and finance has recently gathered considerable momentum within the field of economic geography (Lee et al., 2009; Mason & Pierrakis, 2013). According to some prominent scholars, ‘spatiality is integral to money, in the forms it takes, the organizations through which it is institutionalized, the ways in which it deconstructs, reassembles and distributes assets, liabilities, and indeed, conceives of time and space’ (Martin & Pollard, 2017, p. 1). Crucially, proponents of this view claim the spatial structure of the financial system can influence the supply of finance to firms, thereby strongly contributing to uneven regional development (Klagge & Martin, 2005).

Indeed, the bulk of empirical evidence shows that geographical location is a fundamental determinant mediating access to finance (of all types) particularly in centralised economies such as the UK (Cowling et al., 2023a; Lee & Brown, 2017; Sunley et al., 2005). These problems are acutely exacerbated by London’s negative impact on other regions and cities which some label the ‘finance curse’ (Martin & Sunley, 2023). Such is the powerful centripetal force of some dynamic locations, dominant pools of ‘VC-backed high-tech start-ups can end up widening the gulf between rich and poor’, thereby accentuating social inequalities (Breznitz, 2021, p. 4). This kind of financial ‘dark star’ effect seems fairly commonplace especially for specialist pools of equity finance where ‘ideas and money’ are often indivisible (Powell et al., 2002), aptly depicted by the metaphor ‘money flows like mercury’ (Clark, 2005). The dynamic notion of relational ‘flows’ involving ‘networks of transactions and relations’ is important as a geography of finance is fundamentally predicated on a ‘flow-based model’ rather than a fixed physical and functional notion of space (Martin & Pollard, 2017, p. 23).

While most of the literature on the geography of finance focuses on supply-side issues and how this limits certain spatial locations, it is important to remember that demand-side issues are also at play in the construction of

the marketplace for sources of entrepreneurial finance. Nightingale et al. (2009) posit the concept of ‘thin markets’ for equity finance where limited numbers of investors and entrepreneurial growth firms within the economy have difficulty finding and contracting with each other at reasonable costs. Conversely, ‘thick markets’ are characterised by high levels of repeated interaction between VCs and high-growth firms which provide a large enough market for a location to develop for early-stage equity investment (Nightingale et al., 2009). Empirical support for this thesis was found by Colombo et al. (2019) who discovered that ventures are more likely to seek external equity finance when the local availability of VC is higher. In other words, in ‘thick markets’ supply and demand for entrepreneurial finance are inextricably interlinked.

To date, empirical studies typically have concentrated on the geographically bounded nature of different endogenous actors and how they mediate the performance of the local economies. By and large studies have tended to adopt a ‘mono-scaler’ perspective focusing on endogenous localised entrepreneurial processes. This viewpoint neglects the vast range of entrepreneurial assets, resources and processes which transcend any one specific geographical locality. Given the complex financial make-up of different UK regions (Klagge & Martin, 2005; Lee & Brown, 2017), unpacking the spatiality of these interdependencies and interrelationships seems a worthwhile objective to help further develop the literature on the true ‘multi-scaler’ nature of the geography of finance in economies such as the UK.

2.2. How do BAs invest and how does geography influence this?

Angels are ‘hands-on’ investors providing investment capital and advice to new and early-stage firms (Harrison et al., 2010; Politis, 2008). These tangible and non-tangible resources are often acquired and cultivated by angels from their past entrepreneurial experiences (Grilli, 2019; Shane, 2012).² Politis (2008) holds that angels confer four main non-pecuniary benefits for the investee firms in receipt of their investments: a strategic sounding board role; a supervision and monitoring role; a resource acquisition role; and a mentoring role. BAs also serve as mentors and outside directors for the ventures they fund, actively supporting and helping to shape their strategy and operations. Although these non-monetary benefits can often outweigh the financial benefits accrued from these investors, research on this matter remains incomplete and inconclusive (Tenca et al., 2019).

According to Bonini et al. (2018) a key ingredient underlying the success of BAs is that they share many of the positive features of VCs in many key respects. First, they provide equity financing to early-stage businesses. Second, they carefully screen their investments by undertaking intensive due diligence, not by using external advisors but by leveraging their experience and industry knowledge. Recent research emphasises the high selectivity of their investment decisions as measured by their high rejection rates, which are mostly related to the perceived

quality of both the entrepreneur and the associated management team (Mason et al., 2017). Finally, they monitor their investments via ‘soft-monitoring’ mechanisms (Bonini et al., 2018), thereby disciplining the entrepreneurs using less formal contractual-based mechanisms, preferring instead less assertive soft control mechanisms, such as company visits, informal meetings with the entrepreneur and other trust-based types of interactions. It is via this dual role (financial and human capital) that creates positive impacts via higher survival rates, faster and higher growth, and net job creation (Kerr et al., 2014; Tenca et al., 2019).

Flows of equity investments also involve discernible spatial traits which are heavily moderated by the crucial role of networks (Cowling et al., 2021; Nguyen et al., 2023). The market for this form of entrepreneurial finance is an imperfect decentralised market in which entrepreneurs and financiers ‘search and match’ with each other (Cipollone & Giordani, 2019; van Rijnsoever, 2020). The reason for the imperfection is that entrepreneurs and financiers are highly heterogeneous in several respects (e.g., skills, location, beliefs, preferences) and are only partially informed about one another (Cipollone & Giordani, 2019). This means that decision-making is based on partial and imperfect knowledge, often requiring relational interaction to overcome this informational opacity. Often this process is mediated via networks and relational connections as very few equity investments arise from entrepreneurs beating a path to the investor’s door ‘without any connection’ (Gompers et al., 2020, p. 175).

At the spatial level, BAs can help in the process of ‘entrepreneurial re-cycling’ within their respective local and regional economies through a process by which a successful entrepreneur invests their profit and wealth in other local businesses who then gain from new investment (Bahrami & Evans, 1995).³ This can shape local and regional economies in a virtuous circle where successful entrepreneurial activity creates the wealth for re-investment through angels into more entrepreneurial activity and this, in turn, creates more entrepreneurial wealth (Clarysse et al., 2014; Walsh et al., 2023). Following this logic, BAs can play an important role in less developed regions through increasing the pool of informal risk capital available for new investment (Jones-Evans & Thompson, 2009). This has particularly strong resonance for poorer and less well-developed regions who are most prone to deficits in VC (Sunley et al., 2005). One interesting UK study, which used a broader definition encompassing all forms of informal equity capital, found evidence that it filled some of the equity gap experienced in poorer regions left behind by the formal VC market (Jones-Evans & Thompson, 2009).

