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Assessing the characteristics, determinants and spatial variations of internationalised new ventures in the UK

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EXECUTIVE SUMMARY

- This study focuses on internationalised new ventures, here defined as firms that have been trading for 5 years or fewer and which have already engaged in selling their goods and/or services abroad. The report presents analysis of data from the Longitudinal Small Business Survey that: 1) examines differences between internationalised and non-internationalised new ventures, 2) assesses the factors which determine whether a new firm is likely to engage in export activity early in its lifetime; and 3) maps the geographic distribution of these internationalised new ventures across the UK.

- The findings suggest that there are a number of significant differences between internationalised and non-internationalised new ventures. Those that have internationalised are, on average, more productive, and generate a higher level of turnover, than their non-internationalised counterparts. In addition, while internationalised new ventures were found to be operating in all sectors, distinct differences in the sectoral composition were noted. The majority of internationalised new ventures were in the business services sector, which accounted for nearly 60% of these firms, compared with around 40% of all new ventures. Significant differences were also found in other sectors; manufacturing firms accounted for only around 6% of all new ventures and 14% of those that had internationalised. Conversely, SMEs operating in consumption-based sectors account for around 21% of internationalised new ventures and around 30% of all new ventures.

- A number of other differences were noted between internationalised and non-internationalised new ventures. Firstly, a distinct gender gap was noted; a significantly lower proportion of internationalised new ventures were run by women. There were also differences in the capabilities possessed by both groups of SMEs. On average, internationalised new ventures rate their capabilities in terms of innovation management more highly than their non-internationalised counterparts. In addition, a higher proportion of internationalised new ventures reported that they had obtained funding through selling equity. Furthermore, internationalised new ventures also tended to be more optimistic about their future performance in terms of positive changes in revenue, and employment.

- With respect to the antecedents of internationalised new ventures, a number of factors that have a positive influence on a start-ups

engaging in export activity in the first five years of their lifecycle were identified. Consequently, new ventures that have a higher propensity to internationalise are those:

  - that have traded for longer;
  - that have higher levels of productivity;
  - whose innovation activities focus on the introduction of new goods;
  - whose main activity is manufacturing, business services, or consumption-based services sectors;
  - that possess greater capabilities in the area of innovation management;
  - that place a higher importance on sales growth; and
  - that have raised equity finance.

- A number of factors were also identified that had a negative effect. New ventures with a lower propensity to internationalise are those that:

  - are run by females;
  - possess higher levels of capabilities in the area of financial management;
  - are located in either North West, North East, or West Midlands regions of the UK.

- With respect to the geographic distribution of internationalised new ventures, the analysis highlights the fact that these firms can be found across the entire UK. Furthermore, internationalised new ventures were present in both urban and rural areas. However, significant clustering of internationalised new ventures was observed around the London and the South East regions, which accounted for around one-third of these firms.

- A number of regions were found to be over-represented with respect to internationalised new ventures given their proportion of new ventures located there. These were London, South East, Yorkshire and Humberside, Wales, and Northern Ireland, suggesting that regions outside the competitive core of the UK are performing well in terms of internationalised new ventures.

- Location characteristics appear to be correlated with the internationalisation of new ventures. Regional characteristics that are associated with higher levels internationalisation are higher

levels of GVA per capita, higher levels of regional R&D expenditure, and higher levels of degree level qualifications.

- As the report highlights the antecedents of new ventures that have a higher propensity to export, the findings should be of use to policymakers in identifying new ventures that are likely to internationalise. As such, the report presents a number of policy recommendations:

    - Given the fact that internationalised new ventures are found across all regions of the UK it is important to ensure that support programmes do indeed cover the entire country. Likewise, as internationalised new ventures were found across all sectors, which suggests that a broad rather than targeted programme of support is required.
    - Policy support could also be directed towards overcoming disadvantages faced by new ventures with a lower propensity to internationalise. Firstly, support programmes targeted at female owned businesses to develop export markets appears to be appropriate, as such firms are under-represented among new internationalised ventures. Secondly, support for service innovators may be of use in order to identify and overcome the barriers that may account for their relative lack of internationalisation.

CONTENTS

1. INTRODUCTION

This report focuses on exploring the characteristics of internationalised new ventures, here defined as new businesses that have been trading for 5 years or fewer and which have engaged in export activities (Masango & Marinova 2014). The underlying rationale is that these firms are of significant interest to both the academic and policymaking communities. Firstly, they are of academic interest as the existence of new ventures that internationalise soon after inception questions the accepted theories that see the process as incremental in nature. Secondly, they are of interest to policymakers as these firms add both value and jobs to the economy (Anyadike-Danes et al. 2015), as well as contributing to a positive trade balance through their export activities. Indeed, there is evidence to suggest that, for SMEs, exporting and innovation are complementary activities (Esteve-Pérez & Rodríguez 2012; Golovko & Valentini 2011), suggesting that early internationalisation may be a sign that a new firm will be successful. In light of these arguments it appears pertinent to examine these firms in greater detail, addressing a significant gap in the literature (Wright et al. 2015), as well as providing further evidence on an issue increasingly important to the future of the UK economy.

The theoretical and conceptual underpinnings of this project lie in the literature on international entrepreneurship, which focuses on international new ventures or born global firms, defined as “a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and from the sale of outputs to multiple countries” (Oviatt & McDougall 1994 pg. 49). The extant literature on international entrepreneurship draws closely on the extant literatures on both entrepreneurship and the internationalisation of SMEs but departs from it 'parents' by focussing on entrepreneurial activities that cross international borders and occur immediately after start-up. As such, international entrepreneurship is associated with a broad range of cross-border activity, including exporting, importing, licencing and franchising, alliance formation, and foreign direct investment. Despite this, the extant literature tends to focus on empirical studies that look at exporting as the primary means of

engaging in cross border activity (Knight & Cavusgil 2004; Kuivalainen et al. 2007; Hennart 2014). Indeed, exporting is a straightforward and relatively low risk entry strategy to foreign markets (Etemad 2009), and is typically the main focus of policy support for internationalisation (Catanzaro et al. 2015).

However, a clear understanding of the nature and antecedents of early internationalising firms is limited by the fact the previous work in this area often uses specially constructed samples that only contain details of firms pre-identified as internationalising early in their lifecycle, or samples that use large firms as the unit of analysis. As such, little effort has been made to examine the counterfactual, i.e. the factors that differentiate *internationalised* new ventures from other new ventures. Furthermore, the existing literature is generally skewed towards more high-technology sectors in terms of sampled firms (Yli-Renko et al. 2002; Knight & Cavusgil 2004; Laanti et al. 2007) rather than looking at a broad population of new start-ups.

