KINGSTON UNIVERSITY

THE INTERNATIONALISATION AND LOCALISATION OF FOREIGN VENTURE CAPITAL INVESTMENTS IN THE UNITED KINGDOM: GEOGRAPHY, EVIDENCE, IMPACT AND IMPLICATIONS

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ABSTRACT

The internationalisation of venture capital (VC) is a growing field in academic research, as more VC investors (VCs) become involved in cross-border investment activity. The rising demand for VC money could be influenced by increasing search for high-quality deals beyond the investor's national borders. The flow of foreign VC receives little attention despite the volume of international financing flowing into UK companies. This thesis analyses 5,932 VC backed deals made to 3,279 UK companies between 2002 and 2017. The empirical data do not distinguish between foreign, national, and local funds, hence the variables were manually created. Twelve research participants, consisting of domestic venture capital professionals, foreign venture capital professionals and entrepreneurial company founders or senior executives, are interviewed to explore how VC backed deals originate.

Firstly, the thesis investigates the geography of foreign venture capital (FVC) investment at regional level, assessing the attractiveness of the 12 UK regions to international investors. It identifies the volume and patterns of FVC investment, whether investors co-invest or make stand-alone investments and whether they invest in early or later rounds. It reveals the flow of FVC money across UK regions, identifying the regions with high and low investment. It provides insight into the function of FVC investors providing seed and growth capital to UK companies. The findings reveal that nearly one-third of all VC deals in the UK have one or more foreign investor, and the USA is the most active foreign nation investing in UK regions. There are sizeable differences between the regions in terms of the proportions of companies that receive FVC investment, and three regions, London, South-East England and the East of England are identified as receiving most FVC investment.

Secondly, the thesis investigates the investment activities of domestic venture capital funds (DVCs) and local venture capital funds (LVCs) in the UK, specifically the volume and flow of VC investment transactions that take place between regions, and the level of regional VC self-sufficiency. The results show that more than half of UK companies receive investment from one or more domestic investor. There is regional disparity in the volume of investments, and fewer companies from South-East England and the East of England receive investment from LVCs.

Thirdly, the thesis investigates deal origination for FVCs and DVCs in the UK. It examines how foreign VC funds discover deals in UK regions, especially those in remote locations, and the influence of social networking in facilitating deals. The results suggest that the prospect of a company raising VC money is dependent on factors beyond location and deal quality. The quality

of the investor's network directly influences deal flow. Entrepreneurial firms located in regions with a high concentration of high-quality human capital have increased prospects of attracting investment. Distance between VC investors and fundraising companies is less relevant.

Little is known about directional flow of FVC money in the UK, despite it being among the top global investment destinations for foreign VCs. Therefore, this thesis contributes to the literature of economic geography at national and regional scale. It recommends policies to foster cross-regional and cross-border VC investment in the UK, directed at attracting FVC investment while promoting inter-regional investment. It recommends increasing the level of co-operation between higher education and private companies, government funding for private companies, and tax breaks for investment partnerships.

The research adds a theoretical contribution to location theory by presenting new results which indicate that VC firms with international experience have minimal geographic limitations when scouting for deals. Therefore, deal location does not restrain VC firms from investing, but presents them with an opportunity to break into new markets. Companies located in regions with better infrastructure, talent and information have a higher likelihood of attracting both FVC and DVC investment. The research finds that fundraising companies gain VC investors' confidence through existing relationships, thereby reducing agency problems. The contribution to information asymmetry theory is that information about distant deals is often transmitted through network ties, so poor ties between regions lead to reduced confidence and trustworthiness of investment-related information.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

TABLE OF ABBREVIATIONS

BBB	British Business Bank
BC	Backed company
BREXIT	British exit from the European Union
BVCA	British Venture Capital Association
CVC	Corporate venture capital
DVC	Domestic venture capital
DVCs	Domestic venture capital investors
EU	European Union
EVCA	European Venture Capital Association
FVC	Foreign venture capital
FVCI	Foreign venture capital investment
FVCs	Foreign venture capital investor
GBP	Great British Pound
GDP	Gross domestic product
GPs	General partners
IPO	Initial public offering
IRR	Internal rate of return
LPs	Limited partners
LVC	Local venture capital
LVCs	Local venture capital investors
M and A	Mergers and acquisitions
OECD	Organisation for Economic Co-operation and Development
PC	Portfolio company
UK	United Kingdom
US	United States of America
USD	United States Dollar
VC	Venture capital
VCs	Venture capital investors

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AUTHOR'S DECLARATION

I declare that:

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Signature:

CHAPTER 1: INTRODUCTION

1.1 Background

Venture capital investors (VCs) provide finance to companies. Gompers and Lerner (1999) describe venture capital (VC) as an independently managed, dedicated pool of capital that focuses on equity-related investments in privately held, high growth companies. Venture capital investors play a significant role in supporting the development of the companies they back by equipping them with the resources required to transform, scale and grow their businesses (Gompers and Lerner, 2001; Alemany and Marti, 2005). Both practitioners and academics see the venture capital industry as a suitable financing structure for entrepreneurial firms, especially in the early stages of company formation (Croce et al., 2013). More importantly, VC firms are extremely selective about the type of companies they back, since they are primarily interested in businesses that generate a substantial return on their investments over five to seven years via an initial public offering or sale of the business to a corporate buyer (Mason and Pierrakis, 2011).

Over the years, studies have established an imbalanced geographical distribution of venture capital investments in the UK (Martin, 1989). Munari and Toschi (2015), among others, argue that the gap in UK regions is inherently on the supply side. Despite this widespread observation within the industry, some researchers suggest that the unequal distribution of VC investment could be a reflection of demand-side factors, as companies in peripheral regions are less likely to seek VC investment (Bertoni et al., 2015). Analysing how company location influences demand for VC investment contributes to the debate on the geography of VC, especially in the UK regions. Gompers and Lerner (1998) describe venture capital as a means of providing capital to firms which may not have the necessary independent financial power, but require external financing (Groh and Wallmeroth, 2016). The UK venture capital market began to grow in the 1980s. Martin (1989) cites the British Venture Capital Association (BVCA) (1988) who note that there were only 20 VC firms in the UK in 1979, but this number grew significantly to 144 by 1988.

Several studies attempt to find the reason behind VCs investing outside their national boundaries. Schertler and Tykvova (2012) explain that VCs sometimes invest abroad to exploit differences in risk-adjusted expected returns between their home country and the portfolio companies' country, with deal flow considerations and value-adding activities as additional reasons for investing abroad. According to Schertler and Tykvova (2009), countries with higher expected economic

growth stimulate venture capital investments from foreign VCs as well as local VCs, however foreign VCs are more likely to participate in larger deals. Additional findings by Schertler and Tykvova (2011) suggest that VCs with extensive experience tend to actively engage in cross-border investment activities. In this doctoral thesis, cross-border VCs are defined as international venture capital investors that invest in companies outside their domiciled home country, while domestic VCs are UK based VC investors that invest in companies within their domiciled home country.

1.2 Area of Study

The study of geography has shifted over recent years, with more interest emerging in the field of economic geography. The financing of entrepreneurial companies has several dimensions, with investors' footprints increasingly spanning geographical locations. The study of venture capital investment attracts wide interest at both an academic and industrial level. Research explores the directional flow of investment in various parts of the world including New York, Boston and Silicon Valley in the United States, London, the South East and Scotland in the United Kingdom, Flanders in Belgium and Paris in France, among several other cities and nations. Some of these studies focus on the directional flow of domestic VC investment in the UK. This thesis is unique in that it not only focuses on cross-regional investment but also on cross-border VC investment across the UK regions. To the best of the researcher's knowledge, no existing academic literature specifically examines the flow of foreign venture capital (FVC) investment in the UK and the cross-regional flow of domestic venture capital (DVC) and local venture capital (LVC) investment in the UK at the national and regional level. Hence, this thesis contributes to the existing literature on the geographic flow of FVC and DVC investment in the UK.

Specifically, this thesis focuses on venture capital investment at the national and regional level by examining foreign venture capital investment backing UK companies in all twelve UK regions: Northern Ireland, Scotland, North-East England, North-West England, Yorkshire-and-the-Humber, East Midlands, West Midlands, East of England, Wales, London, South-West England and South-East England. The study is carried out at both deal level and company level. It informs academics, practitioners and policymakers about the regions that attract foreign venture capital investors (FVCs), and those regions that lag behind. The cross-regional section of the study focuses on domestic VCs that invest locally within their region and across UK regions while revealing how VCs in the 3-star regions (London, South-East England and East of England) invest in the UK. The thesis also identifies the VC self-sufficient regions of the UK.

1.3 Research Objectives

This thesis delivers insight into the role of foreign venture capital investors (FVCs), domestic venture capital investors (DVCs) and local venture capital investors (LVCs), in the supply of seed and growth capital for UK companies. It deconstructs the channels of cross-regional venture capital investment in the UK. The principal objectives of this thesis are, firstly, to examine the investment patterns of FVCs in UK regions, e.g. whether they co-invest or invest alone, invest in early rounds or later rounds, and secondly, to investigate the investment activities of DVCs and LVCs in the UK. Specifically, it investigates the volume and flow of venture capital investment transactions that take place between one region and another in the UK and analyses the level of regional VC self-sufficiency.

1.4 Research Questions

There is increasing involvement of foreign venture capital investment in the UK, but the extent of FVC involvement is yet to be ascertained. This thesis contributes to the existing debate on the geography of venture capital investment in the UK, alongside the work of Martin (1989), Mason and Harrison (2002), Mason and Pierrakis (2013), and Colombo et al. (2019). The thesis identifies the UK regions that attract FVCs to back deals from the region, and it also discloses cross-regional VC investment activities in UK regions. It reveals the flow of foreign venture capital investment and domestic venture capital investment in UK regions, and explains the depth of FVC involvement in regional development and entrepreneurship across the UK, especially at a time when Brexit is an important topic.

Lerner and Tag (2013) argue that the venture capital market is supported by macroeconomic theory, that is, combining capital and labour is central to producing sound output. The theory broadly implies that the provision of capital is central to the production of any tangible or intangible asset that contributes to a nation's entrepreneurial economy. The US is widely considered to be the originating nation for VC investment, yet the geographic distribution of investment in the region is imbalanced (Chen et al., 2010). Over the years, the UK venture capital market has experienced growth, yet the spatial organisation and regional distribution of funding continue to show variability. Studies show regional disproportion in venture capital investment in the UK at the national and regional level (Martin, 1989; Mason and Harrison, 2002). Humphery-Jenner and Suchard (2013) indicate that, in comparison to local VCs, foreign VCs are likely to have a limited domestic connection to their portfolio companies' locations. There are supply and

demand shortages in VC investment in the UK, therefore the first research questions are framed to address the uneven supply of FVCs across UK regions.

1. What is the proportion of foreign venture capital investments in the UK? How different is their pattern of investment across UK regions?

Previous studies on the geographic flow of venture capital investment in the UK reveal a regional distribution with a highly uneven pattern (Martin, 1989; Mason and Harrison, 1991, 2002). The VC industry has a high concentration of investment in South-East England and neighbouring regions, as companies from these regions are more likely to seek external funding (Thwaites and Wynarczyk, 1996). Following this pattern of investment in UK regions, the flow of investment is steadily towards the South, but whether or not there is cross-regional investment across UK regions is another debate. The supply of venture capital does not reveal a spatial concentration of economically lagging regions. An understanding of the spatial concentration may help regional government schemes which attempt to cover undersupplied regions (Mason an d Pierrakis, 2011). This may drive an increase in the supply of risk capital for companies seeking investor funds, but the amount of capital available might not be substantial enough to cover the gap.

2. How different is the pattern of investment for domestic VCs in the UK regions? Do they invest across all UK regions or only locally within their regions? What is the level of VC self-sufficient in UK regions?

When multiple VCs syndicate their investments, they become connected through the shared investment (Alexy et al., 2012), creating a secure link between the VC backed company and the VCs. In a distant transaction with unclear regulatory frameworks or a lack of legal recourse, VCs rely strongly on the interconnections between individual or institutional networks with their local knowledge of the environment to negotiate deals (Meyer, 2001). To a great extent, syndication is vital to the operation of cross-border VC transactions. Tian (2012) suggest that syndication has the capacity to improve venture output. More interestingly, Brander et al. (2002) indicate that syndicated deals are more likely to yield a higher return on investment. Dai et al. (2012) show that a partnership relationship between local VCs and foreign VCs helps reduce friction due to cultural or geographic distance. Partnership relationships are vital in cross-border investment activity as they influence information transparency and reduce geographical and cultural distance. Syndication enables cross-border VCs to invest in other jurisdictions. A previous study into cross-border VC investment in China by Dai et al. (2012) reveals that funds co-invested by cross-border

VCs and local VCs have a 5 per cent increased likelihood of having a successful exit compared to funds invested only by local VCs and only by foreign VCs.

3. How do foreign VCs discover local companies that are investment ready?

VC firms are widely perceived to be problem-solving experts of information symmetry and moral hazard (Lerner and Tag, 2013), but whether this perception is correct remains up for debate. Several pieces of literature show that VCs provide added support beyond the financing of the firm. Prominent amongst these studies is that of Kortum and Lerner (2000), who find a significant positive effect between VC financing and patent grant, especially in the 1990s. Other studies, such as Chemmanur et al. (2011), and Popov and Roosenboom (2012) also find a positive effect of VC on total factor productivity (TFP) growth, although the results are weaker for European nations and industries. A study by Cumming et al. (2016) on the impact of foreign VC investors on entrepreneurial firms, suggests that international VC investors add significant value to portfolio ventures. The geographic diversity of VCs' portfolio firms enables better fund performance. Cumming et al. (2016) make a further suggestion, that cross-border VCs provide their portfolio ventures with access to their own networks (such as lawyers, bankers and accountants), which provides the portfolio firms with an opportunity to go public during the exit phase.

4. How do foreign VCs provide non-financial value to VC backed companies in the UK?

1.5 Methodology

This thesis adopts a combination of research techniques which are suitable for answering the research questions. The study investigates the flow of foreign venture capital investment in the UK by analysing the flow of cross-regional venture capital investments in the UK and assessing the deal origination, especially for distant VCs. The technique adopted contributes to the debate of economic geographers on the internationalisation and localisation of foreign venture capital investment in the United Kingdom. The research adopts a critical realist philosophical framework, and employs mixed methods (Bhaskar, 1975). VC researchers are encouraged by Sapienza and Villanueva (2007) to use several methods. This research initial applied empirical data analysis, which followed by a qualitative technique to obtain information from VCs and entrepreneurial founders. The study delivers new insight and perspective on the flow of FVC money in the UK, the role of DVC and LVCs in promoting regional development, and the function of networks in

influencing investment transaction within and across borders. Additional information on the methodology is provided in Chapter 4.

This thesis contributes to the academic literature in the following areas. Firstly, it uses disaggregated data that has not been used previously in academic studies to examine the proportion of foreign venture capital investments in the UK and their pattern of investing across UK regions. Secondly, it uses this disaggregated data to examine the investment pattern of domestic VCs in UK regions, whether they invest nationwide or focus on local deals within their region, and VC regional self-sufficiency. Thirdly, it uses aggregated data to assess deal origination for local and foreign VCs involved in UK deals and how foreign VCs discover local companies that are investment ready. Lastly, the results offer a better understanding of the localisation and internationalisation of the geography of foreign venture capital investment in regions within the UK.

1.6 Thesis Structure

This thesis is presented in eight chapters. Chapter 2 contains a comprehensive review of literature related to the thesis. The chapter commences by reviewing the academic literature that relates to domestic VC and cross-border VC investment activities. It reviews the value added to VC backed companies, the performance of FVC backed companies and the impact of FVC investment on the performance of backed companies. It deliberates on the internationalisation of foreign venture capital investors across various geographies and reviews theoretical approaches that directly and indirectly support the debates around localisation and internationalisation of foreign venture capital investors including key theories such as human capital theory, traditional location theory, social network theory, agency theory and information asymmetry theory. The chapter concludes by presenting the existing literature on the geographic flow of domestic VC and foreign VC investment in the UK and the limitations of the study.

Chapter 3 provides an overview of the grey literature that describes the VC industry and VC market performance across the UK, EU and US. It presents information on VC characteristics and deal dynamics within the respective geographies, shows the impact of VC financing on regional development and provides insight into the implication of policy on venture financing in the UK. It tracks the various perspectives and relevant literature based on studies carried out by research organisations such as the British Venture Capital Association (BVCA), European Venture Capital Association (EVCA), Pitchbook, Beauhurst, Softbank, and other industry reports. The chapter

outlines the various elements that constitute the internationalisation and localisation of venture capital investment in the UK.

Chapter 4 delivers a detailed blueprint for achieving the research objectives and explains the rationale for the research methodology selected for the study. The chapter outlines the various research approaches along with the benefits and limitations of these approaches, the data collection processes used and the analytical techniques employed to make sense of the data. Given that the research adopts mixed methods, with the majority of the study adopting empirical analysis and a qualitative approach being used to validate the findings, attention is drawn to the past and present arguments around numerical and non-numerical analysis. The philosophical assumptions are reviewed to support the research methods selected.

Chapter 5 presents the first set of results. It identifies the geography of FVC investments in UK regions while assessing the performance of each UK region in terms of attracting external VC investments from abroad. The chapter examines FVC investment patterns in UK regions and determines whether FVCs co-invest or invest alone, invest in early rounds or later rounds. This chapter addresses the initial set of research questions that focus on revealing the geographic flow of foreign venture capital investments in the UK regions. It identifies the regions in high demand for FVC investments as well as lagging behind regions. The chapter provides insight into the regional dimensions of the geographic flow of venture capital investments in the UK.

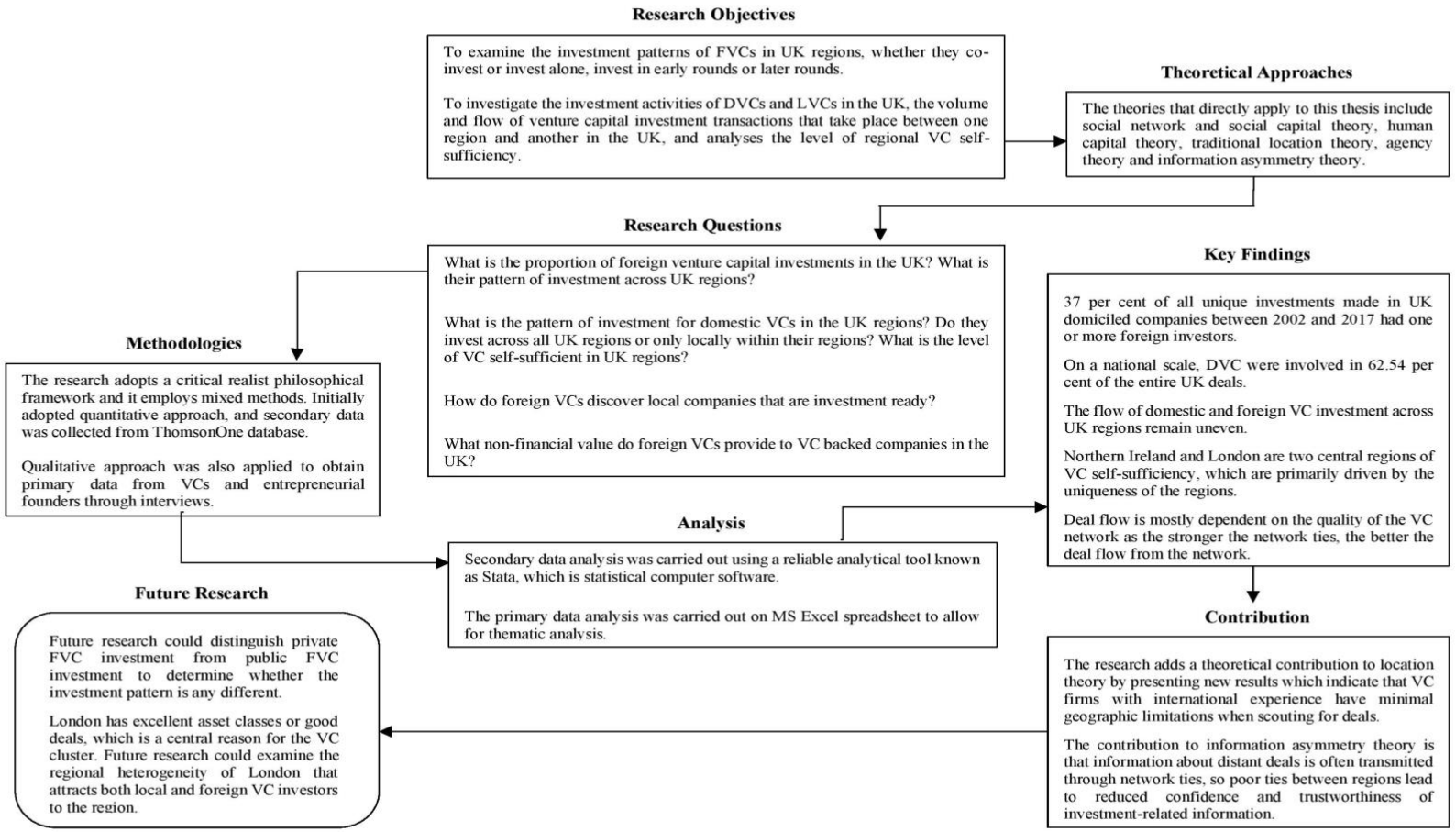
Chapter 6 analyses the cross-regional flow of venture capital investment in the UK. The chapter addresses the second set of questions that aim to, firstly, identify the direction of flow of venture capital investments between UK regions and, secondly, analyse the level of regional VC self-sufficiency. Specifically, this section identifies the regions with the highest concentration of VCs and the geographical distribution of capital in the UK. The chapter identifies VC funds that provide capital to fundraising companies within their region and those outside their region of origin. A significant contribution of this chapter is that it informs both academics and practitioners of the UK regions that offer attractive deals to VCs and the regions that require both entrepreneurial and funding support to boost regional development, especially post Brexit.

Chapter 7 investigates the origin of cross-regional and cross-border venture capital deals in the UK. It deconstructs how foreign VCs discover deals in UK regions, especially deals located in remote UK locations, and investigates whether fundraising companies initiate the first contact leading to deal closure with VCs, or vice versa. The results are presented in three tiers: first,

information as it relates to UK domiciled venture capital investors; second, as it relates to deal sourcing for foreign venture capital investors backing UK companies; and third, the evidence gathered from backed companies that either receive venture funding from domestic VC investors, foreign VC investors or both.

Lastly, Chapter 8 discusses the empirical and theoretical contribution of the thesis to the knowledge domain in academia. The implications for policy and practice are presented in this section along with potential future research questions and directions. This chapter presents the conclusions of the thesis by: firstly, revealing that London and Northern-Ireland are self-sufficient, with Northern Ireland receiving a sizeable financial volume of support from the government due to a joint public fund with Ireland; secondly, comparing the performance of LVC in other UK regions to the 3-star regions (London, East of England and South-East England) to show that it is imbalanced and there are enormous differences in the availability and quality of human capital across regions that directly reflect on network quality; and thirdly, revealing the high quotient of cross-regional investment by DVCs in the UK, which confirms that companies seek funding outside of their region of origin. Finally, the chapter explains how the quality of general partners influences FVCs to make co-investment in some regions and standalone investment in others.

Figure 1. 1. PhD Research Flowchart



CHAPTER 2: ACADEMIC LITERATURE REVIEW

2.1 Introduction

Financial resources are a crucial component of any venture's growth and survival. Previously, access to finance was a serious obstacle for entrepreneurs, especially those in the early and growth stages of their businesses (Rosenbusch et al., 2013). Freeman (2013) implies that small businesses face challenges in securing investment to support their growth and development. This section provides a background to the academic literature relating to cross-border VC investment, reviewing a wide range of published literature on both domestic and cross-border VC investment activities. The chapter reviews the theories relevant to cross-border venture capital investment and cross-regional venture capital investment, which are agency theory, human capital theory, institutional theory and social network and social capital theory. The section also reviews theories relating to regional development and the financing of companies.

This literature review is carried out based on Hart (1998) conception of a literature review that should: (a) distinguish between what has previously been investigated and what needs to be researched; (b) discover essential variables relevant to the subject under study; (c) take a new perspective and identify the relationship between theory and practice; (d) establish the problem and the significance of the problem; (e) explore the structure of the problem and apply relevant theory; and (f) identify the principal methodology and research techniques. Therefore, critical academic material related to the research topic is reviewed and analysed. Hart (1998) describes literature review as the selection of the available documents (published and unpublished) on the study topic that contain relevant evidence, data, ideas and information, written from a specific standpoint to express an opinion on the subject under investigation, to effectively evaluate its relevance to the proposed research. Hence, this chapter reviews the existing literature relevant to cross-border VCs, domestic VCs, and venture capital investment activity.

The subject of cross-border VC investment is one of the fastest-growing debates in the VC industry, yet Espenlaub et al. (2015) express concerns about the lack of substantial research in the field. Wright et al. (2005) suggest that the shift in geographical focus of VCs from cross-country investment to cross-border investment merits further research. The literature covered in this review is carefully selected based on resources that have depth and provide the insight required to address the research questions. The literature search is carried out on several databases using key search terms that synchronise with the research question. Literature is selected across a wide range of

repositories, including databases such as Emerald, Science Direct, JSTOR Search, and Google Scholar, among several others. Specific keywords are used as a filter mechanism, including cross-border venture capital, domestic venture capital, international venture capital, information asymmetry, regional development and high technology firm, among several others. This chapter begins by identifying a gap in the existing literature and the most widely accepted methodologies used in previous studies. Rosenbusch et al. (2013) present an extensive meta-analysis of VC and VC backed companies' financial performance research.

2.2 Literature search processes

The literature search initially used the keywords cross-border venture capital, domestic venture capital, and portfolio company growth in various databases before adding other keywords. A reference was found to a 1964 article on human capital, but only literature produced between 1986 and 2019 was selected for the review process from Web of Science, Springer, Emerald, Wiley, Science Direct, Research Gate and Google Scholar, among several others. A meta-analysis based on Kaplan (2004) was adopted as the most suitable analytical technique as it allows for the integration of empirical studies in order to create a generalised conclusion. The search criteria initially focused on venture capital, before the search was narrowed to include cross-border VCs, domestic VCs, and backed companies. This formed the selection criteria for core literature, with a focus on studies that deal with both foreign VC and domestic VC flow in UK regions. The literature that falls outside these search areas was excluded, and this includes literature with contents published in other languages besides English. A large proportion of academic journal articles were initially identified, but the number was reduced by removing duplicates and including only materials published by elite journal publishers.

Combs et al. (2005) suggest that the commonly employed variables, profitability, growth and stock market, are the best three metrics for measuring the financial performance of backed companies. Given the limited availability of literature on the geographic flow of FVC money in the UK, the selected literature suggests that cross-border VCs add value in the area of international experience but are disadvantaged in the areas of gathering investment-related information and monitoring investment (Schertler and Tykvova, 2012). On the other hand, domestic VCs add value through monitoring of portfolio companies (Makela and Maula, 2006). Both cross-border VCs and domestic VCs perform better when there is syndication (Cheng and Tang, 2019). Nevertheless,

most studies suggest that cross-border VCs add significant value to their backed companies, but this, arguably, differs from one geographical region to another.

2.3 Critical evaluation of the existing literature

VC firms typically finance high-risk ventures with high-return potential. Metrick and Yasuda (2010) provide five main characteristics of VCs: (a) VCs are financial intermediaries that receive funds from investors and invest funds directly in portfolio companies; (b) VCs primarily focus on maximising financial returns; (c) VCs play an active and significant role in assisting and monitoring portfolio companies; (d) VCs are primarily fund companies with high growth potential; and (e) VCs invest explicitly in private unlisted companies.

VCs are considered to be critical drivers of entrepreneurship, innovation and public company formation (Lerner, 1994; Kaplan and Stromberg, 2003). VCs are widely considered to be instrumental in the growth of their backed companies, which, by extension, enhances and drives innovation, economic growth and entrepreneurship (Busenitz et al., 2004; Dimov and Shepherd, 2005; Samila and Sorenson, 2011). By nature, VCs possess the ability to access lucrative growth opportunities through international investment in foreign markets, leading to increased growth in the number of VC deals across national boundaries. Busenitz et al. (2004) argue that an exceptional feature of VC financing, compared to other funding structures, is their ability to manage and protect their portfolio ventures. This exceptional VCs feature is similar to funding by equity angel investors who are generally known for protecting their portfolios. Macmillan et al. (1989) indicate that VCs add value to their backed companies by taking board positions, making introductions to suppliers and networks, offering strategic managerial and operational advice, and monitoring the performance of their investment.

2.3.1 Regional dimension of venture capital investment in the United Kingdom

Academic experts in the field of venture capital and regional development share the view that knowledge creation in venture capital and regional development are relevant to entrepreneurship. The significance of venture capital to national and regional development cannot be over-emphasised given their support in funding high-growth technology companies. Pierrakis (2012) suggests that venture capital makes a significant contribution to national and regional development at four distinct levels: (a) the creation of new industries; (b) company growth; (c) networking and clustering; and (d) research and development expenditure and patents.

In recent decades, there has been a shift in the general outlook of regions to a more open perspective with more complex linkages between places within and beyond their boundaries (Taylor et al., 2008). Harrison (2006) indicates that regional geographers struggle with the definitions of the regions, the divisions of which remain a mystery, but Malecki (1991) describes regional development as a mixture of the qualitative and quantitative features of a region's economy, with the qualitative feature holding the most meaning. Malecki (1991) argues that growth and decline, which arise from quantitative changes in economic activity, impact the regional employment rates, income and spending, along with a range of other factors both local and external. Malecki (1991) indicates that the most widely accepted theories of economic growth focus on quantitative changes, despite rising awareness that regional growth has several other facets.

Several studies assess the effectiveness of public policy in creating active VC markets, yet the impact of public policy on VC markets at the regional level remains unexplored (Munari and Toschi, 2015). The reasons for this lack of attention include: firstly, VCs concentrate on a selected number of high-tech clustered regions while other regions remain devoid of VC activity (Martin et al., 2005); secondly, regional equity gaps incite additional government policies aimed at promoting new venture funding, yet few empirical studies take regional differences into consideration when assessing the effectiveness of public VC programmes (Gompers and Lerner, 1999; Collewaert et al., 2010).

2.3.2 Reflection on regional deficiency in the supply of venture capital investment

Mason and Harrison (2006) suggest that, following the growth of the venture capital industry in the 1990s, the debate on the geographic distribution of VC money has gained significant attention as a result of the variability of supply across UK regions. The limited accessibility of VC money for early-stage companies is the rationale for government intervention to improve small firms' access to equity financing, which is embedded in the funding gap debate (Robbie, 1998; Lockett et al., 2002). The supply of venture capital investment in the UK shows a high level of spatial concentration, and local and national governments are making efforts to cover gaps in economically lagging regions by increasing the supply of capital for early-stage businesses. However, they have only provided partial and costly solutions (Mason and Harrison, 1995). Governmental and regional authorities across the world have implemented various funding

programmes to support the establishment of new businesses and fix the funding gap in the private capital market (Munari and Toschi, 2015).

Earlier debate by Marshall, cited in Frenz and Oughton (2005), reveals several distinctions that cause regional variation in economic development, drawn from internal and external economies. Internal economies are primarily reliant on the company's capabilities, and management, while external economies are reliant on market competitiveness, infrastructure development, the pool of human capital, skilled labour and knowledge spill-over. Fund seeking companies from peripheral regions are often handicapped by their lack of knowledge of packaging funding proposals and their understanding of the criteria required for investment readiness. The geographical distribution of VC investment is dependent on the opportunity cost of venture capitalist's time spent searching for and monitoring deals (Gifford, 1997). This implies that the further away a deal is, the less likely that VCs will back the deal as it would take a considerable time to conduct due diligence and monitor the deal. Hence, there is a bias for VCs to back companies in close geographical proximity to their offices, as this supports the hands-on investment style many favour. This long-distance effect contributes to the variation in regional supply and demand of venture capital investment in the UK.

2.3.3 Regional variation in venture capital investment in the United Kingdom

Regional differences across the UK can be attributed to variations in industrial structure, since some regions hold higher or lower sectoral shares, and sectoral contributions influence regional variation. The cause and effect of regional variation in the supply and demand of venture capital investment in the UK is a matter of considerable debate among academic experts. Clark (1988 cited in Melecki, 1991) suggests that regional differences in developed nations are tied to where individuals reside, which imposes variability on the availability of resources unique to each region or location. Frenz and Oughton (2005) argue that there are significant regional differences in areas of economic growth and innovation activities, which are regionally clustered. The differences between regions are irregular, which is synonymous with the UK having disparity across the 12 regions.

Mason and Harrison (1995) argue that the variation in the supply of venture capital investment in the UK is primarily attributable to the location of the investment, the inter-regional flow of capital from VCs, support for the development of regional technological infrastructure and the influence of the institutional structure of the VC industry. They suggest that access to capital has long been

a constraint for start-up and scale-up companies, and hence the spatial access to risk capital leads to spatial variation in entrepreneurial activity. This directly impacts UK regions because of the high concentration of venture capital investments in specific regions, causing regional disruption to the geography of capital in advanced economies (Clark, 1999).

Mason and Harrison (1995), citing the Financial Times (1993), suggest that there is a significant flow of money from large North American investors aiming to diversify their portfolio into the UK market. The literature between 1985 and 1991 which examines the regional distribution of investment shows an uneven distribution of capital with a large concentration of investment in London and the South-Eastern part of the country (Martin, 1989; Mason and Harrison, 1991). These regions, at the time, dominated the supply and demand side of VC investment. More interestingly, Mason and Harrison (1995) argue that the distance between VC firms and their backed companies discourages VCs from backing more geographically distant businesses since travel may be inconvenient, and it eliminates the possibility of face-to-face communication with the company.

Historically, London led the UK money market and acted as the financial district of the country and, by extension, Europe. The establishment of the Euro-market, the influx of international banks and deregulation of the London Stock Exchange helped the region maintain its pre-eminent position as the nation's financial capital (Martin, 1989). The emergence of various financial and other related institutions added to the region's diverse pool of investment activities leading to a concentration of expertise. According to Martin (1989), the venture capital market in the UK has long been controlled by London, but more recent studies by Mason and Harrison, (1999, 2002), Chen et al. (2010), Mason and Pierrakis (2013) and Bertoni et al. (2019) suggest that London is still the dominant region for VC investment in the UK. A forecast of future VC investment in the UK regions by Mason and Harrison (2002) suggests that the government's implementation of regional venture capital funds was unlikely to close the regional financing gap. They suggest that increasing globalisation of VC investment may intervene to attract investment and expertise from other parts of the world. This justifies the increasing flow of foreign venture capital investment into the UK. Barkham (1992) investigates regional variations in entrepreneurship in the UK, revealing that companies based in South-East England are significantly larger with more dynamic founders than their counterparts.

2.3.4 Regional investment complexities in the United Kingdom

The UK government has implemented some measures to tackle the equity gap (Mason and Harrison, 2006). Firstly, the government had previously set up regional venture capital funds across England to support SMEs with high growth potential and early growth funding programmes to provide small amounts of risk capital for early-stage companies. These issues are not limited to the supply side, but extend to investment readiness and the demand side of venture capital investment. Several pieces of evidence reveal that investors are unable to invest in some regions due to the low quality of deals they see emerging from these regions, meaning VCs are sometimes unable to invest up to their capacity (Mason and Harrison, 2002; Paul et al., 2003). Demand side issues are primarily attributed to the investment readiness of the fundraising companies (Mason and Harrison, 2006). Additionally, there is a huge equity misconception among fundraising companies, attributable to the failure of entrepreneurs to understand the function of various sources of finance for start-ups and scale-ups, as well as their unwillingness to relinquish ownership or control.

Munari and Toschi (2015) argue that VCs undertake investment in distant and less technologically advanced regions only when the fundraising company offers high-quality deals with high returns, sufficient to compensate for the additional cost. Consistent with this idea, Chen at al. (2010), in their research of a sample of 2,039 US VC firms, reveal that deals distant from the main office perform better than those in closer proximity. They suggest that VCs that back companies in lagging behind regions may require a higher expected rate of return, which suggests that, unless companies resident in lagging behind regions offer distant VCs exceptional deals with higher returns, the chances of these companies securing VC investment is relatively low. This adds to the uneven supply of VC investment in UK regions. Geographic proximity can support information transfer within networks, which could potentially drive the innovation process (Arranz and de Arroyabe, 2012). Given the concentration of VCs and deals in certain UK regions, there is a need to promote policies that develop the VC market in lagging behind regions (Munari and Toschi, 2015).

2.3.5 International venture capital investment and VC backed company performance

Practitioners and researchers alike suggest that having a VC on board is a vital resource for increasing growth especially in an ecosystem characterised by uncertainty (Rosenbusch et al., 2013). In uncertain environments, VCs can create value for themselves through unique

mechanisms such as identifying, screening, selecting, staging and monitoring investment (Kaplan and Stromberg, 2003; Baum and Silverman, 2004). While these mechanisms help improve VC performance, Lerner (1995), and Sapienza et al. (1996); Rosenbusch et al., (2013); and Cumming et al., (2016) argue that VC backed companies benefit from their investors beyond financial gain, given the inherent uncertainty associated with entrepreneurship. McMullen and Shepherd (2006) add that specialists advocating better performance of VC investment should highlight the critical functions required to improve performance. This group of specialists firstly suggest that VCs carefully select the most suitable and promising industries and firms, then provide value following the selection process (Brander et al., 2002; Dimov et al., 2007). Although VCs are generally perceived as increasing venture performance, Steier and Greenwood (1995) argue that VCs can also impede the growth of their investee ventures, especially when they offer the wrong management or operational advice. This is a critical point raised by Steier and Greenwood (1995), which points out that managerial and operational advice from investors to investees has a tendency to lead to poor venture performance.

The internationalisation of VCs has improved significantly since the 1990s. Aizenman and Kendall (2012) indicate an upward rise in VCs participation in cross border investment activities from 15 per cent in the early 1990s to over 40 per cent in 2007. Wang and Wang (2011) describe cross-border VC investments as investments made by foreign VCs in companies outside the boundaries of their domestic region. This definition describes cross-border VC investors in an easily comprehensible way, but Devigne et al. (2013) describe cross-border VC investors as investors who manage their investments from a geographical region (usually a country), separate from where the portfolio company operates. Cross-border venture capital has become increasingly common in recent years, but little is known about the impact of foreign venture capital investors on the performance of VC backed companies. In recent years, a growing body of literature indicates a paradigm shift towards a more globally distributed VC investment pattern (Kendall and Aizenman, 2012). This paradigm shift is not only of interest to governments seeking to develop local VC markets by attracting foreign funds and expertise but also to researchers with an interest in examining and monitoring the changing paradigm (Groh et al., 2010).

Cross-border investment is essential to the growth of high-risk ventures in emerging markets that have a limited supply of local investors. According to an OECD report on financing high growth firms, cross-border investment deals are possible when there is a trusted relationship in place with sufficient knowledge about the market, hence, only a tiny fraction of deals are cross-border

(Wilson, 2011). Despite the increasing amount of cross-border VC investment research, Wang and Wang (2011) highlight the need for further investigation into cross-border investment performance, investment strategies, monitoring methods and exit strategies. This implies that cross-border venture capital investment is under-researched and requires a considerable level of attention. According to Schertler and Tykvová (2011), one-third of global VC deals are cross-border because they involve VC funds that are outside the portfolio company's location of origin. In most cases, VCs co-invest with other VCs that are domiciled in another country or continent. Co-investment by foreign VCs requires the involvement of local and trustworthy investors.

The majority of VC deals in the United States are funded locally, while countries such as the UK, and the rest of the world, are mainly dependent on foreign VC investment (Aizenman and Kendall, 2012). This demonstrates increased cross-border VC investment activity. According to Marston et al. (2013), the search for investment opportunities is part of the reason most VCs seek investment opportunities overseas, which can be done either through satellite offices or travelling. A study carried out by Espenlaub et al. (2015) reveals that, on average, UK VC firms invests half their funds in international portfolio companies. This raises a question of whether VCs are faced with poorer deal flows in their own geographic locations. A study by Dai et al. (2012) into the investment behaviour and exit performance of foreign VCs that seek expansion in Asia reveals that foreign VCs operating in the Asian market have an advantage in experience and firm size but a disadvantage in collecting information and monitoring their investment, as a result of cultural and geographical distance. Further findings from the study reveal that syndication helps reduce issues relating to monitoring and information asymmetry, which often affect exit performance. This finding supports Tian (2012), and Lerner and Tag (2013), who emphasise the importance of co-investing with a domestic investor due to their knowledge of the local market and ability to monitor their investment closely.

Financing small and medium-size companies involves high risk and strong information asymmetry (Lerner, 1995), which makes it difficult for investors to assess given the short history and weak signal about the quality of the companies (Lahr and Mina, 2016). This suggests that only a few VC investors are willing to back such companies. If they do, there is an expectation of satisfactory returns given their application of specific capabilities and business knowledge, which enables them to make better choices and handle market uncertainty in such a way as to actively influence the outcome of their investments (Kaplan and Stromberg, 2004). VCs' knowledge and experience is crucial to companies with high growth potential. Calantone et al. (2002) show strong

interconnectivity between learning, innovativeness and company performance. They describe learning orientation as a wide range of activities (including gathering and sharing information on market trends, market and customer needs and new technology) within the company while creating and enhancing the use of knowledge to gain competitive advantage. This helps strategically position the company for a successful exit. Following the attribution of knowledge spill-over, Wang and Wang (2012) suggest that foreign VCs are more likely to pull off successful exits through IPO or mergers and acquisitions, while spending only a short investment duration with the VC backed company.

FVCs plays a critical function in the Asian VC market which could be attributed to its infancy. Dai et al. (2012) indicate that, of the USD35 billion investment in the Asian VC market reported by Venture Xpert between 1996 and 2006, over 70 per cent was provided by FVCs. They reveal that, despite the increased partnerships between FVCs and DVCs through syndication or participating in the same rounds, FVCs most often act alone without DVCs' involvement when making investments in the Asian VC market. The findings by Devigne et al. (2013), Rosenbusch et al. (2013) and Cumming et al. (2016) suggest that cross-border VCs positively impact the performance of their backed companies, but a contrary result by Humphery-Jenny and Suchard (2013) suggests that cross-border VCs do not impact backed ventures in a way that leads to success. While the outcomes of these studies provide valuable insight into the impact of cross-border VC on the performance of portfolio companies, there is a disparity in findings which could be attributable to geographical location effects.

Several pieces of literature argue that company performance is a multi-dimensional construct. Combs et al. (2005) indicated three dimensions of financial performance based on profitability, growth and stock market success. A firm's success can be influenced in several ways due to the unique characteristics of VC investment. Belden et al. (2001) and Roberts and Barley (2004) indicate that VC funded ventures are more likely to focus on company growth rather than profitability because they usually aim to attain market leadership positions in rapidly growing markets. Tykvova and Schertler (2014) suggest that international investors particularly add value to private entrepreneurial firms through increased access to capital, knowledge and experience of foreign deals and access to international networks and markets. Cumming et al. (2016) suggest that having international VC in a private firm decreases the likelihood of being unsuccessful and increases the likelihood of exiting via an IPO with higher proceeds. This indicates that foreign

VCs add value to their portfolio companies through collaboration with co-investors and portfolio companies.