Other research has suggested that angels can have a ‘catalytic’ role that inspires higher rates of new formation (Martin, 2010). This chimes with the strong evidence showing how historical levels of entrepreneurship strongly shape future levels of regional entrepreneurial activity (Fritsch et al., 2019). Therefore, we can expect that a region’s levels of entrepreneurial recycling will in part be

a function of the historical levels of entrepreneurship in that location previously (Walsh et al., 2023). Obviously, this relationship is not fixed as not all entrepreneurs become angels so levels of recycling will be largely indeterminate and likely vary region by region. So rather than regions exhibiting ‘path-dependent’ tendencies ruling out ‘alternative trajectories’ we feel (in line with other scholars) they convey so-called ‘past-dependencies’ whereby the past mediates and configures different locations on a temporal basis (Wurth et al., 2022, p. 18).

A recurring feature in the BA literature is the local focus of these investors (Cowling et al., 2021), and the BA market ‘is usually identified as a local market, and the proximity of an investment has been shown to be key in the angel’s investment preferences’ (Harrison et al., 2010, p. 113). In short, BAs operate in spatially narrow, local markets, and this mirrors the findings from one of the first BA research studies in the US that found angel investment decreased exponentially in physical distance (Wetzel, 1983). This spatial parochialism has been referred to in an angel context as ‘local bias’ and extends to VC investing, although evidence on this issue is inconclusive (Fritsch & Schilder, 2008).

The main explication for a local bias in BA investment, which some label the ‘localised investor hypothesis’ (Wong et al., 2009), is that physical proximity permits the transfer and sharing of soft information, improves the quality of the investor/investee matching and results in more effective decision-making as information opacity issues are reduced. However, newer research has started challenging this prevailing orthodox viewpoint and shows that an absolute majority of 53.6% of UK BAs operate nationally, 18.0% regionally and only 26.8% locally (Cowling et al., 2021). Those authors assert that the fact that an absolute majority of BA investments are made outside of the angel’s immediate locality and home region calls into question the ‘local bias’ thesis.

Clearly, the landscape for BA investment is changing. It would appear that some regions are becoming less self-contained and more porous when it comes to attracting non-local resources such as BA investment. However, to date research has failed to properly unpack the nature and types of regions which display greater levels of inter-regional investment from BAs than more closed regional economies.

3. DATA AND METHODOLOGY

Research in the field of BAs is fraught with difficulties identifying representative samples, as this type of informal investors do not make up a ‘known population’ (Shane, 2012; Wetzel, 1983). This usually leads to the use of samples of convenience, which may not be representative of the actual population, and can be a source of potential bias (Harrison & Mason, 2008). To overcome this issue, our representative data is derived from the UK Business Angels Association’s (UKBAA) 2019 annual survey which is co-funded in partnership with the British Business Bank (BBB). The scope, scale and accuracy of

the known BA population that are active in the UK has improved significantly in since 2018 as the BBB rolled out regional offices and with the foundation of its Regional Angels Programme. These developments captured a greater share of BAs in the UK, and allowed the UKBAA–BBB BA surveys from 2018 to have a much larger and more representative starting sampling frame that was made available to the professional survey company that administered the surveys. *Ex ante* and *ex post* checks were in place to ensure that the achieved sample was broadly representative of the identified BA population. Further, BAs who had not been active in making investments in the last three years were excluded. In its totality, the UK BA market is estimated to invest £2.68 billion per annum, and the total population of angels is estimated to be approximately between 8000 and 15,000, because not all angels actively invest at any given time (British Business Bank, 2018). The total sample included in our survey represents 508 active BAs, or approximately 5% of the overall population of angels. The survey captures demographic data (e.g., age, gender, ethnicity and experience of angels), investment data (volume, value, investments, industry sectors and decision-making), and other aspects of BA investing. In aggregate, the 508 active BAs in the survey data have made 8260 lifetime investments and 1910 in the survey year of 2019. A key aspect of the survey is that it captures the domicile region of the angel and also the regions in which they have made their investments so we can explore the spatiality of angel investments.

The first step in our analysis is to use the survey data to map the regional number of BA investment deals made in the period 2018–19 in each of the 14 UK regions plus outside of the UK angels and investment deals. As BA activity has a strong technology bias we have additional geographical identifiers (aside from the standard 11 UK regions) for Greater London, Oxford and Cambridge which relate to very strong established technology clusters. These estimates (Figure 1) trace investments made from angels across all 14 regions plus foreign investments across the same regions. The second step is to use the survey data to map the size of angel investments in cash terms from angel’s domicile region across all 14 regions plus foreign investments (Figure 2). The final step is to multiply these two sets of calculations through to get an aggregate cash value of total investments made by BAs within and outside of their domicile region and pro rata these cash figures up to the full UK BA population of 9000. Finally, we calculate the net inflows and outflows of angel investment capital for each of the 14 regions plus foreign investment. This gives us an aggregate total BA investment of £2.68 billion for the period 2018–19.