In particular, this project focuses on the differences between internationalised and non-internationalised new ventures, assesses the factors which determine whether a new venture is likely to engage in export activity soon after inception, and maps the spatial distribution of these firms across the UK. In the context of the UK, there has not yet been a systematic examination of these firms, their characteristics, determinants, and spatial distribution. Indeed, their spatial distribution has been broadly overlooked by the entire field, which has focussed on the firm as the unit of analysis at the expense of ignoring location factors.

The project utilises data from the Longitudinal Small Business Survey (LSBS), which provides a unique opportunity to examine the factors outlined above in significant depth. This dataset contains details of over 15,502 UK SMEs constituting a representative sample of SME population. The LSBS dataset contains details of 1887 firms aged 5 years or under, of which 320 had internationalised through exporting their product or service.

The report is structured as follows; Section 2 outlines the theoretical and conceptual work that underpins the empirical analysis. Section 3 presents the methodology and sets out the analytical techniques employed. Section 4 presents the results of the analysis, while Section 5 offers conclusions and recommendations based on findings reported here.

2. THEORETICAL BACKGROUND

2.1 International Entrepreneurship and Internationalised New Ventures

The past two decades has seen increasing interest in international entrepreneurship, a field of research focussing on the creation of what have been termed international new ventures or born global firms (Cavusgil & Knight 2015). The emergence of this field has cast a new light on the pattern of internationalisation among firms, which had been previously considered to be more incremental in execution (McDougall et al. 1994; Cavusgil & Knight 2015). As a result, the internationalisation of new ventures has become the subject of increasing research attention by scholars within the disciplines of business and management studies (Rialp et al. 2005; Aspelund et al. 2007) for a number of reasons. Firstly, in a theoretical sense, their presence questions the previously accepted model of incremental internationalisation. Secondly, these firms, potentially, make a significant contribution to the economy through adding value and jobs, whist also contributing to a positive trade balance through their export activities (Anyadike-Danes et al. 2015; Esteve-Pérez & Rodríguez 2012; Golovko & Valentini 2011). Consequently, this field unifies a number of broad literatures, that of international business, entrepreneurship, and SMEs, and while it has broadened over time, the focus on new ventures that internationalise in the immediate aftermath of their founding remains the primary area of focus (Peiris et al. 2012; Knight & Liesch 2016).

Despite their relatively recent identification, internationalised new ventures have been observed in a wide range of contexts, including across many countries and sectors (Kuivalainen et al. 2010; Cavusgil & Knight 2015;

Evers 2011b). They are typically associated with small knowledge-intensive firms in high technology sectors, particularly manufacturing, but also ICT, software, electronics, or biotech (Cannone & Ughetto 2014; Al-Laham & Souitaris 2008; Bell 1995; Coviello & Munro 1997; Peiris et al. 2012), but have also been observed in lower technology and traditional sectors (Evers 2011a; Belso-Martinez 2006; Peiris et al. 2012).

Internationalisation, however, is a broad term covering a wealth of cross-border activities, including exporting, importing, licencing and franchising, alliance formation, and foreign direct investment (Brouthers et al. 2009). This has been reflected in the move toward redefining international entrepreneurship in more general terms as "a combination of innovative, proactive and risk-seeking behaviour that crosses national borders and is intended to create value in organisations" (McDougall & Oviatt 2000). While the process of international entrepreneurship may potentially involve a broad range of cross border activities, the extant literature is dominated by studies that focus on exporting as the new ventures' primary means of engaging in cross border activity (Knight & Cavusgil 2004; Hennart 2014; Kuivalainen et al. 2007). Indeed, the accompanying interest in export-led growth (Balaguer & Cantavella-Jordá 2004; Siliverstovs & Herzer 2006) also highlights the potential benefits of promoting this type of new venture creation to policymakers. Furthermore, as other scholars note, exports represent a straightforward and relatively low risk entry strategy to foreign markets (Etemad 2009). Consequently, a large proportion of the extant literature focuses on the internationalisation activities of small new ventures after start-up, particularly exports (Autio 2000; Mudambi & Zahra 2007; Aspelund et al. 2007). Accordingly, we follow Kuepp & Gassmann (2009) in acknowledging that the process of international entrepreneurship covers a diverse range of cross-border activity, of which the internationalisation of new ventures through exporting represents a sub-set and not the whole field.

As this field has developed a degree of heterogeneity within the population of internationalised new ventures has begun to be acknowledged within the literature; for example, Kuivalainen et al. (2007) propose the concept of

'degree of born global-ness' based on three criteria; export intensity, the international scope of their markets, and the speed of internationalisation. They use these to differentiate between 'truly born global' firms (those operating in 'distant' markets and multiple global market regions) from 'born international' firms. In addition, the 'born regional' firm, those that internationalise within their 'local' trade bloc, has been recognised within the literature as another derivative (Lopez et al. 2008). Thus, some consider that the criteria for new ventures to be considered to be truly 'international' hinges on whether they are engaged in exporting or market development activities in countries beyond the immediate vicinity of the home country (Sleuwaegen & Onkelinx 2014; Johanson & Vahlne 2003). Yet, for other scholars it is not the international scope of the firm's market but the proportion of revenue derived from international activity; in these terms internationalised new ventures are those that obtain more than a quarter of their revenues from foreign sales within three years of their establishment (Knight & Cavusgil 1996). Finally, it is suggested that internationalised new ventures are distinguished by the particular 'international entrepreneurial orientation', 'global mind-set' or 'global vision' of their founders (Gabrielsson et al. 2008; Nummela et al. 2004; Nummela et al. 2009).

As well as the existing heterogeneity with respect to degrees of internationalisation of new ventures, there are also differences within the literature in terms of defining the upper age limits of these firms. Many studies typically focus on firms that began exporting within three years of start-up (Kuivalainen et al. 2010; Knight & Cavusgil 2004; Kuivalainen et al. 2007), while others suggest that new ventures that have been trading for up to 5 years meet the criteria (Sleuwaegen & Onkelinx 2014). Furthermore, some have included firms aged up to eight years in empirical studies (Gabrielsson & Kirpalani 2012). Furthermore, others have suggested that the start-up date of the firm is merely symbolic and that many important milestones occur in the gestational phase (Hewerdine & Welch 2013), making the age of the firm in terms of number of years after founding appear less important. Thus, flexibility over the age at which a firm starts exporting appears to be important (Gabrielsson et al. 2008),

leaving room for potential variations according to country location and sector.