2.4 Theoretical approaches

Traditionally, no specific step by step guide for the procedure for initiating cross-regional venture capital deals exists, as deals can be initiated through inbound sources, the social network of the VCs, or outbound sources. This thesis refers to deal sources in which the VCs have no prior relationship or contact as inbound, and those where the VCs proactively reach out in search of a deal as outbound. Hence, VCs may contact companies in other regions about exclusive deals with an intent to invest, or a company may contact the VCs to secure venture finance. This suggests the existence of multiple scenarios at the initial stage of fundraising, since either the VC or the fundraising company may initiate the first contact or they could be introduced by a third-party. Fritsch and Schilder (2008) indicate that VCs in proximity to fundraising companies have better chances of being contacted first when companies are fundraising, and vice versa when VCs seek investment opportunities. Manigart et al. (2006) suggest that VCs also rely on networks to find deal flows, but Fritsch and Schilder (2008) indicate that the search for good deals is not reliant on spatial distance but the regional dimension of the network.

The absence of a strong network connection between DVCs and FVCs has a direct effect on entrepreneurial growth and regional development in the UK. Klyver et al. (2008) suggest that social networks play generic and universal roles, regardless of the culture or industry in which entrepreneurs operate, although the mode of practising social networking might be different due to culture and industry. Culture, in some UK regions, influences the level of openness of the region to attracting cross-regional or cross-border venture capital funding. Hence, the theories that directly apply to this thesis include social network and social capital theory, human capital theory, traditional location theory, agency theory and information asymmetry theory.

2.4.1 Social network and social capital theory

Social networks and entrepreneurship ties serve as a conduit for the spread of information about opportunities and the ability to recognise new opportunities is often determined by reach of ties with others (Aldrich and Zimmer, 1986). In a study of industry connection and friendship ties in the UK, Crick and Spence (2005) show that 7 out of 12 industry connections are used for identifying and exchanging new opportunities. This exemplifies the function of a social network in identifying business opportunities. Jaaskalainen and Maula (2014) suggest there is a likelihood

of obtaining VC investment when the fundraising company is located in close geographic proximity to the investor. When the VCs or their social network are near the fundraising company, there is an increased likelihood of them backing the company, compared to when there is a significant distance. Huberman (2001) indicates that the lack of information about distant opportunities may lead to reduced confidence and trustworthiness of investment-related information or total ignorance of investment opportunities. Jaaskalainen and Maula (2014) suggest that restricting information as a result of a poor network connection reduces a company's opportunity to receive funding from a non-local VC investor.

Wang (2016) argues that social ties have a powerful effect on venture financing because the information embedded in strong social ties reduces search costs during deal screening. Coleman (1988) argues that information acquisition through social networks is cheap and expeditious. Shane and Cable (2002) suggest that VCs rely on the information conveyed through social ties to validate the quality of business proposals. Hirshleifer (2001) suggests that the reduced availability of information about distant investment opportunities may result in ignorance and lack of confidence in the investment target. A study by Jaaskalainen and Maula (2014) on FVC exit shows that proximity between networks facilitates foreign transactions since information acquisition is more accessible through networks, which attracts investments from geographically and culturally distant investors.

Martin et al., (2005) argues that experience and knowledge of the local VC market spread through local networks tend to encourage development of entrepreneurial activity and the seeking of private equity investments. Shane and Cable (2002) suggest that entrepreneurs rely on social capital to connect with VC investors, and the distance between VCs and fundraising companies influences the deal structure, since distance is often associated with uncertainties resulting in higher information asymmetries (Carpentier and Suret, 2006). Proximity between VCs and their backed companies allows for more frequent meetings, and augments coaching, to boost VCs' expected benefits, and monitoring, to reduce expected agency costs (Cumming and Dai, 2010). The adverse effects of geographical distance between VCs and their backed companies are reduced, but not eliminated, by the advancement in technological systems which minimises the cost of face-to-face meetings (Bernstein et al., 2016). Therefore, the existence of well-developed VC networks in regions that are technologically inclined has a significant effect in accelerating the pace of technological innovation and economic development in those regions (Florida and Kenney, 1988).

2.4.2 Human capital theory

According to Zingales (2000), human capital is central to the development of new ventures. Coff (2002) explains the term human capital as the knowledge, skills and abilities (KSA) embodied in people, not just the factual aspects but also the "how-to" that can be either explicit or tacit. Human capital comprises the wealth of knowledge and skills that reside within an individual (Becker, 1983), and is developed over time and transferred between individuals. Wright et al. (2007) cite Bartel and Lichtenberg (1987); and Siegel et al. (1997) suggest that several pieces of empirical research in the field of economics show the function of knowledge and experience in enabling companies to successfully adopt and implement technological changes. Human capital theory suggests that human capital is a crucial driver of firms' performance (Becker, 1993; Ployhart and Moliterno, 2011). Another assumption of human capital theory is that employees with better human capital, in the form of experience and education, are more productive in technology-enabled companies (Wright et al., 2007).

Human capital is widely regarded as a critical factor in firms' competitiveness and success. The relationship between human capital and performance is relevant to entrepreneurship. Unger et al. (2011) suggest a positive relationship between human capital and venture success, which is evident when human capital is conceptualised as skills or knowledge rather than education or experience. Hitt et al. (2001) say that human capital, in terms of an individual's professional experience and education, has a direct and moderating effect on the performance of the company. They find an increase in firm performance when there is a higher level of human capital present. Bontis (1998) indicates that human capital is a crucial source of innovation and strategy renewal, especially in knowledge-based industries. This research draws arguments, based on the premise of human capital theory, that company growth, profitability and competitiveness are dependent on the entrepreneur's human capital as well the investor's human capital.

The presence of high-end human capital, a better business environment, military expenditure, and deeper financial markets are essential local factors that appear to attract international venture capital (Aizenman and Kendall, 2012). In a study of 1,053 new ventures, Cooper et al. (1994) find that the type or level of education attained can be a useful proxy for determining entrepreneurial qualities such as commitment and problem-solving abilities. Human capital theory suggests that higher-quality human capital equates to higher performance in task execution both pre-investment and post-investment (Dimov and Shepherd, 2005). Politis and Landstrom (2002) reveal that venture performance depends on the quality of the investor's human capital. De Clercq and Dimov

(2008) likewise find that VCs with relevant human capital perform better. However, Gompers and Lerner (2001) show that the causality of the impact of VCs on their backed company remains pending, with unanswered questions.

2.4.3 Traditional location theory

The geographical distance between VCs and their backed companies is critical at the pre-investment and post-investment stages. Colombo et al. (2019) suggest that entrepreneurial ventures which are far from VC clusters are often unaware of how beneficial VCs could be to the company and this makes them less interested in sourcing VC investment. Traditional location theory explains the uneven spatial distribution of venture capital investment in UK regions. Gorter and Nijkamp (2015) argue that the concentration of economic activity in a particular city has a direct effect on the city's formation and externalities, such as information and skills, trade growth, and the availability of human capital. Location theory forms a central element of regional and economic geography, as location influences trade flows, and trade affects location decisions. Florida and Smith (1993) support location theory, which is adopted in this thesis, by their claim that VC investment flows to areas of most exceptional opportunity and return on investment. However, capital mobility does not occur through the operation of the free market but through the network structure of the VC industry which is deeply rooted in geography. Florida and Kenney (1988) suggest that venture capital investments flow predominantly towards established highly technological areas, and this is characterised by a high degree of intra-regional and inter-regional syndication and co-investment.

Based on the uneven distribution of venture capital investment in the UK, a company location has a critical function, as it attracts human capital and venture investment to a particular region. Owen et al. (2019) suggest that small scale regional and sector-specific firms usually fail to find realistic, high-quality investment, and similarly struggle with insufficient funding for follow-on investment purposes. This leads to failure to achieve an optimally sized VC portfolio fund for follow-on investment, to keep the best performing firms afloat until they exit the investment. The spatial concentration of economic activity prompts an accelerated interest in innovation and entrepreneurship in large urban or industrial agglomerations (Gorter and Nijkamp, 2015), which extends to venture capitalists. It is arguable whether location effects attract entrepreneurial activity to regions, as regional clusters form in innovative entrepreneurial hubs, which attract VC investment.

2.4.4 Agency theory

Agency theory concerns the ubiquitous agency relationship wherein one entity, known as the principal, delegates responsibility to another entity, known as the agent, who performs and delivers the task on behalf of the principal (Eisenhardt, 1989). Jensen and Meckling (1976) use the metaphor of a contract to describe the relationship. Based on Eisenhardt's (1989) description, this thesis suggests that the relationship between VC investors and portfolio companies is a typical principal-agent relationship. The existing literature on agency theory reveals two separate assumptions: the first that capital markets affect firms (Barney and Ouchi, 1986); while the second exempts capital markets (Eccles, 1985; Eisenhardt, 1985). Agency theory is useful for analysing the relationship between VCs and their backed companies. In ordinary circumstances, agency problems occur when the fundraising company (agent) and the VC investor (principal) have conflicting goals and risk thresholds. Agency theory assumes that both the principal and the agent have self-interest and are boundedly rational (Eisenhardt, 1989). In most cases, the agent acts in their own best interests, and this could have an impact on the principal, especially in cases where the principal is resident in another jurisdiction. Since accessing public information is rare and often unreliable, investors experience uncertainty and information asymmetry problems, especially when the fundraising company has confidential information about its business successes and failures (Cheng and Tang, 2019).

A novel contribution of agency theory to organisational thinking is linked to incentives, risk, outcome uncertainties and information systems. Hence, agency theory is concerned with addressing two issues that affect the agency relationship. In an agency relationship, the first problem surfaces when the principal's desires or goals conflict with those of the agent. The second arises when it is difficult for the principal to verify and assess the agent's activities (Eisenhardt, 1989). Agency problems are evident in specific cross-border VC deals. Devigne and Manigart (2013) claim that cross-border investments are characterised by additional risks and challenges, which are usually a result of increased cultural, institutional or geographical distance between VC investors and investee ventures, making it challenging to monitor investment performance. Bell et al. (2012) suggest that this results in the creation of larger information asymmetries, which increase agency risk and other relative risks. However, Huang et al. (2015) indicate that geographic and social proximity play a key role in cross-border investment, a claim based on the work of Sorensen and Stuart (2001) who state that foreign VCs are more likely to co-invest with domestic VCs. Given the context of this research, agency theory is applicable, since an investor assumes the function of a principal while the entrepreneur assumes the function of an agent

(Sorensen and Stuart, 2001). Therefore, exploring the relationship between VC investors and their backed companies gives additional depth to the research.

From a broader perspective, Cheng and Tang (2019) indicate that entrepreneurs seeking to raise VC finance possess detailed information about the quality of the company and their innovative solutions, as the actual value is frequently misrepresented or communicated. VCs' prior experience within their industry, specialisation or jurisdiction of operation allows them to use an extensive network to carry out due diligence on the quality of the information provided. The quality of information shared by entrepreneurial firms during fundraising demonstrates their level of transparency, and their ability to act in the best interest of their investors. The more transparency that is exhibited by entrepreneurial firms, the less the time spent on due diligence. Amit et al. (1998) state that most research focuses on information asymmetry in the VC market. However, other studies indicate that information asymmetry is a distinguishing element between VCs and other financial intermediaries. The availability of relevant deal information has long been an issue in the VC industry, as one party exclusively holds more sensitive information than the other. Davila (2003) argues that information asymmetry governs the relationship between investor backed companies, labour markets and financial markets.

Academic researchers, including Lerner (1994), Gompers (1995) and Sorenson and Stuart (2001) discuss information asymmetry as a fundamental resource for deal sourcing and financing. To a certain extent, the VC industry is characterised by uncertainties on returns and exchange of information between principals and agents. Sorenson and Stuart (2001) indicate that entrepreneurs often have a better understanding of the opportunities they seek to raise venture funding, but VCs cannot rely on the accuracy of the information offered to them about the fundraising company. This suggests that the information provided by entrepreneurs is skewed in favour of them, but unfavourable to their investors. Due to information asymmetry problems, investors sometimes find it challenging to filter high-quality deals from low-quality deals, resulting in prolonged due diligence (Pierrakis, 2012).

Typically, information asymmetry problems are intensified in international transactions, especially when FVCs invest alone without co-investors. As suggested by Pierrakis (2012), inter-firm relationship within the VC markets helps decrease spatial limitations of information flow. Building on claims made by several scholars, including Fried and Hisrich (1994) and Sorenson and Stuart (2001), VCs tend to have greater confidence in deals that originate from their networks, previously backed entrepreneurs, friends or family, as they present more accurate information than

other sources. Additionally, partnerships with local VCs help alleviate information asymmetry and monitoring problems and have favourable implications for the exit performance of local entrepreneurial firms (Dai et al., 2012). Mäkelä and Maula (2006) argue that changes in a venture's prospects influence investors' commitment levels. This is amplified by the remoteness of the investor but mitigated by the investor's embeddedness in local syndication networks and the relative investment size. FVCs may decide to join a syndicate based on the past performance of the local GPs, in which case it would be the quality of the local GPs that drives exits rather than the presence of FVCs.

2.5 Conclusion

Since the 1980s, there has been growing interest amongst academics in the directional flow of investment in the United Kingdom. On average VC backed companies grow faster, acquire more patents and exhibit a higher level of productivity than non-VC backed companies (Wright and Robbie, 1998). This suggests that VCs play a critical role in the overall success of portfolio companies, but it could also be that VC is vital to the success of portfolio companies. A study by Humphery-Jenner and Suchard (2013) into cross-border VCs in China reveals that foreign VCs do not significantly increase the likelihood of venture success, but rather domestic VCs increase the likelihood of venture success more than other types of VCs. On the other hand, Dai et al. (2012) suggest that Asian VCs have an advantage over domestic VCs in terms of size and experience, while domestic VCs have an advantage over cross-border VCs in gathering information and monitoring investments, which are usually influenced by geographical and cultural distance.

Makela and Maula (2006) argue that cross-border VC and domestic VC partnership is vital to the success of backed companies, especially when the cross-border VCs co-invest with high-quality domestic VCs. Knowledge of the local market enables domestic VCs to provide their portfolio companies with the right advice and to monitor investments, but the function of domestic VCs could be limited when the portfolio company management possesses substantial entrepreneurial experience. Several studies establish that VCs add value to their portfolio companies. Manigart et al. (2002) argue that experienced VCs tend to add more value to their backed companies than inexperienced VCs. Findings by Pruthi et al. (2003) suggest that cross-border VCs are involved mostly at the strategic level of their portfolio companies, while domestic VC investors are engaged at the operational level. The results of their study raise questions about whether cultural and

geographical differences influence VCs value-added services for their backed companies. Similarly, the results of the study by Dai et al. (2012) show that cultural distances affect the formation of syndicates, and also affect exit performance.

Belden et al. (2001) suggest that VC funded firms often emphasise growth rather than profitability. However, Roberts and Barley (2004) suggest that focusing on growth is aimed at enabling VC funded firms to become market leaders in fast-growth markets and therefore attract a premium during exit. Rosenbusch et al. (2013) indicate that this has consequences for the value added by VCs at the selection and post-investment stages. Makela and Maula (2005), and Zhang and Yu (2016) suggest that VCs provide value to their backed companies by connecting them to their networks. Rosenbusch et al. (2013) indicate that VCs networks (local or international) increase firm performance by connecting them with essential contacts that could be potential employees, partners, customers or suppliers, clearly illustrating some of the value-added services offered by VCs to entrepreneurial ventures.

Having reviewed the existing literature, a common finding of the various studies is that foreign VCs add value in terms of capital, knowledge of international markets and access to international networks, while domestic VCs support their portfolio companies with knowledge of the local markets, operations and monitoring of investments (Humphery-Jenner and Suchard, 2013; Cummings et al., 2016). The research by Makela and Maula (2008), Dai et al. (2012) and Humphery-Jenner and Suchard (2013), among others, provides the theoretical background required to understand the investment pattern of foreign and domestic VCs in the UK. In order to investigate this topic, secondary data on VC investment transactions is collected from the ThomsonOne database, while primary data is collected from entrepreneurs, foreign VCs, and domestic VCs.

CHAPTER 3: ANATOMY OF DOMESTIC AND FOREIGN VENTURE CAPITAL DEALS IN THE UNITED KINGDOM

3.1 Introduction

Venture capital remains a principal source of funding in the UK. Productivity stalled between 2007 and 2015, with a staggering 0.7 per cent increase in output per hour (Barclays, 2017). This slow growth rate is alarming for the UK because productivity increase is a central driver of the economic growth of any country, and nations that consistently and efficiently innovate are expected to grow over the long term. Since then, there has been a shift in sources of innovation and technological breakthroughs, which previously originated from large companies, but recent trends show breakthroughs emerging from smaller companies and start-ups (Barclays, 2017). Now, larger organisations are more likely to acquire innovations from smaller companies instead of developing innovative solutions internally. The 2017 Barclays' report describes the UK venture capital industry as a robust grown market, which creates a blooming environment for disruptive technological companies and has earned a spot as a global leader in financial technology, enterprise technology, e-commerce, property and the travel industry. Hence, early-stage fast growing companies rely on venture capital to finance the deals necessary to improve productivity in the UK and beyond.

A wide array of literature on venture capital investment in the UK captures investment information on transactions within Britain's territorial boundaries. However, similarly to other nations, the United Kingdom is faced with economic, environmental and social challenges, which compel policy makers to respond with lasting solutions. The UK VC market is a multinational industry with a high concentration locally, and a massive volume of cross-border investment injected into the UK. Reed (2010) argues that, in order to get the most viable support for the VC industry, operating on a national level is better than operating on a regional level, but this may vary depending on the nature of the venture firm.

This chapter is structured to provide an overview of the literature from the perspective of the wider expert community within the VC industry. It reviews reports on VC market performance across various jurisdictions including the EU and US. It also captures information on fund characteristics and the nature of VC deals within these geographies. The chapter indicates the impact of VC financing on regional development, and it provides insight into how policies impact VC financing

in the UK's entrepreneurial landscape. While tracking the various perspectives of studies carried out by research organisations such as the British Venture Capital Association (BVCA), European Venture Capital Association (EVCA), Pitchbook, Beauhurst, Softbank, and others, this chapter takes into account all the various components of internationalisation and localisation of venture capital investment as they relate to the UK. This chapter expressly discusses the relevant grey literature that supports this academic thesis.

Over the past years, cross-border venture capital has emerged as a new and rapidly growing stream of debate in venture capital research (Maula and Makela, 2003). The wider academic and industry community has seen increased discussion around the internationalisation of venture capital investment across the world. Cumming (2010) postulates that, since the beginning of the millennium, fundraising within the industry has become more international with the majority of funds raised from foreign limited partners. In 2009, a report by Deloitte predicted that most venture capital would consider investing internationally over the coming years. Recent trends support Deloitte's prediction, as more VCs are seeking investment opportunities outside their national borders. A decade later, Beauhurst's (2018) report traces the origin of foreign investment backing UK start-ups, and identifies the majority of funds as originating from North America, Europe, Asia, and other parts of the world.

Although venture capital is considered to be only a small proportion of total capital available for SMEs, it remains extremely significant for certain types of small businesses, particularly those characterised by high innovation, high risk and high growth potential (Reed, 2010). This suggests that, although venture financing could be a small source of funding for companies, it remains a central source of funding for companies with high growth potential, especially later-stage companies. The report by Demos in 2010 provides an outstanding description of the two types of venture capital fund: firstly, private venture capital funds, which are VC firms that raise funds from various investors such as ultra-high network individuals, and pension funds to finance start-ups and scale-ups; and secondly, public venture capital funds that operate similarly to private VC funds yet make use of funds provided by the government in conjunction with private funds.

3.2 Demand for local and international venture capital investment

The existing literature suggests that cross-border investment is mainly driven by the need for VCs to diversify their portfolios internationally, while targeting regions that look attractive for

investment. The balance between demand and supply of capital explains the investment flow of capital between countries; the demand for cross-border VC is related to the presence of a strong pool of attractive investment opportunities such as high-quality human capital (Aizenman and Kendall 2008), patents (Guler and Guillen, 2007) and supportive exit markets (Da Rin et al., 2006). Several studies show that the presence of these indexed components, amongst other deal screening requirements, has a significant influence in attracting VC investment.

Beauhurst (2018) captures non-listed companies between 2011 and 2018 in a report that reveals the sources of money injected into UK companies; with nearly 46 per cent (the majority) of funds from Europe, nearly 42 per cent from North America (mostly from Silicon Valley), and about 40 per cent from Asia. EU financial regulations make it easier for European VCs to invest in early-stage start-up deals in the UK, but the effect of Brexit is likely to change this landscape dramatically. Beauhurst (2018) finds Asian VCs to be less active than American VCs, but more likely to back seed-stage companies. The report reveals European funds such as Kima Ventures and Global Founders Capital to be the most active foreign funds, since each is involved in an estimated minimum of 23 British deals. While the UK challenger banks are attractive to foreign VCs, the majority of their money is used to back new industries such as blockchain, cryptocurrency and open-source technology-enabled deals (Beauhurst, 2018). Table 3.1 shows the total number of deals per region in the UK, focused on foreign investors.

UK Region	No. of Deals with FVC in 2017
London	953
Northern Ireland	22
Scotland	103
North-East England	26
North-West England	63
Yorkshire-And-The-Humber	36
East Midlands	19
West Midlands	26
East of England	144
Wales	18
South East England	136
South West England	45

Table 3.1. Deals per region in the United Kingdom with Foreign VC investors

Source: The Deal: Equity Investments in the UK 2017, Beauhurst (2017)

To summarise table 3.1, it shows 77.49 per cent of total deals are in London, South East England and East of England. London alone captures nearly 60 per cent of all deals. However, a more striking disclosure in the report is that technology-enabled start-ups in the East England region, such as Cambridge, and Scotland, around Edinburgh, are also becoming more active in the global fundraising landscape. The report indicates that FVCs inject a more significant amount of capital into their backed companies. The influx of capital into the UK is supported by the findings from Nesta (2010), which indicate that the UK VC market is the second largest in Europe, after France, since the UK captures 21 per cent of all VC investment into European companies (Nesta, 2010).

The availability of capital is essential; so much so that VC backed companies often create products so revolutionary that new industries are birthed while others bring about changes to existing industries (Nesta, 2009), but the demand for venture growth is also significant. The government plays a significant role in closing the equity gap, as small firms are unable to access the finance they require to grow their businesses. However, government intervention to support SMEs through new organisations that provide funding, such as the 3i, previously known as Industrial and Commercial Finance Corporation (ICFC), has had the effect of institutionalising finance (Nesta, 2009). The size of funds, or cheque size, available to fund seeking companies might be more significant at the early stage of business development, given that the cash burn rate increases as soon as companies reach the growth or expansion stage. Nesta (2009) suggest that early-stage investment activity fell between 2000 and 2009, with certain publicly backed VC funds geographically focused on specific regions. Limiting funds to specific regions has significant risk for investments or deals between regions. Additional insight is provided in the report, which indicates that an overwhelming proportion of early-stage VC investments in UK regions are publicly backed. Publicly backed funds play a crucial role in closing the equity gap across the UK regions.

3.3 Deal pipeline in the UK venture capital market

At the industry level, deals are discovered through a variety of channels including referrals from social and professional networks, cold sources with no prior relationship, and proactive contact by VCs (British Business Bank et al., 2018). The 2018 British Business Bank Report in partnership with Diversity VC and BVCA examines deal progression from accepting the pitch deck to funding. A total of 3,417 deals across the UK are examined, and 39 per cent of the pitch decks that reach VC firms come from sources with which the VC had a pre-existing relationship, 50 per cent from

sources with no prior relationship, and 10 per cent from proactive contact. The report examines 745 deals reviewed by the investment committee for possible funding; 80 per cent were from network sources with pre-existing relationships, 9 per cent from sources with no prior relationship, and 11 per cent from proactive contact. Of the 526 deals that were backed; 82 per cent were from sources with a pre-existing relationship, 8 per cent were from sources with no prior relationship, while 10 per cent were from proactive contact.

The findings demonstrate the depth and influence of social and professional networks for deal sourcing, but also show the high likelihood of being backed when the VC fund makes proactive contact. The venture capital industry is network-oriented, and, to a considerable extent, the quality of deal involvement by a VC fund is influenced by the VCs' social capital and the strength of the relationship. The report suggests that VCs are more likely to consider deals emerging from close sources and less likely to consider deals that emerge from cold sources with no prior relationship. It shows layers of filter mechanism for selecting deals, given the assumption that close associates and friends of the VC firm carry out preliminary due diligence on the quality of deal before passing it to the venture fund.

Since the dot-com era, the venture capital industry did not record a yearly capital investment surpassing USD100 billion until 2018, when aggregate capital invested topped USD130 billion (Pitchbook, 2018). Several experts consider this a remarkable record for VC investment, since it exceeds the USD105 billion recorded by Thomson Reuters in 2000. According to Pitchbook (2018), private equity investors and corporate venture capital investors are becoming more involved in venture deals since both groups were involved in a record high number of transactions over a ten year period. Pitchbook (2018) reveals that corporate VCs were involved in 1,443 deals, while private equity investors were involved in 792 deals, but both investor groups were heavily involved with larger ticket sizes especially in later-stage venture deals. This suggests that VC backed companies present unique investment opportunities for venture investors, especially those involved with high-tech companies.

Technology giant companies Google, Microsoft and Facebook were all previously venture capital backed, and are now dominant players in technology and the technology-enabled business arena (Jeng and Wells, 2000), which shows the relevance of VCs in accelerating company growth. This confirms Burer and Wustengahen's (2008) claim that VCs act as a catalyst for developing sustainable businesses with the potential to make a positive contribution to the environment and society while generating financial rewards. While it remains a common occurrence for VCs to

assume board positions in their backed companies, Jeng and Wells (2000) emphasise that it is a different practice for German and Japanese VCs which focus instead on managing and understanding other companies while identifying companies that could provide a higher reward.

3.4 Economic impact and implications of equity investment in the United Kingdom

A 2008 BVCA report investigating the economic impact of equity investment in the UK reveals that around 1,300 UK companies received equity investments annually. The exceptional growth of these companies led to a significant impact on the UK economy contributing about GBP140 billion in taxes over the five year period leading to the report (BVCA, 2008). On a national scale, the report discloses the relevance of company growth and how its ability to impact a nation's economy depends on the success or failure rate. The 2008/2009 global financial crisis significantly impacted equity investment across the world with a decline in investment activities, but 2013 was a game-changer, as the private equity industry in general experienced remarkable growth in the level of investment, especially venture capital (BVCA, 2016).

Since the 2008-2009 financial crisis originated outside the VC industry, the impact was hard, affecting every part, from the volume of deals to investment activities and time to exit (Nesta, 2010). There was a 38 per cent decrease in the number of UK companies that received VC monies between 2007 and 2009 (Deloitte, 2009). Nesta (2010) indicates that the number of VC backed companies dropped by 54 per cent between 2000 and 2002, and total investment declined by 77 per cent by 2002, leading up to the dotcom crash. The decline in the proportion of companies that received venture finance during the 2008 global financial crisis was low compared to that of the dotcom crash. Nesta (2010) indicates that the average funding round received by companies during the dotcom crash era (2001-2003) was about GBP10 million before exiting, but this figure changed in 2009 to an average investment around GBP8 million over multiple investment rounds. A BVCA report in 2016 shows growth in domestic investment of nearly GBP6 billion from GBP4.7 billion, a nearly 22 per cent increase from the preceding year. While this demonstrates the ability to increase investment, it also shows the UK's capacity to attract external funding despite macroeconomic uncertainties.

A 2017 report by Beauhurst on UK deals shows a funding landscape yet to diversify as London's equity share had been on the rise since 2013, boasting 51 per cent of all deals in the UK. On a

cross-country basis, the report reveals that between 2016 and 2017, the US had the highest level of investment in the UK, while European funds and their counterparts remained active. A significant upward trend in the value and volume of deals between 2010 and 2017 is revealed by the report. The US remains an active capital provider to European companies. A European venture report by Pitchbook (2018) reveals US investors were involved in 24 per cent of all European deals in 2018, representing nearly 50 per cent of the entire deal value. Empirical data confirms US investors to be active backers of European companies, but a noteworthy question revolves around the motive for investing in the European region, especially the UK, which could be dependent on internationalisation of the fund, seeking high-quality deals, or the attractive nature of incentivised European deals.

A report compiled by Demos in 2010 reveals that the 2001-2002 dotcom crash affected the UK greatly because of its sizeable financial services industry, making the impact harder than any other leading economy (Reed, 2010). Several other economies are still to recover from the impact of the financial crisis until this time. In 2001, a sample of 16 European countries' proportion of enterprise innovation activities was collected, and the findings show Britain ranked 13 out of 16 (Demos, 2010). This signifies that enterprise innovation activities in the UK require improvement to support economic growth and development. A report by BVCA and PWC in 2014 suggests that, since the dotcom crash, the search for solutions to cover the funding gap in the UK has been long and painful. The average returns for the whole industry appear to be discouraging, masking successful funds (Clark, 2014). Over a 3 year period, the Demos report reveals the UK to have invested a proportion of its national income in venture capital greater than the US and other European countries, but investing more might have had less impact on economic performance, especially when deals failed (Reed, 2010).

3.5 Outlook for UK VC performance: view from the US and European VCs

A report by Barclays (2017) suggests that venture capital markets and start-ups in the UK share a diverse range of characteristics with their US counterparts, specifically their aspiration to build valuable companies with exponential growth potential, their willingness to experiment, and their openness to new ideas and talent, among others. The report claims that the UK is more flexible than European economies in the field of financial and labour regulation but less flexible than the US. The flow of US venture capital investment in the international market is directed towards the

UK, which remains one of the top investment destinations for US VC funds. When assessing the performance of the various investment funds in the US and Europe, the internal rate of returns as an indicator shows the US outperforms European funds with higher returns to investors (Nesta, 2013). Typically, limited partners expect to make a significant return on their investment, but several factors change this, especially as common barriers include the fund's geographical location and regulatory investment policies.

The UK, as a region, remains the birthplace for more than a third of the European companies valued at over GBP1 billion (unicorns), and remains centre stage of investment themes such as financial technology and artificial intelligence (GP Bullhound, 2018). A report by Diversity VC (2019) reveals the UK to be the largest venture capital market in Europe and the fourth largest in the world. This shows the robust and strategic position of the UK VC market in the global venture capital landscape. Surprisingly, continental European countries take a similar view of the UK. Despite the influx of capital into the UK, it invests abroad. A 2017 Barclays report publicised that UK VC funds in 2015 invested nearly Euro1.35 billion in other European countries. Barclays (2017) further show that USD1.4 billion was invested in the UK by top US VC funds, such as Sequoia Capital, Insight Partners and Andreessen Horowitz. The UK considers the US VC market to be a space with larger deal and ticket sizes, exits and capital pools, which clearly illustrates the position of US VC funds backing European-centric deals.

Babcock-Lumish (2009) justifies the way US VCs outperform UK VCs, arguing that the US economy is significantly larger than the UK economy. Secondly, the US market is geographically concentrated around clusters of VC firms and high growth potential companies located in areas such as Silicon Valley, Boston and New York. This contributes to regional GDP and national GDP as evident in the report carried out by FORA in 2008, which reveals that VC investment as a share of GDP in California (Silicon Valley inclusive) for the year 2007 was nearly double the VC investment as a share of GDP in the entire United Kingdom (Reed, 2010). Companies seeking VC money in the UK frequently find it challenging to get more than one offer from VCs, making it practically impossible for companies to scrutinise the best offer provided during fundraising (Reed, 2010). The report by Demos further reveals that VCs operating in the UK have strict negotiating procedures making it extremely tough for the fundraising companies to secure investment. A revelation by the fund managers who participated in the Demos' study interviews is that the risky nature of the market requires them to invest on punitive terms that allow them to

gain higher profits to offset the losses on a more substantial number of deals they have made over time.

In terms of fund performance, the average UK fund is about 4 per cent below the average US fund performance (Marston et al. 2013). While both US and UK market performance could be improved, Marston et al. (2013) argue that the performance gap between the UK and US VC markets is hugely reliant on two main components: the role of exit which tends to be slower and less profitable in the UK, affecting the performance rate of UK VC funds, encouraging the best companies to move abroad or migrate to the US since they have a more favourable IPO market; and a reliance on the full external environment that start-up companies operate within, which is conflated with regulation, culture, access to information and talent pool.

Assessing actual fund performance prior to the global financial crisis, Marston et al., (2013) reveal that the internal rate of return (IRR) to US VCs is 21.3 per cent, while the IRR to European investors is 8.6 per cent, 12 per cent lower than their US VC counterparts. This shows the differences in returns between the two geographic regions which go beyond the quality of the fund to include other factors such as the location of the fund or deal origination. European investors' returns on early-stage funds are often not the greatest, since most empirical estimates do not place them above zero, and in some case they are negative. While the returns shown are not the most recent, Table 3.2 gives the IRR for US VC funds and European VC funds between 1997 and 2003, which is 3 years pre and approximately 3 years post the dotcom crash. It is essential to note that the average performance of UK funds is not aligned with the average performance of European funds. Some empirical studies show that returns on VC investment in European funds are slightly lower than other types of equity investments (Reed, 2010).

Study and time period	Average US IRR	Average European IRR
Jenkinson[47] Internal rates of return, 1986–2007 (including open funds)	Not included in study	Early stage: −0.8% Development: 7.8% All: 4.5%
Lindström and Maula[48] IRR, all funds of 1998 vintage or older (therefore closed)	21.3%	8.6%
Rosa and Raade[49] 10-year fund IRRs 1994–2003	Early stage: 37.0% Development: 20.4% Total: 25.4%	Early stage: 1.3% Development: 10.7% Total: 8.3%
Hege, Palomino and Schwienbacher[50] IRRs calculated between 1997 and 2003 on individual firms that exited or failed	Mean: 279% Median: −39%	Mean: −40% Median: −61%

Table 3.2. IRR to Venture Capital Investment in the EU and US

Source: Hege et al. (2009) cited in Reed (2010)

A study by Marston et al. (2013) attempts to justify the motives for the performance gap between UK VC funds and US VC funds, suggesting three possible reasons: firstly, the UK VC fund is not the best at investing compared to the US VC fund, because of the terrible strategic choices they make at deal level which affects returns, with the fund managers not being well experienced and UK funds being heavily regulated; secondly, there are fewer exits with good returns, which suggests the majority of exits produce poor returns; and thirdly, there is lesser availability of high-quality deals in the market, making the start-up landscape a harsh environment for business growth, while regulation and legislation impede start-up growth in the UK. Another potential justification for the performance gap between UK and US VC funds is that UK VCs may be equally competent as US VCs, but the pool of deals they have might not be as high quality (Marston et al., 2013), which could be as a result of companies operating in a more robust environment with higher barriers to exponential growth.

Martin et al. (2005), George and Nathusius (2007), and Ernest and Young (2011) indicate that European VCs face several systemic and interrelated problems. Firstly, the most significant challenge is poor historical returns on VC investment in Europe. The next challenge is the low number of large limited partners (LPs) in Europe backing European VCs. Thirdly, poor exit

conditions for portfolio companies in the EU make it difficult for VCs to liquidate their investments. The final challenge is the difficulty faced by companies in scaling quickly, due to the heterogeneity of the European market as a result of differences in language and culture among countries.

3.6 Fund characteristics as a determinant of venture success in the US and UK VC markets

The performance of US VC firms is unmatched by its UK and European counterparts. Unsurprisingly, FVCs contribute to the growth of UK companies. Countries such as the US and China have increased availability of large VC funds, compared to those of the UK, and so, by default, are more likely to enter into larger deals. Several elements contribute to this mix including fund size, deal size, ticket size, team experience and diversity, among others. The US has the most extensive clustering of VC funds in any single location, Sandhill Road in Silicon Valley has 30 or more VC firms. The size of the funds varies as some funds have larger ticket sizes than others, and the larger the ticket size, the higher the propensity for a fund to be involved in larger deals. Soft Bank recently launched a hundred billion dollar venture fund which should allow for broad deal coverage (Bloomberg, 2019). The risk appetite and investment threshold of large venture funds such as Soft Bank are unparalleled by UK and EU venture funds.

A large US VC fund permits larger ticket sizes, that could be used by the firm to spread their risk across several portfolios, an investment strategy which is pertinent to the case of the UK and European funds, where ticket sizes are relatively smaller. The flow of capital and a company's capacity to remain active for an extended period help increase the volume and round size raised by companies. In the US, larger rounds account for the larger proportion of overall deals, as 12.8 per cent of deals in 2018 were valued at USD25 million, higher than the 8.7 per cent in 2017. Venture fundraising had a year on year increase of 90 per cent and the total deal value more than doubled (Pitchbook, 2018). The 2018 Pitchbook report reveals an increase in European VC rounds following the launch of larger funds to allow for more extensive European deal involvement. While there is an increase in fund sizes in the UK and continental Europe, the average ticket size is lower than US VC funds. Hence, the size of VC funds serves as an enabler to grow team size, obtain better social capital and diversify portfolios to international markets.

At the national level, analysis carried out on historical IPO success rates in the UK and US reveals that, regardless of fund origin, investors are more likely to achieve successful IPO exit when they

back US companies than when they back UK based companies (Marston et al., 2013). This does not rule out UK companies in their entirety, only indicates that VC funds make more money on their investment when they back US start-ups. Figure 3.1 shows the success rate of initial public offerings for UK and US VCs.

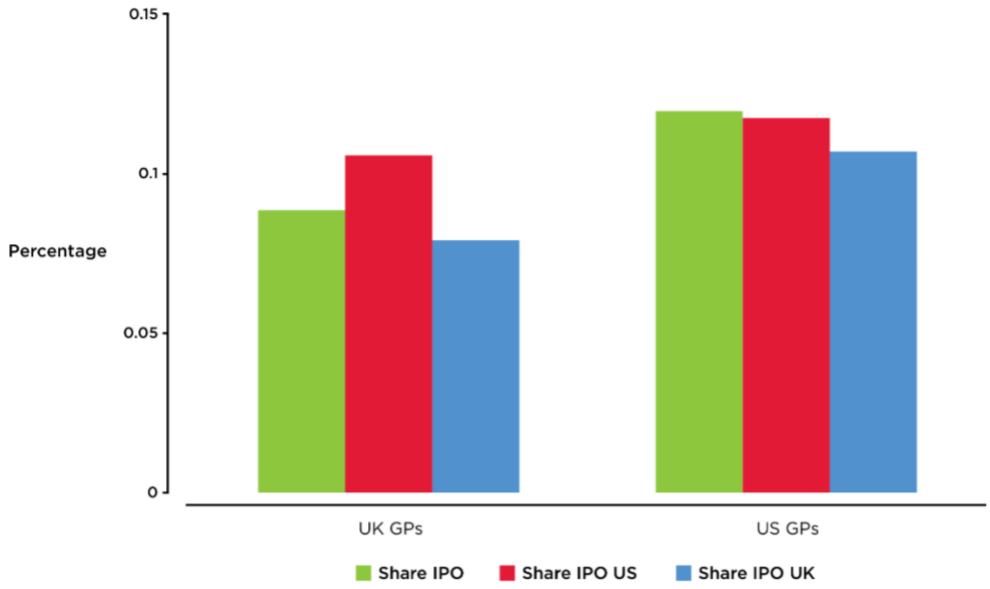


Figure 3.1. IPO success rate for UK and US VCs

Source: Nesta (2013)

3.7 Deals involving local and foreign investors in the UK

In addition to providing a supplementary source of funding for UK companies, foreign VCs play a vibrant role in administering non-financial support in the form of expertise and experience, access routes to scale into international markets and easier access to exit markets. The US is not the only funding nation backing UK companies; European VCs are also active in the UK. Before the 2008 financial crisis, as Figure 3.2 shows, the US, UK and Europe made increased international investments compared to the period from 2008 to 2012. The proportion of UK funds investing abroad between 1990 and 2007 was 62 per cent, but this dropped by nearly 16 per cent in the years leading up to 2012 after the financial crisis.

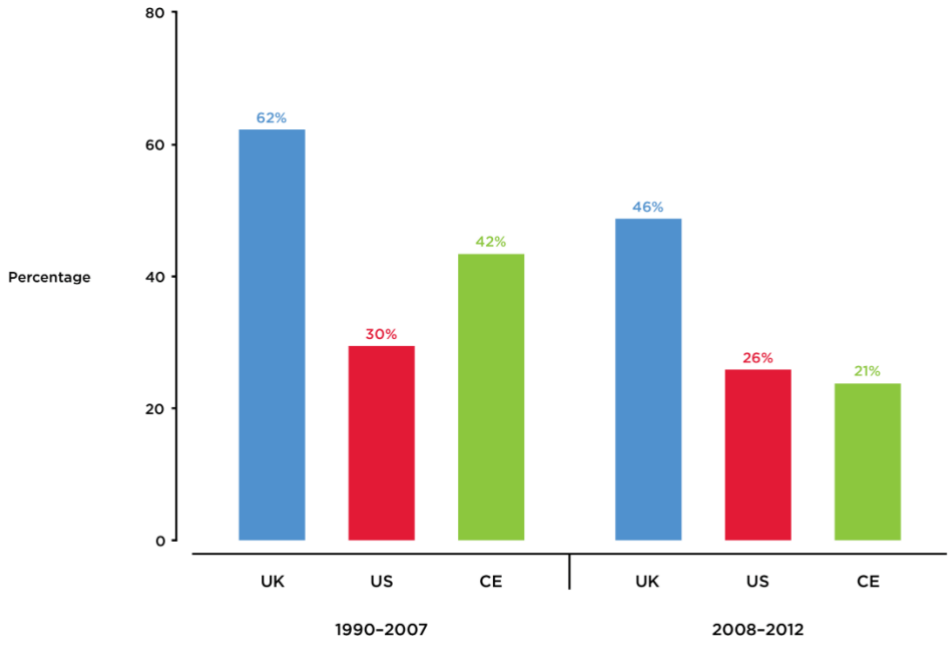


Figure 3.2. Proportion of US, UK, and European funds investing abroad.

Source: Nesta (2013)

Over a period of seven years, Beauhurst (2017) investment radar picked up a significant upward trend in foreign VC investment into the UK. More interestingly, this increase is attributed to the value and volume of deals that involve one or more FVCs. The report shows that FVC investments are mostly concentrated in the upper band of the market, with FVCs participating in larger rounds, as 71 per cent of the deals are GBP50 million or above while only 7 per cent are below GBP500 thousand. The report indicates that the average company valuation for FVC backed deals has increased significantly since 2011. Findings from existing literature position the UK as an investment destination despite the additional cost (money and travel time) linked with remote investing from overseas. The interviews conducted by Marston et al. (2013) identify some barriers to international investment, which include distance, previous negative experience, restrictions on funding agreements, inadequate knowledge of tax arrangements, and high business set up costs. While these barriers exist, various literature shows that cross-border venture investment continues to grow, and this growth is incited by various elements.

A 2019 report by Beauhurst into the various investor types in the UK and where they explicitly invest in terms of industries, confirms that the UK is home to over 30,000 high growth companies.