4. RESULTS

4.1. Where do BAs live?

The greatest concentration of BAs in the UK is in the Greater London region and to a lesser extent the South East which envelops London. Together they represent 53.0% of the active angels in the UK. This compares

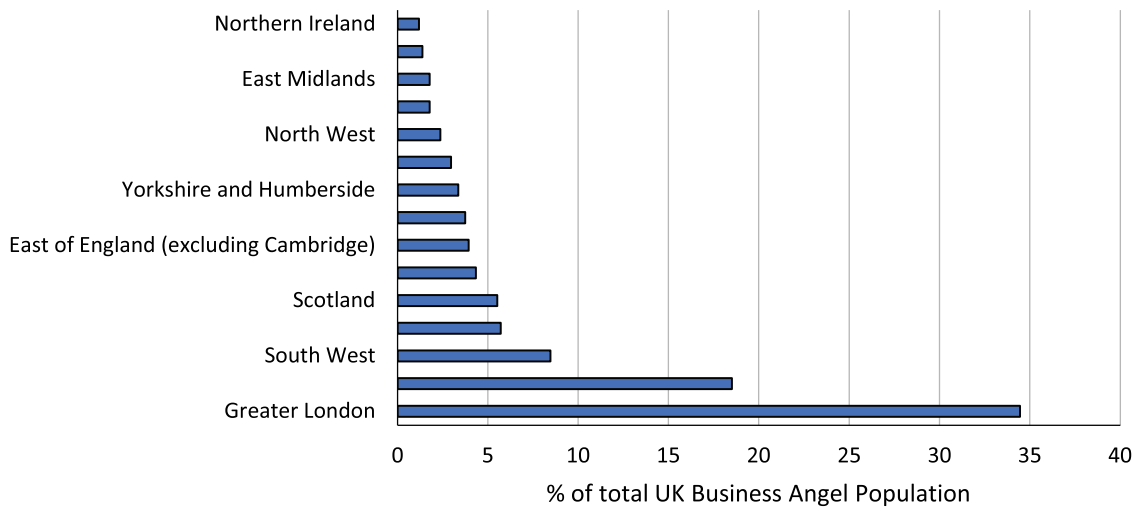


Figure 1. Home region of UK business angels.
 Note: Outside of UK refers to foreign resident business angels who invest in UK firms.
 Source: UK Business Angels Association (UKBAA)–British Business Bank (BBB) Business Angel Survey, 2019.

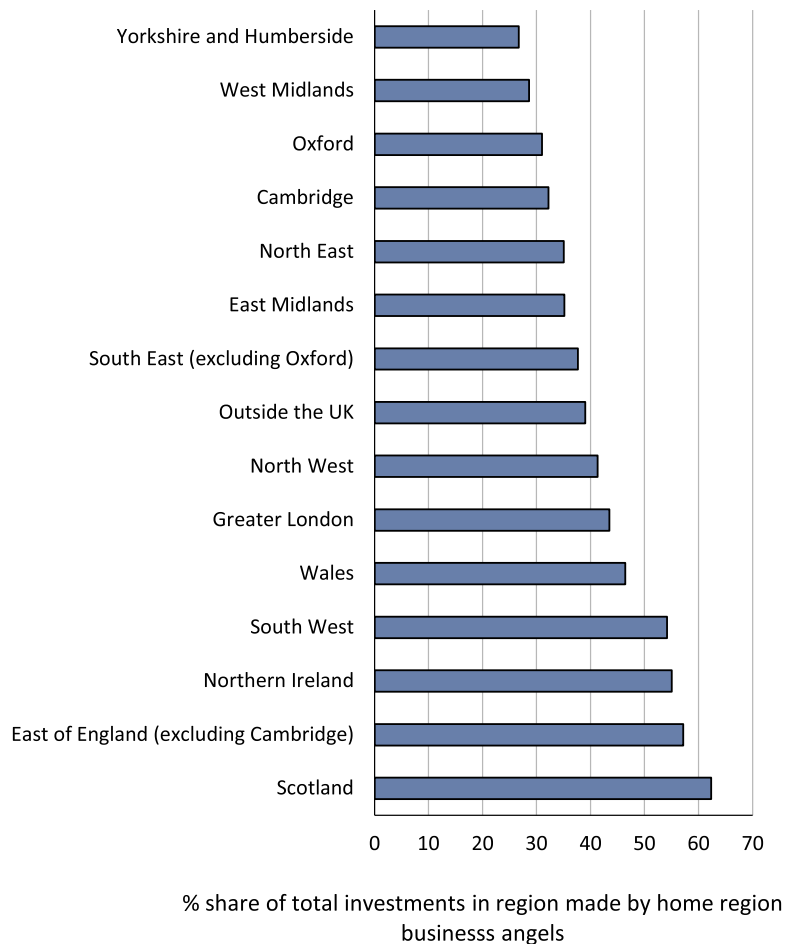


Figure 2. Home region investment deal shares of resident business angels.
 Note: Calculated as home angel – region investments/total investments.
 Source: UKBAA–BBB Business Angel Survey, 2019.

with 27.7% of the human population and 38.9% of gross domestic product (GDP). In other words, there are twice as many BAs in Greater London than other parts

of the UK. This marks a significant overrepresentation on any measure and strongly echoes other research on the UK’s pronounced spatial concentration of various

forms of entrepreneurial finance, such as VC, BA and equity crowdfunding (Cowling et al., 2021; Langley & Leyshon, 2017; Sunley et al., 2005).

Other regions with a significant share of BAs include the South West, where 8.5% of angel reside, West Midlands with 4.3% and Scotland with 5.5%. Regions with small shares of the total active BA population include Northern Ireland with 1.2%, Wales with 1.4%, and the East Midlands and North East with 1.8%, respectively. We also note that 5.7% of the angel population are resident abroad. Again, this is in broad alignment with most other studies highlighting the highly uneven spatial profile of all forms of finance in the UK (Martin & Sunley, 2023). This very uneven regional distribution of BAs in terms of where they live and if angels do indeed have preferences for investing locally or within defined physical distances then we would expect to observe that this uneven distribution is mirrored when we consider the regional distribution of angel investment deals and the cash value of investments made.

4.2. BA regional deal flows by origin and target region

The second issue we discuss is the regional number of home BA investment deals expressed as a proportion of the total number of regional deals in the period 2018–19. Figure 2 represents the home angel share of the total number of investments made within that region. For example, Greater London received 1196 investments in total, of which 520, or 43.48%, were made by home region angels. We observe that four regions had a majority share of home angel deals out of their regional total. These were Scotland, where 62.31% of total angel deals were from Scottish BAs, East of England, with a home share of 57.14%, Northern Ireland, with a home share of 55.00%, and the South West, with a home share of 54.14%. This contrasts with low home shares of total angel investments in Yorkshire & Humberside, where only 26.66% are derived from home angels, the West Midlands, with a home share of 28.57%, Oxford, with a home share of 30.99%, and Cambridge, with a home share of 32.17%. These results suggest that some regions are more attractive to home region angels whilst some regions are able to attract a significant degree of inward investment deal flows from outside region angels. However, it could also reflect the paucity of good quality investment deals in some regions which can discourage local investment.