2.2 Exploring the Antecedents of Internationalised New Ventures

Internationalised new ventures have two important barriers to overcome in order to be successful, the liability of both newness and foreignness (Zahra et al. 2005). As such, it is not a simple task for a new venture to engage in exporting its output in the immediate aftermath of its start-up. Indeed, the relative youth of these firms provides a number of drawbacks, specifically their lower level of resources compared with more established firms; consequently, they are also required to overcome this 'asset parsimony' in order to internationalise (Cavusgil & Knight 2015). Despite the existence of these barriers, internationalisation soon after start-up has been suggested as an important advantage to firms, allowing significant market gains to be made at a time when the firm is more agile and flexible, and also when there are fewer cultural constraints on pursuing new opportunities (Liesch & Knight 1999). Indeed, internationalisation has shown to have a positive effect on firm survival, suggesting that it is an appropriate strategy to follow for new ventures (Puig et al. 2014; Coeurderoy et al. 2012).

The extant literature provides a wealth of evidence as to the factors which influence the propensity of a firm to engage in exporting from inception. The remainder of this section reviews these antecedents in order to provide a framework for the analysis that follows. Firstly, as overcoming the liability of newness is one of the key objectives of these ventures, then the first area of focus is on the influence of the age of the firm on its internationalisation. While the development of the firm may promote learning and advance experience and capabilities, the extant literature suggests that the age of a venture may have a negative effect on its internationalisation activities; instead, it is experience of internationalisation that is the important factor (Love et al. 2016; McDougall et al. 2003). Thus, specificity of experiences appears to be the key, in other words, it is not just about the survival of the firm but its ability to draw on particular

experiences.

Furthermore, these experiences can be captured and conceptualised as knowledge and dynamic capabilities, which evidence shows are important factors in the development of international markets, with new ventures that possess greater knowledge assets and capabilities being more able to develop internationally upon start-up (Bell et al. 2003; Laanti et al. 2007). Indeed, the importance of unique resources in enhancing firms' abilities to internationalise at inception is a key feature of the extant literature (Cavusgil & Knight 2015; Oviatt & McDougall 1994); thus, the firm must possess inimitable knowledge assets plus the dynamic capabilities to be able to exploit them. Yet, dynamic capabilities are a diverse phenomenon (Teece 2009), with the literature providing evidence that a wider range of these are important, including market identification and exploitation (Mort & Weerawardena 2006; Weerawardena et al. 2007), knowledge acquisition, and networking capabilities (Oxtorp 2014; Schweizer et al. 2010; Evers 2011b). Yet, others have found capabilities such as strategy or process development to not affect the ability to internationalise (Jantunen et al. 2008). Thus, as Peiris et al. (2012) suggest, work on the capabilities and their influence on internationalisation is still in its initial stages and more evidence is required to make more substantiated claims.

For SMEs, exporting and innovation are considered to be complementary activities (Esteve-Pérez & Rodríguez 2012; Golovko & Valentini 2011); consequently, the Innovation activities of new ventures have been shown to have an important bearing on their internationalisation. Typically, firms with innovation capabilities in terms of the introduction of new products and services are prone to earlier internationalising (Yip et al. 2000; Jones & Coviello 2005). Indeed, firms which sell niche products and services are seen to have an advantage in the development of international markets early in their lifetime (Zucchella et al. 2007; Hennart 2014), thus those new ventures that are producing a more innovative offering may find that they have more markets available to them. Furthermore, particular types of innovation may be more important than others, for example a strong relationship has been found to exist between product innovation and

internationalisation activity (Roper & Hewitt-Dundas 2015).

Associated with innovative capability is the membership and access to networks through which external knowledge may be sought. The extant literature suggests that the ability of new ventures to develop broad networks is crucial for development of international markets (Sharma & Blomstermo 2003; Freeman et al. 2006; Baronchelli & Cassia 2014; Masango & Marinova 2014; Coviello 2006). Furthermore, these networks may facilitate access to both venture capital and appropriate business support organisations, which have also been shown to have a positive effect on early internationalisation (Bloodgood et al. 1996; Fernhaber & McDougall-Covin 2009; Shane & Cable 2002). Access to these factors may be of particular importance as prior work has highlighted the constraints posed by a lack of finance to small firm growth (Carpenter & Petersen 2002). Thus, the ability to secure appropriate external funding through venture capital has a positive effect on the internationalisation of new ventures (Fernhaber & McDougall-Covin 2009). In addition, interaction with appropriate business support organisations have been shown to have an important role in the start-up and survival of firms (Atherton et al. 2010), yet this remains rather under-researched with respect to the International Entrepreneurship literature (Cumming et al. 2014).

Despite the limited focus of the extant literature on the internationalisation of new ventures, which tends to focus on high-tech sectors in terms of both manufacturing and services, there is evidence that the sector in which a firm operates does influence internationalisation. Firstly, the very characteristics of an industry as well as its structure may be either enablers of barriers to selling in foreign markets (Fernhaber et al. 2007; Mudambi & Zahra 2007; Baronchelli & Cassia 2014). For example, some products or services may lend themselves easily to export as they require little in the way of adaptation (Hennart 2014). Furthermore, some sectors may face particular barriers to internationalisation; for example, biotechnology firms may face significant regulatory barriers that may delay their internationalisation as they face higher scrutiny of their products (Knight & Liesch 2016). In addition, the maturity of a particular sector may also have

a bearing on the level of internationalisation observed amongst its firms (Andersson 2004; Vernon 1979). Yet, Fernhaber et al 2007 argue that the effect of industry structure has been largely implicit in the extant literature highlighting a number of factors that may differ according to sector: evolution, concentration, knowledge intensity, local internationalisation, global integration, and venture capital.

Finally, there are a number of issues that appear to be under-examined with respect to internationalised new ventures surrounding both the influence of the identity of the business owners and the location of the venture. In terms of identity, issues related to the gender and ethnicities of entrepreneurs are rather under-examined; for example, while significant gender differences are noted in terms of entrepreneurship (Kobeissi 2010; Langowitz & Minniti 2007; de la Cruz Sánchez-Escobedo et al. 2014), these have not been explicitly examined with respect to the internationalisation of new ventures. In addition, while there exists a wealth of literature on migrant and ethnic minority entrepreneurship (Ram & Jones 2008; Ram et al. 2012), only scant interest has been paid to this issue with respect to the internationalisation of new ventures (see for example Prashantham et al. 2015).