The report emphasises the severe bias towards London, as 47 per cent of all 2018 deals were in the region (Beauhurst, 2019), but the findings are unsurprising considering previous funding patterns in the UK. Most private equity and venture capital firms are primarily involved in deals with London resident companies. Beauhurst (2019) confirms that London and South East England are consistently among the top regions for VC firms. Beauhurst (2019) suggests that London is home to 37 per cent of the UK's high growth companies and a large proportion of VC firms are located in London, which, in a way, justifies the bias towards the region. The report records a significant improvement in regional funding as VCs backed 3 times as many new deals in Scotland in 2018 than 2011.

Equity investment is vital for companies seeking financial support throughout their growth trajectory. Beauhurst (2019) lists corporate investors, private equity and VC funds, university funds, central government funds, angel networks, devolved government funds and crowdfunding as the top seven investor types, which backed 74 per cent of the UK equity deals announced in 2018. Central and devolved government investments focus on small to medium-sized companies within specified regions and are reflected in small deal sizes. Figure 3.3 shows the average deal size announced for 2018 equity deals.

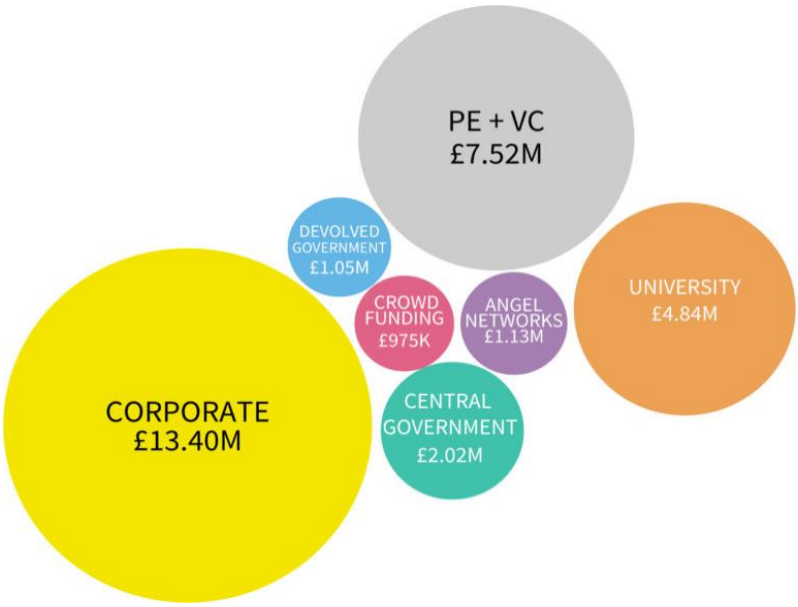


Figure 3.3. Average equity deal size in 2018

Source: 2018 Top Investor Types and Equity Deal Sizes, Beauhurst (2018)

3.8 Venture capital investments and regional development in the United Kingdom

Venture capital markets have an impact on regional growth and development, especially in regions supported by both publicly backed venture capital and private venture capital funds. Melecki (1991) suggests that relying solely on growth to happen within regions is not sufficient without considering other factors that hamper regional growth. Melecki's (1991) argument indicates that regional growth goes beyond the provision of capital, as other factors such as human capital are equally important. Pierrakis (2012) indicates that regional economic problems incorporate inequality in several other factors, such as income, infrastructure, employment rates and social inclusion. Melecki (1991) suggests that a good measure of regional economic development should include income growth rate and employment growth rate. Audretsch and Fritsch (2002) support this concept with their argument that new company formation should contribute to its region more strongly, especially in the area of employment. National differences are significant, but regional differences within countries are a more critical source of variation in regional innovation and competitiveness (Frenz and Oughton, 2005 cited in Pierrakis, 2012).

According to Mason and Pierrakis (2013), national and regional governments respond to the wide gaps in the availability of venture capital finance to start-ups through various schemes that geographically focus on under-supplied regions. They imply that capital deficient regions are supported through various funding intervention schemes with the ability to create new businesses while fostering the growth of existing businesses. A 2009 Nesta report which investigates the role of public investment in financing growth advises the government to complement private investments by creating conditions necessary to attract private investors, such as incentives, lower investment risk and guaranteed reward, rather than compete with private investors (Lerner, 2002 cited in Nesta, 2009).

The introduction of various intervention schemes, such as earnings before interest, taxes, depreciation and amortization (EBITDA), the Enterprise Investment Scheme (EIS) and Enterprise Capital Funds (ECF), enables the government to incentivise private investors to co-invest with publicly backed venture funds; in the case of ECF, providing a 2:1 ratio matching of private capital (Nesta, 2009). The results encourage private investor participation and enable the government to shift its focus from investing alone to co-investing with private venture capital funds (Pierrakis and Mason, 2007). In absolute terms, both publicly backed venture capital and private venture

capital investors are becoming more relevant to regional development, especially when they co-invest in deals.

3.9 Policies supporting venture capital investment in the UK

Several policies have been developed to support the VC market, but critical questions remain regarding their impact. There are several reasons why this is relevant to policy developers and practitioners. This section aims, firstly, to explain, from VCs perspectives, whether these policies stimulate their interest to actively engage in UK deals, secondly, to uncover the critical policies driving increased entrepreneurial financing and regional development in the UK, and thirdly, to explore the UK government perspective on the regional funding gap in the nation's entrepreneurial landscape.

A 2018 report by the European Investment Fund (EIF) assesses the impact of the EIF on the VC market, suggesting the need for an impact assessment of the effectiveness of the various VC focused policies. A quantitative assessment of the impact of these policies would be very useful to isolate the policies that require significant enforcement in order to be fit for purpose. It is imperative to incentivise private investment, and national and regional government can reform tax structures in the VC industry to attract investment using special tax privileges.

Over time, the UK government has held that the limitation on the VC market comes mainly from the supply side rather than the demand side. As a result, most policies are designed to boost the supply side of venture investment. Other tax breaks and incentives such as the EIS are specifically designed to encourage venture investment in the UK, and this has changed over time. The gap in early-stage business financing stimulated the birth of several UK government initiatives to improve access to financing for small high-growth firms. Nesta (2010) outlines previous government attempts to close the funding gap through schemes including the Enterprise Investment Scheme in 1994, the Venture Capital Trust in 1995, the High Technology Fund in 2000, the Corporate Venture Fund in 2000, the University Challenge Funds between 1999 and 2001, the Regional Venture Capital Funds in 2002, the Early Growth Fund in 2004 and the Enterprise Capital Funds in 2005.

Tax break policies are essential, but the government's mandate should also focus on promoting entrepreneurial culture in the UK by developing educational programmes for young people, and

university students (Demos, 2010). The Demos report published in 2010 indicates the presence of talent clustered around universities, and the national government should capitalise on this by promoting innovation and investment activities, in the same way VC firms are already clustered around high-tech regions, to create a pool of deal flow. This applies to Cambridge, Oxford, Norfolk, London and Manchester, and adopting this policy would be very useful for regional governments seeking to attract venture financing to their region.

Cooke (1985 cited in Pierrakis, 2012) argues that policy can be instrumental in creating business innovation hubs in regions. However, the regional supply chain has limited benefits, and the underlying problems encountered by regions have to do with a lack of potential for technical innovation. The UK government is of the opinion that the enormous equity gap is at the seed stage, estimated at between GBP1 million to GBP2 million. Reed (2010), through interviewing VCs, suggests that the funding gap is at the growth stage, especially when the company has already secured early rounds. Difficulty often arises when the company seeks expansion capital before exit, as this is considered one significant cause of business failure. In addition to the existing equity gaps, UK companies find it difficult to raise additional rounds of repeat funding which result in the firm having additional administrative overheads.

The vast majority of VC policies focus on increasing the availability and accessibility of VC finance to fundraising companies, but these policies are mostly financial incentives or direct funding via public sector funds (Demos, 2010). Notwithstanding, the current debates on whether the constraint on VC performance is on the supply side or the demand side remains inconclusive. Inderst and Stewart (2014) suggest that investing in a domestic market has several benefits, including avoiding the risk and exposure of foreign exchange, contributing to economic growth and development, and developing the local capital and financial market. Hence, VC policy should encourage larger VC funds to focus on clean-tech investments, which are generally considered to be innovative solutions that contribute to low carbon emissions (Reed, 2010).

There is no straightforward measure the UK government could adopt to eliminate the performance gap in the UK VC industry, but there are recommendations which, if applied correctly, would be a step towards re-inventing the industry (Reed, 2010). VC policies need to be structured in a format that increases the synergy between the parts of the high growth company funding framework, as action is required at all levels of the funding system. At the initial level, networks and links between public funds, and the business angel community, must not be jeopardised. Reed (2010) argues that experienced and knowledgeable angels play a significant role in feeding promising

start-up funding requirements, and, as such, should be invited to take a seat on the advisory board of each super VC fund. Reed (2010) suggests that larger funds should get involved with companies at the early stage so they can support the company throughout the later stage of the funding system and possibly help them to float when they decide to go public, leveraging existing relationships with secondary trading markets.

3.10 Effects of Brexit on the British economy

Since the UK referendum decreed that Britain will exit the European Union, there has been increased speculation in the European and global financial markets about the possible impact the exit will have on British businesses and their European counterparts. The Director-General of the BVCA argues that the impact of Brexit is dependent on the type of fund, the fund thesis and the fund backers (LPs) (BVCA, 2018). Reviewing the 2018 investment activities on the policy side, the BVCA (2018) stated an event, which started out as the biggest challenge, has transformed into the most satisfying outcome. From the time Brexit became a hot topic in the UK, BVCA has encouraged the UK government to undertake a patient capital review, because the negative impacts of Brexit are unclear. Surprisingly, the UK government came up with GBP2.5 billion, to be administered by the British Business Bank (BBB), over a decade ago, to invest in areas such as life sciences.

Following the uncertainties around Brexit, an initial policy agenda for 2017-18 was tailored to address the issues threatening the future relationship of the UK and the EU (BVCA, 2018), specifically issues of access to talent such as fund managers, continuous funding for UK venture and growth capital, regulation supporting access to investors and transitional arrangements, among others. The BVCA focusses its efforts on access to talent (fund managers and portfolio company teams), continued funding for UK venture and growth capital, investor access to regulation such as the Alternative Investment Fund Managers Directive (AIFMD) and transitional arrangements (BVCA, 2018). The UK remains a two-fold strategic geographic location for foreign direct investment (FDI), as it was the second-largest recipient of FDI in 2016, but also the third-largest source of FDI (BVCA, 2018). Since it is anticipated that the European Investment Fund is soon to become less active and relevant in the UK following Brexit, this leaves a vacuum for British banks to cover, which is conceivable as long as the banks are not restricted to regional investment or funding.

Recent debates address regional funding, since external regional funds such as the European Regional Development Fund (ERDF) are to be cut short once Brexit has taken effect. The UK is widely considered to have a strict rule of law with a flexible labour market and a highly educated workforce, which makes it an attractive destination for FDI (Dhingra, 2016). Foreign direct investment involves all forms of investments from one country to another with the aim of starting up subsidiaries, expanding existing establishments or acquiring local companies. After the US and China, the UK is the next largest recipient of FDI, with an estimated stock value of GBP1 trillion, half of which stems from other members of the European Union (UK Trade and Investment, 2015). Bilateral directional flow of FDI between countries depends on market size, location, geographic proximity, and gross domestic product (GDP) per capita. Alfaro et al. (2004), in a study of 73 countries, found that increases in FDI have a sizeable positive impact on GDP growth, especially in countries such as the UK with well established financial sectors.

Following the heated debate on Brexit, Dhingra et al. (2016) query the likelihood of the UK striking deals with non-European countries in order to reduce trade cost and boost foreign direct investment in the UK economy. They suggest that striking such deals is unlikely, since the UK will no longer be required to compromise with other European countries when negotiating deals. Tyler (2017) states that financial services have the most extensive stock of inward foreign direct investment in the UK, at 45 per cent, and this constitutes 12 per cent of tax receipts and 8 per cent of GDP. An initial empirical analysis by Dhingra et al. (2016) suggests that Brexit may negatively impact the inward flow of foreign direct investment, and leaving the European Union could reduce foreign direct investment flow to the UK by nearly 22 per cent. The analysis reveals that a reduction in the inward flow of investment to the UK would damage productivity and could lower real incomes by 3.5 per cent.

Brexit brings its own challenges, as both the UK and EU examine trade agreements, free movement of labour, goods and services, access to EU funding and financial service regulations (BVCA, 2016). The 2015 BVCA report indicates that, despite the various challenges ahead, the venture capital market is a long-term asset class by default and has the resilient ability to weather unstable economic periods. After Brexit, there remains a likelihood that the UK might be able to have some special privileges, as is the case for Norway, as a member of the European Economic Area (EEA), whereby they could allow free labour mobility with the EU, among others. However, there might still be difficulties in trading with the EU (Bank of England, 2015). Following Brexit, other European cities, such as Frankfurt and Paris, might attempt to capture market shares of the

financial services. Dhingra et al. (2016) indicate that the EEA might not welcome the UK as a member and the European Union may not grant the UK the unique bilateral terms previously extended to non-European Union countries such as Switzerland.

3.11 Conclusion

There is always an overlap between the practical reality of venture capital investment activity and its theoretical underpinnings; however, when combined, they create an arsenal of information useful for both theory and practice. This chapter reviews several pieces of grey literature and industry-related reports on the activities of the broader VC market at the regional and national level. The disparity in the investment performance of VC funds in the UK, US and continental Europe could be attributed to the uniqueness of their geographic regions, as each has unique characteristics that allow the industry to assume a functional form.

Following divorce between the United Kingdom and European Union on 31st January 2020, the UK is now faced with a new freedom to set a trade policy that should potentially boost the UK economy. Agreement to a UK-EU deal is also needed in order to eliminate trade barriers across the border and maintain some degree of relationship between the UK and EU. The remaining chapters focus specifically on addressing the research questions associated with this doctoral thesis.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

Venture capital investors generally back companies in close geographical proximity to their home country or local office (Chen et al., 2010). However, recent studies in Asia, Europe and North America suggest that VCs engage in cross-border investment activities (Dai et al., 2012; Humphery-Jenner and Suchard, 2012, 2013; Wang and Wang, 2011). Their search for deals takes them beyond their geographic locations to explore new territories. Since this thesis investigates VC investment at cross-border and cross-regional level, it is vital to establish the underlying research that supports this section of the report. Krishnaswamy and Satyaprasad (2010) provide a readily comprehensible description of research activities as the search for facts, solutions and answers to pending questions and investigation that takes either a scientific or unscientific approach. They suggest that the unscientific approach is based on imagination, perception, opinion and belief, while scientific research is a systematic approach to investigation. Kerlinger (1986) cited in Daniel (1996) gives a more detailed description of research as a systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relationships among natural phenomena.

This chapter provides a detailed view of how the research objective is achieved. The section outlines the various research approaches and justifies the rationale for choosing the selected approach, data collection process and analytical technique adopted to make sense of the data. Since this research applies mixed methods with most of the work involving empirical analysis while using a qualitative technique to authenticate the reasoning behind certain findings, a background to quantitative and qualitative approaches is presented in this chapter.

4.2 Methodological Approaches

Denzin and Lincoln (2011) argue that qualitative research is difficult to describe as it lacks a distinct set of methods or practices and does not have a theory or paradigm that is distinct. From a broad perspective, qualitative research is described as a naturalistic and interpretative approach, focusing on exploring a phenomenon from the inside, taking into account the perspectives of the research participant as the first point of reference (Flick, 2009). Despite the diversity in the description of qualitative research, Frederick Erickson (cited in Denzin and Lincoln, 2017, p.96) describes qualitative research as:

> *An inquiry that seeks to discover and describe narratively what particular people do in their everyday lives and what their actions mean to them. It identifies meaning-relevant kinds of things in the world, kinds of people, kinds of actions, kinds of beliefs and interests focusing on differences in the form of things that make a difference for meaning.*

In Denzil and Lincoln's (2011) account of qualitative research, they note that a methodology requires a specific dataset. Silverman (2015) indicates that a distinguishing characteristic of a qualitative approach from other approaches is that hypotheses are generated after the data has been analysed, which is contrary to the quantitative approach that requires outlining the hypotheses at the initial stage. Saunders et al. (2009) identify some research philosophies concerning ontology and epistemology that serve as the foundation for various forms of academic study. They indicate that philosophical research consists of developing academic research and pursuing knowledge, which is in accordance with the framework of this study since it focuses on identifying the philosophical means of presenting findings. Biesta (2010) suggest that the interpretation of any study is better understood when framed within a philosophical context. Following a review of various research methods, this study adopts mixed methods, which is a combination of approaches. The geographic flow of venture investment is at the core of this study, and Boschma and Frenken (2006) argue that neoclassical economics renewed interest in economic geography and classical geographers are moving away from economics. The new economic geography, which involves the application of neoclassical economics in geography, is considered a revolutionary approach (Boschma and Frenken, 2006).

Muijs (2004) cites Aliaga and Gunderson's (2000) description of the quantitative approach as a method best applied when describing phenomena using numerical data analysed via statistical techniques. This explanation suggests that quantitative research is fundamentally about gathering numerical data to explain specific phenomena. A quantitative approach is supported by a post-positivist claim of cause and effect thinking, theory testing, specific questions, variables and hypotheses, measurement and observation (Creswell, 2009). According to positivism theory, institutions in society operate based on fixed laws of cause and effect, and scientific approaches are frequently applied to test these theories, and the result is either accepted or rejected. Salkind (2010) describes cause and effect as the relationship that exists between two phenomena whereby one is the reason for the occurrence of the other. However, this study is cognisant that findings are predominantly causes but, in this case, the central area of investigation is to uncover the rationale behind distant VC investment into UK companies, and it attempts to explain the result.

Muijs (2004) suggests that quantitative research is good at extracting information from large number sets and is suitable for testing theories arising from existing knowledge, which could be achieved by hypothesis development. Bryman (1988) describes quantitative research as a genre that adopts language similar to scientific or social scientific expressions used to investigate the natural order, variables, controls, measurements and experiments. Some critics claim that the quantitative method ignores the distinction between the social world and the natural world because it fails to understand the meaning derived from social life. Bryman and Bell (2015) argue that quantitative research often commences by theory testing, which shows a deductive approach to the relationship between theory and the topic under investigation.

Muijs (2004) describes mixed research method as a flexible approach whereby the research design is established based on what the researcher proposes to investigate as opposed to other predetermined epistemological positions. Flick (2009) argues that most literature on quantitative research emphasises survey research and view qualitative research, such as interviews, as preliminary. Ritchie et al. (2014) argue that an effective way of combining quantitative and qualitative methods is by viewing the methods as equal but separate, considering that each method has a unique way of answering questions in the same field. Under usual circumstances, the mixed research method is adopted in social research when the research requires some degree of measurement and proposes to investigate the cause or nature of the issue. An additional reason for adopting a mixed research method is that it describes social phenomena from a number of viewpoints, where each viewpoint is tested to validate the other. According to Ritchie et al. (2014), a mixed method makes up for methodological weaknesses of each method, to provide a rich picture of the phenomena under investigation.

4.2.1 Rationale for methodical consideration

This study adopts a blended approach with most of the work carried out using empirical analysis while the remaining part of the research adopts a qualitative approach to verify the findings. Using a combination of approaches allows the study to have dynamic elements that explain the data. VanderStoep and Johnston (2008) suggest that a quantitative approach increases the likelihood of study samples projecting a more accurate reflection of the overall population. The approach is more suitable for large data collection as it permits comparison of the scale of development in different circumstances (Plonsky and Gass, 2011). The method allows for more precision as the data supports accountability and testing of all elements. The results are often presented as numerical values and the method is considered objective (Steckler et al., 1992). This suggests that the accuracy of results can be examined, even in the absence of the original researcher.

While empirical data analysis would be suitable for the study, it is also significant to present some of the limitations outlined by various researchers. Bryman (2015) suggests that measurement accuracy and the processes of quantitative research could be spurious and artificial. The results can be influenced by the participants, data collection, data analysis and interpretation. VanderStoep and Johnston (2008) argue that research participants are likely to be manipulated, influenced, controlled and placed into random groups during an experiment. This often results in viewing the research participants as objects rather than people. They suggest that when a researcher treats participants as objects, there is an increased risk of objectivism in the research. This is a significant limitation of the method which occurs when the researcher assumes the position of an expert while the research participant is considered a novice. An additional limitation of the approach is the fact that the study involves several participants and a considerable number of them provide brief responses (VanderStoep and Johnston, 2008). Bryman (2015) argues that the relationship between variables creates a static view of social life which is independent of people's lives. Using this argument, Bryman suggests that researchers ignore the precise meaning of events when interpreting their results, especially as they relate to investment decisions.

Qualitative approach is flexible and open, which could be useful for understanding FVCs' motivations for investing abroad. Krefting (1991) cited Duffy (1985) suggests that a qualitative approach allows the researcher to have first-hand experience of the study subject due to the interactive relationship, which gives rich and meaningful data. The time spent and relationships built between researcher and research participants are critical to answering research problems. Hence, undertaking a qualitative study is essential for addressing additional questions such as: Who made the first contact? Was it the VC backed company, or the FVC, or DVC, or introducers?

Qualitative approach has the ability to tackles sensitive issues, Corbin and Strauss (2014) propose that the approach is suitable for extracting intricate details about phenomena which is usually difficult using traditional research methods. Corbin and Strauss (2014) suggest that the method is particularly useful for obtaining details and learning about thought processes, emotions and feeling.

A key limitation of the qualitative approach is longevity, which translates into more extensive data collection and analysis (Madrigal and McClain, 2012 cited in Trmal et al., 2015). A recent debate among qualitative researchers concerns whether data analysis should be verified by a third party to reduce bias (Burnard et al., 2008). This poses a limitation on the method and makes it too subjective and impressionistic. Bryman (2015) criticises the application of findings from

unstructured interviews or observations conducted on small groups to a larger audience or generalising findings. Hence, extending the findings to other European or non-European countries might not be correct because some policy makers and academicians question the reliability of the qualitative method due to its reliance on a small number of participants, which makes it difficult to generalise. Bryman (2015) indicates that qualitative methods are difficult to replicate and lack transparency. Quantitative researchers argue that conducting an accurate replication of a qualitative study is almost impossible, since the principal investigator is the main instrument for data collection. Hence, the interpretation of data can be influenced by the researcher's subjective learning. Bryman (2015) suggests that it is often difficult to establish a clear pattern of how the researcher reaches conclusions. Often, it is unclear what the actual selection criteria for research participants are, which raises the issue of transparency.

Moccia (1988) suggests that researchers should choose a specific method not just based on technical choice but also based on political activity, moral, ethical and ideological reasons. Decisions relating to the suitable method should be dependent on the research question to be investigated. Bryman (2015) suggests that social scientist should not assume that quantitative research is the only method to address every research question, but should also consider qualitative method or mixed methods as they apply to the research.

4.2.2 Rationale for research aim

This thesis adopts mixed methods in order to carry out an investigation on the results that cannot be explained by an empirical data analysis, which involves examining 15 years of cross-sectional data. After reviewing several pieces of literature on venture capital research, it appears that the majority of studies apply quantitative approaches, which emerge as a common practice among venture capital and entrepreneurial finance researchers. Some interesting findings emerge from the empirical data analysis, but it remains difficult to understand some of the reasons behind the results. Hence, undertaking a qualitative study is useful for addressing the unanswered questions that emerge from the empirical data analysis.

The findings related to the geography of foreign venture capital investments in the UK reveal that investors in the United States invest in all UK regions but, most interestingly, they invest in remote UK villages. The significant questions are: Why do they invest in those regions? How do they discover these investment opportunities? Previously obtained empirical data does not address these questions but speaking to foreign venture capital investors would help explain why they invest in these UK regions while they are resident outside the UK, and how they discover the deals. To make further meaning of the results obtained from the empirical data analysis, a

qualitative approach which involves collecting data from interviews is adopted. This involves analysing data using thematic analysis. This research aims, firstly, to investigate how foreign venture capital investors (FVCs) discover the local funds they co-invest in, and secondly, to investigate how venture capital investors (both foreign and local) identify fundraising companies when they invest alone.

Data is collected from three groups of professional individuals. The first group comprises individual staff members (founders, CEOs or senior executive members) of VC backed companies, which means companies that have received venture capital investment; the second group comprises foreign venture capital investors (investment managers or venture partners); and the third group comprises domestic venture capital investors (investment managers or venture partners).

4.3 Methods

This thesis goes beyond unpacking a mere secondary database to engage with real-world VCs and entrepreneurial founders in an attempt to understand the mechanics behind deal origination. Within the context of a critical realist philosophical framework, this research employs mixed methods (Bhaskar, 1975). VC researchers are encouraged to use as many methods of inquiry as possible but should also be aware of the dilemmas of interpretation associated with multiple methods (Sapienza and Villanueva, 2007). Adopting different methods is useful for different purposes in academic study (Saunders et al., 2009). The first approach taken in this research involved empirical analysis; however, a qualitative approach was used to explore the viewpoints of VCs and entrepreneurial founders.

4.3.1 Empirical data sources

The findings from the critical review of the literature reveal that the majority of earlier VC research collected data from the Thomson-One database (previously VentureXpert). Examining the literature reveals that the majority of VC researchers adopt a quantitative approach. Thomson-One is one of the largest and most widely used venture capital databases used for accessing information, market data and financial data on VC backed companies (Schertler and Tykvova, 2011; Wang and Wang, 2012; Espenlaub et al., 2014; Cummings et al., 2016; Colombo and Murtinu, 2017). This thesis includes the VC investments (as defined by Thomson-One) in the dataset and manually distinguishes between deals made by domestic VCs and deals made by international VCs. This allows for the identification of three types of VC investments in UK based

companies: 1) deals without FVC investment but involving solely domestic VC funds; 2) FVC co-investments with domestic VC investors; and 3) standalone FVC investments in UK portfolio companies made solely by one or more foreign VC fund without the participation of a UK based VC fund.

The dataset includes information on 5,932 deals made with 3,279 companies in the UK and it contains all VC deals made with companies in the 12 UK regions (Northern Ireland, Scotland North-East England, North-West England, Yorkshire-and-the-Humber, East Midlands, West Midlands, East of England, Wales, London, South-West England, and South-East England). The data comprises deals made by both domestic VCs and international VCs. However, the empirical data do not distinguish between foreign, national, and local funds, so the variables were manually created and each fund was allocated to the appropriate category. Hence, Chapter 5 focuses on FVC backed deals while Chapter 6 focuses on domestic VC backed deals. The initial dataset collected from Thomson One were focused on investment transactions but separate from these initial data, additional 63 variables were manually created on DVCs and FVCs backed deals in the UK. However, only 34 of those manually created variables were repeatedly used in the analysis. Specific variables in the initial data includes, company name, SIC code, firm city, company city, fund city, fund nation, round number, investment location city, and company primary industry.

The first step in structuring the database was to create a variable for the 12 UK regions. Based on the company city, each VC backed company was classified into one of the geographic regions. The next step was to identify which VC invested in each round, then identify the VCs country of origin. VCs from nations other than the UK were classified as FVCs or international VCs. Using these dataset, other data were manually created by first distinguishing company that received money from FVCs, and those that received money from DVCs. A variable was created for each region and using the data on company city, manual checks were done to identify the appropriate regional category for each of the 3,279 companies. The same was done for the investors to identify the appropriate region to classify each investor. Following the categorization of companies into their appropriate regions, other variables such as year of investment, company ID, and company count among others were also created manually. Additional variable was created to capture the number of investors in each investment transaction. Further information on the creation of dummy variables can be found in the data analysis section in 4.7.

This thesis follows recent studies by Bradley et al. (2019) and Devigne et al. (2018) and defines FVC funds as VC funds that are resident outside the UK but invest in UK domiciled companies. A total of 1,213 companies were FVC backed, and 2,222 unique investments were made between 2002 and 2017. In order to identify the DVC and LVC investors, the data was further distinguished by considering DVCs to be those VCs that operate across UK regions while LVCs are those VC funds that invest within their local region of origin. Deals greater than GBP500 million were excluded from the data as they are highly unlikely to be VC deals, and the data had undisclosed funds. A total of 2,066 companies received investments from UK resident VCs.

Term	*Definition*
Foreign Venture Capital (FVC)	VCs that are resident outside the UK in another country but invest in UK companies
Cross-Regional Venture Capital (CRVC)	Venture capital funds resident in one or more of the 12 UK regions; and either invest locally within the same region or invest in another region separate from where the fund is located
Domestic venture capital (DVC)	Venture capital investors that are resident and headquartered in the UK and have made investment transactions in the UK
Local Venture Capital (LVC)	VC investors that are regionally located and are involved in deals locally within their region
Co-investment	A deal backed by domestic VC and a foreign VC together
Unique Investment	Each investment made by VCs, classified as unique investments, investment transactions or deals
FVC Backed Companies	UK based companies that receive investment from one or more international investor
DVC Backed Companies	UK based companies that receive investment from one or more domestic UK investor

Table 4.1. Description of key terms

4.3.2 Qualitative data source

Tranfield et al. (2003) emphasise the importance of identifying, appraising and synthesising relevant studies using replicable processes. Owen et al. (2019) remark on the significance of a qualitative approach, which helps in understanding financial business decisions, demand-side processes and deficiency. In order to provide some validation and insights into earlier results of the empirical analysis, three distinct sets of participants were involved in the data collection process: (1) VC backed companies, (2) foreign VC investors, and (3) DVC investors. The data was collected using semi-structured interviews. The study participants were identified from a secondary dataset of VC backed companies in the United Kingdom between 2002 and 2017.

In order to understand the aggregate data, themes were created, and data were classified based on these themes using Braun and Clark's (2006) thematic analysis. The reason for adopting thematic analysis was its ability to deconstruct data into workable themes. This method can address a wide variety of research questions and topics. Braun and Clarke (2006) describe thematic analysis as a method of identifying, analysing and reporting patterns in the form of themes within the data. Thematic analysis is considered more suitable given the technique's ability to establish rigour as it relates to data credibility, transferability and dependability (Koch, 2006). After a series of coding based on Braun and Clark's (2006) coding manual, several themes were developed to capture the information provided by the study participants. Using the principles outlined by Saldana (2009), themes were developed independently for each study group (VC backed companies, foreign VCs and domestic VCs). Five central themes were developed for domestic VCs: international experience, investment opportunities, social and professional network, UK government support and the geography of deals. Table 1 shows commonly used terms.

Term	**Description**
Inbound Deals	Deals that are unsolicited from unknown sources where the VC investors do not make any proactive contact to back the deal
Outbound Deals	Deals where the VC investors make deliberate and proactive contact to be involved in the deal, usually the VC reaches out directly or through their network
Domestic Venture Capital	VC investor that is resident or headquartered in the UK and invests in any of the UK regions
Venture Partner or Fund Manager	A principal that writes a cheque to backed companies on behalf of the VC firm
Founder	The founding member of the Entrepreneurial team that receives VC investor funds

Table 4.2. Description of terms

4.3.3 Characteristics of VC firms

A total of 8 venture capital firms were included in the sample, five were domestic and three were foreign. The age of the VC firms ranged from 5 to 22 years. The background of the partners in these VC firms included those with either an entrepreneurial background or a financial background or a combination of both. The fund size of the domestic VCs ranged from GBP10 million to GBP40 million, while the foreign VCs ranged from GBP100 million to GBP125 million, placed in various investment vehicles. The maximum value of assets under management in these VC firms was GBP2 billion. The foreign VCs were in Germany, the United States and Switzerland

while the domestic VCs were all headquartered in London. A minimum of 12 investments were made by the domestic VCs while the maximum was 72 investments. Similarly, the minimum number of investments made by foreign VCs was 24 while the maximum was 800, for collective investment by a network of VC firms.

In the sample, both FVCs and DVCs exited at least one backed deal and the highest number of exits documented was by a network of VC firms, 55 exits. For domestic VCs the maximum number of exits was 15 while the minimum was a single exit. The FVCs had a minimum of 4 exits, via IPO. The majority of VC firms focused on technology, investing in businesses specialising in blockchain, cyber security, biotechnology, health-tech, med-tech, software, prop-tech and agri-tech, among other industries. Only one DVC focused on the retail sector, but the data does not allow the examination of the performance of these funds to determine whether the tech enabled funds performed better than this VC.

4.4 Research Design

The research design acts as the master plan for addressing the research questions and testing the hypotheses, outlining the strategies adopted to gather accurate and objective information for straightforward interpretation (Polit and Beck, 2012). Salkind (2010) describes research design as the plan that provides a logical structure to act as a compass for addressing the research problems and questions. Based on this description by Salkind (2010) the mixed methods used for this research include analysis of academic literature on cross-regional and cross border venture capital investment; insight acquired from professional organisational reports; the collection and analysis of secondary data from the Thomson-One database; and the collection and analysis of primary data through semi-structured interviews from VCs, partners, principals, fund managers and entrepreneurial founders of VC backed companies. This thesis adopts a cross-sectional research design.

4.4.1 Review of related research designs

Ployhart and Vandenberg (2009) suggest that longitudinal design requires at least three-repeated observations of a substantive construct of interest. This is relevant for understanding VC firms and looking at the changes the industry has experienced over a period. However, this approach is costly and requires a significant amount of time, and hence is not suitable for this study. The study adopts a cross-sectional dataset. Bryman and Bell (2015) argue that longitudinal research design is an extension of cross-sectional research design. However, it is distinctive in terms of reliability,

replication and validity since it provides insight into the time order of variables, which may allow for the making of causal inferences. Bryman and Bell (2015) suggest that both panel study and cross-sectional research design are concerned with the understanding of causal influences over a period of time as well as social change. They allow for insight into behaviour, and categorising subsets based on the nature of the investigative variables.

According to Madill et al. (2000), the chance of producing objective and reliable knowledge in social sciences using a qualitative approach has been questioned by several researchers (see Danziger, 1990; Manicas, 1991). Krishnaswamy and Satyaprasad (2010) postulate that the only way to get verifiable and accurate facts is to adopt a scientific research approach instead of the unscientific method. Cantrell (2011) suggests that important selection criteria for research design are design rigour, the potential to generate interpretable and credible findings, the dependability of the data, and the design's ability to sufficiently test cause and effect relationships.

4.4.2 Rationale for selecting a cross-sectional design

After reviewing several research designs, this study adopts a cross-sectional design due to the uniqueness of the design in terms of reliability, replication, validity and the ability to give insight into the time order of variables. Adopting a cross-sectional design is mainly based on the ability to examine patterns and reveal changes over time. The selected design requires repeated observation of the construct of interest, so it is systematic. The cross-sectional design falls within the context of quantitative research as it establishes relationships between variables, but is similarly applicable in qualitative research (Bryman and Bell, 2015). The motives for choosing this design are based on its suitability for data collected from various types of cases including VCs, partners, principals and entrepreneurial founders. Adopting a cross-sectional design has fewer cost and time implications.

Other research designs, including case study, would not be suitable for this research. In as much as the experimental design allows for the manipulation of the independent variable in order to establish the nature of the influence it has on the dependent variable, it is not suitable for this doctoral thesis, since it involves the random assignment of experimental and control groups and the experimental manipulation of the groups. Despite the similarity between longitudinal design and cross-sectional design, this thesis adopts a cross-sectional design as the preferred and most suitable approach.

4.5 Secondary data sample and source

Bryman and Bell (2015) describe the population as the set of all elements of interest, while the sample is the subset of the population studied. A small sample size often raises concerns in relation to selection bias and heterogeneity, particularly when a cross-country sample is used (Cumming and Walz, 2010). In VC research, Cumming and Dai (2010) criticise the use of small sample sizes stating that they do not truly represent all VC investments, especially when the returns of alternative asset funds are misreported. Adopting international samples to bypass issues relating to small sample sizes does not entirely eliminate the potential selection bias within the constituent country. Hence, in order to overcome small sample size issues, this study examines a larger sample size, grouped into three components. For clarity, foreign VC funds or cross-border VC funds are VC monies received by companies from VC investors that are outside the geographic boundary of the United Kingdom. Additionally, the thesis adopts Wright and Lockett's (2003) definition of deal syndication as two or more VCs co-investing in a company and sharing the joint payoff from the deal.

This study comprises two datasets, but this section focuses on the numerical dataset while the qualitative dataset is covered in the primary data section. The secondary data were obtained from Thomson-One, which is a commercial database from Thomson Reuters that includes VC investment activities across the UK regions. Thomson-One provides real-time and historical data on financial investments around the globe, which is updated with an average of 3,000 new reports daily, and this includes data on VC investment in the study region. The deals were distinguished manually to separately capture deals made by FVCs (2,222) and deals made solely by domestic VCs (3,710). The number of VC backed companies was narrowed to focus on those that received investments from domestic VC funds making a total of 2,066 DVC backed companies in the UK. Domestic venture capital investors were distinguished from foreign venture capital investors by considering DVCs as those VC funds within the UK while foreign VC funds are international VC funds resident outside the UK.

4.5.1 Description of variables

FVCs capture both VCs investing from their international head office location and those that invest via a regional branch office. Previous studies (see Wang and Wang, 2011; Schertler and Tykvova, 2012; Humphery-Jenner and Suchard, 2013) exhibit similar types of variables to those contained in this research, this research adds another dummy variable to determine the geographic flow of money into the UK. Some descriptions of the critical variables are given in Table 4.1.

Variable	Description
Round Number	The round in which investment transaction occurs between the VC and their backed companies
Number of Investors	The number of investors that back UK companies in an investment round
Company City	The city of the company that receives money from the venture capital investors
Company Region	The UK region where the VC backed company is located at the time of the deal
Fund City	The specific city where the venture capital investor is resident at the time of the investment
Fund Nation	The primary country of origin of the VC investing in UK companies, which forms the basis for classifying VCs into FVCs and LVCs
Fund Region	The region where an LVC is located in the UK, one of the twelve UK regions
Company Int_Investment	A dummy variable that takes the value of 1 if the company receives investment from FVCs and the value of 0 if the company receives investment from LVCs

Table 4.3. Description of key variables

4.5.2 Primary data collection and source

Data generally includes the raw facts and figures that are gathered, examined and summarised for presentation and interpretation (Bryman and Bell, 2015). According to Creswell (2009), data collection involves the collection of both textual and numerical information so that the final database is populated with both qualitative and quantitative information. In this investigative study, categorical data were also collected. Bryman and Bell (2015) describe categorical data as data that incorporates the use of labels or names to identify the attributes of each element and quantitative research makes use of numerical data. For this study, categorical data such as the locations of funds, stages of investment, average investment size, size of funds, and the number of investors are detailed in the empirical studies.

The qualitative dataset was collected through semi-structured interviews. Savin-Baden and Tombs (2017) state that the number of study participants is dependent on various factors such as the scope of the study, type of sampling and number of individuals that possess the research characteristics. A separate study by Onwuegbuzie and Collins (2007) suggests that the research question, research design and research objective should also serve as essential indicators of the actual study sample. Creswell (2009) suggests that a good interview dataset should have a minimum of 12 participants, but Bryman and Bell (2015) suggest that the sample size should be guided by the sampling method adopted.

Since this thesis adopts a mixed-method, the participants were selected using the snowball sampling technique. The venture capital industry thrives on introductions from professional or individual network connections. To recruit study participants, the researcher adopted the use of 1st, 2nd and 3rd degree networks. Professional social media channel such as LinkedIn were used to contact potential participants. For some VC investors and their backed companies with which the researcher had no prior relationship, a cold calling approach was adopted. An invitation letter describing the research was emailed to all potential participants which enabled them to decide whether to participate. Creswell (2009) suggests that communication must be in a simple and clear format to enable a proper understanding of the subject. Therefore, the research brief was designed to explain to potential participants the research aims, the nature of data to be collected, and how the data would be used and stored. This is significant because it informs the participants of the specific expectations of them and the nature of the study.

Primary data collection was carried out through face-to-face and video interviews. Access to research participants was challenging, hence the use of a professional network to recruit qualified participants. This challenge was inevitable but managed carefully using ethically compliant strategies to recruit participants based on the secondary data mined. From this data, several foreign VCs, local VCs and VC backed companies were identified as potential respondents to the study. Following the stance of Creswell (2009), a total of 15 participants were selected, but, due to uncontrollable factors around participant recruitment, the study arrived at the acceptable minimum standard of 12 participants. The study participants were categorised into three groups; the first group comprised 3 participants, foreign venture capital investors; the second group comprised 5 participants, mainly domestic venture capital investors, and the last group comprised 4 participants, venture capital (local and foreign VCs) backed companies.

A code name was assigned to each interviewee: DVC 1, DVC 2, DVC 3, DVC 4 and DVC 5 for the interviewees from domestic venture capital firms; FVC 1, FVC 2 and FV3 for the foreign venture capital investors; and BC 1, BC 2, BC 3 and BC 4 for the interviewees from VC backed companies; this last group consisted of company founders and C-suite executives.

4.5.3 Method of identifying the interview sample

The selection criteria were unique for each category. The first group, VC backed companies that received investments from VCs resident or headquartered outside the UK, was classified as foreign venture capital backed companies. Classified within the same group were companies backed by VCs resident and headquartered in the UK, considered to be domestic VC backed companies. The

second group were foreign VC firms resident or headquartered in another country but investing in UK companies. The third group were domestic VCs resident or headquartered in the UK, which is same home country as the VC backed companies.

Using the Thomson-One database, VCs were manually distinguished by creating a dummy variable where companies backed by foreign VCs assumed the value of 1, while companies backed by domestic VCs assumed the value of 0. This helped identify specific companies that were FVC backed while simultaneously identifying companies that were backed by domestic VCs from the database, which is central to steering the flow of the discussion with the study participants. After carefully identifying the three distinct groups, the participants were randomly contacted using both snowball and random selection via professional social networks. A total of 108 potential participants were initially contacted for the study, 52 from foreign VCs, 41 from domestic VCs, and 15 from VC backed companies. Several of the potential participants declined involvement in the study due to prior commitments while others did not respond to the initial call for participation. However, 12 participants responded to the call for study participation and were selected for interview. The group, comprising 3 foreign VCs, 5 domestic VCs, and 4 VC backed companies, were interviewed over 5 calendar months. All the VC backed companies interviewed were technological companies headquartered in London that had raised domestic VC rounds, or foreign VC rounds, or a combination of both. Previous studies on venture capital investment interview between 6 and 100 participants. Table 4.3 shows a list of previous venture capital research that has adopted interviews.

Author	**No. of Interviews**	**Country/Region**
Wells (1974)	8 VCs	United States
Zacharakis et al. (1999)	8 Founders and 5 VCs	Unspecified
Haemmig (2003)	100 VCs	Europe, Asia, United States, Israel
Guler (2007)	30 VCs	Unspecified
Levie and Gimmon (2008)	3 VC and 3 Business Angels	Israel, United Kingdom, United States
Tyabji and Sathe (2011)	12 VCs	United States
Marston et al. (2013)	14 VCs and 13 Stakeholders	Unspecified

Table 4. 4. Previous studies comprising interviews with VCs.

Source: Arundale (2018).