Thus far, our evidence suggests that there is a very uneven geographical distribution of angels making new investments across the regions in the UK. There is a home concentration in the devolved nations of Scotland and Northern Ireland, and also the peripheral South West region, and East of England excluding Cambridge. The most open regions for high shares of inward flows of angel investment deals include Cambridge, with its well-established, and internationally renowned, science cluster, but also the West Midlands, the traditional heart of UK vehicle manufacturing, and Yorkshire & Humberside, with its advanced materials cluster.

We now focus on the relative regional distribution of investments made. Again, the evidence shows that there is huge regional variation in terms of the host region of angel deals made. It is also apparent that the differences across regions are even greater than for angel deals by domicile status. For example, the Greater London region attracts 40.74% of total angel investment deals. Again, this is testament to the dense array of entrepreneurial activity and robustness of London's dynamic economy (Sohns & Wójcik, 2020). The South East and Cambridge also have high shares of deals at 10.76% and 8.79%, respectively. Mirroring the results for angel domicile, Northern Ireland, with only 0.68% of total deals received, Wales, with 0.95%, and the East Midlands of England, with 1.26% are regions with a relatively paucity of angel investment deals. We also find that 6.20% of total angel deals are made outside of the UK completely. The combined share of Greater London, the South East and Cambridge is 60.29%. For comparison, the combined UK GDP share of these three regions is 40.34%. The combined GDP share for Northern Ireland, Wales and the East Midlands is 11.84%.

In total, our evidence strongly suggests that BA activity in the UK has a very pronounced geographical aspect on the investor and investee side. Regions such as Greater London, the South East and the South West have a disproportionately high share of the total UK angel population as residents. But resident BAs in Scotland, the East of England, Northern Ireland and the South West have a disproportionately high share of BA investments in their home region businesses. The opposite is true for Cambridge, the West Midlands, and Yorkshire & Humberside which are very open regional ecosystems with a disproportionate share of outside investment deals flowing in. Greater London and Cambridge are overrepresented compared with their population and gross value added (GVA) shares in the overall angel market. This is consistent with an agglomeration of angels and angel investments that is self-reinforcing over time in the same way as initial foreign direct investment (FDI) investments attract more FDI to a region via a process of cumulative causation.

However, we are ultimately interested in regional in- and outflows of BA investment capital and identifying regions that are net beneficiaries (and losers) from the estimated £2.68 billion of BA investment in the period 2018–19. Figure 3 reports these data expressed as the proportion of BA deals emanating from an angel's resident in each region that ultimately end up outside of that domicile region.

Here we observe that it is rare that the absolute majority of BA deals remain in the host region of the angel. This occurred in only four regions: Scotland, East of England (excluding Cambridge), Northern Ireland and the South West. This contrasts sharply with Yorkshire & Humberside and the West Midlands which both saw over 70% of resident their local angels invest outside of those regions. This confirms recent UK evidence on the distance of angel investments away from where the angel is physically located in the sense that physical distance does not appear to be a barrier to interregional angel

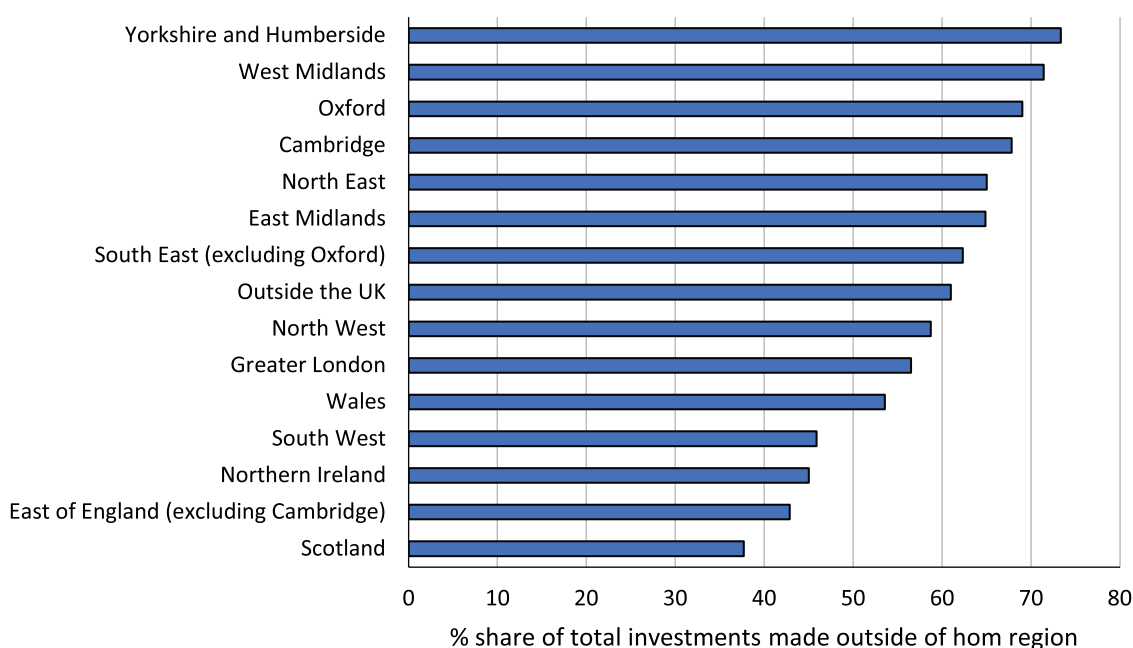


Figure 3. Angel share of deals outside of the home region (%).

Note: Calculated as out of region – home angel region investments/total investments.

Source: UKBAA–BBB Business Angel Survey, 2019.

investment (Cowling et al., 2021). Even in Cambridge (a classic ‘thick’ market for equity finance) angels are much more likely to invest outside of Cambridge, despite having a thriving regional economy with a world leading university which helps propagate the dynamic local start-up scene (Garnsey & Heffernan, 2005). It also highlights the large interdependencies and huge multi-scalar flows of BA capital criss-crossing the regional economies of the UK.