While some attention has been paid to location factors in the extant literature, this theme is again rather under-developed. Indeed, where geographic space is considered within the literature, it is primarily in relation to firms' entry into different geographical markets, rather than to the effects of their location on their emergence (Jones & Casulli 2014; Patel et al. 2016). Where location effects have been considered, the focus is generally on the influence of clusters and clustering on the internationalisation of new ventures (Fernhaber & McDougall-Covin 2009; Colovic & Lamotte 2014; Al-Laham & Souitaris 2008). While this has been found to have a positive influence, Al-Laham and Souitaris (2008) find that in the case of new biotechnology ventures located within a local cluster already dense with international linkages increases their probability of forming international research alliances, a finding also echoed by Fernhaber et al (2008), this represents a limited examination of location

effects. Indeed, it has been noted in the literature that the extent to which factors that influence internationalisation such as capabilities and resources are linked to location still requires greater investigation (Cumming et al. 2009), leading to calls for this literature to focus more explicitly on geographic issues (Crone 2013). As such, these arguments highlight a rich area for exploration that, once investigated, will only enhance the extant literature.

3. DATA AND METHODS

The previous section identified a range of factors that are of importance to the internationalisation of firms in their start-up phase. Thus, the extant literature provides a broad set of characteristics that influence the propensity of a new venture to internationalise early in its lifetime. However, one criticism of this literature is that empirical analysis of the phenomenon does not always focus on new ventures; typically, the methodologies employed involve the identification of a sector or sectors of interest and then data is collected on firms. Following this, firms which report that they have been engaged in exporting from start-up are identified (Kuivalainen et al. 2010). While there are exceptions where scholars focus exclusively on new ventures and making comparisons between those that are internationalised or not (Baronchelli & Cassia 2014; McDougall et al. 2003), the weaknesses of this work are that either the sole focus is internationalised new ventures, or the population of firms does not cover SMEs but larger firms that have been through the IPO process. As such, the extant literature has not sufficiently examined the counterfactual, i.e. when looking at a sample of new ventures what are the factors that encourage their internationalization?

As previously noted, another omission within the literature is the virtual ignorance of location based factors. In order to tackle this, we look at the spatial distribution of internationalised new ventures across the UK and examine this with respect to a number of regional economic development indicators such as regional GVA per capita, expenditure on R&D, degree level qualifications of the regional workforce, and overall business growth

rates.

Therefore, this report addresses these gaps through the analysis of new ventures based in the UK in order to understand the antecedents of internationalised new ventures, their differences between these and their non-internationalised counterparts, and their geographic distribution across the UK. We acknowledge that internationalisation may in fact involve a broad range of activities from export, imports, licencing, and foreign direct investment (Brouthers et al. 2009), due to data limitations we follow the extant literature by focusing on exporting as the primary means of engaging in cross border activity (Knight & Cavusgil 2004; Kuivalainen et al. 2007).

In order to achieve the project's objectives data from the Longitudinal Small Business Survey (henceforth LSBS), originally commissioned by BEIS (Department for Business, Energy and Industrial Strategy), was used. This dataset contains details of 15,502 SMEs responses from a representative group of UK firms, according to regional, sector, size, and legal status strata. The key feature of the survey is its longitudinal character, in other words, the respondents will be surveyed again over the next 5 years annually to obtain a timely perspective on changing circumstances for UK SMEs. Consequently, this LSBS is a year 1 data collection.

The survey was conducted in 2015 via telephone interviews that lasted on average approximately 25 minutes. The respondents within each business constituted individuals with one of the following executive roles: owner, proprietor, managing director, or other senior decision maker. Consequently, the LSBS dataset provides a large dataset containing the broad characteristics of SMEs from multiple sectors, and located across the entire UK, providing an excellent opportunity to examine the characteristics of internationalised and non-internationalised new ventures. The dataset provides two important advantages; firstly, it allows both the factual and the counterfactual to be examined with respect to the characteristics and determinants of internationalised new ventures, something that has no so far been achieved. Secondly, the location data provided by the survey

enables the consideration of their spatial distribution across the UK, a factor that is hitherto unexamined.

The survey contains a wealth of data on UK SMEs (small and medium enterprises), in particular their demographics, performance, export activity, capabilities, obstacles, finance and pensions, innovation, support, training, technology and future intentions. As previously identified by BIS-commissioned Annual Business Survey in 2014 (Office for National Statistics 2014), within non-financial sectors, 10.8% of firms were reported to engage in export activity of goods and/or services. This research focuses explicitly on understanding the determinants of exporting new ventures. In other words, this study focuses on understanding a much narrower research question: what determines export activity of new ventures in UK? Furthermore, the location data provided by LSBS enables the consideration of spatial distribution of exporting new firms across the UK regions.

Within the LSBS dataset 1887 firms were identified as aged 5 years or under, of which 320 were found to have engaged in exporting either goods or services. The sample only consists of firms that range in size from 0 employees to 240, even though LSBS has cut-off criteria at 249 employees. This report examines the characteristics of these 320 firms, the determinants of their exporting activity, and their spatial distribution across the UK.

The analytical approach adopted in this report consists of 3 key stages: 1) bivariate analysis, 2) regression analysis, and 3) examination of spatial distribution of exporting new ventures. Stage 1 and 2 share the same variables, allowing a greater understanding of the data captured by LSBS. Stage 3 utilises non-LSBS data in order to observe further spatial effects in detail.

3.1. Model and Variables

The dependent variable used in the analysis has a binary nature measuring whether firms in the sample engaged in exports of goods and/or services

(taking a value of 1) or not (assuming a value of 0). The reason for using such a construct is in maximising the available observations engaging in exports, given the realities of datasets where missing variables would otherwise invalidate a multinomial approach of the following order: exporting goods, exporting services, exporting goods and services, or not exporting, limiting the number of parameters entered into the regression equation. It is crucial to note here, that LSBS does not collect data on other modes of foreign market entry, e.g. FDI (foreign direct investment) or franchise. Finally, unlike previously used by BIS Annual Business Survey, the LSBS does not collect data on importing activity of SMEs.