According to Bauer and Gaskell (2000), written consent helps avoid any potential misunderstanding, especially relating to how data and confidential information is to be used. Hence, a written request for consent was sent to potential participants to maintain ethical standards. The interview process adopts a semi-structured approach, supported by a guide, which enables the dialogue to take a qualitative approach. Following the research objective, undertaking interviews helps explain early results such as justifying why foreign VCs invest in UK regions, how they discover deals in the UK and the relevance of co-investor quality to their investment decision. The time they took to respond varied from participant to participant, but many did not respond immediately. A periodic reminder was sent out after 14 days to those that did not respond to the earlier email due to their busy calendars. The average interview time was 15 minutes and questions were designed to address deal sourcing and investment motivation while establishing the role of social networks in facilitating investment transactions between VC backed companies and VCs (both domestic and foreign). At the outset, the aim was to have a balanced proportion of study participants in the three categories, but this was not attainable as it was hard to recruit additional participants from the screened list. Hence, a combined total of 12 study participants were interviewed, which is enough to have meaningful representation. For each group, the participants were engaged in discussion to obtain useful information. Data was first transcribed to a MS Word file before cleaning, checking and transferring to a MS Excel spreadsheet to allow for thematic analysis.

4.6 Data Validity and Reliability

According to Bryman and Bell (2015), data validity, replication and reliability are critical research criteria, especially in quantitative research. Unlike other research approaches, quantitative research is widely considered to be appropriate, particularly when it can be replicated should there be doubts or need to carry out further investigation. The standard norm in research-based practice is that data is expected to be valid, credible, reliable and up-to-date. However, this may not be the case, since some data are characterised by validity and reliability issues, especially social survey data, interview extracts and various databases. In order to ensure the data is valid, particularly the primary data, cleaning and testing were carried out via pilot test activities.

4.7 Data Analysis

Data analysis was carried out using a reliable analytical tool known as Stata, which is statistical computer software. Stata was primarily selected for its ability to produce a descriptive and easily comprehensible result. In this case, data transformation was done, and ranking was applied to understand the directional flow of VC investment in the UK in terms of whether UK companies receive investment from foreign venture capital or domestic venture capital investors. Foreign VCs take the value of 1 and domestic VCs take the value of 0. In statistical terminology, this is referred to as a binomial variable.

Several dummy variables were also created with the dataset. A dummy variable was created for all twelve regions, to show whether a company received or did not receive FVC investment in a region. Companies that received foreign VC money in a region is given the value of 1 under the region and 0 if they did not receive investment from FVCs. For companies located in any of the twelve UK regions, they were given the value of 1 if the company is in the region and 0 if the company is not located in that region. Typically, companies in London take the value of 1 and if located in another region outside London, they take the value of 0 and the same was applied for other regions. Another dummy variable was created for VC fund regions and similar principle was applied. VC firms that are in any of the twelve region assumes the value of 1 and if absent in the region, they take the value of 0. Dummy variable was likewise created to identify the investment made in each round. Any round that had investment transaction with FVC take the value of 1, and if DVCs were involved in the round, they take the value of 0.

The qualitative thematic data analysis was carried out to identify themes through careful reading of the data (Rice and Ezzy, 1999). This involves recognising patterns within the data and the emerging themes become the basis for analysis (Fereday and Muir-Cochrane, 2006). A framework presented by Miles and Huberman (1984) that encompasses three stages: data reduction, data display, conclusion drawing and verification, was used to analyse the interview transcripts.

4.7.1 Descriptive Statistics

Variable	*Obs*	*Mean*	*Std. Dev*	*Min*	*Max*
FVC backed UK companies	3,279	0.3699299	0.4828591	0	1
FVC backed companies in London	1,142	0.5070053	0.50017	0	1
FVC backed companies in South-East England	449	0.3919822	0.4887373	0	1
Number of FVC's fund nation	66				
Number of primary industry	18				
Number of rounds	2,222	2.9964	2.578613	1	17

Table 4.5 Summary of descriptive statistics.

4.9 Conclusion

For decades there has been an increased level of interest in both academia and practice in the geographic flow of money in the developed economies such as the USA, UK and the rest of continental Europe (Martin, 1989; Mason and Harrison, 1999, 2002; Chen et al., 2010). The directional flow of investment has mostly remained the same with incremental changes, so this thesis looks into the directional flow of FVC money into the UK. Adopting a mixed approach allows for deconstructing 15 years of cross-sectional data on VC investment transactions in the UK and, at the same time, gathering information directly from selected VC investors and portfolio companies that appear in the secondary data.

This chapter presents various theoretical debates to support the methodical approaches adopted by this thesis. Specifically, the thesis adopts empirical data analysis with minimal qualitative elements. The chapter presents a detailed description and justification of the research design and methods applied to the research. The next chapters focus on the analysis of foreign and domestic venture capital investment transactions in the UK.

CHAPTER 5: THE GEOGRAPHY OF FOREIGN VENTURE CAPITAL INVESTMENTS IN UK REGIONS[1]

5.1 Introduction

Venture capital plays a critical role in technological innovation and regional development through the provision of funds to companies (Florida and Kenney, 1988). The internationalisation of venture capital has grown over the years, with various studies stating the extent of added value provided by the industry to private firms. A 2009 global industry survey by Deloitte and the National Venture Capital Association reveals that 52 per cent of the 700 VCs interviewed invested outside their home countries (Tarrade, 2014). This suggests a significant number of VCs participating in foreign investment activities, but there is uncertainty as to what lures VCs to invest outside their national borders. It could be stimulated by demand for quality VC or demand for quality deals in other countries. Nevertheless, Schertler and Tykvova, (2012) suggest that the capital inflow from FVCs only partly compensates for the shortage of domestic VC supply.

Following the increased competition within the industry, Devigne et al. (2013) indicate that venture capital firms intensively seek investment opportunities outside their national locations, which amplifies FVCs globally. Makela and Maula (2005) suggested that FVCs arise in countries with a shortage of domestic investment opportunities and, by seeking opportunities internationally, they stimulate domestic markets through the creation of exit opportunities in a foreign market. Wright et al. (2005) reveal that, since 1988, the inflow of VC investment into Europe from foreign sources has increased from 20 per cent to 47.6 per cent of funds raised in 2000. Gompers (2005) suggests that half of the new funds raised in Europe and Asia are from foreign sources, but this is generally less than 10 per cent in the US. This shows that companies from Europe and Asia are increasingly raising funds from external investors.

[1] A significant part of this chapter has been published. Harrison, R., Yohanna, B. and Pierrakis, Y., (2020). Internationalisation and localisation: foreign venture capital investments in the United Kingdom. *Local Economy*, 35 (3), P. 230 – 256

This chapter investigated the geography of foreign VC investments in UK regions while assessing each UK region in terms of attracting external venture capital investment from abroad. Specifically, this chapter examines the investment patterns of FVCs in UK regions, e.g. whether they co-invest or invest alone, or invest in early rounds or later rounds. The chapter provides insight into the role played by FVCs in providing seed and growth capital for UK companies. Mason and Harrison (1999) suggest the existence of critical differences between various UK regions, which could be due to micro-economic indicators or cultural factors such as the accessibility of VC as a tool for business growth for entrepreneurs. This means that national policies sometimes have a regional dimension as a result of distinctions within the regions.

This chapter presents UK regions with FVC involvement and contributes to the existing literature on the geography of venture capital in the UK by providing empirical results that demonstrate FVCs involvement in regional development within the UK. The chapter informs practitioners on the role played by FVCs in promoting entrepreneurship in the UK while identifying regions that require increased entrepreneurial activities to stimulate regional development.

5.1.1 Foreign venture capital investments

Several pieces of literature have made valid contributions to the debate on FVCs, Fried and Hisrich, (1994) suggest that FVCs have a function as information agents, since they certify the quality of their portfolio companies in the home market. Zaheer and Masakowski (1997) indicate that the presence of FVCs helps lower the barriers to going public and reduces the liability of foreignness. Devigne et al. (2013) discover that companies backed by FVCs experience accelerated sales growth after a few years of operation compared to companies backed by domestic VCs. Hence, their findings reveal that domestic VCs provide better support to their backed companies in the early stages while FVCs support their backed companies better in the later phases when the VC backed company is undergoing international expansion. However, Makela and Maula (2005) suggest that, while FVCs support the internalisation of their backed companies, they tend to drive these companies towards their home markets and this could be a disadvantage especially if the target market is different from the home market. Cumming et al. (2016) suggest that the presence of a foreign VC in a private firm decreases their likelihood of being unsuccessful and increases their likelihood of exiting via IPO with higher proceeds. By extension, this indicates that FVCs add value to their portfolio companies.

According to Florida and Kenney (1988), venture capital is unevenly distributed across regions in terms of the location of firms, resources and flow of investment; there remains a disparity, and the industry is highly concentrated. This is evident in the findings of Mason (2007) that venture capital is not evenly distributed across regions. Mason and Pierrakis (2013) suggest that the uneven geography of VC investments is a reflection of the uneven geography of entrepreneurial activities that could potentially aid the growth of companies in a particular location. Mason and Pierrakis (2013) further reveal that the regional distribution of early-stage VC investments was dominated by the London region, which attracted more than half of the total investment. London and the South-East regions consistently attract a significant proportion of investments, which is similar to the findings of Martin (1989) and Mason and Harrison (2002). According to Mason (2007), little attention is given to the regional gap in the supply of venture capital investment, and Martin (1989) indicates that the regional imbalance in the supply of VC in the UK would take some time before it is redressed. Hence, undertaking this research reveals whether there is a regional disproportion in the supply of foreign venture capital investment (FVCI) in the UK and whether FVCs have the same or different patterns of investments as local VCs.

Previous studies on the role of VC and regional development in California (Silicon Valley), New York and Boston suggests that VCs are located in regions that have high success rates of VC backed companies. However, could this apply to the UK in terms of the regional geographic effect? The result presented in earlier studies in the US suggest that not much research has given attention to the flow of foreign VC investment in the UK. The remainder of this chapter is arranged as follows. First, in the next section, the related literature is presented, specifically the theoretical underpinnings of this study. The next section presents the findings in a graphic report format, and the final section is the summary and conclusion.

5.2 Theoretical Approach

The significant regional heterogeneity in FVCs investment activities in the UK can be linked to social network theory and human capital theory (Dimov and Shepherd, 2005; Aizeman and Kendall, 2012; and Jaaskalainen and Maula, 2014). Central to the internationalisation of VCs is identifying opportunities to invest in new companies using networks and social capital (Wright et al., 2005). Social capital is a multidimensional construct, which represents valuable resources that arise from individual relationships with others (Nahapiet and Ghoshal, 1998).

These relationships that are formed within the industry is not unique to only the VC industry but extend to entrepreneurial ventures. Without social relations, it is hard to obtain critical deal information required for investment decision (Gu et al., 2019). Several studies have shown the importance of social capital which includes access to information, opportunity identification, emotional support, competitive capabilities, and legitimacy development among others (Bruderl and Preisendonfer, 1998; Elfring and Hulsink, 2003; Bhagavatula et al., 2010).

VCs with international experience and diverse personnel are more likely to possess an extensive network, which is vital for successful entry into new markets (O'Farrell and Wood, 1994). Creating and maintaining strong relationship is often difficult because it requires a significant amount of time, emotional intensity, and reciprocity (Granovetter, 1985 cited in Gu et al., 2019). However, the relationship building is mainly dependent on a series of social interactions that increase the strength of the relationship and level of trust between parties (Nahapiet and Ghoshal, 1998). Through repeated social interactions, VCs and their partners develop trust which facilitates the transfer of resources, market information, and tacit knowledge.

Additionally, human capital theory suggests that companies' employees with better resources in the form of education and professional experience are often more productive in high-tech companies due to their problem-solving abilities, and ability to adapt to changes from the external environment (Wright et al., 2007). Cooper et al. (1994) in a study of 1,053 new ventures, find that general human capital influences both the survival and growth of a company. They further suggest that the type or level of education attained could be a valuable proxy for determining entrepreneurial qualities such as commitment and problem-solving.

5.3 The Geography of Foreign Venture Capital Investment in the United Kingdom

The UK, which constitute the empirical setting of this study, has the most developed VC industry in Europe. Specifically, 1,213 UK companies are backed by FVC and the VC backed companies that receive FVCI operate in 18 primary industries. The top three primary industries are those categorised as 'other' which receive 58.53 per cent of industry FVCI, biotechnology with 47.72 per cent, and internet-specific with 46.83 per cent of FVCI. Industries with low levels of FVCI include consumer-related industries with 17.80 per cent, business services with

13.27 per cent, and the construction industry with 3.12 per cent. Figure 5.1 shows the FVC backed industries in the UK.

At the regional level, the agriculture, forestry, fishing industry receives FVCI only in the London region, while the construction industry receives FVCI in South East England. Table 5.1 presents the FVCI in various industries by region.

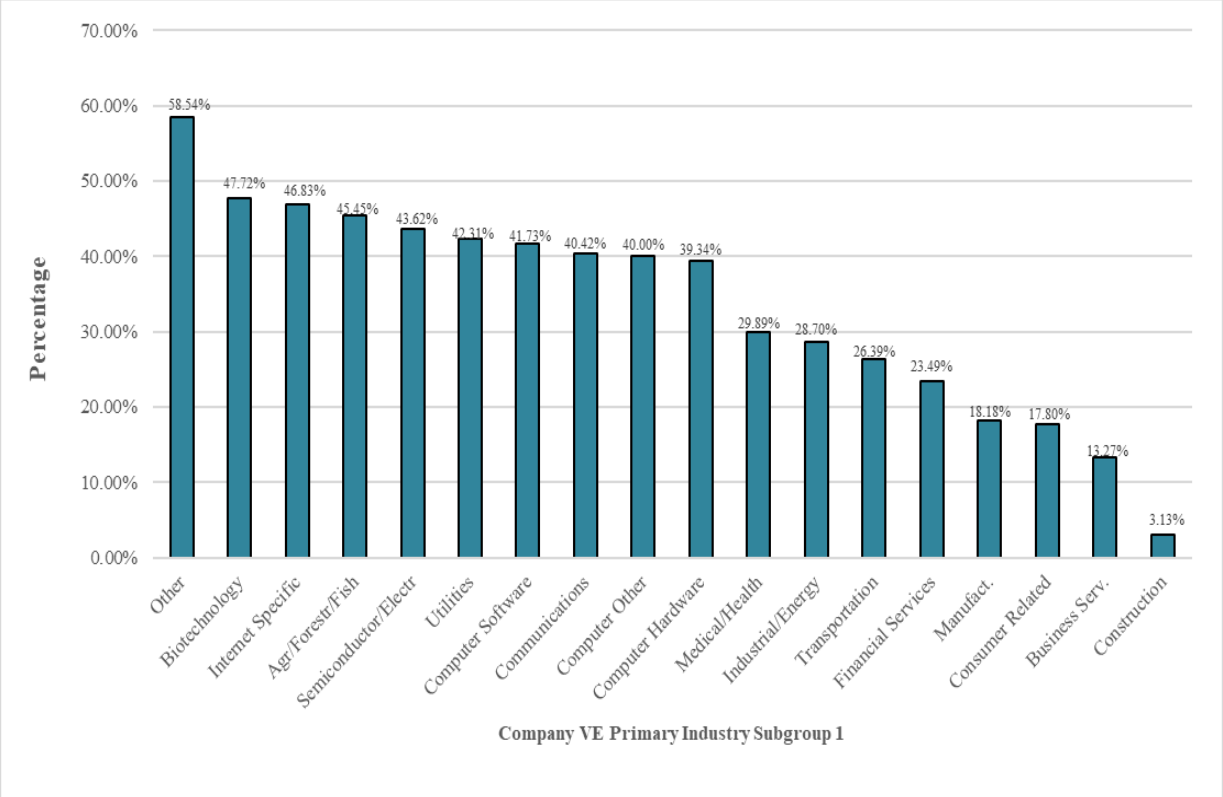


Figure 5.1. FVC backed companies' primary operating industry

Table 5.1. The industry classification of FVCI in UK regions

Company VE Primary Industry Subgroup 1	*London per cent*	*Northern Ireland per cent*	*Scotland per cent*	*North East England per cent*	*North West England per cent*	*Yorkshire-and-the-Humber per cent*	*East Midlands per cent*	*West Midlands per cent*	*East of England per cent*	*Wales per cent*	*South West England per cent*	*South East England per cent*
Agr/Forestr/Fish	80	.	.	.	.	.	.	.	.	.	.	.
Biotechnology	60.71	50	23.25	7.69	39.13	25	.	.	66.18	.	50	50
Business Services	14.28	.	16.67	.	16.67	9.09	18.18	12.5	22.22	.	.	18.18
Communications	50.63	71.42	.	42.85	.	16.67	.	25	38.82	66.67	36	47.27
Computer Hardware	54.68	50	.	.	13.33	.	.	9.09	58.82	.	77.78	36.84
Computer Other	40	100	.	.	.	.	.		50	.	.	.
Computer Software	54.68	63.33	22.78	12	29.17	13.63	4.34	14.28	37.83	18.75	19.67	33.49
Construction	.	.	.	.	.		.			.	.	33.33
Consumer Related	28.28	.	7.14	22.22	3.13	5.55	18.75	12.90	6.66	.	.	17.5
Financial Services	41.33	.	14.28	.	.		.		11.11	.	.	14.28
Industrial/ Energy	41.50	.	41.33	.	4.76	21.21	33.33	6.67	23.25	9.09	26.31	34.69
Internet Specific	56.56	20	16	11.11	20.83	.	18.18	22.22	44.82	33.33	31.25	34.66
Manufacturing	36.36	.	50	.	12.5	.	.	25	25	.	.	.
Medical/Health	37.5	66.67	11.32	.	11.11	40.74	21.74	37.5	38.21	31.25	.	32.63
Other	60	.	.	.	.	.	.	50		.	100	52.17
Semiconductor/Electr	33.33	50	30.95	27.78	22.22	9.09	46.15		51.02	52.38	66.67	.
Transportation	35.71	.	33.33	.	.	.	.	20	.	.	.	52.94
Utilities	75	.	100	.	.	.	.	.	.	.	100	30

The data at company level shows that 1,142 companies receive VC funding in London, which represents 34.82 per cent of total VC backed companies in the UK.

5.3.1 FVCs in the United Kingdom

A significant aspect of this chapter is its analysis at both the national and regional scale. It addresses two empirical questions: Does the geography of venture capital investment in the UK, which is characterised by regional inequalities as indicated in existing literature (Martin, 1989, 1999; Mason and Harrison, 2002; Martin et al., 2005; Mason 2007) extend to FVC investment? What are the effects of the increased involvement of FVC funds in the supply of venture capital, as described in the previous section, on the geographical spread of venture capital investment?

Analysis reveals that FVCs have become considerably more important in both absolute and relative terms, in the supply of venture capital since the turn of the century. Specifically, the

number of deals involving FVC funds, either investing on their own or co-investing with local funds, almost doubled between 2002 and 2017. In proportional terms, there has been a greater increase in the share of investments involving FVCs funds, from 32 per cent in 2002 to 58 per cent in 2017 (Figure 5.2). FVCs are either investing alone or together with domestic VC funds, and are increasingly involved in deals in the UK VC market.

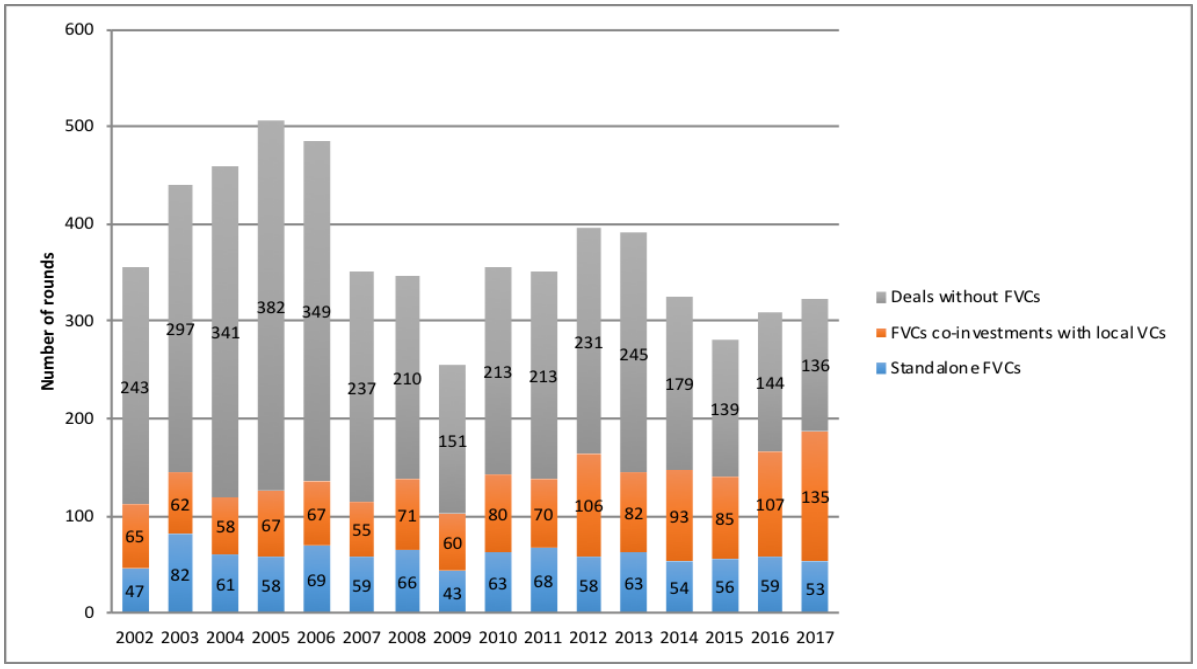


Figure 5.2. FVCs investment in UK based companies, 2002-2017

The number of standalone FVC investments has not changed significantly over the period, and the increased importance of FVC in the UK VC market is due to the substantial increase in co-investments between FVCs and domestic VCs. Therefore, the mounting significance of FVCs is partially credited to co-investment as an investment model. Co-investments between FVCs and domestic VCs accounted for 42 per cent of investments in 2017, compared to a mere 18 per cent in 2002 (Figure 5.3).

This trend can be unpacked in two ways. Firstly, FVCs becomes more prominent in the later stages of investment (Figure 5.2). While FVCs are involved in less than 30 per cent of all investments in round 1, in later rounds they become significantly more prominent. Secondly, there is an increasing trend for FVC involvement in first-round investments, and, while FVCs were involved in only 24 per cent of all first-round investments in 2002, in 2017 they were

involved in 47 per cent of first-round investments (Figure 5.3), due to an increased proportion of FVCs co-investing with domestic funds.

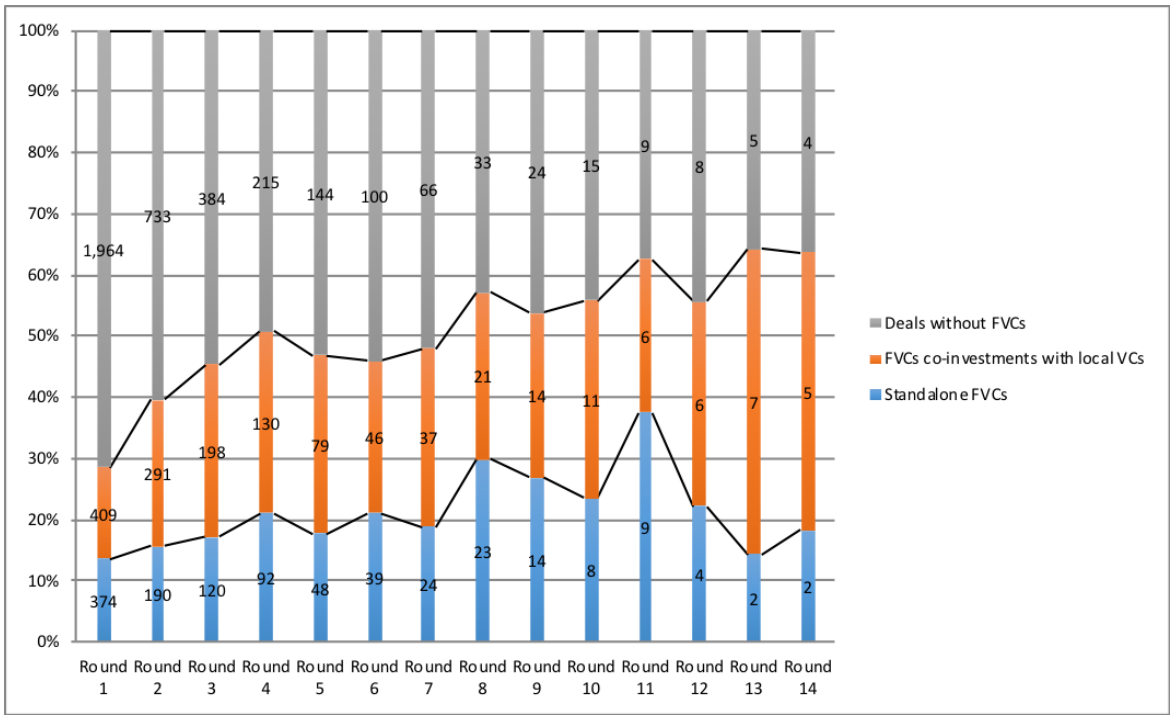


Figure 5.3. FVCs by round, cumulative total for 2002-2017

Along with the increasing trend for FVC fund involvement in first-round investments, the composition of investors investing in the first round has also changed, with an increase in the significance of investments that involve both foreign and domestic VC funds.

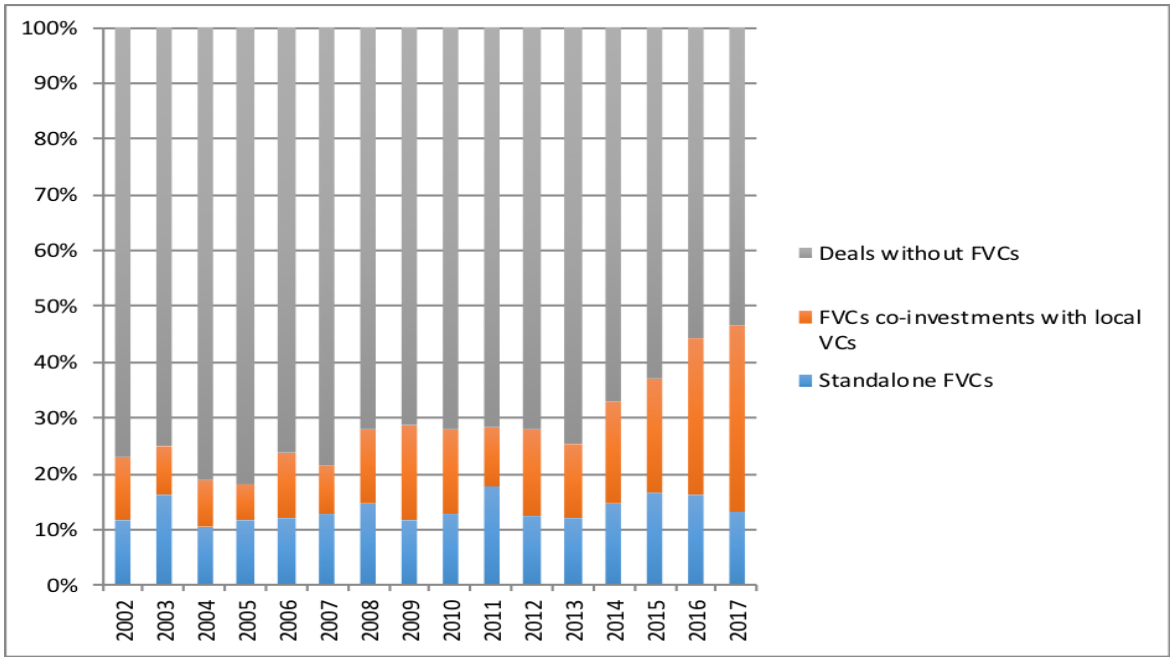


Figure 5.4. FVCs in first-round investments, annual total for 2002-2017

5.3.2 Year-on-year trends in company financing

Assessing venture financing trends from FVCs over the 15 year period, the year 2005 had the lowest proportion of unique investments made in the UK by FVCs at 24.65 per cent, but there was a prevailing upward growth through to 2009. There is variability in the proportion of unique investments following a decline of 4.39 per cent in 2013 before a 20.83 per cent growth between 2013 and 2017 (see Figure 5.5). The UK experienced an upward trend in unique investments made by FVCs from 2015, with an average of 1.76 per cent year-on-year increase.

At company level, between 2002 and 2017 the UK had a 24 per cent increase in the proportion of companies that received FVCI. Over the 15 year period, 2004 was the year UK companies received the least FVCI, a mere 24.18 per cent. Following the dotcom crash there was slow growth in the annual proportion of companies that received FVCI; in 2008, 33.51 per cent of companies received FVCI. However, the year-on-year increase in the proportion of companies that received FVCI was evident after the financial crisis, starting in 2010, when 39.5 per cent of companies received FVCI.

At the regional level, there was a 3 per cent year-on-year increase in the number of London-based companies that received FVCI between 2015 and 2017. Figure 5.5 shows the annual trend of companies that received FVCI in the UK at national level, while Table 5.2 shows the annual trend for companies that received FVCI at regional level.

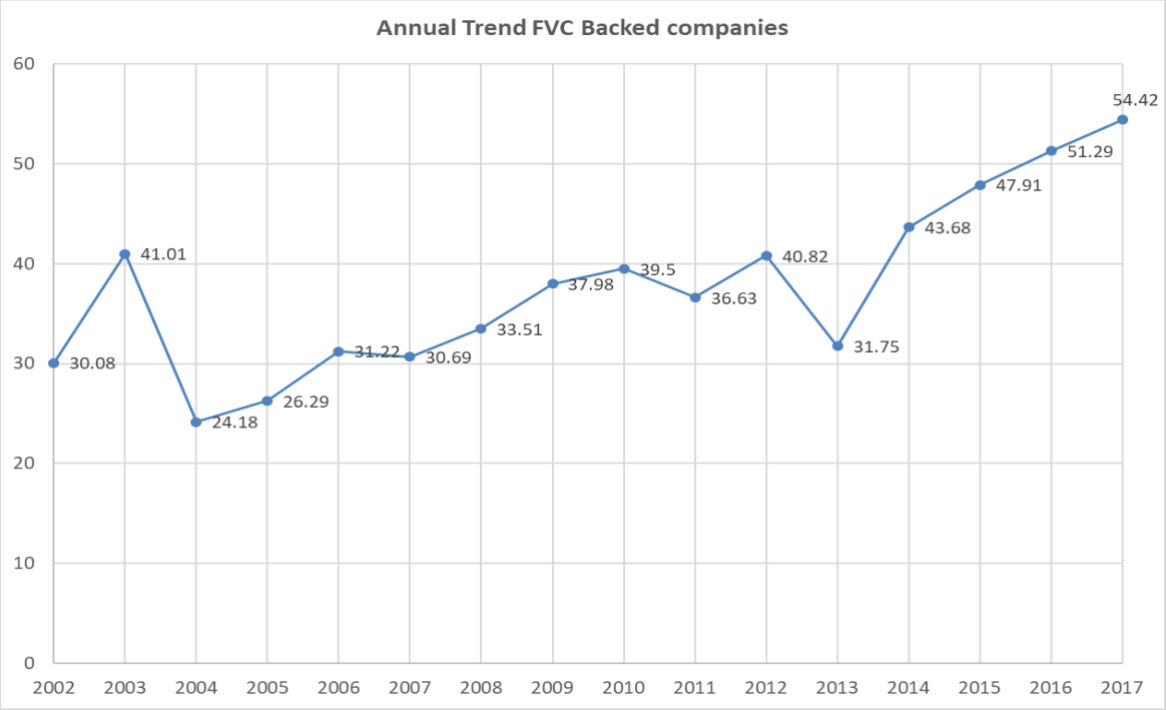


Figure 5.5. Annual trend of UK companies that received FVCI, 2002 - 2017

Table 5.2. Annual trend of companies that received FVCI in UK regions, 2002 - 2017

Investment Year	*London per cent*	*Northern Ireland per cent*	*Scotland per cent*	*North-East England per cent*	*North-West England per cent*	*Yorkshire-and-the-Humber per cent*	*East Midlands per cent*	*West Midlands per cent*	*East of England per cent*	*Wales per cent*	*South-West England per cent*	*South East England per cent*
2002	44.66	50.00	12.00	0.00	28.57	6.25	16.67	0.00	42.86	16.67	28.57	27.14
2003	36.27	66.67	30.77	20.00	27.27	16.67	9.09	36.36	36.23	25.00	36.00	32.35
2004	28.30	50.00	16.67	0.00	30.00	14.29	5.88	0.00	30.43	8.33	33.33	33.68
2005	26.92	66.67	14.29	14.29	33.33	14.29	23.08	12.50	37.68	0.00	31.58	24.17
2006	33.07	16.67	27.50	15.79	8.00	20.00	0.00	25.00	41.82	30.00	40.00	27.17
2007	35.00	57.14	14.29	0.00	16.67	18.18	8.33	12.50	40.00	66.67	33.33	40.00
2008	49.48	80.00	47.83	23.08	17.39	15.79	20.00	16.67	58.97	20.00	39.13	32.73
2009	47.06	100.00	17.65	10.00	25.00	18.18	0.00	10.00	64.00	42.86	29.41	51.06
2010	43.93	50.00	44.83	29.41	21.05	8.33	22.22	6.67	61.76	0.00	60.00	50.00
2011	52.71	0.00	25.00	8.00	18.52	0.00	42.86	7.69	43.24	30.77	41.67	52.38
2012	57.05	40.00	16.67	14.81	15.63	22.22	25.00	18.18	42.86	33.33	43.75	57.89
2013	55.94	0.00	30.00	0.00	6.90	0.00	22.22	18.18	46.51	11.11	30.77	46.15
2014	57.05	50.00	25.00	25.00	0.00	16.67	14.29	10.00	46.15	20.00	33.33	48.65
2015	61.29	66.67	21.43	0.00	0.00	33.33	20.00	66.67	38.89	33.33	40.00	40.63
2016	64.07	100.00	17.65	20.00	40.00	50.00	50.00	0.00	59.46	66.67	25.00	39.29
2017	65.31	66.67	28.57	0.00	12.50	50.00	50.00	33.33	68.42	40.00	60.00	51.85

5.3.3 Regional distribution of FVCI in the UK

Examining the geographic distribution of unique investments across the various UK regions, the majority, 45.22 per cent, of the unique investment is in London, South-East England has 15.75 per cent of unique investment, and East of England has 13.55 per cent of unique investment. The data reveals vast differences in the proportion of unique investments between London and other geographic regions. North-East England has only 1.03 per cent of unique investment, East Midlands has 1.07 per cent, West Midlands 1.30 per cent and Wales 1.30 per cent. This shows the extent to which some UK regions attract foreign VC investment more than others. Figure 5.6 illustrates the geographic distribution of unique investments across the UK regions.

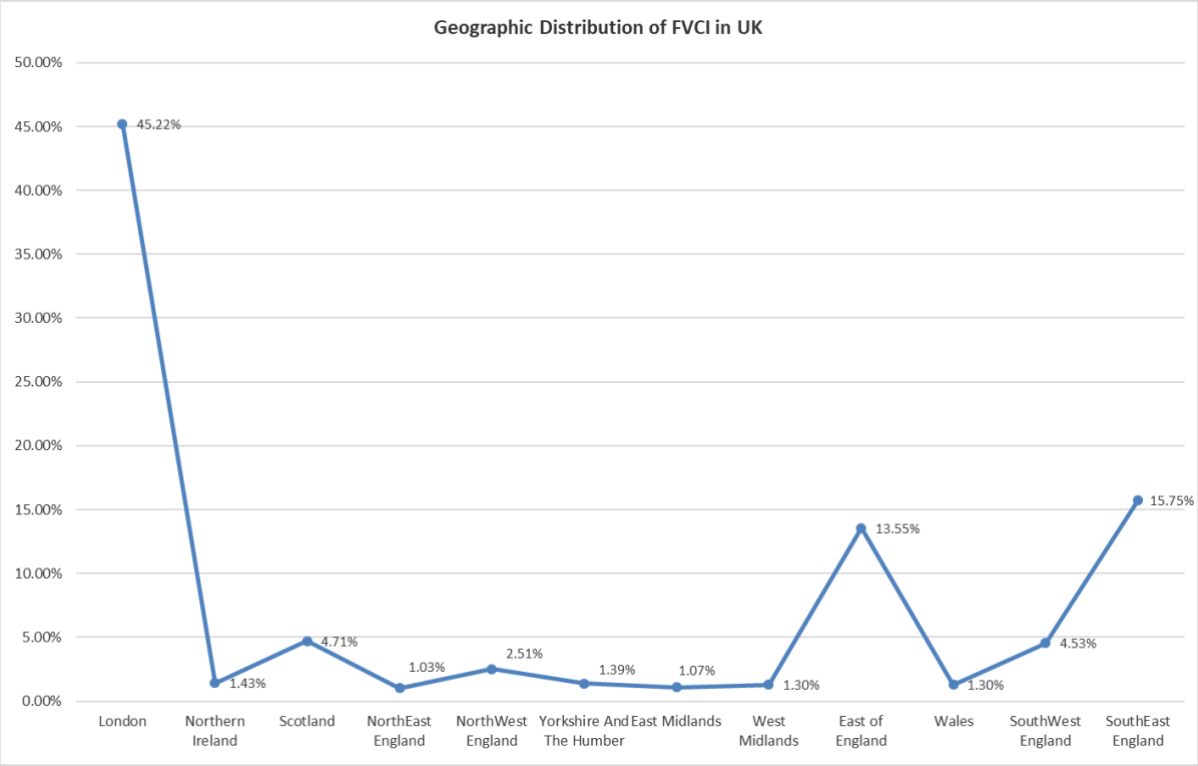


Figure 5.6. Proportion of unique investments across UK regions

The finding show that 37 per cent of all unique investments made in UK domiciled companies between 1st January 2002 and 30th September 2017 had one or more foreign investors and, as the round number increases, the number of foreign VCs increases. The analysis shows that one or more FVCs invested in 28.5 per cent of all first-round investment, in 40 per cent of all round 2 investments, and 45 per cent of all round 3 investments. Figure 5.7 indicates the proportion of FVCs in each investment round across the UK. Examining the proportion of FVCs at the

regional level reveals a similar pattern; as the round number increases, the proportion of FVCs likewise increases in all UK regions except Yorkshire-and-the-Humber, which shows a decrease in the proportion of FVCs as the round number increases. Table 5.3 shows the proportion of FVCs per round for each region.

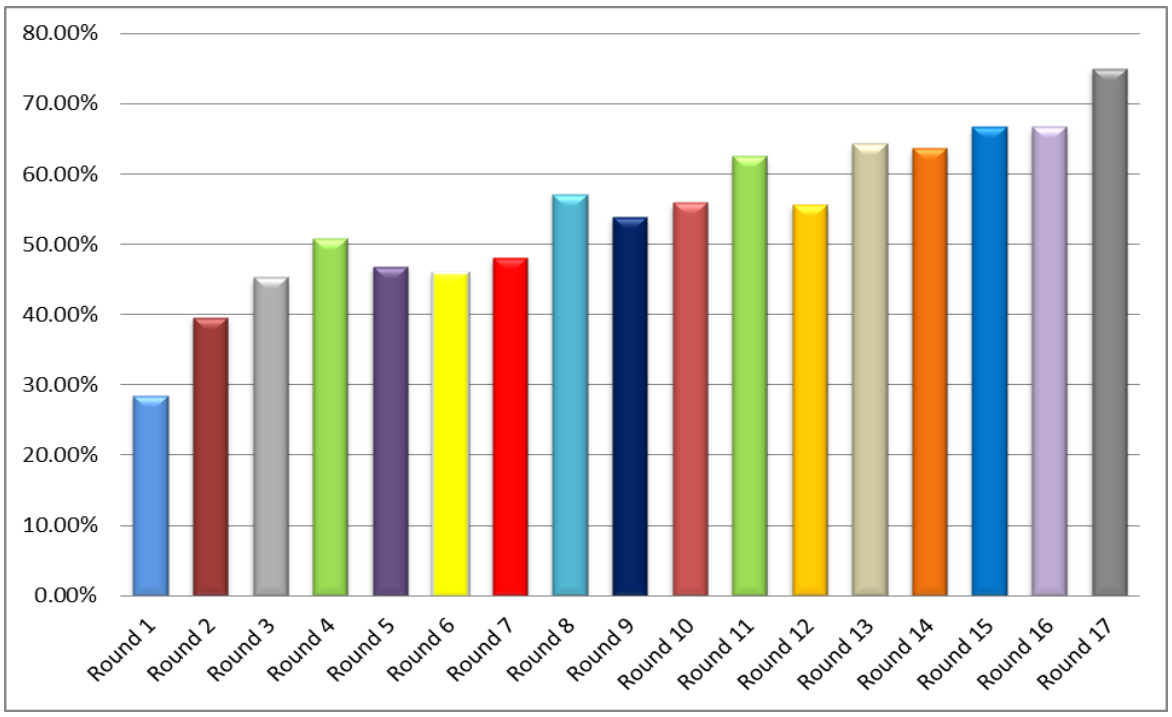


Figure 5.7. The proportion of FVCs in investment rounds in the UK, cumulative total 2002 – 2017

Table 5.3. The proportion of FVCs per investment round for each region

Round Number	*London per cent*	*Northern Ireland per cent*	*Scotland per cent*	*North East England per cent*	*North West England per cent*	*Yorkshire-and-the-Humber per cent*	*East Midlands per cent*	*West Midlands per cent*	*East of England per cent*	*Wales per cent*	*South West England per cent*	*South East England per cent*
Round 1	**41.38**	**40.62**	**18.66**	**7.55**	**12.43**	**11.20**	**10.60**	**12.62**	**34.97**	**12.82**	**21.57**	**27.885**
Round 2	53.64	53.84	25.80	18.91	18.51	9.61	24.24	16.13	41.22	24.00	33.96	34.82
Round 3	60.89	75.00	35.41	36.36	14.28	11.32	20.00	21.05	47.12	41.66	28.57	41.30
Round 4	67.00	67.00	31.25	33.00	9.00	4.76	12.00	23.07	60.00	66.67	48.00	43.33
Round 5	56.96	100	25.00	25.00	33.00	5.26	40.00	42.85	47.05	50	55.55	44.83
Round 6	52.00	100	23.07	14.28	40.00	1.00	33.00	20.00	43.24	50	58.34	52.50
Round 7	51.42	100	42.85	.	67.00	1.00	50.00	.	56	50	42.85	48.39
Round 8	58.82	100	50.00	.	.	.	.	.	59.09	.	66.67	55.56
Round 9	77.00	100	.	.	.	.	.	.	43.75	.	100	46.67
Round 10	50.00	100	.	.	.	.	.	.	50	.	100	55.56

There are vast differences between the regions in the proportion of companies that received FVCIs. About 51 per cent of all London-based companies received FVCIs, 47 per cent of companies in Northern Ireland, 39 per cent of companies in South East England, and 30 per cent of South West companies. Only 16 per cent of companies in Yorkshire and the Humber received FVCI, 15 per cent in North West England and 13 per cent in North East England. Figure 5.8 illustrates the proportion of companies that received FVCI in the various UK regions.