4.3. BA deal size by origin and target region

Here we focus on the average regional deal size expressed in cash terms. We show the biggest average investments by origin and destination in Table A1 in the supplemental data online. This shows that it is a rare event that an angel makes their largest average investment in their own region. For example, huge average investments of £1 million were made by BAs resident in Scotland and Northern Ireland in the North West of England at the same time as average investments of £350,000 went out from North West angels into investments in Oxford and Scotland. Foreign angels, and angels from the West Midlands, made large average investments of £175,000 in Northern Ireland. Angels from Wales made their largest average investments in Greater London and East England. This evidence shows that geography becomes less important when BAs are seeking out big investment deals. It is equally interesting that host region angels were not able to identify and make these big deals in their home regions. This also suggests that the old view of local angels making local investments does not appear to be a fair characterisation of the reality of modern-day BA investing in the UK, although again this could reflect the quality of potential deals that can attract large investments in some home regions.

In terms of where the largest average angel investments in each region came from, the picture is different but still with significant geographical variation. Inward investments averaging £1 million into the North West from Scottish and Northern Irish angels were identified, and inward investments of £350,000 were apparent in East England from Oxford angels, and Scotland from North West and Northern Ireland angels. Cambridge benefitted from average investments of £175,000 from East England angels and Oxford from average investments of £350,000 from North West angels.

So, are there any signs of strong regional trading partners in the sense that a pair of regions have large average in- and outward BA investments to each other? If so, are these paired relationships in physically close regions? On this, there is some evidence on the former, but very little on the latter. In terms of general regions that appear to match up inward–outward angel investment flows we find eight examples including South East–Yorkshire & Humberside, Cambridge – East England, East Midlands –Oxford, West Midlands–Northern Ireland, North East–Out UK, Yorkshire & Humberside + South East, North West–Scotland, and Out of UK–Northern Ireland. Of these only two are physically adjacent. The North West region of England is below Scotland and the East England region surrounds the city of Cambridge. On balance it would appear that the physical geography hypothesis does not have any great traction. Foreign angel investments into Northern Ireland may reflect the unique political circumstances and the role of the US in promoting and supporting the Good Friday Agreement and the significant US in- and outward investment and trade flows that followed the agreement.

4.4. Gross and net flows of BA investment capital around the regions

Finally, we turn the focus to the gross and net outflows and inflows of angel investment capital around the regions of the UK. This is at the heart of understanding how BA activity may have contributed to maintaining, increasing or reducing regional inequalities, or at least if it has the potential for current angel investments to change the future of regions. We observe that gross flows of BA investment are large and represent significant transfers of investment capital out of, and into the host region of the angel (Figure 4).

Figure 4 shows that the total BA investments made by Greater London resident angels is very large at £659 million. Other regions with a large investment value emanating from their regions include foreign angels with £341 million of gross inward UK investment, South East resident angels with £301 million, and Cambridge angels with £242 million in gross investment. This contrasts with only £18 million from Welsh resident BAs and £43 million from angel's resident in the East Midlands. These are very large regional differences in terms of the gross angel investment capital available and invested. In terms of the total cash investment that ends up within each region, there are also very large differences. Greater London is the major recipient of total angel investment with a gross cash value of £1.2 billion. Other regions with a high gross angel investment value include the South East with £217 million, Scotland with

£175 million, Cambridge with £168 million and Oxford with £146 million. We also note that gross foreign angel investments amounted to £227 million. Low gross angel investment recipient regions include Wales, with only £12 million of total gross investment, the East Midlands with £26 million, and the East of England (excluding Cambridge) with £35 million. These gross investment figures show that there are huge gross flows of BA investment capital around the UK and indeed into and out of the UK. Greater London appears central to understanding gross flows in both directions, as do foreign angels and angel investment recipients. We also cannot ignore the South East of England, Cambridge and Oxford. However, we also note the dearth of angel investment activity in and from Wales and the East Midlands.

Figure 5 shows that three regions are winners in terms of having a positive net inflow of BA investment capital into their region and the other 11 UK regions are net losers as more angel capital flows out of their region than into it. The UK regions, however, do benefit from a net inflow of angel capital from foreign based BAs of the order of £114.4 million. The three regional winners are Greater London with a net capital inflow of £584.7 million, Scotland with £19.8 million and the West Midlands with £19.1 million. The biggest net losers are the North West, East of England and South East with net outflows of £89.9 million and £90.8 million and £84.3 million respectively. Clearly, London is a massive outlier as the



Figure 4. Gross business angel investments emanating from, and made in, UK regions (£000s).

Note: Calculated as total cash value of investment derived from angels in a region and total cash value of investments made in a region.

Source: UKBAA–BBB Business Angel Survey, 2019.