There are four control variables adopted in the analysis that define firm's demographic characteristics: size, age, sector, and region. Firm's size is expressed by measuring the number of employees reported by the company to be currently on payroll, excluding owners and partners, across all sites of the firm. To control for the age a variable is adopted from the categorical grouping and transformed into a continuous type data, as the analysis excludes ranged groupings (e.g. 11-20). In effect firm's age takes value between 0 and 5 years, given this study's focus on new ventures. The sector of activity is measured through five dummy variables that take value of 1 if a firm has registered its activities within a particular sector or value of 0 otherwise:

a) manufacturing (SIC 2007 1 digit category: C[1]),
b) business services (SIC 2007 1 digit category: J, KL, M, N[2])
c) consumption-based services (SIC 2007 1 digit category: G, H, I, R[3])
d) education and personal services (SIC 2007 1 digit category: P, Q, S[4])
e) other (SIC 2007 1 digit category: ABDE, F[5]).

[1] Manufacturing.
[2] Information/ Communication, Financial/ Real Estate, Professional/ Scientific, Administrative/ Support.
[3] Wholesale/ Retail, Transport/ Storage, Accommodation/ Food, Arts/ Entertainment.
[4] Education, Health/ Social Work, Other service.
[5] Primary, Construction.

In the multivariate analysis, dummy for 'other' sectors is treated as a reference case. Regional location of the sample is controlled with 12 dummies representing UK's official unitary regions[6]. Each dummy takes value of 1 if the firm is based in that particular region or 0 otherwise. In the multivariate analysis London is adopted as a reference case.

The analysis undertaken here focuses on a number of independent variables, which may enhance the understanding of determinants of new venture's internationalisation activity. First, the analysis investigates whether gender of the business owner is related to company's internationalisation activity. The variable has a dummy character and takes value of 1 if the firm is mostly women-led (over 50% of the business owned by women) or 0 otherwise. Second, the ethnicity of business owners is tested with another variable of a dummy construct. It measures whether the business owner belongs to any ethnic minority group, taking value of 1, or 0 if this is not the case. Third, business capabilities are tested with the use of dummies, which take value of 1 if a firm expressed to have a specific capability and 0 otherwise. The following capabilities are examined; people management; business management; innovation in product or service; raising finance; and innovation in operations. Whilst the underlying questions have a 5-point Likert character, the dummy variable coding of 1 corresponds to the following replies: average, strong, very strong. Conversely, a coding of 0 represents ordinal answers of: very poor, and poor. Fourth, innovation activity is tested using three dummy variables:

a) goods innovator (i.e. whether firm introduced new or significantly improved goods in the last 3 years)
b) service innovation (i.e. whether firm introduced new or significantly improved services in the last 3 years)
c) goods, service or process innovation (i.e. whether firm whether firm introduced new or significantly improved goods, services or processes in the last 3 years).

[6] East Midlands, East of England, London, North East, North West, South East, South West, West Midlands, Yorkshire and the Humber, Scotland, Wales, Northern Ireland.

Each dummy takes value of 1 if the company has reported a particular innovation type and 0 otherwise. Fifth, the report tests whether there is a relationship between new venture's awareness of support organisations and its internationalisation activity. In particular, firm's awareness of UK Trade and Investment (UKTI) support is tested using a dummy variable, taking value of 1 if the company is aware of UKTI's support and 0 otherwise. Furthermore, the report makes use of a variable that combines awareness of all support available in the UK[7] (inclusive of UKTI), by measuring how many business support agencies a company is aware of on a continuous scale. Sixth, productivity of new ventures is examined in relation to internationalisation activity. It is designed by simply dividing firm's reported turnover over the past 12 months by the number of employees. The variable is expressed in millions of Pounds Sterling. Seventh, the report measures different types of finance and their relation to firm's internationalisation activity using three dummy variables: debt finance[8], equity finance[9], and other[10]. The variable takes value of 1 if a firm used a particular form of finance and 0 otherwise. Eighth, future expectations of new ventures are studied here in terms of their association with firm's internationalisation activity. This is achieved through three variables that measure: a) expectation of employment growth over the next 12 months through 3 categories: 'more than currently', 'about the same', 'fewer'; b) expectation of turnover growth over the next 12 months via three categories: 'increase', 'decrease', 'stay the same'; and c) aim to grow sales over the next 3 years expressed in a dummy variable taking value of 1 if a firm aims to grow sales and 0 otherwise.

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[7] UK Trade and Investment, The Tools for Business section on the .GOV website, The British Business Bank, Innovate UK, The Business Growth Service, Local Enterprise Partnership, Growth Hubs, Manufacturing Advisory Service, Scottish Development International, Business Gateway, Scottish Enterprise, Highland and Islands Enterprise, Skills Development Scotland, Co-operative Development Scotland, Scottish Manufacturing Advice Service, NI Business info.co.uk, Invest Northern Ireland, Department for Enterprise Trade and Investment, Department for Employment and Learning, InterTrade Ireland, The Pensions Regulator, Investors in People, Scottish/Highland and Islands Enterprise.

[8] Bank overdraft, commercial mortgage, credit cards, mezzanine, peer-to-peer, other loans.

[9] Private equity, public equity.

[10] Factoring/invoicing, leasing or hire purchase, charitable/trust/grant, government schemes, other finance.

In order to examine the spatial distribution of the internationalised new ventures the postcode sector for each firm was used to determine their approximate location, whist at the same time preserving anonymity. Thus, for urban firms, the location will be accurate to approximately 200m, whilst in rural areas it will be accurate to around 1km. Arcview GIS software was then used to visualise the postcode data and produce a map of their location.

3.2. Analytical approach

The report undertakes three types of analyses: 1) bivariate statistical tests, 2) multiple regression, and 3) spatial decomposition. The bivariate statistical tests uncover associations between the dependent variable that measures whether the firm engages in exporting activity and a number of explanatory variables. The statistical tests used are selected in accordance to the characteristics of the variables tested, with Mann-Whitney U-test and Chi-Square techniques applied, given non-parametric character of the variables.

The multivariate analysis applies a logistic regression model to measure the probability of a new firm *i* engaging in exporting activity. The use of a logit model is dictated by the nature of the dependent variable, being of binomial in character. The multiple regression model used in the analysis takes the following logit form:

$$g(x_i) = \ln\left(\frac{\pi(x_i)}{1-\pi(x_i)}\right) = \alpha + \beta x_i + \varepsilon_i$$

Where x_i denotes a vector of variables defining firm *i*, α is a model constant, whilst β represents coefficients of parameters used. Finally, ε_i denotes an error term capturing variance unaccounted for by the model. In effect, the regression model examines the probability of firm *i* engaging in export activities, given the parameters tested.