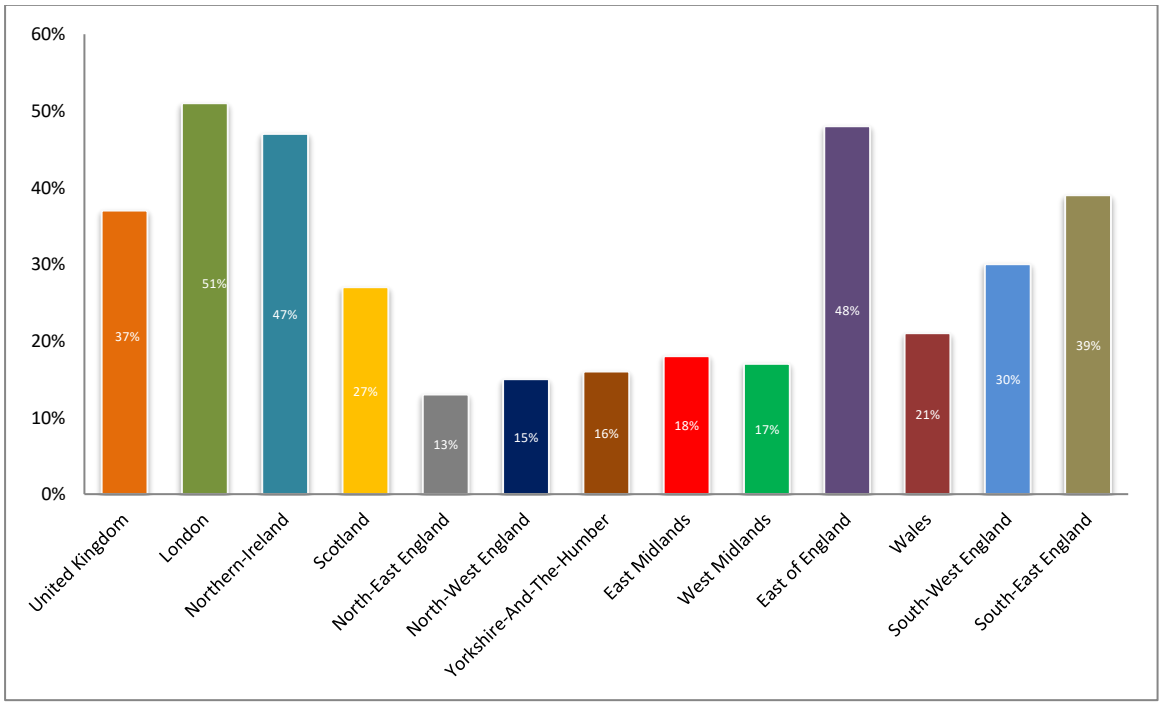


Figure 5.8. Proportion of companies that received FVCI in UK regions, 2002 - 2017.

Assessing the number of companies that received FVCI at the round level, the results show that, as the round number increases, the number of companies reduces. The majority of companies that received FVCI did so in Round 1, and this means 55 per cent of the FVC funded companies received Round 1 investment, 22 per cent received around 2 investment, and 10 per cent received round 3 investment. The later rounds had the lowest proportion of companies that received FVCI. This trend is confirmed by VC investment practice, where, as the round number increases the number of companies decreases, and this is consistent across all UK regions.

5.3.4 FVC investment pattern in the UK

Examining FVCs pattern of investment in UK regions shows that FVCs do not often invest in early rounds but do invest in subsequent rounds. In the London region 30 per cent of round 1

unique investments were made by FVCs, 36 per cent of round 2 unique investments, 45 per cent of round 3 unique investments, and 51 per cent of round 4 unique investments. This pattern is consistent across all UK regions especially those with a high number of companies that received FVCI, which includes London, Northern Ireland, East of England, South-East England and South-West England. Further examination of FVCs pattern of investment in large cities within the regions shows that some cities received FVCI but others did not. Surprisingly, Birmingham in the West Midlands, which is a large city, had only 16 per cent of FVC participation in the first investment round and no further involvement in subsequent rounds.

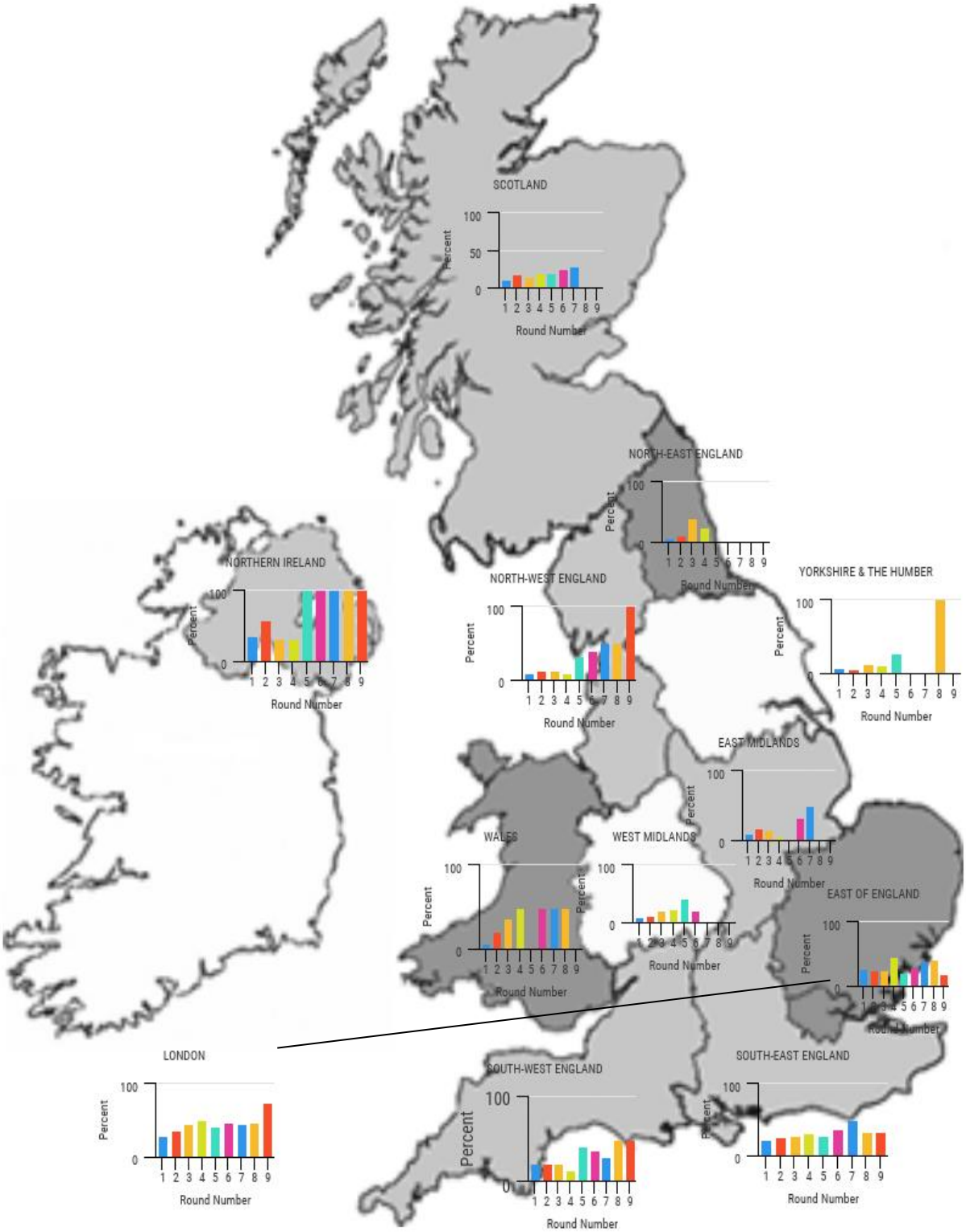


Figure 5.9. FVC pattern of investment in UK regions

Table 5.4. FVCs pattern of investment in large cities across UK regions

Regions	*City*	*Round 1 per cent*	*Round 2 per cent*	*Round 3 per cent*	*Round 4 per cent*	*Round 5 per cent*	*Round 6 per cent*	*Round 7 per cent*	*Round 8 percent*	*Round 9 percent*
London	London	30	36	45	51	41	47	45	47	75
Northern Ireland	Belfast	37	50	33	33	100	100	100	100	0
	Dublin	100	100	0	0	0	0	0	0	0
Scotland	Glasgow	7	18	10	0	16	33	50	0	0
	Edinburgh	5	27	14	20	25	40	33	0	0
	Aberdeen	29	37	0	50	0	0	0	0	0
North-East England	Newcastle	0	0	0	0	0	0	0	0	0
North-West England	Manchester	12	11	20	14	40	40	50	50	50
	Liverpool	2	9	0	0	0	0	0	0	0
Yorkshire-and-the-Humber	Leeds	7	0	0	0	0	0	0	0	0
	Sheffield	11	8	0	0	0	0	0	0	0
East Midlands	Nottingham	0	16	16	0	0	50	100	0	0
	Derby	2	0	0	0	0	0	0	0	0
West Midlands	Birmingham	16	0	0	0	0	0	0	0	0
	Coventry	10	0	25	50	10	10	0	0	0
East of England	Cambridge	24	27	23	48	24	28	12	42	25
	Essex	16	0	100	80	50	0	0	0	0
Wales	Cardiff	11	16	33	100	0	0	0	0	0
South East England	Buckinghamshire	0	25	0	100	0	0	0	0	0
	Surrey	19	33	9	28	0	0	0	0	0
South West England	Bristol	20	23	8	16	25	0	25	0	0

Figure 5.10 presents the allocation of FVCs in regions in proportional terms (all UK=100 per cent). In 2017 London based companies received 68 per cent of all FVCs made to all UK companies, up from 36.84 per cent a decade before. In contrasts, companies based in South-East England received only 7.45 per cent of all FVCs investments made to UK companies in 2017, down from 22.81 per cent a decade before.

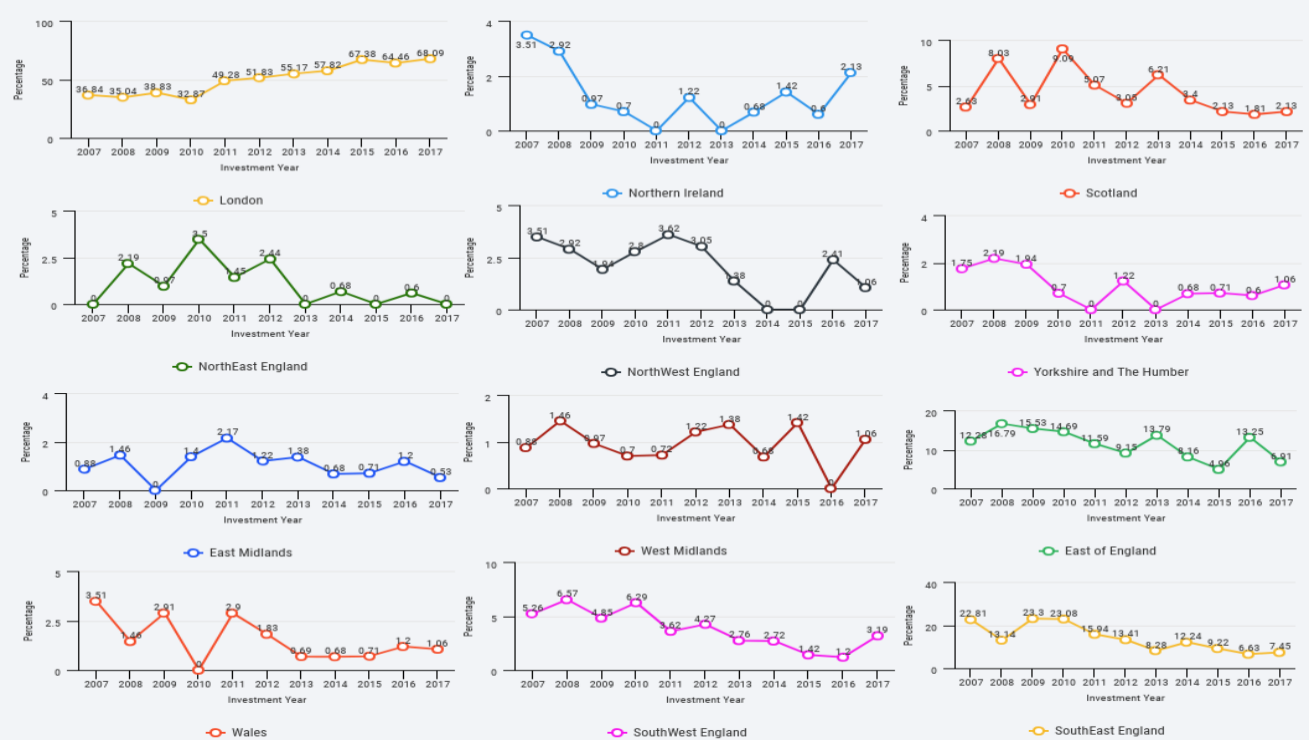


Figure 5.10. Allocation of all FVCs in regions, annual total 2007 – 2017

Examining whether FVCs co-invest with domestic VCs or invest alone, a pattern of co-investments across all regions emerges. The proportions of co-investment in London and South-East England are high but co-investment funds in regions such as North-West England and Yorkshire-and-the-Humber are low. The data show a 41 per cent standalone FVCs investment in London, meaning co-investment with domestic VCs represents 59 per cent of unique investments in London. FVCs prefer to co-invest with domestic VCs in all regions, and the proportion of co-investment in North-West England, where co-investment accounts for 45 per cent while unique investment by FVCs account for 55 per cent, is relatively low compared to the other regions. The East Midlands has 50 per cent standalone investments by FVCs and 50 per cent co-investment. Figure 5.11 shows the proportion of co-investments and standalone FVCIs made in various UK regions, and Table 5.5 shows the actual unique investments at a deal level.

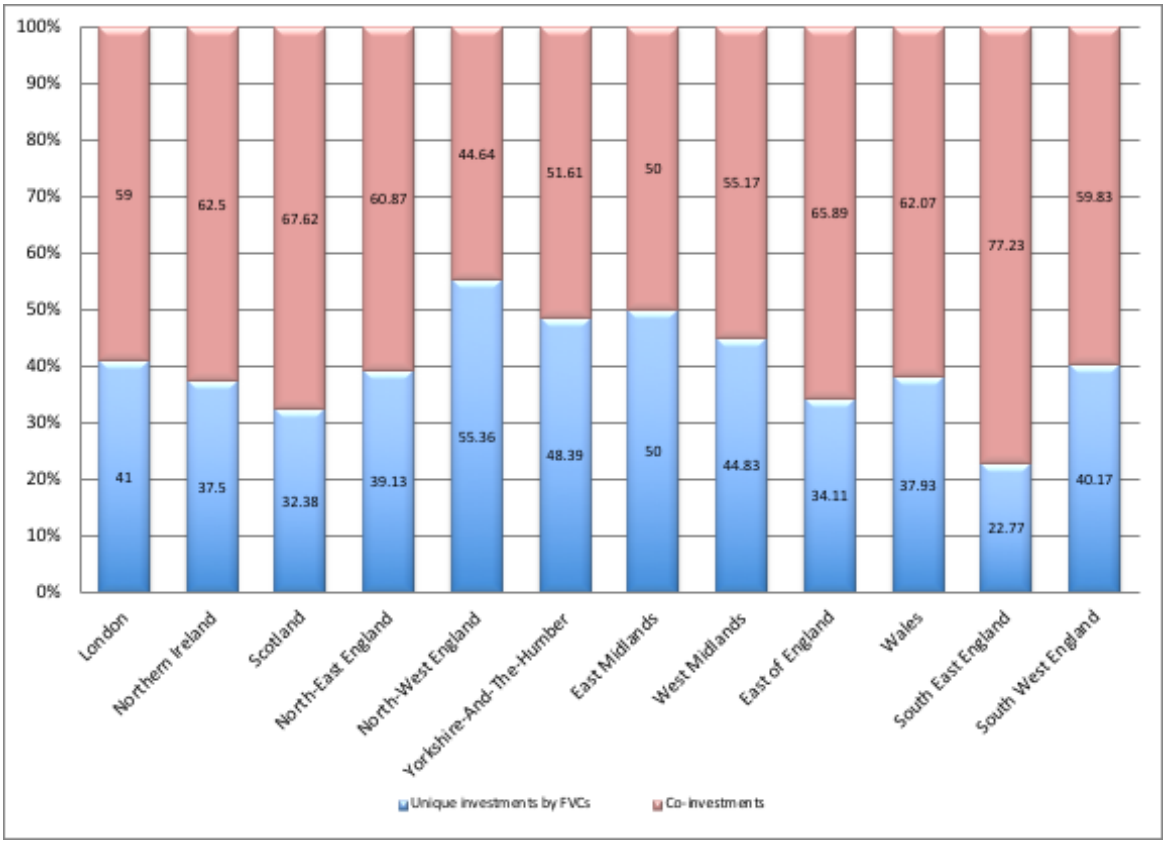


Figure 5.11. FVC co-investments with local VC and FVC sole investments in UK regions

Regions	Unique investments solely by FVCs	Co-investments by domestic and foreign VCs
London	414	594
Northern Ireland	12	20
Scotland	34	71
North-East England	9	14
North-West England	31	25
Yorkshire-and-the-Humber	15	16
East Midlands	12	12
West Midlands	13	16
East of England	103	199
Wales	11	18
South East England	23	78
South West England	141	210

Table 5.5. Proportion of co-investments and standalone investments

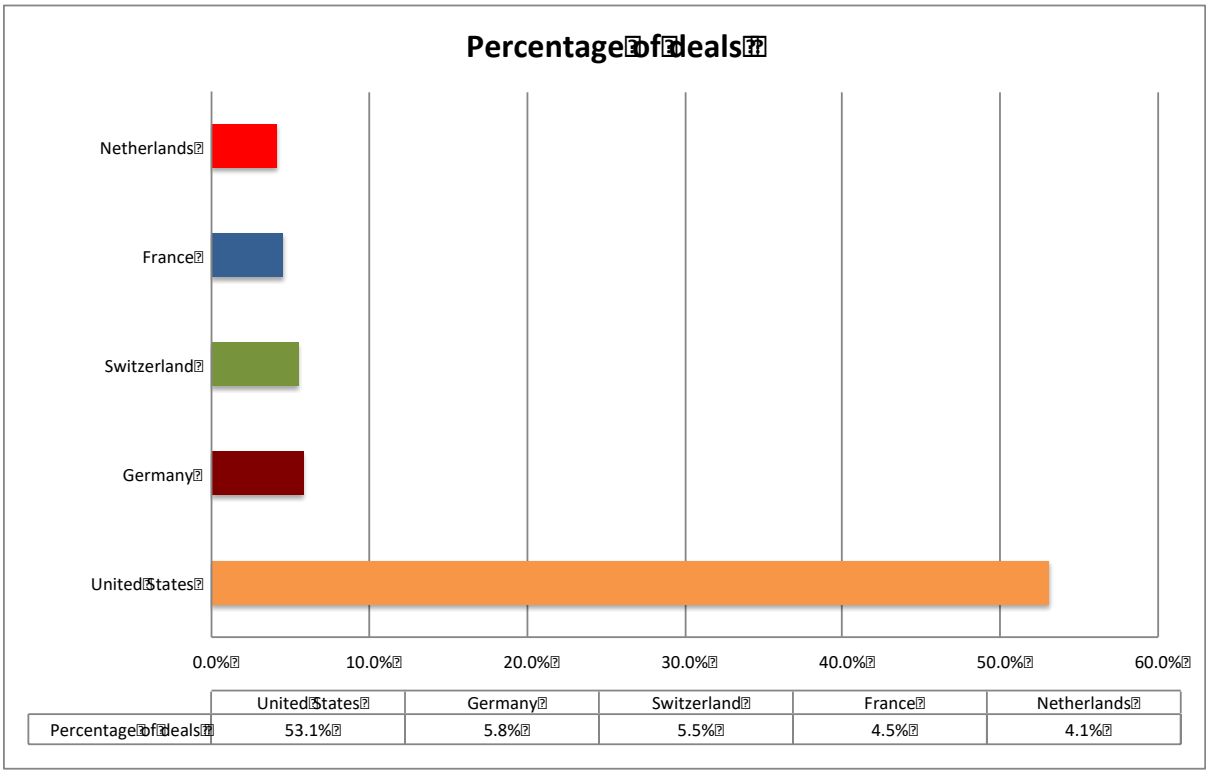
5.3.5 Top 5 FVC fund nations investing in the UK

Examining the top five originating countries for FVCs backing UK deals, a total of 66 fund nations are identified. FVCs from the United States backed 53.1 per cent of UK deals, FVCs

from Germany backed 5.8 per cent of deals, FVCs from Switzerland backed 5.5 per cent of deals, FVCs from France backed 4.5 per cent of deals, and FVCs from the Netherlands backed 4.1 per cent of deals in the UK. Besides indicating the top FVC originating nations, the data reveals that FVCs originating from Ireland, Denmark, Norway, Belgium, Japan, Israel, Canada, Spain, Sweden, Luxembourg, Russia, Hong Kong, Italy, Singapore, Uruguay and Finland also backed UK deals. Surprisingly, less than 1 per cent of deals were backed by FVCs from China.

At the regional level, FVC from the US overshadow all other nations in almost all UK regions. Institutional similarities directly reflect two opinions. Firstly, the quality of UK deals attracts American VCs to back deals at the national and regional level. Secondly, there is largescale dominance of the US VC industry, as companies in over 50 countries have received VC investment from US-based VCs (Pandya and Leblang, 2011). Figure 5.12 shows the top five fund nations investing in the UK regions over the 15 year period.

a)



	United States	Germany	Switzerland	France	Netherlands
Percentage of deals	53.1%	5.8%	5.5%	4.5%	4.1%

b)

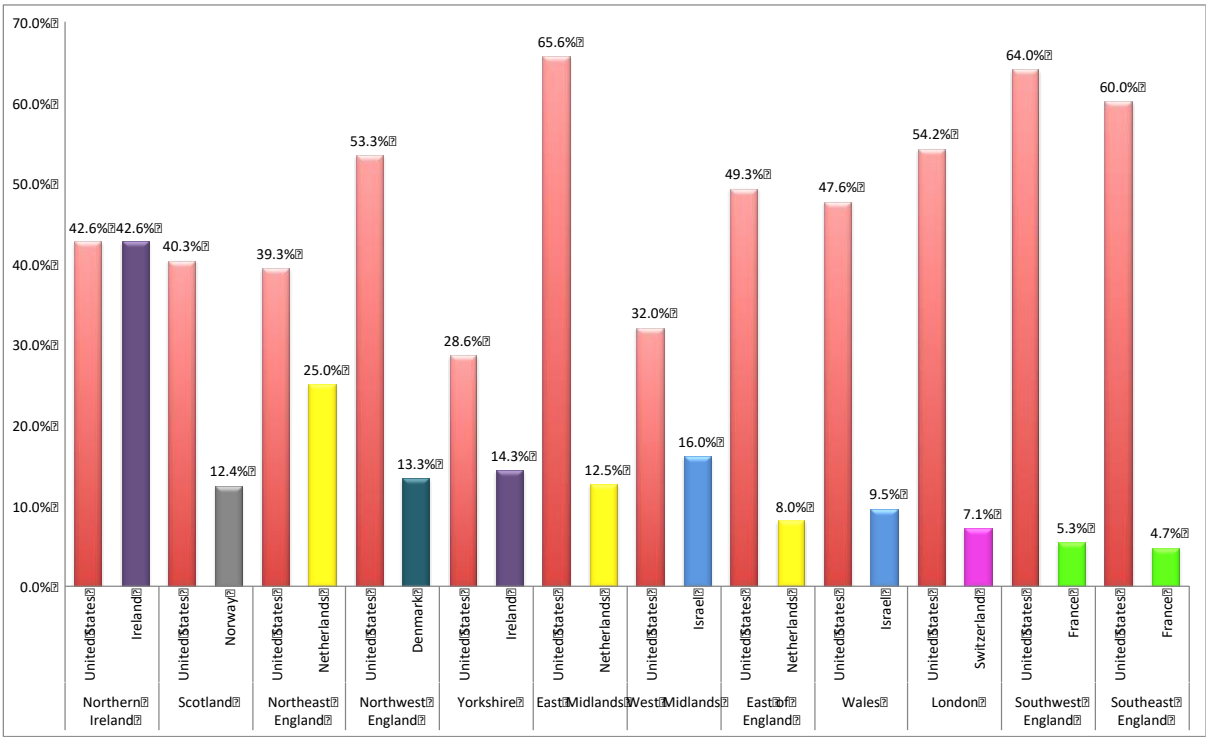


Figure 5.12. Top 5 FVC fund nations investing in UK deals, cumulative total 2002 - 2017: (a) top five FVC fund nations investing in the UK; (b) top FVC fund nations investing in each UK region.

5.4 Conclusion

In summary, VCs' network strength can affect co-investment with FVCs. The results reveal FVCs flow of investment and their patterns of investment are particularly interesting for practitioners, as they indicate the UK regions with active entrepreneurial activities that are attractive for FVCI. Despite the UK Government's support with publicly backed VC funds in UK region (Mason and Harrison, 2002), there remains a wide gap in entrepreneurial activities across the regions. This thesis contributes to existing studies of entrepreneurship and regional development in the UK by informing policy makers and practitioners about the regions that attract foreign investment, and the directional flow of FVCI in UK regions.

VCs with internationally experienced personnel are more likely to possess extensive social networks, which is vital for successful entry into new markets (O' Farrell and Wood, 1994;

Wright et al., 2005). By extension, it is expected that London-based funds, due to their size and track record, would have established significant networks and connections with FVC funds, making it easier for them to attract FVC investors to participate in local deals. In addition, the previous track record of London-based GPs is an attribute that could attract FVC funds to co-invest in the Greater London region. Since the local investors in most UK regions are mainly publicly backed funds (Mason and Pierrakis, 2013), the role of policy makers is vital in ensuring access to international VC markets through increased networking opportunities for local investors that play an active role as information conduits between FVC funds and local opportunities in UK regions.

CHAPTER 6: ANALYSIS OF THE CROSS-REGIONAL FLOW OF VENTURE CAPITAL INVESTMENTS IN THE UNITED KINGDOM

6.1 Introduction

Traditionally, venture capital firms select and back companies with promising future business opportunities and assist these companies in realising opportunities (Amit et al., 1998). Besides the provision of capital, they also coach and monitor the companies, while adding value to help them grow (Hellmann and Puri, 2002; Lindsey 2008). One of the unique features of VCs, that make them different from other forms of financing, is their ability to play an ongoing role in managing their backed companies (Steier, 1998). In most cases, having a member of the VC firm on the backed company's board helps in check-mating important decisions, since they provide operational and strategic information that catalyses growth. Lee and Wahal (2004) also suggest that VCs do not necessarily invest in all industries, but specific industries such as software or biotechnology. Gompers (1995) and Zacharakis et al. (2007) suggest that VCs are also attracted to high-growth markets with a strong focus on technology. Zimmerman and Zeitz (2002) suggest that VC investment in a company serves as an endorsement of the legitimacy of the firm, and could be a prerequisite for resource acquisition or venture growth. Several studies show the positive impact of VC enabling venture success, yet Steier and Greenwood (1995) highlight that VCs can also hinder the growth of a company by offering the wrong strategic advice. This shows that VCs play a central role in both entrepreneurial growth and regional development.

According to Florida and Kenney (1988), venture capital firms are often located in clusters, especially in areas with a high concentration of financial institutions and technology-intensive enterprises. VCs often cluster in two types of region, those with a high concentration of financial resources and those with a high concentration of technology-intensive businesses (Florida and Kenney, 1988). Mason and Harrison (2001) suggest three main reasons for only a small fraction of companies accessing VC financing. Firstly, there are few high-quality entrepreneurial ventures that seek VC investment or are attractive enough for VCs. Secondly, ventures with good prospects may not attract VC investment, especially if the knowledge, skills and abilities of the founders are not impressive. Finally, entrepreneurs may not seek VC investment or may lack compelling arguments.

Previous research by Mason and Harrison (1999), Martin (1999) and Mason (2007) suggests that London and South-East England have dominated the geographic distribution of venture capital investment since the start of the UK VC industry. This chapter investigates the investment activities of UK broad venture capital funds, particularly domestic venture capital funds (DVCs) and local venture capital funds (LVCs). It explores the volume and directional flow of venture capital investment transactions that take place between one region and another in the UK. According to Sorenson and Stuart (2001), venture capital continues to exhibit highly localised investment patterns despite the vast array of external opportunities. Mason and Pierrakis (2013) suggest that the availability of venture capital investment is restricted in 3 main areas. Firstly, it is uneconomical for VC funds to make small investments due to the fixed cost involved in the investment process. Secondly, VC firms tend to concentrate their investments in a few industries, sometimes becoming myopic. Thirdly, the existing research from various countries reveals that VC investments are geographically clustered, typically in the most technologically advanced regions (Mason and Harrison, 2002).

This thesis takes into account the regional imbalance and the consolidation of venture capital investments in the UK. The dotcom crash and global financial crisis both had some degree of impact on the UK economy, based on the performance of VC backed companies. The potential performance of new ventures is driven by high-quality human capital located in regions that offer opportunities and offer exceptional rewards, which has the propensity to drive investment in that direction.

6.1.1 Cross-regional venture capital investment in the UK

Venture capital is a growing field in academic research. Nevertheless, Mason and Harrison (1999) suggest there is much less progress towards understanding the distinctive characteristics of VCs and their role in enhancing regional economic development. This supports Martin's (1999) observation that the intersection between money and the local economy is the least explored aspect of the economic geography of money. Venture location contributes to the debate on how location influences the demand for VCs, and this results in most investments being concentrated in specific regions such as London in the UK, Paris in France, and Silicon Valley, New York and Boston in the US (Colombo et al., 2019). Furthermore, Colombo et al. (2019) indicate that VCs are concentrated in "VC hubs" which are often located in financial centres or high-tech regions.

Mason and Harrison (2002) identify four major issues associated with regional variations in the supply of venture capital: (1) the location of VC investment; (2) the regional flow of capital which influences investment patterns; (3) the rate of influence of the institutional structure of the VC industry; and (4) support for the development of regional technological infrastructure. Findings from previous studies indicate that geographic distribution of VC investment activities is highly lop-sided, as some regions attract a disproportionate share of VC investment (Mason, 1987; Mason and Harrison, 1991).

Mason and Harrison (2002) suggest that the UK government makes effort to ensure a supply of venture capital to create a competitive, innovative and knowledge-driven economy to meet the needs of innovative entrepreneurs that are central to promoting growth, increasing productivity and creating jobs. While the UK government is trying to ensure an increased supply of VCs in UK regions, Martin (1989) suggests that the widening North-South divide in the UK is partly caused by the uneven geographical distribution of venture capital investment. The effect of an unequal spatial distribution of venture capital investment is to deplete regions that are already VC deficient or economically depressed. A higher regional concentration of VC investments linked with capital invested in VC funds contributes to a regionally destabilising flow of money in advanced industrial economies (Clark, 1999).

VC firms are perceived as key performers that contribute to the institutional thickness of regions because of their role in facilitating collective regional learning (Keeble and Wilkinson, 2000). Existing literature on the role of venture capital in regional economic development reveals an interest in small firms and high technology industries, with a full assumption of their importance in supporting regional growth, and the assumption could be valid (Florida and Kenney, 1988). Martin (1989) suggests that, in the early days of the VC industry, from 1983, start-ups, on average, received a low level of VC investment, whereas small, expanding companies received a large proportion of the financing. Over time, this has changed, with early-stage companies receiving a high volume of VC funding while later-stage companies also receive a high volume of VC money.

The main objectives of this chapter are two-fold: (1) to identify the direction of flow of venture capital investments between UK regions; and (2) to analyse the level of regional VC self-sufficiency. The term regional VC self-sufficiency means VC funds that conveniently provide capital to companies within their region without the companies being forced to seek funding from external VCs due to a shortage or unavailability of capital in their region.

6.2 Theoretical Approach

Human capital has a long history of being viewed as a source of value at both managerial and individual level (Becker, 1983). The shortage in supply of high-quality human capital has a direct effect on regional development, making it difficult to compete and perform. Eckhardt et al. (2006) indicate that a founder's human capital affects the company's propensity to seek external equity. According to Wright and Mosey (2004), serial entrepreneurs have more extensive social networks and are more effective in developing network ties to gain management knowledge, advice and finance. In contrast, less experienced entrepreneurs are more likely to encounter structural gaps between their scientific research networks and industry networks which impede their ability to recognise opportunities or gain credibility.

Jaaskalainen and Maula (2014) show that direct network ties between VCs serve as an essential channel for transferring rich information, reducing issues relating to investor quality assessment, and facilitating IPO exits, especially in markets where VCs are connected. Hence, the strength of network ties remains a critical element, especially when foreign VCs are linked with good local VCs. According to Nahata et al. (2014), network effects explain the growing tendency for cross-border VCs to team up in syndicates with local partners to invest in deals, since they leverage local expertise while ensuring interaction. The location of a potential deal is not necessarily a problem for VCs investing across regions, since they can partner with local VCs. Powell et al. (2002) argue that the size of a VC firm influences investment decisions, given that the more substantial the VC firm, the more likely the fund will invest in distant regions.

6.3 Findings

At industry level, deals from business service industries generate most investment from DVCs and LVCs. Specifically, 86.72 per cent of business services deals are backed, while 82.19 per cent of consumer-related deals are backed. Industries that appear at the bottom include internet-specific businesses at 53.16 per cent, and biotechnology at 52.27 per cent. These results are not consistent with the industries funded by foreign venture capital investors, which show high investment interest in the UK biotechnology industry.

At regional level, London's top three industries are business services with 85.71 per cent, ‘other’ industries at 72.73 per cent, and consumer-related services at 71.71 per cent. These findings are inconsistent with the foreign VC money flow, of which technology-related industries receive the most investment. Figure 6.1 shows the industries that received the most and least funding at the national level, while Table 6.1 shows VC backed industries at the regional level.

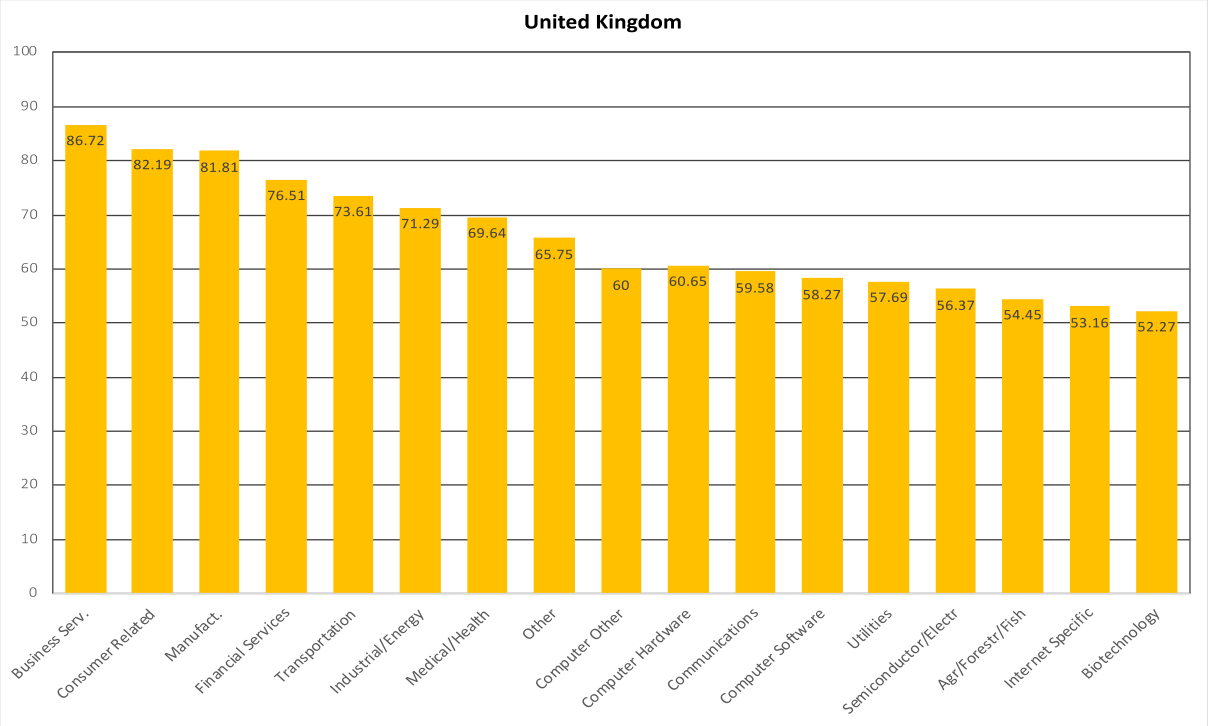


Figure 6.1. Primary operating industries for DVC backed companies.

Table 6.1. Industry classification of CRVC for all UK region

Company VE Primary Industry Subgroup 1	*London %*	*Northern Ireland %*	*Scotland %*	*North East England %*	*North West England %*	*Yorkshire-and-the-Humber %*	*East Midlands %*	*West Midlands %*	*East of England %*	*Wales %*	*South West England %*	*South East England %*
Agr/Forestr/Fish	20	-	100									100
Biotechnology	39.28	50	76.74	92.3	60.86	75	100	100	33.81	100	50	50
Business Serv.	85.71	0	83.33	100	83.33	90.9	81.81	87.5	77.77	100	100	81.81
Communications	49.36	71.42	100	57.14	100	83.33	100	75	61.17	33.33	64	52.71
Computer Hardware	45.31	50	100	100	86.66	100	100	90.9	41.17	100	22.22	63.15
Computer Other	60	100	-			100			50			
Computer Software	45.31	63.33	77.21	88	70.83	86.36	95.65	85.71	62.16	81.25	80.32	66.5
Consumer-Related	71.71	0	92.85	77.77	96.87	94.44	81.25	87.09	93.33	100	100	82.5
Financial Services	58.66	-	85.71		100	100	100	100	88.88	100	100	85.71
Industrial/Energy	58.49	-	58.66	88.88	95.23	78.78	78.26	93.33	76.74	90.9	73.68	65.3
Internet Specific	43.43	20	84	85.71	79.16	100	81.81	77.77	55.17	66.66	68.75	65.33
Manufact.	63.63	0	50	100	87.5	100	100	75	75	100	100	100
Medical/Health	62.5	66.66	88.67	100	88.88	59.25	78.26	62.5	61.78	68.75	64.28	67.36
Other	72.73	-	100	100		100		100	100		0	85.71
Semiconductor/Electr	66.66	50	69.04	72.22	77.77	90.9	53.84	100	48.97	47.61	33.33	47.82
Transportation	64.28	-	66.66	100	100	100	100	80	100	100	100	47.05
Utilities	25	-	0	100	100	100		100	100		0	70

6.3.1 The proportion of companies backed by LVCs within regions

In order to ascertain the regional flow of investment at the company level, the proportion of companies backed by LVCs from each region is examined. Unpacking the data reveals that 60.33 per cent of all London based VC backed companies received investment from London based funds, and 40.9 per cent of companies from the West Midlands received investment from West Midlands LVCs. Only a few companies from South-East England and East of England received investment from LVCs from the same region. Less than 20 per cent of companies located in South-East England, South West England and Wales were backed by LVCs in the same region. Less than 6 per cent of companies in South-East England received investment from LVCs from South-East England.

In comparison to other UK regions, the Northern region shows a high proportion of companies backed by LVCs from that region. 20.17 per cent of companies from North-East England were backed by LVCs from that region, 21.17 per cent of companies from North-West England were backed by LVCs from that region, and 21.16 per cent of companies from Yorkshire-and-the-Humber received investment from LVCs in that region. Figure 6.2 shows the proportion of companies backed by LVCs from their own region.

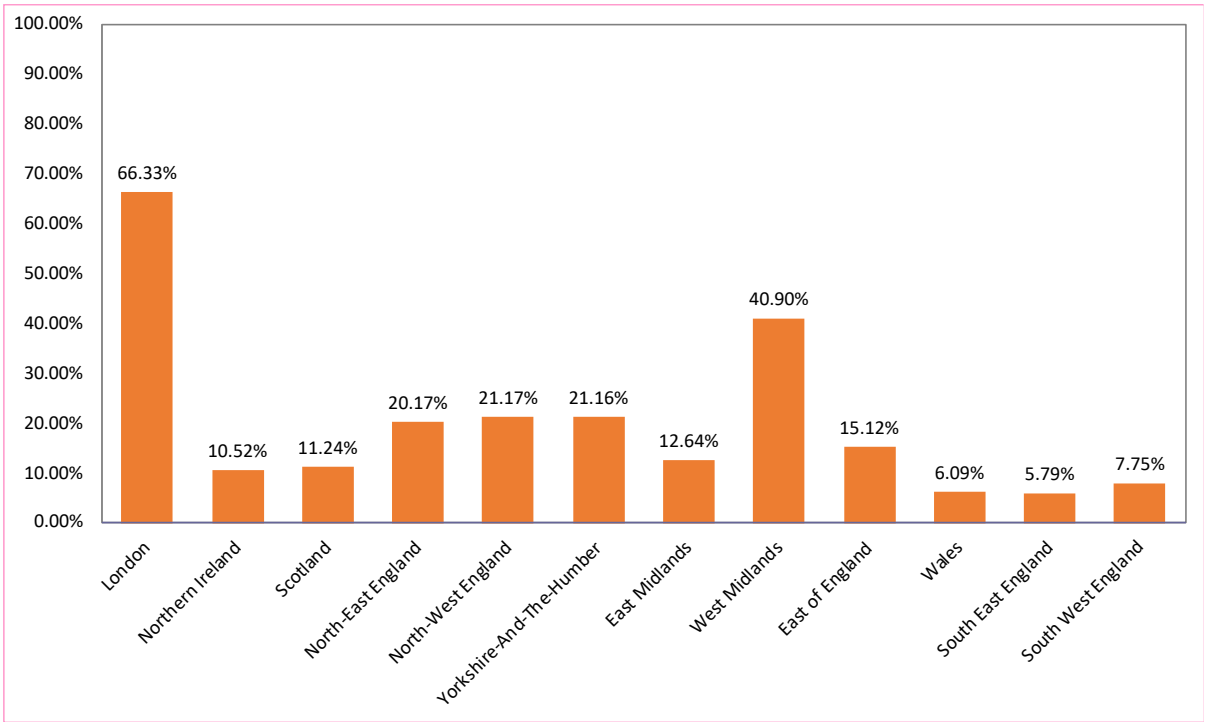


Figure 6.2. Companies backed by LVCs from their region, cumulative total 2002 - 2017

6.3.2 Deal volume involving DVC and LVCs at the regional level

This section unpacks UK regions with the highest and lowest volumes of deals involving both DVCs and LVCs at the regional level. The results show that the Northern region and Midlands have the highest proportion of venture deals involving one or more domestic based or local venture capital investor. Further unpacking the data shows that 51 per cent of total deals in London had either or both DVCs and LVCs, 62.73 per cent of deals in South-East England, and 55.71 per cent of deals in East of England had either or both DVCs and LVCs. Northern Ireland, at 45.76 per cent, was the region with the lowest percentage of deals involving DVCs or LVCs. While the results show a higher percentage of deals involving DVCs and LVCs in the Northern region and the Midlands, the volume of investment transaction is low compared to other regions such as London, South-East England and South West England. Figure 6.3 illustrates the proportion of deals at the regional level.