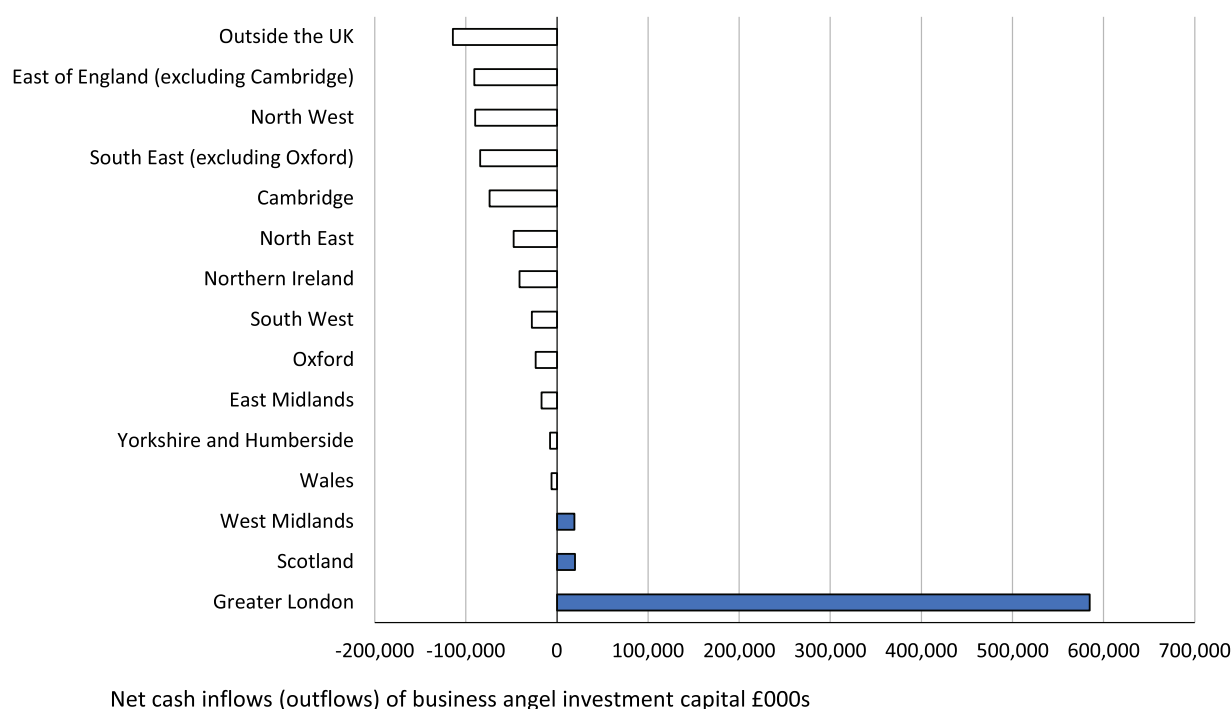


Figure 5. Net inflows (outflows) of business angel investments across UK regions.
 Note: Calculated as home region net outflows of investment – region net inflows.
 Source: UKBAA–BBB Business Angel Survey, 2019.

single largest and dominant net beneficiary of new capital inflows of BA investment, strongly illustrating the ‘dark star’ thesis outlined previously.

Of particular concern in terms of BA investments potentially reducing regional inequality is that the poor regions of the UK (North East, Northern Ireland, Wales and East Midlands) all had net outflows of angel investment capital of £48 million, £41 million, £6 million and £17 million respectively. The fact that angel capital flowed out of these poorer regions and into wealthy regions such as Greater London would suggest that the current distribution of angel investment capital across the UK follows existing patterns of inequality and possibly will exacerbate current regional inequalities. It shows that informal risk capital is prone to the same structural spatial imbalances as formal VC (Sunley et al., 2005).

The evidence also suggests that there may be imperfect geographical matching between firms with investment propositions and possible investors due to informational bottlenecks. One might expect that a well networked regional BA angel or ‘dealmaker’ would be expected to have first sight of any new investment opportunities that arise in their home region. However, it might be the case that networks are industry specific as angels’ networks and investment preferences relate to their industry background rather than the domicile region of the angels in question.

Figure 6 highlights the intense concentration of total UK BA investment in Greater London (46.35%) and the South East (8.08%), and also the relatively high shares in Scotland (6.51%), Cambridge (6.26%) and Oxford (5.43%). It also shows that the shares in Wales (0.46%), the East Midlands (0.97%) and the East of England

outside of Cambridge (1.30%) are very small. In this respect, the BBB Regional Angels Programme may have important effects in promoting BA investments in low investment regions in an absolute, but possibly not a relative, sense. This, of course, is subject to the presence of good business plans and entrepreneurs in lagging regions.

4.5. What types of angels invest in the three net beneficiary regions?

The final piece of analysis is to test whether there is something unique that differentiates BAs who make investments in the three net beneficiary regions of the UK in terms of positive net inflows of angel investment. As each regional BA investment variable (invested in Greater London, West Midlands and Scotland) is coded in binary form (0,1), where 1 indicates an individual angel made an investment in that region, and 0 otherwise; we estimate each separate regional model by probit.⁴

The results from this set of models show some very important demographic differences in terms of what types of angels choose to invest in each of these three regions. BAs who made investments in Greater London were less experienced in terms of the years they had been engaged in angel activity, but had made a greater number of investments. They also had a 16.3% higher probability of being hands-on investors. Their strong preferences were for seed and early-stage investments suggesting that the Greater London market is particularly dynamic. There was also substantial evidence that angels investing in this region also favoured co-investing with angel co-investment funds, VC funds and fintech. This gives them investment scale and access to deals that they

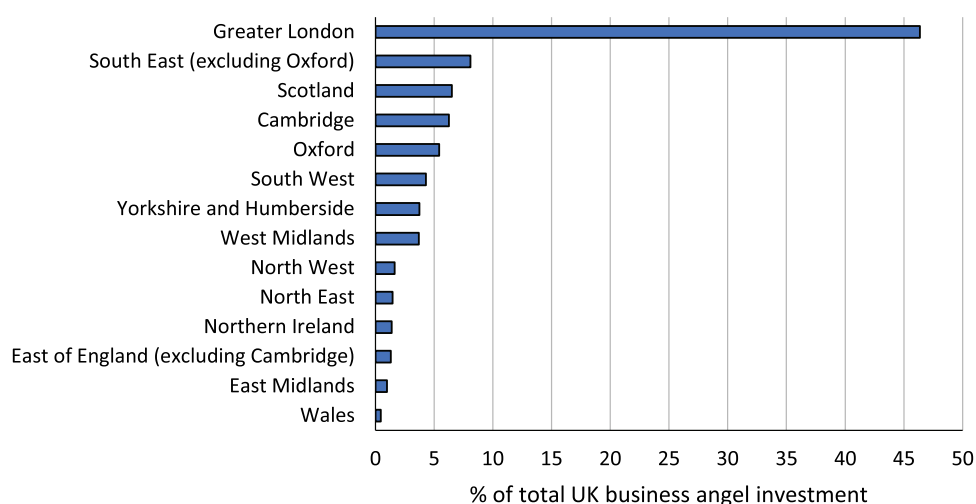


Figure 6. Relative regional shares of total business angel investment.

Note: Calculated as region investments/total UK investments.

Source: UKBAA–BBB Business Angel Survey, 2019. 46.4% of total business angel investment flows to Greater London.

would be unable to locate or meet the financial demands using their own resources.