First, linear associations between variables are explored in Table 3.3 to

identify strong relationships between measures and inform the multivariate analysis of potential modelling issues, i.e. multicollinearity. There are 4 relationships that could constitute a collinearity issue for the following regression analysis, with one in particular: *Support Awareness* and *UKTI Support Awareness* (55%), *Innovation in Product/Service/Process* and *Innovation in Product* (59%), *Innovation in Product/Service/Process* and *Innovation in Service* (87%), *Productivity* and *Turnover* (51%). In order to elucidate whether these indeed translate into modelling problems, a linear regression is fitted using all explanatory variables to observe values of Variance Inflation Factors (VIFs). The only collinear pair is identified was between innovation variables (i.e. the 87% pair) with VIFs rising to 6.7 for *Innovation in Product/Service/Process*. Whilst this is within the accepted range (i.e. less that the conventional value of 10 for VIFs), a cautious approach was adopted. Consequently, the innovation variables are modelled separately, i.e. *Innovation in Product/Service/Process* enters regression equation separately from *Innovation in Product* and *Innovation in Service*, both kept in the same specification.

A number of variables are used to measure such activity, with Tables 3.1. and 3.2. depicting characteristics of all parameters adopted in the report.

Table 3.1 Descriptive Statistics of Continuous Variables

	Mean	**Std. Deviation**	**Minimum**	**Maximum**	**Observations**
Employment	11.49	24.85	0	240.00	1881
Turnover [£m]	£ 1.27	£ 5.49	£ 0	£ 80.00	1356
Age	3.25	1.49	0	5.00	1881
Support Awareness	3.89	2.51	0	13.00	1881
Productivity [£m]	£ 0.12	£ 0.28	£ 0	£ 3.50	848

Table 3.2 Profile of Categorical Variables

		Yes	No	Observations
Dependent Variable: Exporting		320	1561	1881
Sectors				
	Manufacturing	120	1761	1881
	Business Services	749	1132	1881
	Consumption-Based Services	544	1337	1881
	Education & Personal Services	254	1627	1881
	Primary & Construction	214	1667	1881
Regions				
	East Midlands	142	1739	1881
	East of England	181	1700	1881
	London	301	1580	1881
	North East	56	1825	1881
	North West	174	1707	1881
	South East	302	1579	1881
	South West	177	1704	1881
	West Midlands	137	1744	1881
	Yorkshire & the Humber	134	1747	1881
	Scotland	137	1744	1881
	Wales	70	1811	1881
	Northern Ireland	70	1811	1881
Women-led business		382	1499	1881
MEG-led business		172	1709	1881
Capabilities				
	People Management	1176	705	1881
	Business Management	1705	176	1881
	Innovation in Product or Service	1571	310	1881
	Raising Finance	952	929	1881
	Innovation in Operations	1672	209	1881
UKTI Support Awareness		733	1148	1881
Innovation				
	Goods	439	1425	1864
	Services	756	1112	1868
	Goods/Services/Processes	887	994	1881
Finance Used				
	Debt	473	205	678
	Equity	90	588	678
	Other	274	404	678
Applied for Finance in past 12 months		379	1502	1881
Future Performance Expectation: next 12 months				
Turnover				
	Increase	1163	666	1829
	Decrease	100	1729	1829
	No Change	566	1263	1829
Employment				
	Increase	770	1094	1864
	Decrease	107	1757	1864
	No Change	987	877	1864
Future Performance Expectation: next 3 years				
Sales Growth		1542	339	1881

In order to examine the influence of location based variables on the internationalisation of new ventures, a number of regional indicators were used. This analysis was undertaken at the NUTS 1 level, i.e. the 12 Government Office Regions that make up the UK, as there is a wealth of socio-economic date available at this spatial level and the Office for National Statistics (ONS) uses these as the basis for regional comparisons of the UK. ONS Data on GVA per capita, R&D expenditure, degree level qualifications, and firm growth, available through the ONS website or NOMIS.