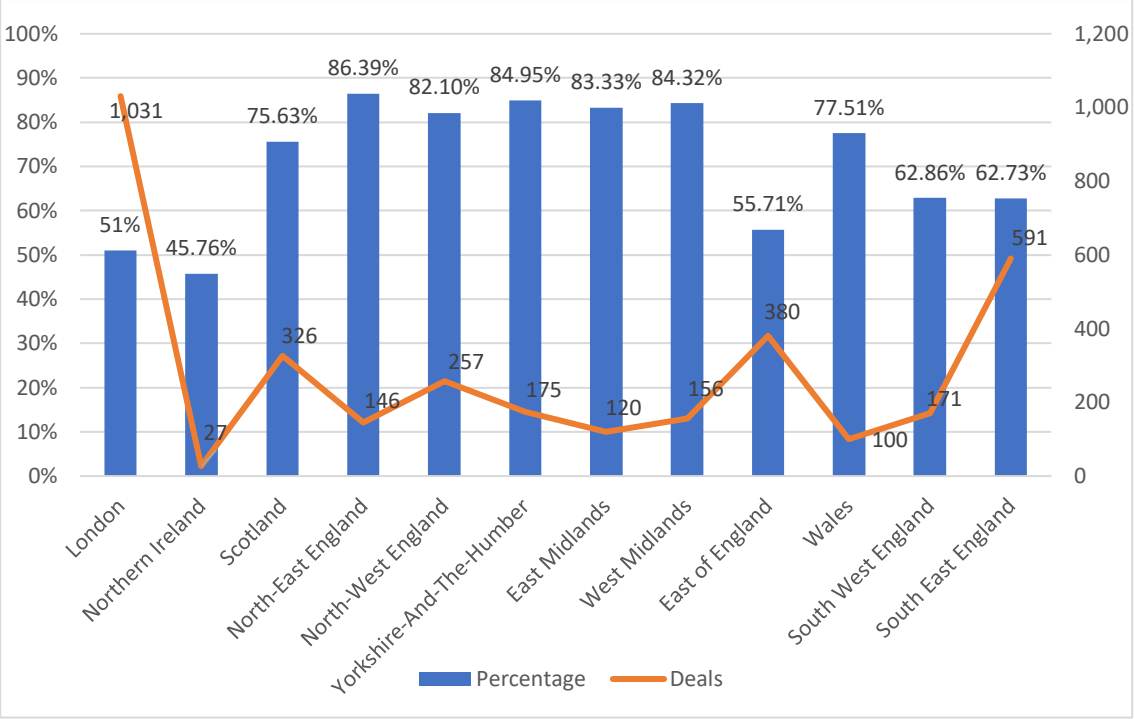


Figure 6.3. Deals with both DVCs and LVCs by region

6.3.3 Year-on-year funding, 2002 – 2017

The annual growth trend in VC investment in the UK over the 15 year period reveals a consistent decline in the proportion of DVC investment across the UK. The year 2005 had the highest DVC investment, at 75.34 per cent, but this was down by 25 per cent a decade later. 2017 had the lowest DVC investment, which dropped to a staggering 41.97 per cent. The annual proportion of DVC investment in London dropped below 50 per cent from 2010. Over the period, there has been an increased level of investment by DVCs in regions which were previously less attractive for VC investment, such as Scotland and the Northern region, which show more year-on-year growth. The yearly trends reveal that the East of England and South-East England experienced a lower volume of venture investment between 2012 and 2017. Figure 6.4 shows the year-on-year trend in the UK, while Table 6.2 shows the year-on-year trend in the UK regions.

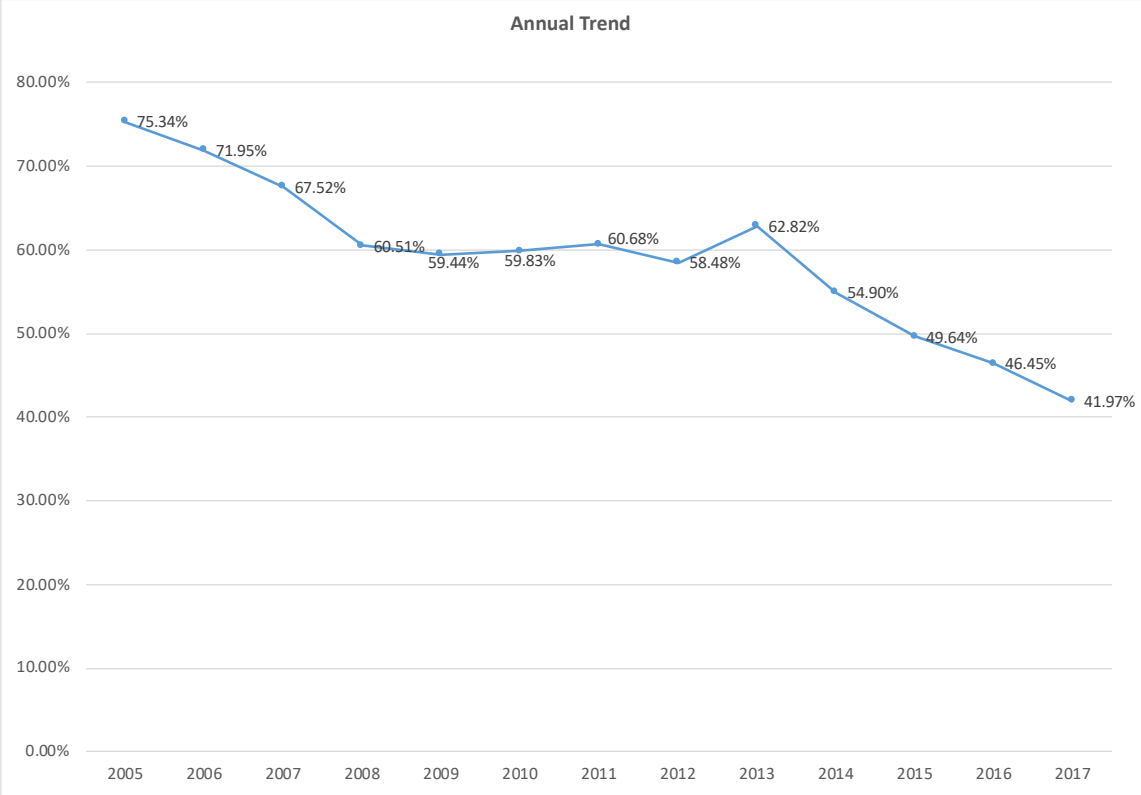


Figure 6.4. Year-on-year growth trend in DVC investment in the UK, annual total 2005 - 2017

Table 6.2. Year-on-year growth trend by region, 2002 - 2017

Investment Year	London %	Northern Ireland %	Scotland %	North-East England %	North-West England %	Yorkshire-and-the-Humber %	East Midlands %	West Midlands %	East of England %	Wales %	South-West England %	South East England %
2002	55.33	50	88	100	71.42	93.75	83.33	100	57.14	83.33	71.42	72.85
2003	63.72	33.33	69.23	80	72.72	83.33	90.9	63.63	63.76	75	64	67.64
2004	71.69	50	83.33	100	70	85.71	94.11	100	69.56	91.66	66.66	66.31
2005	73.07	33.33	85.71	85.71	66.66	85.71	76.92	87.5	62.31	100	68.42	75.83
2006	66.92	83.33	72.5	84.21	92	80	100	75	58.18	70	60	72.82
2007	65.00	42.85	85.71	100	83.33	81.81	91.66	87.5	60	33.33	66.66	60
2008	50.51	20	52.17	76.92	82.6	84.21	80	83.33	41.02	80	60.86	67.27
2009	52.94	0	82.35	90	75	81.81	100	90	36	57.14	70.58	48.93
2010	56.07	50	55.17	70.58	78.94	91.66	77.77	93.33	38.23	100	40	50
2011	47.28	100	75	92	81.48	100	57.14	92.3	56.75	69.23	58.33	47.61
2012	42.95	60	83.33	85.18	84.37	77.77	75	81.81	57.14	66.66	56.25	42.1
2013	44.05	100	70	100	93.1	100	77.77	81.81	53.48	88.88	69.23	53.84
2014	42.95	50	75	75	100	83.33	85.71	90	53.84	80	66.66	51.31
2015	38.70	33.33	78.57	100	100	66.66	80	33.33	61.11	66.66	60	59.37
2016	35.92	0	82.35	80	60	50	50	100	40.54	33.33	75	60.71
2017	34.69	33.33	71.42	100	87.5	50	50	66.66	31.57	60	40	48.14

Throughout the 15 year period London had an average of 56.12 per cent of deals involving DVCs, a record high of 73 per cent in 2005, and low of 34.69 per cent in 2017. In contrast, the average volume of deals involving LVCs in Northern Ireland was 49 per cent, which is lower

than the rest of the regions. In 2005, 33.33 per cent of deals in Northern Ireland involved DVCs, in 2015 and 2017 respectively, 33.33 per cent of deals involved DVCs. The gap between London and the other regions remains wide in terms of the actual volume of deals that involve LVCs. Generally, London's volume of deals involving DVCs declined by about 10 per cent between 2010 and 2017.

6.3.4 Proportion of deals with DVC at the round level

On a national scale, DVC were involved in 62.54 per cent of the entire UK deals. Analysing the proportion of deals that involved DVC at the round level shows that as the round number increases, the number of DVCs also decreases. At the national scale, 71.49 per cent of deals in round one involved DVCs, 60.37 per cent of deals in round two had one or more DVCs, and 54.37 per cent of deals in round 3 had one or more DVCs. The later stage rounds had less VCs than the earlier rounds, with less than 50 per cent of deals in round 8 and above involving DVCs. DVCs are more involved in early investment rounds than later rounds. Figure 6.5 shows the proportion of DVCs per investment round.

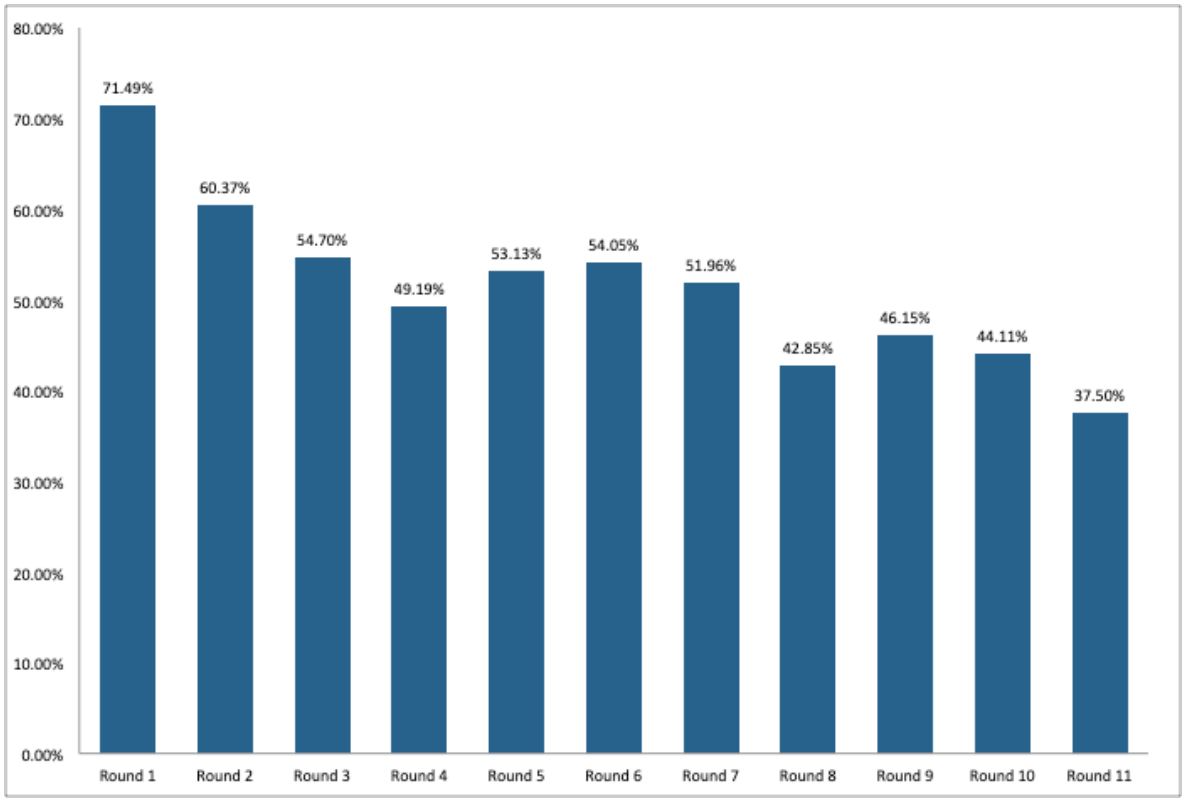


Figure 6.5. Proportion of deals with DVCs at round level, cumulative total 2002 – 2017

6.3.5 Regionally based funds backing local deals

Based on overall deals per region, this section reveals the proportion of deals backed by only LVCs from the same region as the VC backed companies. Unpacking the data reveals that London based VCs had the highest proportion of local VC involvement, at 60.04 per cent of London deals. The LVCs from Northern Ireland backed 59.25 per cent of deals in Northern Ireland, North-East LVCs backed 47 per cent of deals in North-East England. While the proportion of deals backed by LVCs from North-East England were significantly represented, North-West England deals backed by LVCs from that region were under 30 per cent. Further examination reveals that only 6.66 per cent of deals in East Midlands were backed by LVCs from the same region, and about 10 per cent of deals in South-West England and South-East England were backed by LVCs from these regions. Figure 6.6 shows the investment transaction in each region backed by LVCs from the same region.

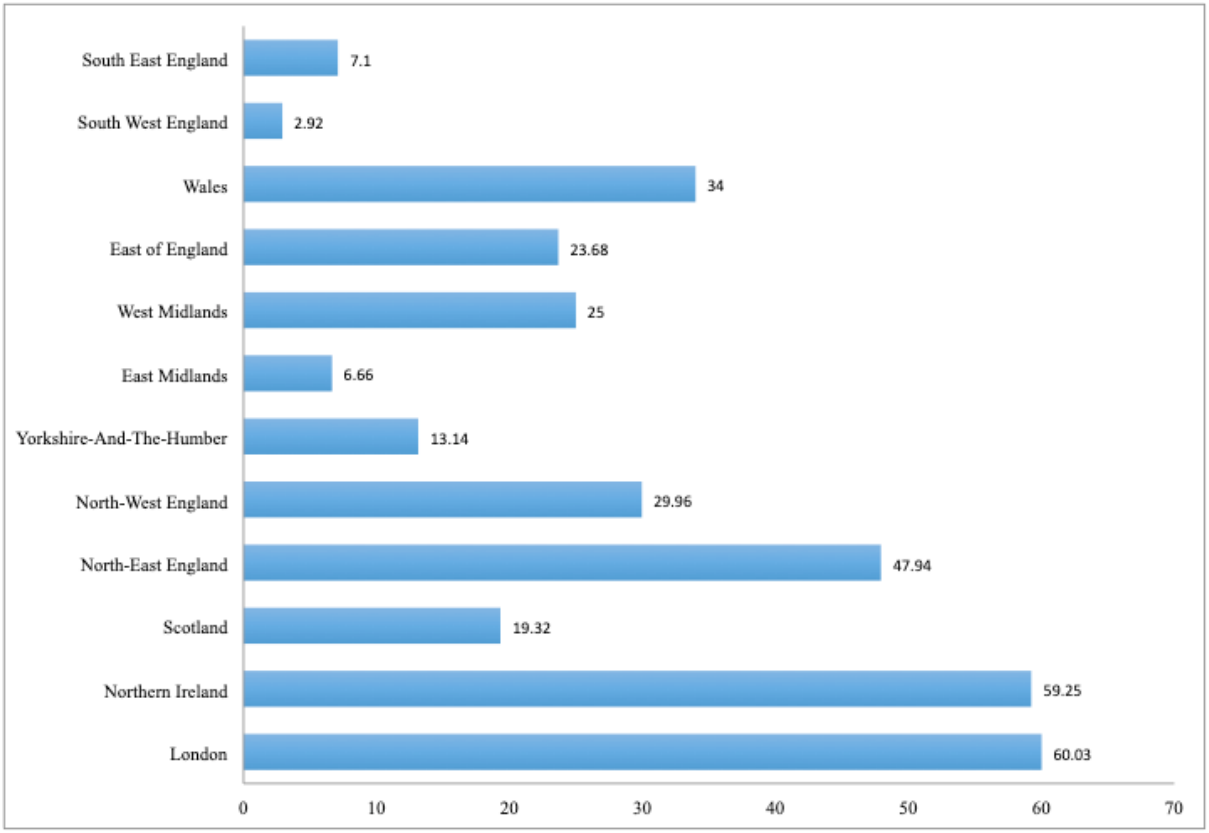


Figure 6.6. Deals per region involving LVCs from the same region

Assessing the proportion of deals per round involving LVCs from the same region shows that LVCs based in the Northern region and Midlands were less involved in deals from their regions

after the 3rd and 4th rounds. However, this is different in London, where 64.44 per cent of deals in round one were backed by London LVCs, 56.66 per cent of deals in round two, and 57.73 per cent in round three. Between the first and tenth investment rounds, an average of 44.78 per cent investment transaction in London involved London based LVCs. In the East of England, an average of 29.24 per cent of deals in the region between the first and tenth rounds were backed by LVCs from that region. LVCs from the region backed an average of 6.28 per cent in South East England. Table 6.3 shows the proportion of deals per region with LVCs from the same region, by round.

Round Number	London	Northern Ireland	Scotland	North-East England	North-West England	Yorkshire-And-The-Humber	East Midland	West Midland	East of England	Wales	South West England	South East England
Round 1	64.44	57.89	24.7	56.12	37.27	17.47	11.86	38.88	22.72	44.11	2.5	7.56
Round 2	56.66	66.66	18.84	50	22.72	11.76	4	7.69	16.88	15.78	2.85	6.1
Round 3	57.73	0	9.67	0	12.5	5.55	0	13.33	19.56	14.28	4	7.4
Round 4	65.11	100	9.09	0	10	0	0	0	20	0	7.69	3.92
Round 5	44.11	0	13.33	0	0	0	0	0	40.74	0	0	9.37
Round 6	45.83	0	0	0	0	0	0	0	28.57	0	0	15.78
Round 7	52.94	0	0	0	0	0	0	0	27.27	0	0	12.7
Round 8	28.57	0	0	0	0	0	0	0	33.33	0	0	0
Round 9	0	0	100		0	0	0	0	33.33			0
Round 10	33.33	0	0		0	0	0	0	50			0

Table 6.3. Regional deals with LVCs at round level

6.3.6 Cross-regional Venture Investments in UK regions

There is a significant disparity in the volume of deals per region shown by assessment of the regional flow of venture capital investment between regions. Primarily, the analysis examines the proportion of deals involving LVCs and DVCs per region, but this section presents the results for cross-regional venture investments. The findings reveal that DVCs are involved in about 40 per cent of deals in London. In Scotland DVCs back 80.67 per cent of deals from the region while 93.33 per cent of deals in the East Midlands had DVC involvement. South-West England appears the most active region, with 97.08 per cent of deals backed by DVCs in the region. Figure 6.7 illustrates the volume of deals involving LVCs and DVCs per region. Table 6.3 shows regions with the highest and lowest level of DVC involvement at deal level.

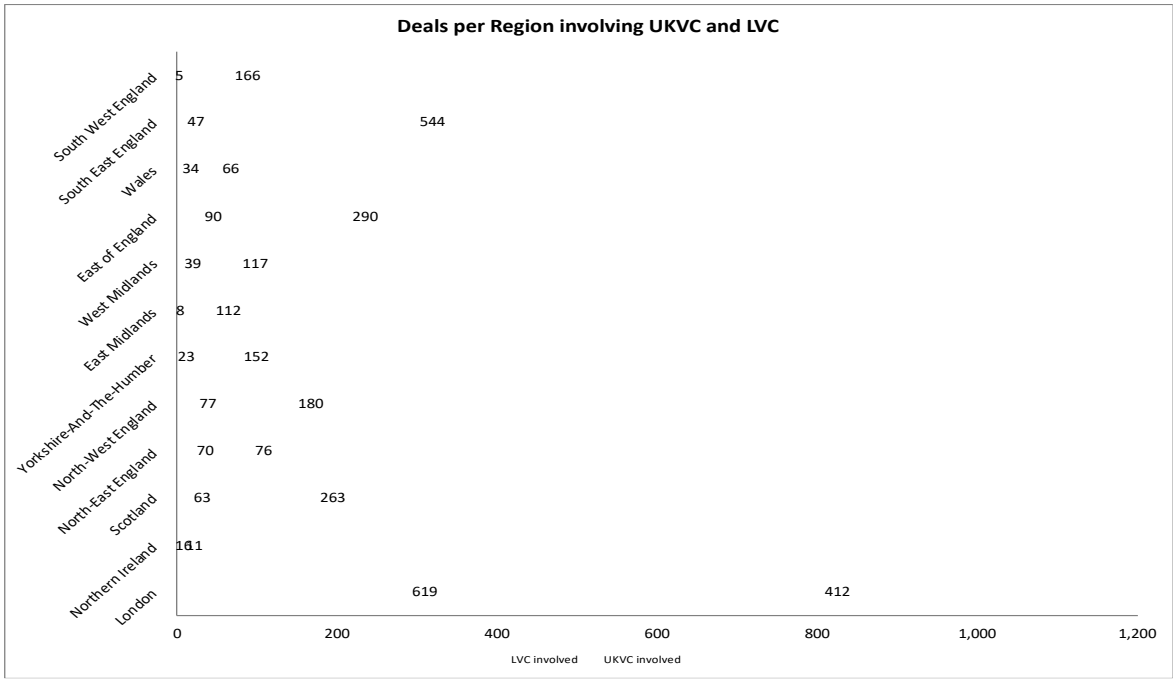


Figure 6.7. The proportion of deals per region involving LVCs and DVCs

6.3.7 Geographical distribution of DVC money in the United Kingdom

The flow of VC investment across UK regions remain uneven. Consequently, to determine the regions where VCs are more involved in cross-regional deals, the first step was to identify regions with clusters of VCs and their backed companies. Based on the results, the focus is narrowed to London, East of England, and South-East England VCs, since they emerge as the top regions. The next step in the process is to trace the flow of money by looking at regions where they are more involved in investment transactions. Specifically, examined the deals in each region that involved London, South East England and East of England funds. The results indicate that only London LVCs were more involved in deals within their region while backing deals from other regions. London VCs were involved in 619 deals in their region, East of England VCs were involved in 90 deals in their region, and South East England VCs were involved in 42 deals in their region. Beyond investing locally, VC funds from the three regions also backed deals from all other regions. Unsurprisingly, when assessing the attractiveness of deals from Northern Ireland, since it has a lower volume of deals, the results show VC funds from all UK regions are less involved in deals in the region. Northern Ireland had a total of 27 deals originating from its own region, which is most of the deals, but the results show that some VCs from London and North-West England also backed deals in Northern Ireland. Figure 6.8 shows the geographic flow of domestic VC deals in the UK.

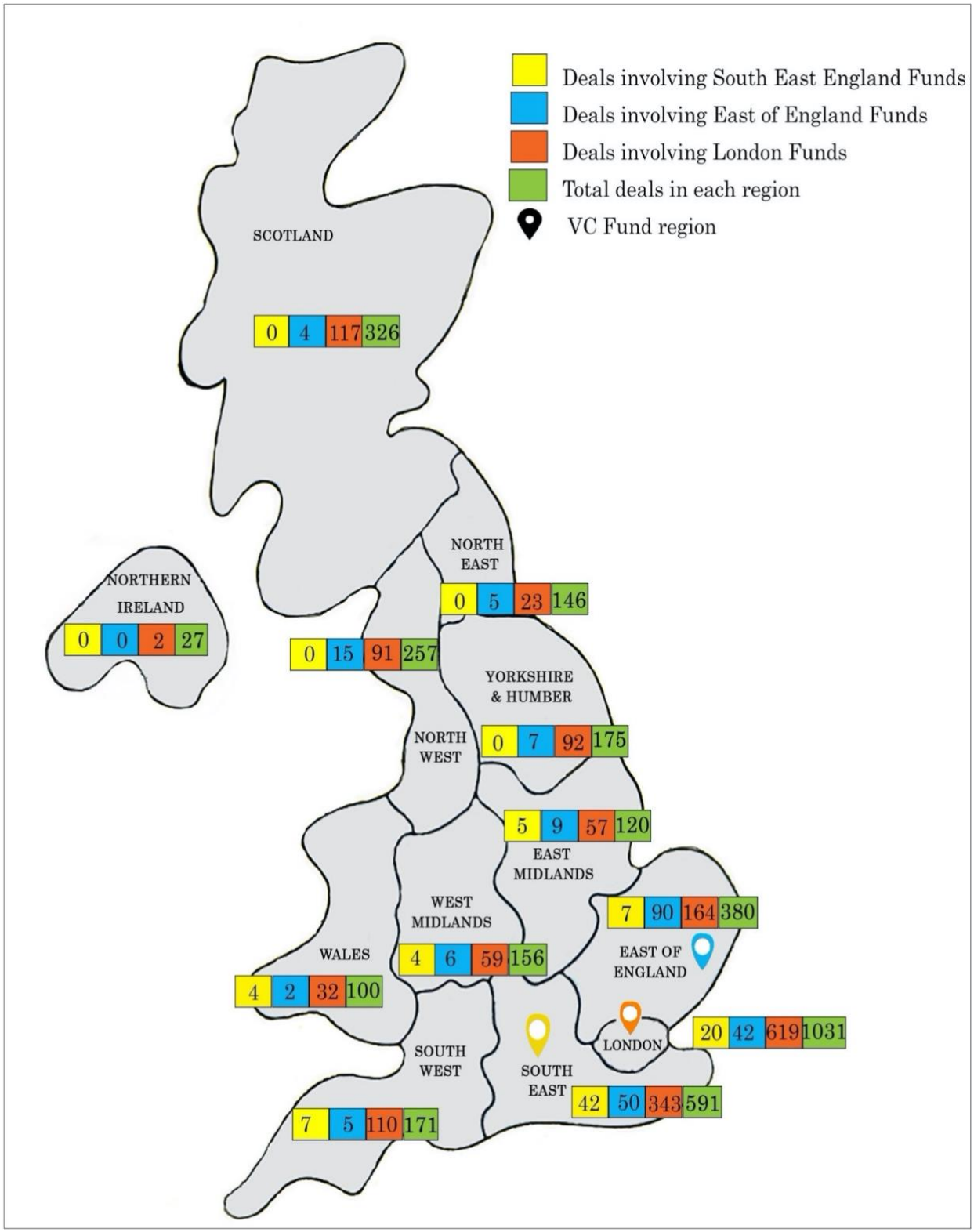


Figure 6.8. The geographic flow of venture deals backed by the top three DVC clustered regions

6.3.8 Top three active VC money providers per region

The top three capital providers for each region are identified and, unsurprisingly, 3i Captive Capital emerged amongst the top three capital providers in seven of the UK regions. While the number of unique investments for each region varied, London had the highest, at 1,030. The Capital Fund made 39 unique investments in a single region – London, and this is the highest number of unique investments by a single fund in any UK region. The Northern region, specifically North-West England, had regional development funds amongst the top capital providers: the North West Fund for Digital and Creative with 17 unique investments, and the Northwest Fund for Biomedical and the Northwest Fund for Venture Capital each with 15. Figure 6.9 shows the top three capital providers per region.

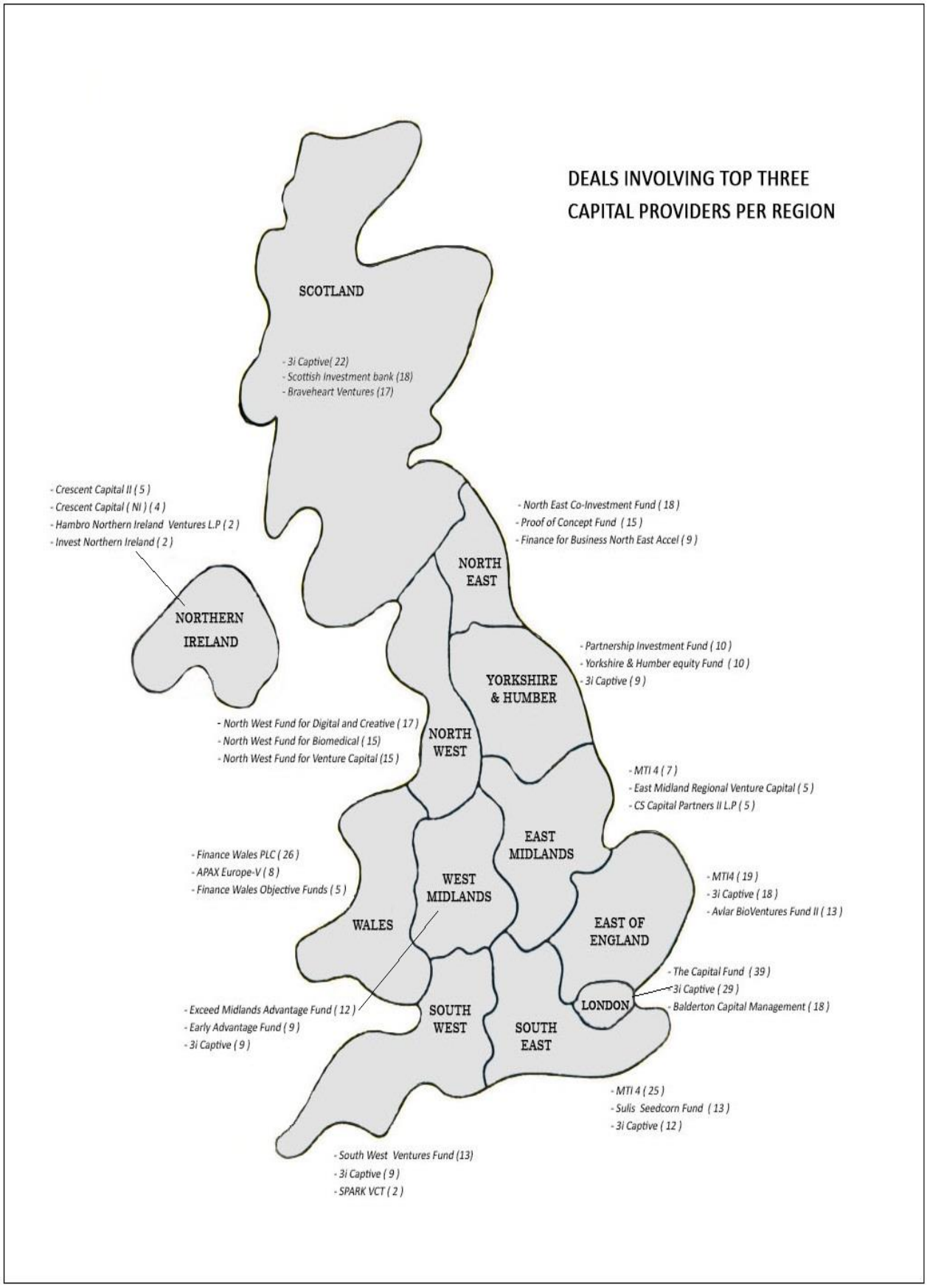


Figure 6.9. Number of deals backed by the top three capital providers per region

6.4 Conclusion

This thesis reveals insights into the annual trend of VC investment, which experienced a continuous decline in the volume of venture funding received by UK companies between 2008 and 2009. The proportion of investment received varies by 2 per cent starting in 2008 through to 2013, but the volume weakened from 2013 to 2017. The results could be influenced by several factors such as the global financial crisis and UK referendum, among other dynamics that might hasten the decline. Firstly, this chapter investigates the investment activities of UK domiciled venture capital funds. Secondly, it examines the flow of investment transactions that took place between UK regions. Thirdly it determines the level of self-sufficiency across the UK regions.

On a nationwide scale, there have been significant changes in the supply of local venture capital investment since 2005. Although the amount of money invested by DVCs might be high, the volume of venture investment in the UK declined by 25 per cent between 2005 and 2015. The decline may be influenced by factors such as the influx of foreign venture capital investment in the UK, since FVCs invest in later stages as well as larger deals. It is inarguable that DVCs and LVCs remain a significant source of funding for UK companies, since 62 per cent of deals between 2002 and 2015 in the UK were backed by DVCs. Unsurprisingly, DVCs are heavily involved in over half of all round one deals, which indicates that DVCs serve as a primary conduit for raising capital at the seed stage of companies' lifecycles.

On a regional scale, there remains an imbalanced proportion of deals, by volume, across the UK regions. Examining the LVC deals within region (e.g. a London LVC involved in a London deal) reveals an outstanding result. As anticipated, 60 per cent of deals in London involved LVCs from London, because VCs are generally expected to be attracted to regions with high clusters of technological and innovative companies (Colombo et al., 2019). London is one such region, with a high concentration of technological companies. In contrast, LVCs from Scotland were involved in 19.32 per cent of deals in Scotland, and LVCs from the East Midlands, South-West England and South-East England were involved in less than 10 per cent of deals from their regions. The volume of deals backed by LVCs in these regions is low because of their reliance on securing funding from external VCs. While this may not look good in terms of regional venture funding, it might not necessarily translate into poor outcomes, since it directly or indirectly represents cross-regional venture investment in the UK.

The results show a high quotient of cross-regional investments by DVCs, confirming that UK companies seek funding from VCs outside their regions of origin. This result could be due to the unavailability of VCs within companies' own regions, which forces companies to seek finance from VCs resident in other regions. Most VC money originates from VCs resident in London, which is unsurprising since London is the region with the highest concentration of VCs in the UK. Only 6.6 per cent of deals in the East Midlands involved LVCs from that region while DVCs backed the majority of deals. Beyond financial backing, a significant reason for companies' decisions to seek funding from investors outside their region may be the need for non-financial support in the form of access to markets, increased sales or corporate clienteles.

CHAPTER 7: VENTURE CAPITAL DEAL ORIGINATION AND NETWORK EFFECT

7.1 Introduction

The venture capital market survives on network infrastructures set up at firm, company and industry level. Aizenman and Kendall (2008) indicate that, in the early 1990s, VCs began shifting their focus from local markets to foreign markets. Schertler and Tykvova (2012) investigate the economic factors that drive cross-border venture capital inflow in European and North American countries. The results show that cross-border venture capital inflows partly compensate for the shortage in supply of domestic venture capital investment. This phenomenon has grown over time to a scale whereby VCs invest in international markets and entrepreneurial firms branch out to seek funding from international investors (Schertler and Tykvova, 2012). Foreign VC investments in separate jurisdictions have various stimulating factors, but what are the actual drivers of cross-border venture capital inflows? In an attempt to address this question, Schertler and Tykvova (2012) provide two lines of argument: firstly, VCs invest abroad to exploit differences in risk-adjusted expected returns between their home nation and the VC backed company's nation; and secondly, they invest abroad because of deal flow considerations and value-adding activities.

Historical information has shown that, since the 1980s, the concentration of UK domiciled VCs is skewed as they are predominantly clustered in the Southern part of the UK (Martin, 1989). This reveals that the distribution of VC investment has long been an issue in the UK, but Schertler and Tykvova (2012) argue that countries with favourable environmental conditions attract more deals than countries with poor environmental conditions. The UK is a country that attracts more venture deals than other European countries, and a combination of factors influence it.

After presenting the literature that attempts to explain the drivers of foreign venture capital investment, this chapter investigates deal origination for cross-regional and cross-border venture capital investment transactions in the UK, specifically, how foreign VCs discover deals in UK regions especially those in remote locations. It examines the extent to which social networks facilitate deal sourcing in the UK. This chapter is concerned with these questions because foreign venture capital investment does not transpire in isolation especially in early stages, when the initial contact may be made by either the foreign VC investor, the fundraising

company or introducers. Hence, this chapter describes the impact and implications of social networks in deal origination, syndication, as a driver for foreign VC deals, and supporting foreign VC backed deals.

Additionally, this chapter presents information based on interviews that was carried out with foreign VCs, domestic VCs, and VC backed companies. The VC backed companies interviewed were technological companies headquartered in London that had raised domestic VC rounds, or foreign VC rounds, or a combination of both. The interview was useful for addressing the unanswered questions that emerge from findings in the descriptive study. The characteristics of the VC firms that participated in the study and the rationale for conducting the interview were presented in chapter 4.

7.1.1 The impact and implications of social networks in deal flow and origination

The study of social networks attracts academics from various fields, recent arguments suggest that network connections are relevant to understanding a wide range of physical and social phenomena (Spier, 2017). Firms form strategic relationships with other firms for various reasons, some of which are aimed at gaining access to scarce resources (Stuart and Sorenson, 2007). Academic researchers widely acknowledge that VCs are mostly involved in deals that originate through referrals from close contacts such as other VC firms, professional contacts, family members and previously VC backed companies (Fried and Hisrich, 1994; Shane and Cable, 2002). As outlined by Stuart and Sorenson (2007), recognising opportunity requires access to privileged information, and social networks act as conduits for the flow of access to critical information. However, they argue that less research has been conducted into how social status affects opportunity recognition.

Lee (2017) argues that social network connections can influence the transfer of human capital know-how and access to deals, particularly in environments that are characterised by limited investment opportunities and information asymmetry. Information asymmetry has long been a barrier, following the non-mandatory disclosure of company statements, especially in early-stage deals where there is no previous track-record of business performance. Information and resource sharing are essential for VC investment performance. Rowley et al. (2005) argue that within a network community, distances are short and internal connections are often close. In most cases, this reduces the transaction cost and enhances the exchange of information among

members of the community (Ahuja, 2000). VCs that operate within network communities easily absorb and acquire resources from the shared community pool. Gulati et al. (2012) argue that VCs continuously exchanging resources may result in resource homogeneity within communities.

Several studies have investigated social ties as a stronghold of VC backed company performance, but these studies are yet to categorically address the question of how social connections help achieve robust performance (Lee, 2017). In VC focused literature, less research investigates network communities, but Bubna et al. (2016) adopt a computational technique to identify VC communities, and find that companies backed by VC communities display more innovation, particularly early-stage funded firms with a poor history of innovativeness. Hochberg et al. (2007) argue that VC networks established through present or past syndication add value to the success of a deal rather than merely providing access to good deals. While forming networks and joining network communities is very important for VCs, Chaokai et al. (2019) argue that moving from one network community to another could potentially result in losing access to resources in the former community which adversely affects the investment performance.

As much as social ties remains a significant aspect of the venture capital industry, the importance of social ties can be extended outside the VC community, meaning ties between VCs and the entrepreneurial community are relevant. Li et al. (2014) argue that cultural distance could negatively affect VC investment performance in three related ways. To better understand cultural distance in the context of this study, Amit et al. (1998) and Dai et al. (2012) describe cultural distance as the distance between two countries following Hofstede's four cultural dimensions: uncertainty avoidance, masculinity-femininity, power distance and individualism-collectivism. Taking the lead from Li et al. (2014), the three ways cultural distance affects VC performance are: (1) it creates communication problems that obstruct information sharing, which is fundamental to the success of any relationship between VCs and their backed companies; (2) by default, cultural distance indicates differences in values and beliefs resulting in variations in approaches to deal selection, monitoring, advice and contracting, which could reduce the performance; and (3) cultural distance could lead to liability of outsidership which, in turn, could directly increase social discrimination and decrease the level of trust (Vaara et al. 2012). On a broader scale, the cultural dimension can affect VC investment performance and relationships with backed companies.

VCs with diverse international experience are often aware of the differences in institutional rules between their sovereign country and the host country. This knowledge enables VCs to operate on an international scale (Johanson and Vahine, 1977 cited in Li et al., 2014). Building on this claim, Meuleman and Wright (2011) suggest that international experience influences VCs' adaptive capability to bridge gaps around national distance. Foreign VC firms backing UK companies are inclined to have some degree of international experience or regional offices that act as facilitators of investment transaction within the UK.

7.1.2 Syndication as a catalyst for both domestic VC and foreign VC investments

Venture fund performance is an essential signal for limited partners. Syndication serves as a route for VCs to diversify geographically and expand their portfolios (Schertler and Tykvova, 2012). Network ties in the venture capital market have a significant impact on deal flow, syndications and fundraising (Lee, 2017). Several elements could trigger VC deal syndication, such as the size of a fund and budget allocation, especially for early-stage venture funds. According to Bruton et al. (2005), foreign venture capital is habitually co-invested along with domestic VCs to gain market knowledge while having some degree of local influence on the institutional environment. Guler and Guillen (2007) argue that co-investing with a reputable foreign fund in a deal could have some positive influence on the reputation of the domestic VC. More interestingly, Schertler and Tykvova (2012) suggest that co-investing in deals allows VCs to spread their limited funds over a more significant number of deals, to generate additional value through the VCs' skillsets, experience and networks.

The presence of a local and knowledgeable co-investor within close geographic proximity to the VC backed company makes it easier for management and operational monitoring of the investment (Makela and Maula, 2008). Devigne et al. (2013) point out that having a domestic VC in a deal helps, since they have a better understanding of the legal and regulatory institutions in their local environment, are similarly conversant with where to find resources, and offer potent business and expansion advice. Domestic VCs have valuable knowledge of local market operations, including deal flow, and have networks that are familiar with various local requirements (Meuleman and Wright, 2008).

Wright et al. (2005) flagged transaction cost as one of the significant pitfalls of investing across borders, since these are higher than domestic investments, and so the variance in return must

exceed the transaction cost in order to justify backing an international deal. Hence, higher return on investments, portfolio diversification, reducing monitoring cost, due diligence and screening cost are all aspects of VC investment across national borders. In contrast, some literature shows that the contractual and regulatory uniqueness of a country has some degree of effect on the transaction and decision to create a syndicate (Bruton et al., 2005). This discrepancy could be more pronounced if one investor operates in a common law system while the other operates under civil law.

7.2 Theoretical Approach

Several studies of entrepreneurship reveal that social networks influence opportunity recognition, entrepreneurial orientation, decision making and growth (Singh, 2000; Lee and Tsang, 2001; Ripolles and Blesa, 2005; De Clercq and Arenius, 2006). The absence of a strong network connection between domestic VCs and FVCs has a direct effect on entrepreneurial growth and regional development in the UK. Syndication occurs with the motive of sharing and reducing investment risk since information sharing and co-investment increase the likelihood of the portfolio company succeeding (De Clercq and Dimov, 2004). Besides risk sharing, there are several other factors that stimulate VC syndication. Lockett and Wright (2004) suggest VCs syndicate with the aim of raising the expected return on investment. Cumming and Walz (2004) confirm that syndication can mitigate risk and increase the VCs internal rate of return (IRR). Beyond the reasons provided for the importance of deal syndication, Gompers and Lerner (2001) suggest that syndication allows each venture capital firm to invest in more projects and broadly diversify their portfolio away from firm-specific risk. This suggests that co-investment provides multiple opinions, which limit the dangers of financing a lousy deal.

Findings by Tykvova and Schertler (2008) suggest that distance reduces consensual cross-border investment, and syndication between FVCs and DVCs also reduces distance effects. Deal syndication improves deal flow while sharing the burden and cost of due diligence across the portfolio (Lockett and Wright, 2001; Sorenson and Stuart, 2001). Examining the relevance of syndication in VC backed deals, Lerner (1994) argues that syndication can mitigate governance problems and help a successful venture exit. Syndication enables skill complementing, since foreign VCs offer knowledge on capital and product markets, especially

in the local nation. This confirms that syndication is formed on the premise of information asymmetry theory. Domestic VCs on the other hand, have local information about legislation, local policies, and operations, among other useful skills. Hence, the relationships between VC firms within the industry reduce spatial limitations for information flow (Pierrakis, 2012) and reduce information asymmetry and monitoring problems (Dai et al., 2012).