BAs who invested in the West Midlands region had a very different profile. They were older and willing to invest a greater share of their total wealth. They also favoured co-investing, but their investment partners were different as they co-invested alongside corporate venture capital and private equity investors and with angel syndicates. This suggests a very different approach to angel investing and in particular the partners with whom they co-invest with. In Scotland, the typical angel investor looks very similar to the average UK BA in many ways. The defining characteristics relate to a preference for co-investing alongside private equity.

5. DISCUSSION

The literature on the geography of BA finance has hitherto provided scant evidence on the nature of the spatial architecture of entrepreneurial finance both within and across different regions. Therefore, we set out to elucidate and expand upon the spatial nature of the market for BA investment in the UK. We identified distinct regional patterns in terms of the physical distribution of angels, the flow of angel deals across regions, and how much angel investment was made and retained in their home regional economies. Given the discernible regional patterns of angel equity investments detected herein, we strongly echo others who stress how spatiality is ‘integral’ to monetary flows (Martin & Pollard, 2017).

From a theoretical perspective it is clear that acute interregional differences in BA investment patterns are a deep-seated feature of the entrepreneurial landscape, as embodied by the ‘thin’ versus ‘thick’ markets thesis (Nightingale et al., 2009). The paucity and poor connectivity between start-ups and angels is probably a key determinant behind these spatial demarcations. Successful angel investors enhance the markets’ beliefs about

their investing abilities (i.e., the so-called ‘reputation hypothesis’) and, hence, should lead to an increase in their network connectedness (Venugopal & Yerramilli, 2022). Networks act as a crucial connective tissue binding investors, entrepreneurs and regions together which can help overcome spatial separation. Indeed, some maintain extra-regional networks ‘can be a substitute for the benefits typically associated with regional agglomeration’ by enabling firms access to non-endogenous resources ‘to compensate for weak local linkages’ (Barzotto et al., 2019, p. 217). Therefore, a key conceptual contribution of the paper is the importance ascribed to the multi-scalar nature of entrepreneurial finance networks and how this mediates thin and thick markets. However, more work on the functioning of extra-regional networks in entrepreneurial finance is undoubtedly needed to help further unpack these issues.

Our study also makes several important contributions to the empirical literature on the nature and composition of different regional financial systems. A key finding was that BAs were found to be very unevenly distributed around the different regions of the UK, with over half (i.e., 53.0%) residing in Greater London and the South East. We then established that only three regions saw a net inflow of BA investment while the other 11 UK regions and cities (including high-tech hot spots such as Cambridge and Oxford) were net losers as more angel capital flowed out of their respective economies. In terms of the winners these were Greater London (around the financial epicentre of the UK), Scotland (with its devolved nation status) and the West Midlands (the traditional manufacturing heartland). These inflows may owe to sectoral specialisms by these investors as angels can often experience difficulties generating attractive investment returns when diversifying their investments (Antretter et al., 2020). The gross inflow of angel investments to these regions was £632.8 million. Of the recipient regions, Greater London is by far the largest

beneficiary of BA investments, reaffirming its dominance over this source of entrepreneurial finance within the UK. In contrast, the biggest net losers were the East of England and the North West with a combined gross outflow of £180.6 million in investment.

We also find a very strong footprint of foreign BA investment and UK angel investment abroad, but again London was the largest beneficiary of foreign angel investment with a gross investment of £199.3 million of the £341.2 million invested in the UK. This very much corresponds with other work on foreign VC (Harrison et al., 2020b). This suggests two prevailing trends may be evident: angel investors are increasingly widening their portfolio search horizons (Croce et al., 2023); and the centripetal spatial logic of BA finance flows continues to be spatially concentrated towards major urban centres of economic growth such as major capital cities and leading metropolitan cities (Adler et al., 2019; Florida & Kenney, 1988; Klagge & Martin, 2005). Whether or not a continuation of these trends becomes an enduring feature is clearly contingent on the emergence of further data to corroborate this spatial investment behaviour. At present it shows no sign of abating, however.

A second key finding concerns the extent of the complex interlinkages dissecting different UK regions in terms of sources of entrepreneurial finance. What our detailed analysis reveals is a complex mosaic of BA investment patterns emerging. What seems a factor underpinning this changing picture is a possible diminution of the 'local bias' associated with BA investing. Despite considerable evidence corroborating investment parochialism by angels (Chen et al., 2010), other recent evidence (together with our own findings) appears to challenge the 'local bias' thesis (Cowling et al., 2021; Fritsch & Schilder, 2008; Harrison et al., 2010). One plausible explanation for this reduced localised focus could be attributed to the upsurge in syndicates of BAs investing together in new investments.⁵ It is now widely considered that the angel market is increasingly organised via networks whereby angels collectively pool their resources and investments via syndicates (Kerr et al., 2014). This changes the dynamics of BA finance by reducing agency risks and 'soft monitoring' costs (Bonini et al., 2018). This may be leading to 'less spatial embeddedness ... enabling local angels to access firms across a wider spatial catchment area' (Cowling et al., 2021, p. 1195). So, what we see is that exogenous linkages or 'pipelines' are crucial for providing resources from outside the 'local milieu' (Bathelt et al., 2004).

Another contributory factor behind a possible reduction in local bias could be due to the increased use of social media by start-ups. One recent study found that social media activity by start-ups is associated with more investment (Jin et al., 2017). Therefore, the increased prevalence of social media may be reducing the 'distance effects' which previously restricted longer distance angel investments. Alternatively, another plausible explanation for the reduced local bias by BAs could rest with the increasing propensity for angels to invest via equity crowdfunding platforms.⁶ Some scholars posit that this form of equity investing may

particularly appeal for smaller scale 'hands off' equity investments requiring limited relational involvement by the investor (Cowling et al., 2021). What this also points towards is the highly variegated and distinctive nature of different angel investors which ultimately shapes the nature of their investment behaviour on several different discrete levels including, *inter alia*, the spatial proximity of their investments, scale of investment and post-investment monitoring relationships.