Table 3.3 Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1 Dependent Variable: Exporting	1.00																																			
2 Employment	0.03	1.00																																		
3 Turnover [£m]	**0.08**	**0.42**	1.00																																	
4 Age	**0.10**	0.04	0.03	1.00																																
5 Sectors	**-0.24**	-0.03	-0.05	-0.03	1.00																															
6 East Midlands	-0.02	**0.09**	0.02	-0.01	-0.03	1.00																														
7 East of England	-0.01	-0.02	-0.02	0.05	0.03	**-0.09**	1.00																													
8 London	**0.08**	-0.01	**0.07**	0.02	**-0.07**	**-0.13**	**-0.14**	1.00																												
9 North East	-0.03	0.03	0.03	0.00	-0.01	-0.05	-0.06	**-0.08**	1.00																											
10 North West	-0.04	0.03	0.01	0.04	0.00	**-0.09**	**-0.10**	**-0.14**	-0.06	1.00																										
11 South East	0.01	-0.02	-0.01	0.02	0.02	**-0.13**	**-0.14**	**-0.19**	**-0.08**	**-0.14**	1.00																									
12 South West	-0.01	-0.02	-0.01	-0.02	0.03	**-0.09**	**-0.11**	**-0.14**	-0.06	**-0.10**	**-0.14**	1.00																								
13 West Midlands	-0.03	0.04	0.00	-0.03	0.05	**-0.08**	**-0.09**	**-0.12**	-0.05	**-0.09**	**-0.12**	**-0.09**	1.00																							
14 Yorkshire & the Humber	0.01	-0.03	-0.03	0.00	-0.05	**-0.08**	**-0.09**	**-0.12**	-0.05	**-0.09**	**-0.12**	**-0.09**	**-0.08**	1.00																						
15 Scotland	-0.02	-0.01	-0.04	-0.03	-0.01	**-0.08**	**-0.09**	**-0.12**	-0.05	**-0.09**	**-0.12**	**-0.09**	**-0.08**	**-0.08**	1.00																					
16 Wales	0.01	-0.03	-0.04	0.03	0.02	-0.06	**-0.06**	**-0.09**	-0.03	**-0.06**	**-0.09**	**-0.06**	-0.05	-0.05	-0.06	1.00																			
17 Northern Ireland	0.02	-0.04	-0.02	**-0.12**	0.04	-0.06	**-0.09**	-0.03	**-0.06**	**-0.09**	**-0.06**	-0.06	-0.05	-0.05	-0.06	-0.04	1.00																			
18 Women-led business	**0.08**	0.02	0.06	0.02	-0.06	0.00	0.01	0.06	-0.02	-0.01	0.01	-0.04	-0.04	-0.02	0.00	0.02	0.02	1.00																		
19 MEG-led business	-0.01	0.00	0.04	0.05	0.05	0.01	0.04	**-0.21**	0.02	0.03	0.02	**0.07**	-0.02	-0.01	0.05	0.04	0.02	-0.04	1.00																	
20 People Management Capabilities	0.01	**0.35**	**0.14**	-0.03	-0.02	0.05	-0.03	0.01	-0.03	-0.01	-0.03	-0.05	0.01	0.01	0.05	0.04	-0.02	0.00	-0.02	1.00																
21 Business Management Capabilities	0.03	0.05	0.03	0.04	-0.06	0.02	0.03	-0.03	-0.04	0.01	0.00	-0.04	0.03	0.03	0.00	0.01	-0.03	-0.01	0.01	**0.14**	1.00															
22 Innovation in Product or Service Capabilities	**0.09**	0.05	0.02	0.01	**-0.07**	0.00	-0.01	0.03	0.00	-0.04	0.00	-0.01	0.04	-0.01	0.03	0.00	-0.03	-0.01	-0.03	**0.12**	**0.27**	1.00														
23 Raising Finance Capabilities	-0.06	**0.13**	**0.09**	-0.04	0.01	0.03	-0.02	0.04	-0.03	0.01	-0.03	0.02	-0.01	-0.05	0.00	-0.02	0.03	0.00	-0.03	**0.11**	**0.16**	**0.14**	1.00													
24 Innovation in Operations Capabilities	0.03	**0.10**	0.05	-0.01	**-0.07**	0.00	0.00	0.02	-0.02	-0.02	0.00	0.05	0.03	**-0.07**	-0.01	-0.02	-0.01	-0.01	0.01	**0.16**	**0.19**	**0.24**	**0.16**	1.00												
25 UKTI Support Awareness	**0.14**	0.02	**0.07**	0.06	**-0.12**	0.00	0.01	0.03	0.06	-0.02	-0.04	-0.04	0.00	0.02	-0.01	0.00	0.03	**0.08**	-0.03	-0.03	0.06	0.05	-0.01	0.05	1.00											
26 Support Awareness	0.02	0.03	0.06	0.03	**-0.09**	-0.02	**-0.06**	**-0.15**	0.03	0.01	**-0.09**	-0.04	-0.02	-0.02	**0.37**	-0.05	**0.20**	0.02	**0.09**	0.05	**0.08**	0.06	**0.07**	**0.08**	**0.55**	1.00										
27 Innovation in Product	**-0.16**	0.01	-0.01	-0.03	**0.11**	0.04	-0.01	0.01	0.01	0.00	-0.03	-0.02	-0.02	-0.01	0.00	-0.02	0.05	-0.04	0.01	-0.02	-0.04	**-0.15**	0.01	-0.02	-0.08	-0.04	1.00									
28 Innovation in Service	**-0.07**	0.00	0.01	-0.05	**0.09**	0.02	0.01	-0.02	0.03	0.02	-0.02	-0.04	-0.01	0.02	-0.02	0.02	0.03	-0.03	0.03	**-0.07**	-0.05	**-0.14**	0.04	**-0.07**	**-0.08**	**-0.09**	**0.34**	1.00								
29 Innovation in Product/Service/Process Capabilities	**-0.15**	0.00	-0.02	-0.05	**0.13**	0.02	0.00	0.00	0.04	0.03	-0.03	-0.05	0.00	0.01	-0.02	0.01	0.05	-0.04	0.01	**-0.05**	**-0.07**	**-0.18**	0.03	**-0.06**	**-0.11**	**-0.11**	**0.59**	**0.87**	1.00						
30 Productivity [£m]	**0.09**	-0.04	**0.51**	-0.02	-0.02	-0.03	-0.03	**0.16**	-0.01	-0.04	0.01	0.00	-0.02	-0.02	-0.04	-0.05	0.00	**0.10**	0.02	0.01	-0.05	-0.01	0.02	0.01	**0.11**	0.05	0.05	0.04	0.03	1.00					
31 Applied for Finance in past 12 months	-0.04	0.05	-0.01	0.03	0.01	0.00	0.02	0.03	-0.01	-0.01	0.01	-0.03	0.01	0.00	0.01	-0.03	-0.02	0.01	0.02	-0.03	0.04	-0.04	**0.09**	0.02	0.00	0.03	**0.10**	**0.10**	**0.12**	-0.01	1.00				
32 Finance Used: Debt	0.02	**0.11**	0.07	-0.01	0.01	-0.02	0.05	**-0.16**	-0.07	0.03	0.08	0.06	-0.08	0.02	0.09	-0.02	0.02	0.02	**0.12**	**0.17**	0.06	-0.03	**0.14**	0.04	0.01	0.05	0.02	-0.03	-0.03	-0.08	0.03	1.00			
33 Finance Used: Equity	**0.13**	0.05	0.09	-0.03	-0.10	-0.04	-0.08	**0.16**	-0.07	-0.03	0.03	-0.04	-0.01	0.01	-0.01	0.01	-0.02	0.07	0.01	**0.12**	0.00	**0.11**	0.09	-0.01	**0.10**	0.08	**-0.10**	-0.07	-0.08	**0.14**	0.02	-0.04	1.00		
34 Finance Used: Other	0.01	**0.17**	0.09	-0.02	0.02	0.05	-0.04	0.02	0.05	0.00	-0.06	-0.02	0.08	-0.01	0.05	-0.05	-0.04	0.01	-0.01	**0.20**	0.04	-0.01	**0.17**	-0.02	-0.03	0.03	0.03	0.02	0.02	0.08	-0.01	0.01	-0.03	1.00	
35 Expectation of Employment Change	-0.05	**-0.08**	-0.03	**0.11**	**0.06**	-0.03	0.00	**-0.07**	0.02	0.02	0.03	-0.01	0.00	0.03	0.02	0.00	0.00	-0.02	0.03	**-0.09**	-0.05	**-0.10**	**-0.06**	**-0.09**	**-0.06**	-0.02	**0.07**	**0.08**	**0.11**	-0.09	0.04	0.03	-0.07	-0.02	1.00
36 Expectation of Turnover Change	-0.05	-0.04	0.02	**0.11**	**0.06**	-0.01	0.01	**-0.08**	0.01	0.03	-0.01	-0.03	-0.01	0.05	0.02	0.01	0.05	0.02	0.06	**-0.09**	-0.04	**-0.14**	-0.03	-0.05	-0.05	0.00	**0.11**	**0.13**	**0.15**	0.01	0.06	0.05	-0.07	-0.06	**0.28**	1.00
37 Expectation of Sales Growth	**-0.09**	**-0.09**	-0.07	**0.09**	**0.08**	-0.04	0.03	**-0.08**	0.05	**0.06**	-0.02	0.04	0.01	0.05	-0.02	0.00	-0.03	-0.04	**0.08**	**-0.19**	**-0.11**	**-0.21**	**-0.07**	**-0.11**	-0.05	-0.04	**0.09**	**0.13**	**0.14**	-0.05	0.06	0.06	-0.08	0.00	**0.24**	**0.35**