A study by Dimov and Milanov (2009) shows that the majority of first-round investments in the US were syndicated. Wright and Lockett, (2003) find that 40 to 60 per cent of first-round deals in Europe are syndicated with a UK fund, which attests to the relevance of the UK venture capital market. Culture has the propensity to affect foreign deals since cultural differences and distance raise the barriers to information sharing, increase transaction costs and reduce trust (Li et al., 2013). This shows how important it is to have a domestic venture capital investor present in a transaction, as it helps eliminate some of these impacts. Venture investment is characterised by several uncertainties which often result in agency and information asymmetry problems. There is a close relationship between agency and information asymmetry, and both are relevant to cross-regional and cross-border venture capital investments. Therefore, this chapter is structured around agency theory and information asymmetry theory.

7.3 Findings

The results of this study are presented in three tiers: the first presents information related to UK domiciled venture capital investors or domestic venture capital investors; the second presents information relating to deal sourcing by foreign venture capital investors backing UK companies; and the third presents information gathered from VC backed companies that either received venture funding from domestic VCs or foreign VCs or a combination of both. A total of 12 interviews were conducted and insights were gathered from 5 domestic VCs, 3 foreign VCs, and 4 VC backed companies. The foreign VCs originate from Germany, Switzerland, and the United States of America while the domestic VCs and the VC backed companies are headquartered in London. The thematic frame is structured to capture the frequent occurrence of each sub-theme during a conversation with the fund manager. The higher the number of occurrences recorded during the data collection, the more relevant the theme is considered to be in the dataset.

For the purpose of data protection, code names are assigned to each interviewee: DVC followed by a number for interviewees from domestic VCs; FVC followed by a number for foreign VC firms; and BC followed by a number for VC backed companies. To identify primary themes, a series of coding and re-coding was carried out. Seven central themes are developed based on data captured from the domestic and foreign venture capital investors. For DVCs, the relevant themes are: *VC experience and investment opportunity, social and professional networks, UK regions,* and *government support*; and the themes for FVCs are; *deal sourcing, co-investment,* and *cross-border distance*. Each theme is covered individually below.

7.3.1 Domestic venture capital investors

7.3.1.1 VC experience and investment opportunity

The data provides rich insight into deal origination within and outside VCs' geographic region of origin. A VCs' national or international experience may influence their approach to deal sourcing in the UK. The result reveal that VCs actively source good quality deals, and this could emerge from their social or professional contacts or through unknown sources. All domestic VCs disclosed that they had international experience, either by having an international office, investing abroad or partnering with a foreign fund. They take an international approach when they back deals within the UK.

A venture partner from DVC 1 revealed some techniques their firm adopts to discover deals from multiple sources: "*We do not just sit down waiting to achieve, we build our profile, connect with other investors and intermediaries who might be active in the sectors that we care about".* This indicates a fair amount of time invested in networking and reputation building with the expectation that it leads to deal flow. They connect with investors and other members of the community with whom they operate to gain more exposure. The partner added that: *"Occasionally when we are investigating a particular opportunity or an idea, especially in specific sectors, we would get proactive trying to look for interesting businesses that are providing solutions in that area".* This confirms that VCs actively search for deal flow and the trigger for VCs' proactiveness to seek deals is typically dependent on their level of interest, especially when the deal is rare within the market. The more scarce the deal of interest, the higher the chances the VCs become hands-on in search of the deal, as this may require them to directly reach out to the company: *"You got to go outbound in order to get good inbound, especially talking about relationships with other investors and intermediaries, so hopefully,*

you get more and more appropriate deal flow on the inbound side". Further suggestions from the DVC 1 partner indicate that the ultimate purpose of an outbound or inbound deal is to have consistent deal flow. This shows the relevance of building a reputation which allows for increased network ties and relationship building with other investors. It emphasises the significance of building a relationship while proactively seeking good deals. There is also an indication that good deals do not surface without some degree of direct involvement from the VCs and the VCs networks.

VC firms have a unique screening and filter mechanism for exploiting investment opportunities. While each fund has a unique strategy, a venture partner revealed the deal screening mechanism they use to identify high quality deals. A VC investor from DVC 3 said that they ask a set of questions which acts as initial filter for deal selection. According to the VC, the first question they ask is: *"Do we think this company will be a multi-billion-dollar company?".* Answering this question requires the VC firm to assess the company's market size, the industry dynamics and the latest trends to determine the ability of the deal to yield a maximum return. Some other questions they ask aim to provide them with the appropriate tools to carry out due diligence, such as: *"Are they creating a brand-new market entirely that is going to be very big and very applicable or are they disrupting an existing market by being 10 times better or 10 times faster, or 10 times cheaper?".* This set of questions indicates that a fundraising company is required to demonstrate their potential to scale and grow exponentially in order to pass the VCs selection process. Unsurprisingly, market size and potential for disrupting an existing market are similarly important deal selection criteria given the signal effect they provide to VCs.

The findings on cross-regional transaction information in Chapter 6 reveal regional variation, as few regions present healthy deals to domestic VCs. The search for investment opportunities surfaces as part of the reason for cross-regional VC investment, since fund managers are consistently in search of exceptional deal flow. This allows them to search for investment opportunities that stretch to the twelve UK regions. The results of the interviews show the relevance of business location during fundraising, which runs contrary to the argument that having a presence in a geographic location allows easier access to VC investment and a company's physical location influences the investment opportunities presented.

A principal partner in DVC 1 suggested that they find opportunities across the UK and do not necessarily search in a specific location. The principal partner indicated that deals are available between the main cities of any region, so: *"You just find that the opportunities are diverse. Scotland is a tiny place, so obviously every major city is within two hours apart from each other".* This explains the emergence of deals around major cities like Aberdeen, Glasgow and Edinburgh, but, more importantly, the huge number of deals originating from cities and boroughs around London, as revealed in Chapters 5 and 6. The statement also reveals inter-city VC investment transactions across major cities that are geographically close. The VC investor added that good deals come from regions with world class academic institutions: *"The south of the UK is a hotbed just because all the top world-class institutions are there".* This explains the high concentration of VCs in South-East England, East of England and London as being due to the presence of world class institutions such as Cambridge University, Oxford University and Imperial University. The results of the analysis in Chapter 6 show a large concentration of VCs in these regions (South-East England, East of England and London) but this may be driven by the increased number of deals emerging from top higher educational institutions. This explains the availability of deals at national and regional level but, to a certain extent, the quality of these deals may not appeal to investors.

The data points to the relevance of human capital in building a successful company, and the continual search for talent is linked to the geographical concentration of VC firms. Particularly, access to the talent pool allows for sourcing the most relevant human capital when building a company. A venture partner in DVC 3 emphasised the need for human capital when building a company with the aim of scaling and growing: *"Again, if you are building a large business, you need an ecosystem of talent"*. The venture partner added that the further away a company is from the talent pool, the harder it is for the founding team to build a company since venture success is mainly dependent on talent and competence. While attracting talent is usually hard, the partner suggested that retaining talent could be even harder, especially when the company becomes successful.

The venture partner from DVC 3 revealed the importance of fundraising early, particularly when there are future plans to expand into foreign markets such as the US: *"If you are going to have a David vs Goliath scenario in the US, then it is better you fight it sooner rather than later. You are better off going in early focusing on the same market rather than later".* Based on this response, a fundraising company that aspires to enter a foreign market is better off

raising a round at the beginning from investors familiar with the foreign market of interest rather than raising later when the company reaches the growth stage. Fundraising early allows easier entry into the intended foreign market, which is often driven by intense competition. When scaling to other jurisdictions, the dynamics of fundraising could be different from the US. The venture partner added: *"Raise money from later stage American VCs rather than early stage so you can raise more and more capital".* Non-US companies that aim to enter the US market are better off raising capital from later stage US VCs to allow for easier fundraising in later stage rounds. However, the practical reality of raising early rounds from later stage VCs remains questionable.

7.3.1.2 Social and professional networks

The presence of an extended network across the wider UK tends to pull investors towards specific regions. For clarity, 'unknown sources' as it is used in this thesis refers to contacts or fund-raising companies that do not have any prior relationship or connection with the VC while 'known sources' are contacts or fund-raising companies that have a prior relationship or connection with the VC. The aggregate data shows that VC firms assess both inbound deals and outbound deals but, unsurprisingly, VC firms receive a significantly higher proportion of deals from unknown sources than known sources. A venture partner from DVC 1 outlined their deal discovery strategy given that they take the initiative to proactively seek deals, especially within domains of interest: *"A good fund manager goes out and talks to different groups and creates a level of awareness to invest and participate in certain fields".* This statement presents networking skills as an integral requirement for high performing fund managers as they are expected to connect with industry associates that deliver deal flow: *"We get many referrals and referred people come through for us. People can refer people they have been successful with; they tell their colleagues they are seeking a particular type of investor".* While there is an element of networking in deal sourcing, the interviewee indicated that deals discovered through networks often meet certain quality expectations for VC investors since they pay more attention to deals from known or referred sources. The venture partner's response shows that VC backed deals discovered through close social and professional networks tend to be a better fit for VCs than deals from unknown sources: *"Those are the ones we particularly pay attention to because it is less random".* VC firms pay less attention to unknown sources than leads from referred sources, largely because of the reputation and trust factor that comes from network sources, which offer a higher level of confidence.

Additional insights from the venture partner from DVC 1 reveal that VCs invest a significant amount of time in their relationships, with the prime intention that the relationship will turn into a transaction in the near future: *"The idea is, if something does not happen now to cement those relationships, then it will happen 12 months from now or 24 months from now, so you keep forging the connection and the relationship".* This suggests that VCs invest time in nurturing relationships with their social and professional networks to access deal specific or related information. The networks span beyond the VC community to corporate and institutional clients which also provide support to VC backed companies. The venture partner added: *"We are constantly building for the exchange of information – that is very important".* This statement suggests that, within each relationship with an institution, corporation or entrepreneur, there is the potential to close a deal or enhance information flow. Information flow has the propensity to generate an exceptional deal for the VC; but it takes time to build the relationship.

Away from deal referrals through social and professional networks, a deal must present some potential for exponential growth. Analysis suggests that deal quality is as important as the deal information obtained through the network; hence, the expectation is that a deal must have the ability to drive high returns to the venture investor. The data emphasises the function of networks in facilitating investment transactions. A venture partner from DVC 5 indicated that they discover deals through a variety of network sources but, like every other venture fund, there is an increased number of companies approaching VC firms for investment: *"We also have a lot of inbound deals with over 3000companies approaching us annually".* This suggest that, whilst networks play an active role in deal sourcing, the proportion of inbound deals appears to be larger than outbound deals. The venture partner stated that the majority of deals they support are inbound, from network sources, while a relatively small proportion are outbound: *"So, I would say probably 90-95 per cent of the deals we look at are inbound, and 5-10 per cent of the things we look at are outbound. However, I would say the majority of the things we do are inbound".* This statement explains the function of a network in facilitating investment transactions within the VC industry, since most backed deals are those from network sources.

7.3.1.3 United Kingdom regions

The responses from the interviewees revealed the preferred investment regions for domestic VCs in the UK. A fund manager at DVC 4 suggested that uneven distribution of money is not an uncommon phenomenon: *"There is always an uneven distribution of funds anyway. I do not think you will find any place in the world that will have even distribution of investment".* A profound insight into the uneven distribution of investment opportunities was shared by a venture partner who specifically argued that historical data on human existence is yet to reveal an equal distribution of resources. Hence, the availability of financial and non-financial resources will remain disproportionate across the world. The fund manager added that this is also common in the US: *"If you look at the US, Silicon Valley obviously and then you have Boston, New York, and then other clusters have emerged, but they are there disproportionate when looking at it".* From the fund manager's response, the uneven geographic distribution of VC monies in the UK is not unique, as there is a similar issue in the US where the VC industry started. The distribution of financial resources is lop-sided even in the US, where regions such as Boston, Silicon Valley and New York have the highest concentration of funding. The fund manager suggested that the funding gap will remain an unsolved issue: "*Never in the history of humanity will there be even distribution of resources or investments across clusters".* Deconstructing this fund manager's statement suggests that the uneven distribution of VC investment in the UK will remain, given the uneven distribution of financial and non-financial resources across the world.

The data reveals VCs to be regionally agnostic, meaning they do not have a geographic preference in terms of investment destination, but they focus on securing high-quality deals. A venture partner from DVC 3 revealed that they are less driven by geographic interest but more driven by high potential deals: *"We do not really look geographically; we look at things that are growing".* Like nomads, VCs move towards regions that present them with greener pastures in the form of high-quality deal flows and pipelines. The venture partner showed that they were more interested in sourcing good quality deals, so the location effect was less important: "*It is not a top-down analysis when looking for deals, but it is more about where I can find fast growing deals and where they happen to be".* While DVC 3 is headquartered in London, the venture partner revealed that they spent more time in Edinburgh in 2019 since the region presents exceptional deal quality: *"I have seen things in Edinburgh more than the usual. So, we do spend time there as well just because good deal flow comes from there".* This supports

the claim that VCs are pulled to regions that presents superior deal quality rather than regions that have high geographic clustering.

The search for high-quality deals emerges as a central reason VCs scout for deals across the UK regions but only specific geographic regions presents them with investment opportunities. The principal from DVC 1 revealed that they search for deals outside their locality but deal quality and access to human capital is central in their investment decisions: *"There is no requirement that it has to be within our locality. It is the quality of the business and the ecosystem that matters. So, you want it to be in a place where you can get the skillsets".* The VCs' response confirms the importance of regional characteristics and deal quality as a stimulant of VCs interest. Additionally, the response confirms that the skillsets of the entrepreneurial team influence investors' interest.

Mapping the geographic location of portfolio companies based on the responses of the participants reveals the presence of good deals in specific UK regions, and shows VCs' interest in UK regions with good deal potential. Unsurprisingly, analysis of cross-regional flow of VC money shows that each firm has at least one portfolio company in London. The respective fund managers suggested they are regionally agnostic when it comes to deal sourcing in the UK as long as the deal is an excellent asset class. The results of the analysis show that three DVCs indicated backing at-least one company in Scotland or South-East England. None of the DVCs interviewed backed any companies in Northern Ireland, Wales, North-East England or Yorkshire-and-the-Humber.

Assessing the regions that are of interest to DVCs, four of them expressed interest in London, three expressed interest in Scotland and South-East England, while two expressed interest in the East of England. None expressed any interest in Northern Ireland, North-West England or the Midlands. The current findings show Scotland to be among the top regions that gained investors' interest, largely due to the presence of better-quality human capital in the region. Surprisingly, there appears to be some degree of relationship between the locations of the backed companies and regions of interest of the various venture partners and principals interviewed. Table 7.1 shows portfolio company locations and the regions of interest indicated by the fund managers ('1' indicates the presence of portfolio companies while '-' indicates they did not mention a portfolio company).

Location of Portfolio Companies	DVC 1	DVC 2	DVC 3	DVC 4	DVC 5
London	1	1	1	1	1
Scotland	1	1	1	-	-
Northern Ireland	-	-	-	-	-
Wales	-	-	-	-	-
North-West England	-	1	-	-	-
North-East England	-	-	-	-	-
Yorkshire-and-the-Humber	-	-	-	-	-
East Midland	-	1	-	-	-
West Midlands	-	1	-	-	-
South-East England	-	1	-	1	1
South-West England	-	1	-	-	-
East of England	-	-	-	-	1

Table 7.1. Location of portfolio companies

In Chapters 5 and 6, both FVCs and DVCs were shown to be primarily involved with companies from London, South-East England and the East of England. When asked to indicate regions that were especially of interest to the investors, the interviewees expressed interest in two of the 3-star regions, and Scotland was added since they have portfolio companies there. They were asked to confirm the reasons for choosing these regions, and their responses were largely the increased deal flow coming from these regions. Table 7.2 shows the responses from DVCs on regions of interest.

	DVC 1	DVC 2	DVC 3	DVC 4	DVC 5
London	1	1	3	1	1
Scotland	1	1	1	.	.
Northern Ireland	.	.	.	.	.
Wales	.	.	.	.	.
North-West England	.	1	.	.	.
North-East England	.	.	.	.	.
Yorkshire-and-the-Humber	.	.	.	.	.
East Midland	.	1	.	.	.
West Midlands	.	1	.	.	.
South-East England	.	1	.	1	1
South-West England	.	1	.	.	.
East of England	.	.	.	.	.

Table 7.2. DVCs preferred investment regions

Tertiary institutions provide ecosystems for nurturing talent. Over time, there have been clusters of VC firms around top UK universities. A fund manager for DVC 4 expressed the firm's interest in world class education institutions that offer good deals: *"We invest in real IP businesses"*. Intellectual property is an important indicator of VCs' involvement in deals and the quality of intellectual property remains a central driver of investment into companies. Hence, VC clusters around good higher educational institutions, since there are exceptional IPs in these institutions which develop innovative solutions. Reputable educational institutions serve as hubs for nurturing human capital.

7.3.1.4 Government support

The domestic VCs expressly indicated interest in the development of favourable policies for venture investments and need for the UK government to provide financial and non-financial support for fundraising companies. A few of the interviewees emphasised the need for institutions to support innovation, and the data does not reveal the type of support required; rather it provides a broad overview. The principal from DVC 1 suggested that current policies around venture investment are unclear for investors: "*We would like to see more policies on incentives. We want to see something more transparent, and clearer because currently, it is more confusing".* This statement expresses misapprehension about current policies that incentivise investment; hence, having clarity on current and future policies may improve investors' confidence to back more UK deals. Additionally, the principal indicated that several early stage companies require financial and non-financial support: *"Some institutions designed to support innovation would also require some direct government support in that early stage".* Hence, direct or indirect government involvement to close the gap would boost the performance of young companies.

Beyond the provision of incentives, a venture partner from DVC 2 suggested the need for policies that could hold companies accountable, particularly on the subject of environmental sustainability: *"Policies that recognise business has some motive beyond the purpose of business profit engine, employment engine, and tax engine".* The government need to start driving policies to encourage more impact-oriented investors to back UK companies. The venture partner similarly pointed out the need for policies focused on environmental sustainability, which expressly dictate the externalities and benefits. The interviewee further indicated that the majority of policy debates are around tax breaks, but the current debate should take a new perspective by extending tax breaks to investment partnerships, which may attract

regional investment. The venture partner from DVC 2 added that there should be more policies that encourage collaboration between higher education and companies: *"I think clustering helps where there is expertise around universities, so I think companies clustering around these places will need support".* The interviewee meant new policy that encourages hands-on involvement between academia and industry would create a win-win for both industry and the academic community. The fund manager revealed the potential for increased collaboration when tax breaks are extended to investment partners, which has the potential for developing regions.

On the subject of desirable policies to benefit the UK VC industry, a venture partner from DVC 3 added that special investment schemes such as EIS and SEIS are beneficial programmes that increase deal flow. However, there were concerns around immigration, since the current Brexit deals do not explicitly state the terms and conditions that will be in place after exiting the European Union: *"The reality of Brexit, the sooner the clarity on immigration would be helpful when considering talent acquisition".* The venture partner expressed concerns that, since access to talent remains a catalyst for venture investment, the conditions on the movement of talent, goods and services should be addressed. These are areas that several interviewees indicated some degree of concern about, given the array of uncertainties surrounding the topic. A venture partner from DVC 5 said: *"Brexit is here, so some of the policies I would like to see is around having some banks take over the role of other European funding coming into the UK".* The interviewee suggested the need for financial institutions to take over the responsibility of European funds since Brexit has been initiated and is anticipated to have some degree of negative impact on the UK. However, the idea of having commercial banks take on this role of closing the funding responsibility remains under-developed.

Some interviewees entered heated discussion about the future of the UK as it exits the European Union. A fund manager from DVC 4 suggested that Brexit should be called off, as it would not benefit local or foreign investors: *"Cancel Brexit is a good policy that will benefit the industry to grow very much".* The fund manager suggested that, rather than the government backing Brexit, there should be more investment made into research and development in the UK. None of the other investors suggested the cancellation of Brexit, but several were interested in policies that could offer a soft landing for Brexit. The interviewee from DVC 4 indicated that Brexit would disrupt the economy rather than improve it: *"Brexit will be hugely disruptive to the UK economy; there will be less foreign investment in the UK and entry into Europe".* This

fund manager emphasised the negative impact of Brexit on the influx of foreign investment into the UK, especially in the education sector. However, the fund manager also made a noteworthy policy recommendation around the movement of goods and people post Brexit: *"Try to attract or import more foreign talent so stuff like entrepreneurship visa, immigration".* The government should be more considerate about the movement of talent, products and services, so that entrepreneurs are not negatively affected to a great extent. The current assumption is that investment activities look good prior to Brexit, but investors' confidence has been lost since the referendum.

7.3.2 Foreign venture capital investments

7.3.2.1 Deal sourcing

Early findings in Chapter 5 show that FVCs were involved in 37.5 per cent of UK deals, but additional questions emerge following the interviews. Specifically, how do FVCs from distant nations discover deals in another jurisdiction? Unpacking the data provides some insight into deal sourcing by foreign venture capital investors. The responses from the interviewees indicates that VC firms in distant geographic locations discover good quality deals through their networks, associates and regional offices. An investment director at FVC 2, which is an American venture fund, confirmed that they source deals through their partner funds in the European market: *"We get to know UK deals because we have a partner fund in the UK that can co-invest in the UK and the rest of western Europe"*. This statement suggests that foreign venture capital firms have local offices in other jurisdictions that act as an investment vehicle within those jurisdictions. Analysing the statement suggests that parent funds could be in another country but their regional funds back deals within those regions. Another perspective on deal sourcing was provided by a fund manager at FVC 1, which is a German VC fund. The fund manager emphasised the role of the network in facilitating deal sourcing: *"This comes down to networks, even here within the Berlin circle, you will find that deal flow is mainly via networks".* This statement confirms the function of networks in facilitating investment transactions for both local and foreign venture capital investors. The fund manager suggested that deal flow is largely through people they know both locally and internationally and that is how they discover deals in the UK. The fund manager indicated that the asset is important, but the network gives them confidence in the asset class.

Deal sourcing requires reaching out to search for deals while getting referrals from close networks. The response from a fund manager in FVC 1 suggests that deal quality and superiority could be tied to deal origin, as those that came from close network ties have superior quality. The fund manager emphasised the proactive approach taken by their firm to sourcing good deals: *"We source deals most times via networks. We mostly go out and find good deals".* This statement implies that sourcing superior quality deals requires deliberate search action by the VC firm, since they are aware of their set requirements. Nevertheless, the internationalisation of VCs has various purposes, such as increased financial returns, diversifying portfolios, geographic expansion and other forms of expansion. The motivation behind foreign funds expanding into UK markets gives some insight into the role of the UK in the European venture capital market. An investment director in FVC 2 gave some context for London as an important geographic location for technological and innovation start-ups in Europe: *"So outside of the US, there are probably two main ecosystems where technology and innovation are happening, and one is Europe and the central place is London, and then China where venture activities take place".* This supports the finding that there is a larger proportion of FVCI in London and explains the international context of London as an investment destination for foreign VCs because of the increased technological innovation taking place in the region. It rationalises the attractiveness of the region to both domestic and foreign VC investors.

7.3.2.2 Co-investment and cross-border distance

The results in Chapter 5 indicate that foreign VCs make stand-alone investments in some UK regions and co-invest in others. The broad perception of co-investment involving FVCs is a mixed signal. The responses from the interviewees reveal that the quality of co-investors, especially lead investors, is a dominant factor. The idea of co-investment is essential, and often emphasised in international venture transactions The results show that VC funds are very particular about their lead investors and co-investors. The interviewees revealed that the quality of co-investors has an impact on the investment, especially the non-monetary value that could be added to the deal. The investment director from FVC 2 provided detailed information about how the construct of co-investment is dealt with in their firm. They co-invest in two ways: firstly through the fundraising company which approaches several investors and forms a syndicate that puts money back into the company; and secondly by leading a round in which they know other VCs in their network will add value to the company, thus the firm reaches out to a potential co-investor to invite them to be part of the deal. So they co-invest either through

the company's network or through their own network. This confirms that network ties play a significant role in co-investment transactions.

The subject of co-investment is important for foreign VCs investing in other geographical regions. A principal in FVC 3 emphasised the relevance of having a good co-investor in a deal considering it a decision-making signal, particularly for foreign deals. The principal expressly stated: *"We are interested in who invested previously, so the quality of the investor is a factor we look at as you expect. We led 85 per cent of our first fund deals. We can find good deals, and then others come in later"*. According to the principal, they prefer to be lead investors in a round because of their reputation in the European VC market. This gives some degree of confidence to their co-investors. However, when they are not the lead investor, the quality of the lead investor is essential to them for any deal they are involved in, as the lead investor must have an exceptional reputation. The follow-on investors are also very important. The quality of investors is important because it impacts on the deal, since they are expected to provide non-financial support to their portfolio companies as they scale and grow. The results of the interviews show that co-investors are signal points for good quality deals, especially when there is a prior relationship. Several responses from the FVCs interviewed show that the quality of the co-investors in a VC deal is critical since it gives foreign investors some level of confidence in the deal.

Geographic distance is perceived less as a barrier for FVCs investing abroad; however, this is dependent on the age and experience of the VC fund. Novel VC funds may want to operate within close geographic proximity to their investment and could expand their geographic scope as they grow and become more experienced. A principal for FVC 3, a Swiss VC firm, said that distance between them and the entrepreneurial firm had never been a challenge, but this may be attributable to the diverse team experience they had: *"Distance is not a barrier, we were in London last week, and we are holding an LP conference in November in London, we were in Sheffield twice in the last four months talking about investments, so we are a little atypical."* The distance between Switzerland and the UK is little challenge since it is less than two hours flight. However, 'home advantage' may also contribute, since European countries have borderless regulatory policies, at least prior to the UK exit from the European Union. A more diverse team can better enhance the internationalisation of a VC fund. The principal explained why distance was not a problem, due to their international approach: *"Maybe because of the nature of our investment area and because we are very international, my co-founder is*

American, and we have a diverse team that is internationally minded". This suggests that a VC fund with a more diverse team can consider more deals in distant geographic regions than a less diversified team. All VC funds are interested in good deals, as long as the deals are within their areas of interest; hence, geographic distance is never a barrier for VCs that consider themselves to be international in their approach.

Since European countries have borderless regulatory policies, a European VC considers backing UK companies like backing home deals. However, concerns were expressed about Brexit, which will change the European funding landscape. Other non-European VCs do not consider distance a barrier, since technology closes communication and monitoring gaps. Some interviewees however did suggest that the presence of a local partner gives a degree of confidence.

7.3.3 DVC and FVC backed companies

This section presents the insights from the VC backed companies, revealing how they secure VC funding. The section presents results, through the lens of VC backed companies, whether distance is a barrier between these companies and their investors, especially foreign VCs. The non-financial value provided by VCs to their backed companies is presented in this section.

7.3.3.1 Deal sourcing

The results of the analysis of the qualitative study suggest that companies which are successful in their fundraising contact an average of 43 VCs before raising investment. Similarly, the companies that previously raised DVC or FVC rounds indicated an existing relationship with the investors beforehand, sometimes forged over a period of years. A founder of BC 2 said that they took deliberate and intentional action to build relationships, with the aim that when their company was raising a round, there would be minimal complications with the fundraising: *"We contacted them a few years ago and we built a relationship with them ahead of when we are raising money."* In this case, the founder made the first contact with the investor to prepare for their fundraising ahead of time. The founder was cognisant that they would be raising an investors round in the future, so they built relationships with the relevant investors. This confirms that the function of social networking is not limited to VC firms but extends to entrepreneurial firms: *"So, we did a lot of networking within the early stage of building the business so that when we needed the money, we already had a relationship without that being*

a challenge to the progress of the business". This statement, from the founder of BC 1, demonstrates that forging relationships with VCs was central to early preparation for fundraising, as they were able to establish trust and confidence in each other. The relationship allowed the investor to understand the business model of the fundraising company.

The results of the analysis show that existing relationships with domestic VCs function as a gateway for the fundraising company to access international VC investment through the DVCs' network. A founder of BC 3 revealed how they discovered the FVCs that backed their company: "*So, two of those funds that we already knew, one of the funds was already a partner to an international fund"*. Before fundraising, the founder had a prior relationship with the VC fund, and through the VCs' network, they were able to access international VC that allowed them to raise an additional round. This partially explains the results in Chapter 5 that shows more DVC involvement in early rounds, while later round had more FVC involvement. Specifically, domestic investors that back companies in early rounds tend to get their international partners involved in later or follow-on rounds: *"The other foreign investor was through an investors' network because a large percentage of investor activity is oriented around building and maintaining a network of relationships to syndicate deals and also to provide good validation in deal flow"*. This statement from the founder of BC 3 shows that raising an FVC round could easily be fostered through an existing relationship with DVCs, but requires the entrepreneur to convince the investor to access their network to generate additional leads.

7.3.3.2 Geographic distance between backed companies and VCs

Insights drawn from VC backed company interviewees indicate that distance between the backed companies and foreign VCs might affect their relationships, depending on the stage of business and the non-financial support required by the portfolio company. Most participants from VC backed companies suggested face-to-face meetings were useful for them, but electronic meetings fostered by technology were also valuable. Responding to a question on distance as a barrier, the founder of BC 3, a company that had raised both DVC rounds and FVC rounds, indicated that long geographic distance between company and investor could affect early stage companies (seed stage to Series A): "*Yes, it affects it. Usually, there is some perception, but there is also some reality of it that if you are far away, you are sort of inaccessible and remote".* However, the founder suggested that this turns out to be less relevant

for growth stage (Series B onwards) since they are already international and, by default, assumed to have a diverse and distributed network. Concisely, distance is mostly dependent on the company's growth stage, the older the company, the less relevant the geographic distance, while the younger the company, the more relevant the geographic distance.

Another founder that had previously raised a Series B round from FVCs revealed that distance was not a challenge for them, despite having distant VCs that backed them in the round: "*No, we do not consider distance to be an issue in as much as our Series B round had distant co-investors. Well, the partner was in London every week, so distance was not an issue".* This reveals the international nature of FVCs, since distant investors regularly travel to meet with their backed companies. However, the response shows that FVCs often commit travel time to support their backed companies, especially when it is a high value deal. Nevertheless, since the distant VC was in their Series B round, the need for FVC might be limited compared to an early stage round. A noteworthy remark was made by a senior executive in a VC backed company which confirmed that geographic distance was not a challenge pre-Brexit, but this may change depending on the outcome: *"I do not think it has been an issue, I mean maybe now with Brexit there are some implications, I do not know, but throughout the years there have not been any issues".* This suggests that, in the future, the distance between backed companies and investors may depend on Brexit, especially immigration law. Other founders confirmed that video calls benefit them greatly in the absence of face-to-face meetings with their VC investors.

7.3.3.4 Non-financial support for VC backed companies

The non-monetary value added by distant VC reveals the diverse characteristics of VC backed companies. VC backed companies lean towards international markets, specifically the US market, which consistently attracts growth-stage companies that aim to scale into foreign markets. The founder of BC 3 revealed some of the non-financial benefits of scaling into the US market: *"From a company point of view, the US allows you to build a bigger business relatively maybe not 10 times larger but pretty large in comparison to what is available here".* This statement indicates that the US market is larger than the UK market, hence attracting UK companies that plan to expand their businesses abroad. The US market is of interest to a significant number of UK companies and the size of the market is an attractive feature: "*A lot of people are interested in getting access to the US market because it is an accessible market, and it is a large market".* However, the founder pointed out a major challenge around devising and implementing a successful market entry strategy; growth stage companies frequently

experience growth challenges without having any form of presence in the US market: *"The challenge is that most businesses that are going Series B plus might have already had a presence in the US because it is difficult to grow quickly and attractively without having some sort of US market presence".* This shows the function of the US market in the growth of UK companies and the non-financial value that distant FVCs add to their backed companies by giving them access to foreign markets.

Studies present a range of arguments about the non-financial support provided by VCs. Detailed insights were provided by an investment director from FVC 2: *"Our job is to build relationships with large corporate networks to work with start-ups so we do things that will open the door for those start-ups to set up partnerships and get investments and hopefully get acquired by those large corporations".* This foreign VC investor supports companies from the start-up and scale-up stages to the exit stage, providing access to a members' community where they can connect with other start-ups, build relationships and forge partnerships. This confirms the type of non-financial value given to VC backed companies, but also demonstrates that strategic relationships are forged with the aim of having seamless acquisitions in the future, since these relationships are formed with potential acquirers very early. The investment director added: *"We also give a huge discount to them with service providers, car providers, real estate and so on".* This suggests community members obtain non-financial support in terms of a global entrepreneurial community that allows partnerships with similar companies or corporations while providing discounted offers on external services or products. These results may be different when viewed through the lens of VC backed companies.

The data shows some degree of variability in the time commitment made by VCs to their portfolio companies. Several VC backed company interviewees revealed having contact with VCs in the early stages of their fundraising but, unsurprisingly, limited contact at the post-investment stage. Several revealed they had weekly meetings with VCs at the initial stages of the fundraising, but monthly after raising the round. The senior executive from BC 4 revealed that VCs become less involved with their portfolio companies after completion of the fundraising: *"Yes, when you are setting up, in the beginning, the VC would be very hands-on, and they will take a step back later".* This highlights the possibility of having limited time commitment from the VC investor at the post-investment stage, but this may vary between VC firms.

From a regional perspective, nearly all the VC backed companies identified London as the region that presented the most opportunities for them, and as the top region for trading and operations in the UK. South-East England was also identified by the founder of BC 2 as one of their preferred business destinations in the UK, at least partially because it is geographically close to London. Transportation infrastructure and networking in London and the South East were also reasons for them being the preferred business destinations. The founder of BC 3 revealed that companies resident outside London, or with fewer ties to London's entrepreneurial and investment community may be disadvantaged: "*London does have the highest density of venture capital around so if you want truly professionalised and add scaled venture capital and you are not in London; you are missing out*." This suggests that the large concentration of financial and human capital in London is a huge benefit for companies in the region. Nevertheless, there is significant level of competition in London, since both small and large companies compete for talent.

The added support offered by VCs to their portfolio companies is mixed, with the most common non-financial values being networking and expansion into foreign markets as such the US. More surprising is a contrary opinion shared by the founder of BC 1, who said that VCs add financial value but offer little non-financial value to their portfolio companies: *"To be honest, VCs do not provide a full range of value beyond the money."* This founder suggested that VCs makes a good investment and therefore have useful benchmarks to compare the quality of deals. Despite the widely assumed notion that VCs provide knowledge, this founder suggested that very few VCs have knowledge that adds non-monetary value to their backed companies: *"Very few VCs have deep, useful knowledge. I think the premium VCs could do that, but I do not think many VCs can do it, to be honest"*. This interviewee thought that only the reputable VCs support their backed companies with access to clients, best practice design, and sales, since they specialise in specific sectors. VCs with prior experience backing software as a service deal, for example, have some knowledge about the challenges of using specific technologies, so their problem-solving skillsets could be beneficial to the companies they finance.

7.4 Conclusion

The results in this chapter show that the prospect of a company raising a VC round is largely dependent on the company's social capital, location and network ties, rather than the deal quality. Often, a fundraising company with good deal quality and strong social or professional network ties to VCs has a higher likelihood of raising a VC round compared to companies that have no prior relationship with a VC investor. Deal flow is mostly dependent on the quality of the VC network as the stronger the network ties, the better the deal flow from the network. Beyond the VCs' network, the location of entrepreneurial firms might not be of much concern as long as the firm is located in a region with high-quality human capital, which is a driver of VC investment. This conclusion is based on the findings which suggest that most VCs pay attention to deals from their networks or outbound deals rather than inbound deals.

Examining the role of social network in sourcing VC deals within UK regions and across UK borders, reveals some unique dimensions: firstly, most deals backed by VCs are discovered from outbound sources, as VCs back only a small portion of inbound deals (5 to 10 per cent), which indirectly shows the role of networks in facilitating investment transaction within the VC industry; secondly, the UK government has a significant role to play in the face of Brexit, as there are widespread concerns by DVCs and FVCs about the ability of the government to provide comfort to cross-regional and cross-border VCs by obliging regional funds to match VC investment in lagging behind regions to stimulate investor involvement; thirdly, promoting collaboration between world class universities and regular higher educational institutions in lagging behind regions could lead to the good practice necessary for high-quality human capital development.

The long debate on the geography of venture capital investment in the UK may continue to remain lop-sided, largely as a result of nearly 30 years of regional imbalance and dominance by London, South-East England and the East of England while other regions receive lower VC investment. The results of the interviews suggest that Scotland is gaining in popularity while the East of England is losing popularity. The US is widely regarded as the birthplace of the VC industry, yet there is a regional imbalance in the geographic distribution of venture capital investment here too, given the dominance of New York, Boston and Silicon Valley. Since the inception of VC funding, McGregor et al. (2019) suggest, there has been an uneven distribution of financial capital and wealth across the world.

The results at round level show a higher proportion of DVCs back early-stage companies because they operate within domestic markets, but the pattern changes when companies diversify into foreign markets. Evidence from the analysis in Chapter 5 reveals that FVCs back companies in later rounds, especially as the companies attain growth and seek to scale into international markets. Several explanations present themselves for why FVCs prefer to invest in certain regions, primarily the quality and stock of domestic companies and the availability of human capital (Aizenman and Kendall, 2012). London and the South-East are continually attracting more VC investment than any other region, projecting an increasing demand for money by fundraising companies. The presence of high-quality entrepreneurial firms in these regions is a significant attraction for VC investment in these 3-star regions.

Domestic VCs perform the function of increasing companies' readiness to scale internationally, since they offer advice on operational management, contacts and local market knowledge (Mäkelä and Maula, 2008). The strength of the network ties between foreign and local VC funds can be credible deal flow information, and this could be a reason for some regions like London and South-East England having higher co-investment activities than other regions. Poor network connections reduce a company's opportunity to receive financing from DVCs or LVCs (Jaaskalainen and Maula, 2014). DVCs in the North and the Midlands regions may have limited ability to establish strong social ties with foreign funds which significantly influences their venture financing (Aldrich and Zimmer, 1986; Jaaskalainen and Maula, 2014; Wang, 2016). These regions are mainly dependant on publicly backed funds, and some argue that public sector venture capital funds may not be as 'smart' as their private sector counterparts in terms of adding value (Schäfer and Schilder, 2009) and therefore may not appear to be attractive co-investment partners for FVCs.

CHAPTER 8: CONCLUSION

8.1 Introduction

The internationalisation and localisation of venture capital investment are characterised by uncertainties. However, social capital has a notable function in fostering investment transactions both within and across borders. This research uncovers the internationalisation and localisation of foreign venture capital investments in the United Kingdom; specifically the geographies, evidence, impact and implication of cross-regional and cross border venture capital investors in UK regions. With background information presented in Chapter 1, this study addresses a set of questions related to the proportion of foreign venture capital investments, their pattern of investment across the UK regions and the investment pattern of domestic VCs across UK regions (whether they co-invest in other regions or only invest locally). The study investigates deal origination for domestic and foreign VCs as it uncovers the UK regions that are self-sufficient in VC financing. A portion of this thesis investigates deal origination and network effects in domestic and foreign venture capital backed deals in the UK, revealing the depth of VC investment transactions across UK regions and across borders, driven by network ties and relationships. The results of the qualitative analysis show non-financial value added by foreign VCs to UK backed companies.

This chapter is concerned with the contributions of this research to theory, practice and policy. Firstly, a summary of the findings of the research is presented along with the core discussion around the geographic flow of VC money at regional level, the origin of deals for foreign and domestic VCs, co-investment and the regional self-sufficiency of venture capital investment in the UK. Secondly, the theoretical and empirical contribution to knowledge is presented to support the argument that cross-border and cross-regional VC investments are influenced by networks ties and human capital. The literature on the flow of VC investment, FVC and regional development and the geography of foreign VC is discussed. Thirdly, policies are recommended that would increase the supply of VC finance to support UK entrepreneurs, and which directly reflect the nation's economy. This thesis suggests that network ties, proximity within networks and high-quality human capital facilitate an increased rate of cross-border transactions. It suggests that strong network ties increase information flow about investment opportunities and the evaluation of deal quality, and that strong network ties attract culturally distant VCs to invest in the various UK regions.

8.2 Summary of Findings

The findings in chapter 7 provide some indication on the changing nature of cross-border and cross-regional venture capital investment. However, it may require additional empirical research with larger sample size of foreign VCs, domestic VCs, and VC backed companies to uncover their view on geography.

8.2.1 Geographic flow of VC money in UK regions

The key findings of this thesis show significant differences between the UK regions, as 37 per cent of all VC backed companies in the UK, between 2002 and 2017, received investments from one or more foreign VC investor. The results reveal that around 50 per cent of all VC backed companies in London and the East of England received FVCI, but less than 20 per cent of VC backed companies in the Midlands, Yorkshire-and-the-Humber and Northern regions received FVCI. This result is largely influenced by the increased concentration of entrepreneurial firms in the 3-star regions, with nearly 34.5 per cent (one in three) of the 5.9 million UK businesses located in London and South-East England (House of Commons Library, 2019). FVCs are involved in 42 per cent of early rounds in London and 35 per cent in the East of England; however, this is not the same in the North, at 7.6 per cent in North-East England and 12.44 per cent in North-West England. These results in the Northern region are unsurprising, since the region has the lowest proportion of UK businesses.

The results presented in Chapter 5 reveal the investment pattern of FVCs as they co-invest in regions such as London, Southern England, Scotland and the Midlands but make standalone investments in other UK regions such as the North of England. The quality of co-investors is significant to FVCs involvement in other jurisdictions, and the findings presented in Chapter 7 reveal the motive behind VCs' decisions to make standalone investments or co-invest in specific regions. To a large extent, the results suggest that the quality of co-investor is a determining factor in FVCs' investment decisions. London is revered as a European tech hub, and the majority of VC interviewees involved in this study expressed interest in the region. The concentration of high-tech companies in London attracts the interest of local and international VC firms reflected in the high proportion of interest registered in the region by interviewees. This directly confirms the presence of high-quality human capital in the region, which develops high-tech solutions for local and international markets.

FVCs generally lack close geographical proximity with their portfolio companies, and this has implications for both the portfolio company and the host region. VC money is smart money (Sorensen, 2007) as investors actively support the company to grow with hands-on involvement and regular interaction (Pierrakis and Saridakis, 2017). Given the extended geographical distance, it is challenging for foreign funds to offer hands-on support to their backed companies, especially compared to domestic funds (Chen et al., 2010). To address this challenge, FVCs often syndicate investments for distant deals with local partners that are within close proximity to the deal (Fritsch and Schilder, 2008). Nevertheless, the results of the analysis of patterns of FVC investment at the regional level show several UK regions where around half of all FVCIs are standalone investments. When FVCs co-invest with domestic VCs, the results show that the domestic co-investors are usually located in London, which is contrary to the expectation that FVCs co-invest with local VCs from the same region as the company.