A final very important issue which may also influence the geography of BA investments concerns the levels of demand (and quality thereof) for equity finance within any given spatial context. The 'thin markets' thesis stipulates that in some areas the low levels of demand (together with weak supply) for equity funding will negate the ability of start-ups from connecting with potential investors (Nightingale et al., 2009). In some peripheral regions featuring a fragmented and shallow BA community, entrepreneurs will have less experience of 'meeting and mating' with potential investors (van Rijnsoever, 2020), a problem compounded by a lack of social networks in some nascent entrepreneurial contexts (Rocha et al., 2021). Entrepreneurs, especially those running enterprises with growth potential, often need a greater understanding of how equity investors operate and specialist advice on how to structure business plans to secure external equity finance (Aernoudt, 2005; Maxwell et al., 2011). A lack of self-confidence, time and knowledge about the process can result in entrepreneurs simply becoming deterred from seeking angel finance, similar to the issue of 'borrower discouragement' in debt markets (Brown et al., 2022).⁷

6. REGIONAL POLICY IMPLICATIONS

We now discuss some key policy implications arising from the research reported. A core focus of BA interventions both in the UK and across much of Europe is supply-side measures to encourage greater levels of angel activity via government-funded co-investments and tax incentives for BAs (Audretsch et al., 2020; Harrison et al., 2020a). Evidence on the success of such schemes seems scant and much of the motivation for these policies seems driven by 'an act of faith' by governments rather than hard evaluation evidence (Mason, 2009, p. 550). Given this, coupled with the diminishing local bias of regionally localised BA investment patterns identified herein this clearly calls into question *modus operandi* of this policy approach. We contend that these attempts to stimulate a 'local angel-local investment' policies are incongruent with the increasingly diffuse and multi-scaler nature of the BA market. This 'one-size-fits-all' national approach to policymaking clearly ignores the important specificities of different spatial locations (Cowling et al., 2023b; Ortega-Argilés, 2022), especially as some areas such as Scotland and the West Midlands have been relatively successful in attracting exogenous angel investment. In other words, policies that over-engineer decisions by entrepreneurial actors such as angels can backfire and become 'counter-effective', resulting in suboptimal investment decisions being made (Sohdoha et al., 2023).

Leaving aside thorny questions about the existence or otherwise of market failures in local angel markets, this begs an important question as to how policymakers can make these markets function more effectively. A key lesson ripe for more concerted levels of policy intervention concerns demand-side stimulation. From a demand-side perspective, a lack of exposure to best practice pitching techniques may detrimentally affect some entrepreneurs (Clingsmith et al., 2023; Latifi et al., 2024). We can speculate that these obstacles may prevent local entrepreneurs having capabilities to demonstrate their ‘investment readiness’ to investors (Silver et al., 2010). This is particularly salient because almost 90% of angel deals are rejected at the initial screening stage (Mason et al., 2022).

While training how to successfully pitch to investors is one solution (Clingsmith et al., 2023), probably a better one is to foster vicarious learning opportunities. One way of enhancing the ‘investor readiness’ levels of local entrepreneurs would be to collaborate with VCs to help informally mentor and coach these *de novo* entrepreneurs. To ensure ‘buy-in’ by the VCs, the start-ups in receipt of this support could offer a small equity stake as a form of incentivisation. This is important because VCs are usually regarded as a qualified source of information that can reduce information asymmetries related to the quality of the proposal and to the entrepreneur’s reliability (Croce et al., 2017).

As well as the important demand-stimulation mechanisms outlined above, connecting local entrepreneurs to external angels through an informal brokerage mechanism might open up opportunities to access external angel finance which is unavailable in more fragile and less developed regions. One interesting example of this is an innovative Scottish scheme that invites external investors from various parts of North America to roadshows of promising local start-ups seeking equity investment.⁸ Developing these kind of equity ‘pipelines’ connecting entrepreneurs in ‘thin’ markets to investors in external ‘thick’ markets seems another logical policy response and one requiring a relatively minimal resource outlay from policymakers. It would appear that a mixture of cleverly crafted supply and demand-side policies will be required to effectively enhance the functioning of these complex market interactions.

7. CONCLUSIONS

To date the literature has largely overlooked the important role played by entrepreneurial actors such as BAs in shaping different regional and urban economies. These important entrepreneurial actors play a multifunctional, munificent and complex role within regional entrepreneurship. Our data on UK angels allowed us to calculate interregional in- and outflows of angel investment flows which discovered that only three regions – Greater London, Scotland and the West Midlands – witnessed a net inflow of angel investment, while the other 11 UK regions and cities were net losers. Given these findings the main thrust of policy approaches towards building local networks of BAs seems somewhat at odds with the diminishing local bias found herein. Stimulating the demand side of the

entrepreneurial/investment nexus, raising levels of ‘investor readiness’ and enhancing the external connectivity of a region with more resource abundant locations appear, *prima facie*, more plausible policy objectives. However, given our knowledge of how investors match and interact with prospective investee ventures remains relatively sparse, these issues clearly merit further empirical scrutiny before more definitive policy recommendations can be formulated (Manigart & Khosravi, 2024).

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NOTES

1. Typically, angels invest their own money in a small business in exchange for a minority stake, usually 10–25% (British Business Bank, 2018).
2. Typically, angel investments represent a relatively modest share of an individual’s total wealth or investable wealth, typically around 5–10% (Bonini et al., 2018).
3. The neo-Schumpeterian term was first coined to depict the pervasive recycling process of entrepreneurial activity in Silicon Valley (Bahrami & Evans, 1995).
4. For interpretation we report the marginal effects for each of our explanatory variables, which include BA personal demographics (age, region of domicile, gender, ethnicity), experience (years investing, number of lifetime investments made) and their investment preferences (passive investor, investment stage, share of total investable wealth allocated to angel investing), and any co-investment partners (see Table A2 in the supplemental data online).
5. Research shows that increasing use of syndication by VCs has reduced the importance of distance in VC investments (Fritsch & Schilder, 2008).
6. Some estimate nearly half of all angels invest via these crowdfunding platforms (Wright et al., 2015).
7. Interestingly, risky innovative firms are considered to be those most predisposed towards discouragement (Brown et al., 2022), which are exactly the types of firms often seeking recourse to equity investment.
8. See <https://dailybusinessgroup.co.uk/2023/08/silicon-valley-vcs-offer-advice-to-scots-startups/>.

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