Several factors influence these results: firstly, the presence of closer ties between foreign investors and local investors in various UK regions, as per previous findings by Aldrich and Zimmer (1986), Jaaskalainen and Maula (2014), and Wang (2016), confirms that strong social ties between VCs influence venture financing; secondly, the high concentration of high-quality human capital in London and South-East England attracts FVCs to back deals from those regions, and the presence of high-quality entrepreneurial firms in London attracts a large proportion of FVCs to back deals in these 3-star regions; thirdly, the presence of high-quality co-investors in the region attracts FVCs to invest there; and lastly, the previous track records and reputations of the co-investors attract FVCs to co-invest in certain regions.

8.2.2 Co-investment and regional self-sufficiency

The increased presence of FVCIs in the UK can be a double-edged sword. On the one hand, firms in receipt of finance from FVC funds benefit in terms of resources such as international knowledge, networks and reputation, which enhance the portfolio companies' growth and development internationally (Makela and Maula, 2006; Devigne and Manigard, 2013). Along with FVCs improving the quality of the companies and their chances of exiting, the findings suggest they become increasingly significant in later rounds and a dominant supplier of company finance in specific UK regions. On the other hand, FVCs may be interested in relocating the company to their home countries, negatively impacting the local economy. In addition, regulatory controls around Brexit may have significant implications for FVC funds

that invest in UK companies. Although the vast majority of FVCs operating in the UK are US based, there is still uncertainty about the direct and indirect implications of Brexit for the investment appetite of US-based VC funds backing UK companies. A potentially significant decrease in FVC investments would have severe implications for the VC industry especially in regions such as London, South-East England and East of England where FVC is more active.

The emergence of Northern Ireland and London as the two central regions of VC self-sufficiency is primarily driven by the uniqueness of the regions. Insights drawn from the perspective of Northern Ireland suggest the possibility that some of the local venture funds backing companies in the region originate from the Republic of Ireland, which is geographically nearby, and the national governments have jointly established a government-backed venture capital fund to support entrepreneurial activities in the region. This partially explains why the region appears to have a high level of self-sufficiency. London, on the other hand, has the highest clustering of VC funds in any UK region. It is the financial capital of Europe, which suggests a high volume of investment transaction taking place in the region. Hence, the long distance to the other regions and the high concentration of venture capital funds in one region are reasons for the low level of self-sufficiency in certain regions. Proximity between entrepreneurial firms and the VC community influences the level of cross-regional VC investment. The complexity of London is remarkable, and the region being in close proximity to South-East England and the East of England, explains the low level of self-sufficiency in these regions. The two Northern regions have regional investment funds backed by the government, which may explain the low to mid level of self-sufficiency in both.

Following this array of evidence, it is indisputable that cross-regional venture capital investment in the UK is influenced by the location effect and the availability of high-quality human capital. A local VC fund located in Glasgow may seek investment in other UK regions such as London or South-East England, since there is the availability of outstanding human capital in these regions. Traditional location theory supports previous findings that the 3-star regions have been the dominant regions for VC investment in the UK for nearly three decades (Martin 1989). In contrast, deal location in the UK has a great influence on the flow of capital. Specific geographical locations have better deal quality, and the attractiveness of a region in terms of conditions such as ease of doing business, nearness to markets and availability of human capital, all play a role in venture financing.

The existence of an active VC market in London may balance out the potential concerns resulting from London's heavy dependency on FVC funds. In contrast, regions with less active VC markets, for example East Midlands, Wales and Yorkshire-and-the-Humber, are more vulnerable to the risks associated with FVC investment. This calls for a balanced approached, as policy makers at the national and regional level explore options to encourage FVC investment in the UK. A coherent policy approach should not be limited to attracting FVCs, but should seek to strengthen the domestic VC market (Bradley et al., 2019). The efforts of regional authorities should focus on attracting FVC investments that are closely linked to regional industrial strengths and aligned with their regional development strategies. They should also encourage co-investment with local funds at the expense of standalone investment by foreign funds.

8.2.3 Deal origination for FVC and DVC

The findings of this study shows that FVC backed deals are largely driven by social and professional networks with ties to domestic VCs or entrepreneurial firms. Drawing from Crick and Spence (2005), relationships between VCs and fund seeking companies are often established with the aim of having a soft landing during fundraising. Friendship ties enhance the identification and exchange of information for new opportunities. This supports findings which depict preliminary contact between investors and fundraising companies as either initiated by the fund seeking company or the VC investor. The investor-investee relationship takes time to form but, once established, has the propensity for high conversion. The results of this thesis are consistent with Guler and Guillen (2007), showing that distant FVCs and entrepreneurial firms repeatedly leverage their networks to source deals in foreign nations and this is a result-oriented model for seeking deals across national borders.

The majority of DVCs and FVCs suggest they are mostly involved in deals they source directly by themselves or deals that originate from their networks, and they rarely back deals from unknown sources. This shows that companies which have previously raised VC rounds are aware of the ability of relationship building, especially with distant VCs, to allow seamless fundraising. As evident in the findings of this study, VCs have a diverse interest in UK regions based on the suitability of their investment thesis, among other areas such as deal availability. The concentration of VC funds in London makes fund seeking companies actively approach VCs in the region, especially when they are raising early rounds. This confirms that London

has excellent asset classes which is attractive for VC clustering. Martin (1987) supports this claim in an early piece of research which suggests that most regions in the UK are dependent on London as a source of venture financing.

To a great extent, the internationalisation of VCs is dependent on the age and experience of the firm. The wider ideology shared by VCs, explored in Chapter 7, is that distance is not a barrier to investing in foreign geographies. The results indicate that younger VC firms prefer to limit their geographic coverage to areas within close proximity but, beyond age and experience, they are dependent on their social network in the foreign nation. VC firms with lengthier years of experience tend to have less restriction on geographic coverage, while younger VCs have limited geographic coverage. The years of experience gained by older VCs translates into an extended network of corporations, institutions, entrepreneurs and partners, which allows them to diversify into foreign nations. A principal in FVC 3, which is an older VC firm, suggested they had a huge network across the VC industry including multiple geographical regions, which enabled them to search for the most suitable deals. This undoubtedly reaffirms that firm size, age, networking and experience are important factors that allow VC investors to expand their portfolios to foreign countries. Hence, some VC investors back companies in other continents regardless of the geographic distance between the company and their head office. Younger VCs take a similar perspective when examining geographic distance, which is in accord with Aizenman and Kendall (2008), that distance, common language and network ties are positively related to investment flow. However, this may not apply to VCs that have gone through single or multiple funding cycles.

The findings of this study support those of Bottazzi et al. (2016), that trust is a catalyst for investment and investment behaviour; hence, trustworthy nations attract foreign investment from other nations. The UK is among the top European nations for providing high-tech solutions, which is a good signal to foreign investors on the deal quality that originates from the nation. Most VCs are more receptive to deals that come from close sources or networks than deals that come from unknown sources. This finding supports Sorenson and Stuart's (2001) argument that VCs have more confidence in deals that originate from friends and family, networks or previously backed entrepreneurs. This study confirms that the degree of influence of VCs' social capital frequently influences cross-regional and cross-border investment transactions. Literature including Singh (2000), Lee and Tsang (2001) and De Clercq and Arenius, (2006) indicates that VCs receive deals from networks, and the findings of this study

confirm that VCs go out in search of deals but often access them through their social and professional networks. They get deal referral by actively searching for deals. The majority of VC interviewees expressly indicated that they put themselves out in search of deals.

8.3 Theoretical and Empirical Knowledge Contribution

This study commenced with a focus on contributing to the existing literature on the geography of venture capital in the United Kingdom. Specifically, the research has been extended to cover the geography of foreign venture capital investments in UK regions. The findings of the study are drawn from both foreign and domestic venture capital investment datasets that concentrate on UK regions between 2002 and 2017. This chapter supports the theoretical argument that cross-border and cross-regional VC investments are influenced by social network connections and the availability of human capital in specific regions. The chapter contributes to the existing literature by exerting a theoretical and empirical contribution that demonstrates the function of FVCs in promoting regional development in the UK. The thesis informs practitioners about the role played by FVCs in promoting entrepreneurship in the UK while identifying regions that require increased entrepreneurial activity to stimulate regional development, especially after Brexit. The results are beneficial to investors as they reveal regions in high demand for VC investment. Policy makers should be aware of regions that require more investment in order to improve on regional growth and development. Discovering FVCs' patterns of investment provides clarity for UK companies and entrepreneurs seeking funding from FVCs, by informing them of the appropriate stage (early or later rounds) to approach FVCs for funding.

The literature explored in Chapter 2 reveals the theoretical underpinnings of cross-border venture capital investment and cross-regional venture capital investment. Until the first quarter of 2020, few studies had attempted to comprehend the directional flow of venture capital investment in the UK or, more expressly, foreign venture capital investment and cross-regional venture capital investment. To some extent, the newly established literature on internationalisation and localisation of the directional flow of venture capital investment in the UK provides some clarity on the subject. Although venture capital investment assesses deals using several components, this may vary on a fund to fund basis given their individual characteristics. Existing literature indicates several trends, investment patterns and funding gaps between the North and South of the UK, which is expanded on to include deal characteristics using numerical and non-numerical data.

Previous studies on the geography of venture capital money in the UK, US and Europe have largely involved the use of questionnaires or regression analysis on large datasets to ascertain the geographic distribution of venture capital investments with a core focus on domestic venture capital investment (Martin, 1989, 1999; Mason and Harrison, 1991, 2002; Sorenso and Stuart, 2001; Mason, 2007; and Chen et al., 2010). Therefore, this study contributes to the literature on cross-border venture capital investment, cross-regional venture capital investment and regional development in multiple ways.

8.3.1 Contribution to the literature on the geography of cross-border venture capital investment

The contribution of this thesis is to provide a holistic and broad analysis of the flow of foreign venture capital investment in the context of domestic and international VC funds backing UK deals. This study is unique in following extensive tracking of the flow of VC money in the UK at both national and regional scales. The research contributes to the literature on venture capital investment by proposing an additional framework for increasing foreign VC involvement in UK deals, which is summarised in the contribution to practice and policy section. Since the 1980s, the UK venture capital market has been flawed, with an uneven distribution of capital. New findings indicate the likelihood of the flow of VC money remaining imbalanced for a few more decades. There are lagging behind regions in nearly every nation with a functional VC industry, as evident in Mason and Harrison (2002), Mason (2007), Cumming and Dai (2010) and Colombo et at. (2019). These studies reveal a lop-sided geographic clustering of VCs as some regions have higher concentrations of VCs than others. For decades, the US VC market has predominantly been located in New York, San Francisco (Silicon Valley) and Boston. In practical reality, the US has the leading concentration of large venture capital funds, termed super VC funds, but the regional concentration of VC money is unevenly distributed across the entire country. There is a similar imbalanced distribution of capital in the UK VC industry, with most VCs located in the 3-star regions (Martin, 1989; Mason and Harrison, 2002; Mason, 2007). The debate around the geography of VC has survived for a long time with barely any noticeable change over the past decades.

Reviewing the VC literature that analyses and tracks the flow of venture capital investments within and outside the UK shows that no studies, including Martin (1989) or Mason and Harrison (2002), have examined the directional flow of cross-border VC money in the UK. Therefore, this study adds to the literature on the geography of venture capital investment by

examining the internationalisation and localisation of foreign venture capital investments in UK regions. The study addresses areas that have not been covered in earlier studies by examining the pattern of investment of foreign VCs, their regional appetite in the UK, year-on-year trends of FVC financing in the UK, regional distribution of FVCI, the allocation of FVC at regional level, and the proportion of companies that receive FVCI across all 12 UK regions. Additionally, this study contributes to the literature by revealing co-investment at regional level using views of VC practitioners on the rationale for making standalone investments in some UK regions while co-investing in others.

The results presented in Chapter 5 reveal that FVCs are more involved in later rounds than early rounds. Excerpts from the interviews provide a partial explanation that it is due to the VC backed companies' involvement with DVCs. The results show that domestic VCs back companies in early rounds but support the portfolio companies to get follow-on funding from foreign VCs since they have network ties with the FVCs. New results from the interviews explain the mechanics behind FVCs making standalone investments in specific UK regions largely because they are unable to get good quality co-investors to give them some degree of confidence. They co-invest more in some regions principally because of the high quality co-investors involved. Therefore, syndication and trusted social contacts play a vital role in the area of deal sourcing and information signalling.

The research reveals large disparities in FVCI in the UK regions, implying that some regions attract more FVCI than their counterparts, as is evident in the case of London which continually attracts foreign VC investment. This is consistent with the findings of Mason and Pierrakis (2013) in their analysis of UK VCs. The Northern parts of England, Wales and the Midlands have a low proportion of FVCI. The location characteristics of London explains the region's dominance in FVCI and cross regional VC investment. Mason and Harrison (2002) reveal that London and South-East England have high concentrations of technology companies, and this is supported by the findings in this thesis that there is a high concentration of VC backed companies in these regions. This range of evidence indicates the attractiveness of the 3-star regions in the UK. Regions with a lower proportion of FVCI have lower levels of entrepreneurial activity to stimulate FVCs' interest, which may be due to a shortage in the supply or quality of human capital (Aizenman and Kendall, 2012). This contributes to location theory principally because the regions with better talent, infrastructure and entrepreneurial activities attract increased VC investment.

As presented in Chapter 5, FVCs patterns of investment show that they prefer to make standalone investments in specific regions, and they co-invest in others. This could be influenced by the strength of network ties in various regions, which influences credibility and deal flow information. Some regions have higher co-investment activities than others, but the particularity of London and South-East England is unsurprising. Nonetheless, the proportions of co-investment are low in regions such as North-West England, Yorkshire-and-the-Humber and the Midlands. The rationale for variation in co-investment is, according to Cumming et al. (2016), partially linked with co-investing with FVCs being likely to yield higher proceeds especially when exiting through IPO. Several other studies show a positive effect of co-investment on VC backed companies, but this thesis does not ascertain whether companies that receive co-investment funds perform better than companies that receive only standalone FVCI.

This thesis suggests that cross-border venture capital investment is supported by the theoretical insights found in social network theory, human capital theory, agency theory and information asymmetry theory. The thesis highlights that cross-border venture capital is not deterred by company location, particularly where there are high quality deals. Foreign VCs are more interested in other elements that give deal confidence, such as deals discovered through their social or professional networks that consist of robust teams or the deal having uncensored and transparent information. Consequently, team characteristics (human capital), network ties and access to high-quality deal information from the founding entrepreneurs, partners and co-investors create confidence that attracts distant FVCs to back UK deals. This thesis contributes to theory by adding that relationship building (social networking) breeds trust between investors and entrepreneurial firms for transparent and reliable flow of information (information asymmetry) that minimizes the agency problem (agency theory) and grows FVC investors' confidence to make standalone investments.

8.3.2 Contribution to the literature on the flow of cross-regional venture capital investment

An extensive section of this thesis examines the movement of venture capital money in the UK by observing the pattern of domestic and local VC investment activities, the investment trend over the 12 years of the data, the top VC funds involved in deals in each region and, lastly, inter-regional VC investments. Extending these assessments to the regions, especially at cross-regional scale, shows new findings that are inconsistent with the research of Colombo et al. (2019), which suggests that entrepreneurs exhibit local bias by fundraising from investors that

are within a short distance of their company location. New findings in this research do not show any geographical restraint on fundraising from VCs outside the entrepreneur's region. The results of the empirical analysis and views from VC practitioners indicate that VCs navigate in the direction of exceptional asset classes, regardless of the deal location. This is attributed to the practical reality that entrepreneurs' local regions may be VC deficient or lack relationships with VCs, forcing them to extend their reach to VCs outside their region. Since this research analyses the flow of money provided by LVCs and DVCs, deal location might not be a barrier for VCs accessing external investment opportunities in other UK regions. The flow of information within a network may influence venture financing, since deal sourcing and deal intelligence are strong elements of network connection, especially at the regional level.

Several aspects of this study present a new rationale for why London deals attract nearly 40 per cent of DVC in London, unlike deals in the Northern, Midland and Southern regions. The deal location and clustering of investors in London makes it convenient for VC involvement since the majority of UK companies and VC investors are located in London. It equally reflects the quality of UK deals and the openness of UK regions to DVCs from other regions participating in cross-regional deals. The argument presented by Stuart et al. (1999) supports this research, since entrepreneurial firms' access to external VC money, and VCs' involvement in deals signifies their endorsement. In generic terms, the presence of exceptional human capital at regional level attracts VC financing but, beyond theoretical underpinnings, the results presented inform investors, academics, policy makers and practitioners about the UK regions that offer increased entrepreneurial activities. More importantly, the results present the regions that are open or closed to cross-regional venture capital investment in the UK.

Another new finding is that the majority of the VC interviewees had no preference in terms of regions as investment destinations. This is linked to a systemic default setting that investors are pulled towards destinations that offer attractive deals, which is common to both domestic VCs and foreign VCs. Previous findings presented by Tykvova and Schertler (2008) suggest that a favourable legal environment has that potential to facilitate increased domestic VC investment while attracting foreign investment to a region. To a certain extent, anecdotal evidence suggests that various tax incentives such as SEIS, EIS and VCT pull foreign VCs towards backing UK deals, however, the deal quality emerging from specific UK regions is also an attractive feature. The outcome of Brexit may have some degree of impact on the relationship between distant VCs and UK companies. Restrictions around immigration and

movement of goods and services may have a negative impact on the UK economy, especially in the case of a so called 'no-deal' Brexit.

The results of this thesis contribute to the debate surrounding the geographic flow of VC money at regional level, indicating that the flow of venture capital investment in the UK will continually move in the direction of regions that offer high quality deals. The findings are supported by social network theory, location theory and agency theory. The new findings show that VC deals across regions are facilitated by VCs' networks, and the contribution to social network theory is that inter-regional investment transactions are primarily influenced by network ties between local VCs and domestic VCs at regional level. Information about distant deals is often transmitted through network ties, so poor ties between regions lead to reduced confidence and trustworthiness of investment-related information (Huberman, 2001). A similar contribution to location theory is that companies located in regions with access to better infrastructure, talent and information have a higher likelihood of attracting both LVC and DVC investment. This research adds a new argument that fundraising companies gain VC investors' confidence when there is an existing relationship, thereby reducing the occurrence of agency problems. The research establishes that company location and the distance between the investor and the entrepreneurial firm are less relevant to VCs especially when the deal stands out amid other asset classes. Furthermore, deal involvement is largely dependent on the institutional context that allows VCs to build relationships that convert to deal discovery and investment transactions.

8.3.3 Contribution to the literature of FVC and regional development

Several pieces of literature including Mason (1987), Martin (1989), Mason and Harrision (1991, 2002) and Martin et al. (2005) show regional imbalance in the geography of venture capital investment in the UK. The 3-star regions have maintained dominance in the regional concentration of VC funding but, aside access to finance, these regions offer a pool of know-how and accessible talent, making it convenient to finance companies within these regions. Other studies, such as Chen et al. (2010), show that VCs' proximity to their backed companies is significant to them, as it facilitates performance monitoring. New findings in this study show that VCs are less concerned with deal location in UK regions, but this is largely dependent on the age and experience of the VC firm. The increased flow of regional investment in the 3-star regions is mainly backed by network ties and the availability of high-quality human capital.

Nevertheless, additional support structures in location theory focus on the spatial concentration of economic activities that appeal to cross-regional and cross-border VC investors. Hence, regional economic activity remain a key element, driving regional growth and development.

Social networks facilitate the identification of business opportunities and, at the same time, act as conduits for the spread of relevant deal information (Aldrich and Zimmer, 1986). VC social ties breed information sharing based on mutual trust, and such information sharing could be beneficial to attracting VC money into specific regions. The more open a network connection is in the UK, the more information is shared between VCs and entrepreneurs across regions. The study by Wang (2016) is supported by this research, that social ties have an influential effect on venture financing since strong ties reduce the cost of deal screening. Deal origination in distant geographic locations in the UK is often bred through network ties with local VCs, corporations, entrepreneurial networks, family and friends. Therefore, this research suggests that the VC market will continue to thrive on social and professional networks that facilitate investment transactions especially in foreign jurisdictions. Furthermore, social networks still play a role in standalone deals, following VCs' proactive search for deals. Hence, FVCs making standalone investments suggests the absence of strong network ties with other VCs in the region.

This study presents the significance of social networks in sourcing deals for FVCs in UK regions. Guler and Guillen (2007) study the effects of social networks in the internationalisation of VCs, and their findings suggest that home country syndication networks positively influence VCs expansion. This is consistent with the results of this study which show distant FVCs often leveraging their networks to source deals in foreign nations, which has proven to be a result-oriented model for seeking deals across national borders. The presence of venture capital firms in any of the 12 UK regions allows them to perform the function of regional ambassadors, connecting and informing VCs within their close-knit networks about good quality deals. Specifically, a VCs' network that invests in local companies directly contributes to the region's development and entrepreneurial economy. An argument presented by Jaaskelainen and Maula (2008), and Botazzi et al. (2016) suggests that a domestic VCs have a better understanding of the local investment landscape and better knowledge of local regulations. On a broad scale, investing in foreign nations is characterised by challenges, but the findings of this study confirm that VCs have diverse interests in UK regions based on the suitability of their investment thesis and other areas such as deal availability. Nevertheless, the

network effect has some degree of influence on regional deals, since the VC interviewees mostly backed companies they contacted, or were introduced through network recommendations. To some extent, VCs' networks are characterised by the idea of collectivism, which is likely to be supported by the cultural context.

The research adds some theoretical contribution to social network theory and location theory with an emphasis that is contrary to the widespread assumption that VCs invest in deals within close geographical proximity. To some extent, VCs' involvement in deals is often dependent on the age of the VC firm, the fund size and the experience of the VC fund. This research presents a new result, that experienced VC firms with an international framework around their investment thesis have no geographical limitations on deal scouting. Therefore, deal location and proximity to entrepreneurial firms does not restrain VC firms from investing, but presents them with an opportunity to break into new markets. Social networking reduces the liability of outsidership and social discrimination. Information asymmetry is greatly reduced when there is an existing relationship between VCs and entrepreneurial firms, as this improves the level of trust required for a conducive VC investment atmosphere. Having existing relationships also increases the potential for transparency and openness in a deal while increasing investors' confidence to co-invest or make standalone investments, especially in cross-border transactions. Additionally, deals being located in economically deficient regions often discourages VC investors from backing those deals.

8.4 Contribution to Practice

This research contributes to practice by pointing out the areas within the industry that require improvement to increase the regional distribution of VC funding in the UK. It is common knowledge that the distribution of venture capital money across UK regions requires additional attention in order to encourage VCs to back deals from specific locations; specifically, whether the decision is primarily driven by the search for high-quality deal flow or regional diversification of their portfolio, or whether there are other fundamental motives behind their decision to invest in a specific region. This study acknowledges that, in order to explore the rationales behind VCs' investment decisions at national and regional level, there is need to interact with VCs to draw insight into their investment decisions to back companies from other regions. Several pieces of literature show VC clustering in regions with high-tech entrepreneurial activity. The US has high levels of entrepreneurial finance activity in San

Francisco, Boston and New York (Chen et al., 2010), while the UK has severe VC clustering in London, South-East England and the East of England (Mason and Harrison, 2002). Contrary to widely held assumptions, VCs do not limit their search for deals to close geographic proximity but extend their search to regions that offer high value asset classes. This is common for VC firms, which are regionally agnostic in their search for deals. Similarly, the search for VC money by entrepreneurial firms has no geographical restrictions, extending far beyond home country borders.

Several questions on cross-regional and cross-border VC investment have been raised. Schertler and Tykvova (2012) query the rational for VCs' involvement in deals outside their regional location. This research presents a new finding that, in the search for high value deals, VCs' social networks lure them to invest abroad or outside their region of origin. Meyer and Shao (1995) support this finding, since VCs reduce the risks associated with venture investment by diversifying into foreign markets. Hence, VCs often have no limitations on geographical coverage, and are attracted to foreign nations or regions that offer access to high-quality deals. Based on the views shared by VC practitioners, there is no specific motivation for investing in other regions, but scouting for deals lead them to companies across the wider UK regions. The insights provided by a venture partner show no specific motivation for sourcing deals in certain regions. Consequently, VCs headquartered in various regions travel across the UK in search of good deal flow. The interview excerpts present VCs' proactiveness in deal sourcing:

> *"There is no particular motivation except what we find in the company regardless of where the company is located. We do not spend a proportion of time in regions, I do not spend too much time seeking things out there but if I find something in Scotland, then I will be there tomorrow and will work on the deal."*

Another noteworthy finding is the relationship between UK, higher institutions and deal flow. The majority of fund managers interviewed revealed they sometimes source deals in top performing universities, otherwise called world-class institutions. These universities conduct ground-breaking research and development which, because of its high standard, attracts VC firms to cluster around these institutions in search of the next disruptive innovation with unique potential for exponential growth. This supports Florida and Kenney (1988) who suggest VCs frequently concentrate around high-tech clusters to get selected deals. Another noteworthy disclosure made by a venture partner in DVC 2 is that most of the deals emerging from higher

education are in the fields of biotech, medtech and edtech, among others. Over time, VCs have developed a deep interest in high-tech innovation, but more intriguing is their deep search for deals within their respective fields of interest. In the interviews with fund managers, partners and principals, they expressed an interest in technology-enabled companies, which confirms Lahr and Mina's (2016) claim that VCs are mostly interested in high-tech ventures.

Dimov and Shepherd (2005) reveal that VCs hire high-quality human capital to source the best deals for their firms, hence VC teams seek deal flows in regions that possess high-quality human capital or regions where they have strong network ties. Based on this construct, geographic elements are likely to be of prominence following the frequent contact that occurs between the VC and their backed company (Chen et al., 2010). In practice, regional government has a role to play in the Northern and Midland regions that have a low proportion of companies that received FVCI between 2012 and 2017. The low quotient may be driven by the absence of good deal flow in the region or it may be attributable to FVCs' weak network ties in the region. Consistent with the findings of Fried and Hisrich (1994), VCs are more comfortable backing the deals they discover through referrals from close networks, family and friends or their fellow VCs. This confirms Gould's (1993) finding that the VC industry is not merely a network-driven market but also a collectivist society that relies on informal relationships and connections as a means to prevent opportunistic conduct.

This thesis contributes to practice by informing practitioners on the function of higher education institutions in presenting high value deals. This calls for increased collaboration between academic experts and practitioners to develop the next disruptive technology. The study presents the function of network ties in facilitating investment transactions, since VCs are more likely to interact with their counterparts from the same region (Pierrakis and Saridakis, 2017). Multiple VC investor activities are oriented around the building and maintaining of network relationships to form syndicates. On the international scale, DVCs are privileged, since they understand the territory better than FVCs but, more importantly, there is a need for increased relationship building with international VCs in the US and continental Europe. A hand of friendship should be extended to VCs in the South-East, such as Singapore, given their interest in the UK. Operating from a foreign market comes at an increased cost which could be reduced with domestic VC involvement in deals (Zaheer, 1995). A foreign VC co-investing with a domestic VC reduces the liability of foreignness for the FVC (Wright et al., 2005). On a national scale, there should be increased collaboration between regional funds and VC funds

in the Southern UK, given the presence of world-class institutions in these regions. The restrictions on regional funds' investment activities should be eliminated in order to increase inter-regional investment that would build relationships for increased cross-regional transactions. International social capital is significant for UK VC investors, since it acts as a conduit for deal information sharing and receiving. Additionally, having both FVCs and DVCs in a syndicate may facilitate regional development in the UK.

8.5 Contribution and Implications for Policy

This thesis contributes to the literature on the geography of venture capital in the United Kingdom. The most important contribution is that it exposes the regional gap in venture funding across the UK. The data allows for analysis of FVC and DVC investment flow in the UK while uncovering VC self-sufficient regions. Attempts to make policy recommendations in this thesis consider the regional heterogeneity. The findings suggest that FVC investments become more significant in later rounds, and the supply of VC finance in some regions reinforces rather than reduces the uneven geography of VC in the UK. This has both positive and negative implications. FVC backed companies benefit in terms of resources and access to a wider network of potential acquirers. US-based VCs dominate the FVC market in the UK mostly due to the much larger fund in the US (Lerner et al., 2011) which allows them to invest larger amounts and follow up their investments. For the host region, an increase in the supply of VC finance has a positive impact that improves employment, innovation and productivity growth (Brander et al., 2015).

8.5.1 Recommended policy

8.5.1.1 Create additional incentives to attract foreign investors

Over the years, the role of the European Investment Fund, European Regional Development Fund, European Venture Capital Funds and European Investment Bank cannot be over emphasised, especially in lagging behind regions that are dependent on these funds. Several studies speculate about the impact of Brexit on the UK venture capital industry and the degree of impact that leaving the European Union will have on the nation's economy overall; however, these studies are yet to precisely ascertain the extent of these impacts. Exiting the EU may have a lasting impact on the UK economy and, if left unattended, could widen the entrepreneurial

funding gap across UK regions. The British banks have a significant role to play in providing finance to entrepreneurial ventures, especially when the UK exits the EU.

There are several channels through which national and regional policy makers could approach this matter. At the national level, the British Business Bank, through its Enterprise Capital Fund scheme, could encourage industry targeted foreign co-investments with local funds. This could be done either at the fundraising level, with incentives offered to foreign GPs to raise funds together with domestic GPs, or at the deal level whereby incentives are offered to domestic VC funds to co-invest with high-quality foreign VC funds. In addition, improving the quality of domestic GPs, which are often publicly backed (Mason and Pierrakis, 2013), would minimise the need for foreign VC funds to choose London based VC funds as their preferred co-investors.

At the regional level, authorities may organise networking opportunities to expose local GPs to their international counterparts and improve the flow of information between domestic and foreign VC funds, since the international social capital of local investors facilitates the formation of cross-border syndicates (Mäkelä and Maula, 2008). More fundamentally, and much less subject to the intervention and influence of government policy, the rise in significance of FVC on regional balance reinforces existing patterns of geographical unevenness in the distribution of venture capital and, in so doing, shapes the pattern and form of regional economic development.

The recent global pandemic, widely termed Covid-19, has halted the increased flow of venture capital investment around the world. Fundraising companies are faced with difficulties raising investor rounds, largely because investors are uncertain about the economic direction of their investments since the global economy is crashing. Similar to the Coronavirus Business Interruption Loan Scheme (CBILS) introduced by the UK government to support struggling businesses, the UK government could support VC investment activities by extending a parallel special intervention scheme. The provision of such a scheme would boost the confidence of both domestic and foreign investors involved in UK deals, especially in such uncertain period.

8.5.1.2 Promote co-operation between higher education and private companies

The regional equity gap has stimulated the creation of numerous regional government policies aimed at boosting new venture funding. However, there are still some gaps in assessing the effectiveness of these policies to create new ventures (Munari and Toschi, 2015). The most important implication of this study for practitioners is developing human capital and building

social capital to boost entrepreneurial finance activities in UK regions. The function of policy makers in promoting entrepreneurship in regions such as Yorkshire-and-the-Humber, Wales, Northern England and the Midlands cannot be over emphasised, since the provision of an enabling environment to nurture and grow human capital in these regions is very important.

Higher educational institutions play a strategic role in human capital development. A 2018 Beauhurst report suggests that the East of England captured a moderately large portion of foreign deals, mainly because of tech start-up in the region, with most commencing operations from the University of Cambridge. Darktrace is one such start-up that raised GBP70 million in VC money in 2017, solidifying the region's position in attracting FVCI. At the core of Darktrace is the University of Cambridge, which had a role in nurturing and developing their high-quality human capital. The findings of this research point out that VCs access high-quality deals around higher education institutions, which implies that universities have an enormous role in developing human capital in UK regions given their ability to attract investors to back deals. Enabling student participation through university entrepreneurial talent hunt programmes and competitions would foster creative development in its early stages. Beyond the theoretical construct of entrepreneurship, policies that enforce the establishment and mandatory use of innovation hubs on university campuses would serve as a useful intervention for human capital development. The development of human capital in each region is essential for starting new companies and scaling existing companies to directly attract VC investment into the region, which would, by extension, impact the regional economy.

Over the next few years, there is a likelihood that the UK VC market will experience a geographic shift towards regions that offer high-quality deals. Recent industry reports by Beauhurst (2018) and Pitchbook (2018) show that new deals are emerging in Scotland. At the other end of the spectrum, Brexit is, directly or indirectly, transforming the funding landscape of the UK as it plans to leave the EU. Entrepreneurial firms from regions outside London might grow to attract VCs to their region, but examining recent trends and patterns over the last thirty years shows that VC money will remain unequally distributed in the UK, since it is attracted to regions that offer better quality deals. Higher education has a significant role to play in fostering VC clustering in UK regions. Apart from the universities located in London, other educational institutions attract VCs to their regions, which serves as a conduit for cross-regional investment. Cambridge University, Oxford University, the University of Manchester, and, more recently, the University of Edinburgh have attracted VCs. This confirms the close

association between enterprise development and entrepreneurship within higher education. At the regional level, local authorities may collaborate with universities to solve complex societal problems and act as a catalyst for attracting VC financing. The development of world-class educational institutions in each UK region may attract better talent to these regions and, by extension, FVC funding and VC clustering.

8.5.1.3 Foster additional incentives for inter-regional investment transactions

An increased partnership between regional government and private sector organisations tends to increase entrepreneurial activities in deficient regions. With the large concentration of VCs in London and Southern England, the UK government should encourage VC involvement by providing additional incentives, especially for investment transactions outside of their region. Additional tax discounts that allow a more favourable return on investment have the propensity to spark the interest of VCs in searching for deals outside of their regions of origin. To a great extent, this would promote co-investment between local VCs and domestic VCs.

Chen et al. (2010) suggest that VC firms are more likely to be located in regions that offer better deals, especially since geographic nearness to their backed companies allows for easier portfolio monitoring. Proximity between portfolio companies and VCs does not necessarily matter when the deals are within the same national jurisdiction. Given that companies seek venture funding from VCs outside their region, additional incentives such as tax rebates may attract increased investment transactions between the UK regions, with less regard to regional geographical boundaries.

8.5.1.4 Additional entrepreneurial support and government funding

The UK government has made several attempts to create incentives to stimulate venture investments at both national and regional level. Despite the availability of investment incentives, all attempts by the government to increase the supply of VC money have yielded poor results, primarily linked to the demand gap in lagging behind regions. The findings of this research show that VCs are attracted to regions with favourable returns so creating enabling ecosystems such as special economic zones in lagging behind regions has the tendency to increase entrepreneurial and investment activity in these regions, which will be especially important after the UK leaves the EU. This would also allow each region to have its own arrangement with the EU, EEA and EFTA.

The arguments presented by Cumming and Johan (2007) suggest that problems related to tax and legal environments have an exceptional ability to reduce the attractiveness of foreign markets as investment destinations for institutional investors. This explains VCs continual advocacy for additional incentives to stimulate early-stage financial and non-financial support from the national government. The parliamentary discussions around Brexit suggest that entrepreneurial firms in the UK will require some degree of extra support from the UK government. The British banks taking over European funding is a solution to covering regional development in the UK, especially in lagging behind regions that have less venture capital funding available to entrepreneurs. This clearly reaffirm the role of British banks in covering the funding gap, particularly post-Brexit.

8.6 Limitations of the Study and Future Research

Similar to every academic study, this research has some limitations that provide scope for future research. The fundamental limitation of this study is the low number of interview participants; the study engaged a total of twelve (5 DVCs, 3 FVCs and 4 VC backed companies). The small number of participants is linked to the challenges encountered, with the recruitment lasting nearly 5 months to secure 12 participants. New results might be discovered by a study that uses a larger sample. Additionally, this study confirms that FVC deals are largely influenced by social networks. However, the study does not measure the strength of network ties or how they influence FVC investment transactions. No tests were carried out to ascertain whether network ties have to be strong in order to influence foreign VCs to back deals in another nation. Future research could test the strength of network ties in cross-border deals by conducting regression analysis.

Another limitation is that the review of the existing literature is likely to be limited by the risk of not identifying or retrieving the relevant literature. Ahmed et al. (2011) suggest that researchers should be concerned with the availability of data, type of publication and selection bias which tend to affect studies. The critical literature review assesses only published literature and excludes unpublished literature, so this suggests a high tendency for normative publication bias, since the majority of academic literature is selected from elite journals. This acknowledges the presence of selection bias as unpublished literature and low-ranking journal articles have a tendency to reveal relevant empirical findings. Another possible limitation of this research is that it focuses on a small amount of literature, due to the unavailability of literature on cross-regional VC investment activities in the UK. Overall, the thesis shares the

concern highlighted by Rosenbusch et al. (2013) about future research in entrepreneurship and management sciences, which could be significantly improved if researchers regularly reported findings of replicated studies even though the results are similar.

The research undertaken presents several research questions that could be addressed in future studies. There is an assumption that VCs only invest within close geographical proximity, but this study has shown that VCs have no geographical limitation as long as they find high-quality deals. Future research could distinguish private FVC investment from public FVC investment to determine whether the investment pattern is any different. The concentration of VC funds in London makes fund seeking companies actively approach VC funds in the region, especially when they are raising early rounds. This confirms that London has excellent asset classes or good deals, which is a central reason for the VC cluster. Martin (1987) supports this claim in early research, given that most regions in the UK are dependent on London as a source of venture financing. Future research could examine the regional heterogeneity of London that attracts both local and foreign VC investors to the region.

8.7 Personal Reflection

The learning experience from this doctorate program spans across various knowledge domain, but this section of the thesis aims to focus on key learning activities while also outlining the next phase of the research activities.

8.7.1 The PhD Experience

The PhD journey lasted for a period of nearly 5years. Prior to starting the course, preliminary enquiry about the degree program showed that nearly 40 per cent of PhD candidates struggle with completion. This informed my decision on chosen area of interest so to ensure that I remain resilient in that area regardless of any hurdle I may encounter on the program. The first year as a PhD candidate exposed me to research methods and philosophies, which provided me with the foundation for research best practices. Upon completing the first year, I progressed from MRes to PhD, where I encountered my first challenge which was access to Data. To address the data issue, I had to restructure the focus area of my research.

The entire experience was remarkable, and my research exposed me to several local and international academic conferences, where I presented my study from conceptual stage through

to its final stage. My first conference paper presentation was internally at Kingston University, the feedback from senior colleagues was helpful particularly for the literature review section of my thesis. This led to several other paper presentations at conferences, thereby improving my research paper presentation skillset over the last years.

8.7.2 Key learning and the next phase

My approach to problem solving has become better since embarking on the program. The research has broadened my understanding of the special role of research in relation to policy and practice. Similarly, the findings of my study have given me great insights into the world of venture capital investors, and has made me become aware of the importance of social and professional network in deal flow and business transactions. Understanding the importance of applying best research practices cannot be overemphasised since research findings impact on decision making in both private and public sector organisations. Another key learning during my PhD was developing my coding skills specifically the use of Stata which is data analytical software. I have also learnt to be resilient throughout the PhD journey knowing that incremental results are relevant for successful project completion.

The knowledge gap between academic experts and industry practitioners has sparked my interest to continuously engage in both communities. Therefore, my next steps will be firstly, to publish my PhD chapters. Precisely the chapter 6, and 7. Secondly, explore the uniqueness of London as an investment destination for entrepreneurial companies, domestic VCs, and foreign VCs. Thirdly, continue to engage in academic research projects and simultaneously engage in consultancy project that will support in bridging the wide gap between both communities.

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APPENDIX

Appendix 1: Interview Questions

The interviews adopt a semi-structured approach to allow the participants to provide information that could reveal insights. The interview is expected to last between 20 and 30 minutes, and no longer than 45 minutes, since the questions are few. Some sample questions are outlined below, in no specific order for the three groups.

Research questions – VC backed companies

1. Tell me about your company.
2. Your company has previously raised investors' funds. How did your company approach the investors, especially the foreign VC investors that backed your company?
3. Did you contact the investor directly, or did the foreign investor reach out to you, or were you introduced to the investor? If introduced, who introduced you to the investor?
4. How many investors did your company reach out to, or reached out to your company, before backing your business?
5. Do you consider the distance between the investor and your company to be a problem? If yes, why? If no, why not?
6. How do you as a local company benefit from a distant international VC investor?
7. How often do you interact with the investor?
8. Based on your company's offering, which of the 12 UK regions do you think presents the best opportunities for your company? Name the top 3.
9. Does your company really get any value from the investors apart from just their money? If yes, what kind of value does your company get from the investor?

   Additional comments

Research questions – foreign VC investors

1. Please tell me about your VC firm and what you do.
2. Has your VC firm previously invested in the UK?
3. How did you get to know about UK deals since they exist outside your home country?
4. What is the main motivation behind your firm investing in the UK?

5. Have you co-invested in any of the deals with a UK based fund?
6. If yes, why did you decide to co-invest with those particular funds? If no, did you invest alone, and why?
7. Of the twelve UK regions, name the top three your firm invest in, and why?
8. Considering the distance between your country and the UK, how did your firm discover the companies you invested in alone?
9. What kind of support do your firm offer portfolio companies besides money?

Research questions – local VC investors

1. Please tell me about your VC firm and what you do.
2. Has your VC firm previously invested in the UK?
3. How do you discover high quality deals?
4. Does your firm invest in other UK regions separate from the location of your UK office? If yes, what is the motivation behind investing in the region? If no, why is your firm not investing in other regions?
5. Has your firm co-invested in any deals with a non-UK VC funds?
6. If yes, how did you get to know about the foreign fund? Did they contact you to co-invest or did your firm contacted them?
7. From the 12 UK regions, name the top three your firm invest in, and why?
8. Would your firm benefit from any specific policy that can help you invest better? If yes, what specific policies would be useful to your firm?

Appendix 2: Publication

Harrison, R., Yohanna, B. and Pierrakis, Y., (2020). Internationalization and localization: foreign venture capital investments in the United Kingdom. *Local Economy*, 35 (3), P. 230 – 256

Yohanna, Babangida and Pierrakis, Yannis (2019). Analysis of the cross-regional flow of venture capital investment in the United Kingdom. In: 42nd Institute for Small Business and Entrepreneurship (*ISBE) Annual Conference 2019, Newcastle. (**Nominated Best ECR Paper Award**)*

Yohanna, Babangida and Pierrakis, Yannis (2018). The geography of foreign venture capital investments (FVCI) in UK regions. In: 41st Institute for Small Business and Entrepreneurship (*ISBE) Annual Conference 2018, Birmingham. (**Nominated for Best research and knowledge exchange paper award**).*

Appendix 3: Conferences Papers

Yohanna, Babangida and Pierrakis, Yannis (2019). The cross-regional flow of venture capital investment in United Kingdom. In 10th Annual Faculty Research Conference: Contemporary Issues in Business and Social Sciences in a period of uncertainty: Kingston Business School, 2019. (Unpublished)

Yohanna, Babangida and Pierrakis, Yannis (2018). The geography of foreign venture capital investments (FVCI) in UK regions. 9th Annual Faculty of Business research Conference: Contemporary Issues in Business. Kingston Business School, 2018. (Unpublished)

Yohanna, Babangida K. (2017). Portfolio Company Performance: The role of Cross-border venture capital investors and Domestic venture capital investors in European Countries. 8th Annual Faculty Research Conference: Contemporary Issues in Business. Kingston Business School, 2017. (Unpublished)

Yohanna, Babangida K. (2017). Portfolio Company Performance: The role of Cross-border venture capital investors in United Kingdom. BKM Doctorate Workshop (University of Duisburg-Essen, Germany 2017. (Unpublished)