Note: Correlations in italics significant at 5% level (2-tailed); correlations in bold significant at 1% level (2-tailed). Correlations between continuous variables are Pearson's, correlations between continuous and categorical dummy variables are point-biserial, correlations between categorical dummies are phi coefficients. Appendix 1 holds a table with respective observations data to corresponding correlated pairs.

4. RESULTS

This section presents results of analyses performed to explain internationalisation activity of UK new ventures.

4.1 Bivariate Analysis

The first part of the analysis examines differences between internationalised and non- internationalised new ventures, with Table 4.1 highlighting the main characteristics of the firms in the sample. On average, the internationalised new ventures in the sample employed 13 individuals, with no statistically significant difference observed between these and non-internationalised new ventures (U=242351, Z=-0.86, p=0.39, r=0.02). Output per worker within these firms averaged nearly £170,000, comparing favourably over their non-internationalising counterparts (just over £100,000), depicting a statistically significant difference (U=39434, Z=-6.37, p<0.01, r=0.22). On average, internationalised new ventures' turnover for the previous financial year was just over £2m, which is double of the firms focused on the domestic market, a difference that is statistically significant (U=114970, Z=-5.24, p<0.01, r=0.14). Internationalised new ventures, on average, have been trading slightly longer than those non-internationalised counterparts, a difference that is statistically significant (U=213452, Z=-4.20, p<0.01, r=0.10). Finally, there is only a coincidental and small disparity found between the level of awareness of state support organisations between internationalised new ventures and their non-internationalised counterparts (U=241037, Z=-0.99, p=0.32, r=0.02).

Table 4.1: Firm characteristics

	Non-internationalised new ventures		Internationalised new ventures		
	Median	**Mean**	**Median**	**Mean**	**p-value**
Firm Size	2.00	11.14	2.00	13.2	0.391
Firm's Age	3.00	3.18	4.00	4.00	0.000***
Awareness of State Support	4.00	3.86	4.00	4.00	0.321
Productivity (£000s)	41.91	107.07	84.52	169.75	0.000***
Turnover (£000s)	127.50	1053.92	220.00	2171.91	0.000***

Note: N=1881, except Productivity - N=848, Turnover - N=1356; All tests are independent samples non-parametric Mann-Whitney U-tests; One-sample Kolmogorov-Smirnov tests indicated non-normality in variables' distribution.

The majority of internationalised new ventures in the sample were business services firms, which accounted for over 57% of the sample. Consumption-based service firms (21%) and manufacturing firms (14%) are the next two largest groupings. The distribution of internationalised new ventures by sector of operation is significantly different from that of their non-internationalised counterparts as observed from Table 4.2 ($\chi^2(4, N=1881)=119.80$, $p<0.001$, $V=0.25$). In particular, there is a higher proportion of internationalised new ventures in the manufacturing and business services categories than in the non-internationalised cohort of firms.

Table 4.2: Sectoral Make-up of New Ventures

Sector	**All New Ventures**	**Non-internationalised new ventures**	**internationalised new ventures**
Primary & Construction	11.3%	12.9%	4.1%
Manufacturing	6.4%	4.8%	14.1%
Business Services	39.9%	36.3%	57.2%
Consumption-Based Services	28.9%	30.5%	21.3%
Education & Personal Services	13.5%	15.6%	3.4%
Total	100%	100%	100%

From Table 4.3 it is clear that internationalised new ventures are not equally distributed across the regions of the UK. indeed, there are clearly regions that are characterised by a greater concentration of such firms (e.g. London and South East), although this could be expected as a natural consequence of a greater concentration of entrepreneurial activity in such areas. When the regional distribution of internationalised and non-internationalised new ventures is compared, only weak evidence of a statistically significant difference between sampled firms' concentrations was observed ($\chi^2(11, N=1881)=19.49$, $p=0.053$, $V=0.10$).

Table 4.3: Region and Internationalisation Activity

Regions	**Non-internationalised new ventures**	**internationalised new ventures**
East Midlands	7.8%	6.6%
East of England	9.8%	8.8%
London	14.7%	22.5%
North East	3.2%	1.9%
North West	9.8%	6.6%

South East	15.8%	17.2%
South West	9.5%	8.8%
West Midlands	7.7%	5.3%
Yorkshire & the Humber	7.0%	7.8%
Scotland	7.5%	6.3%
Wales	3.7%	4.1%
Northern Ireland	3.6%	4.4%
Total	100%	100%

A significantly lower proportion of internationalised new ventures were led by females than their non-internationalised counterparts (χ^2(1, N=1881)=13.39, p<0.001, V=0.08). In particular, only 12.8% of these firms were led by females, compared with 21.8% of non-internationalised new ventures. Furthermore, no differences were observed with respect to ethnic minority led businesses, which accounted for around 9% of firms in both cases (χ^2(1, N=1881)=0.14, p=0.711, V=0.01). The results indicate that whilst there is a clear 'gender gap' in exporting, no ethnicity-based bias is detected.

Table 4.4: Gender and Ethnicity and Internationalisation Activity

	Non-internationalised new ventures	**internationalised new ventures**
Women-led business	21.8%	12.8%
Ethnic minority-led business	9.0%	9.7%

Significant differences in the firms' rating of their own capabilities were observed. Whilst only coincidental differences are observed for three capabilities: people management (χ^2(1, N=1881)=0.39, p=0.531, V=0.01), business management (χ^2(1, N=1881)=2.14, p=0.144, V=0.03), and innovation in operations (χ^2(1, N=1881)=1.18, p=0.278, V=0.03), with a minor skew towards internationalised new ventures, there are interesting associations depicted in two capabilities. In particular, internationalised new ventures report a higher level of capability in product or service innovation (χ^2(1, N=1881)=14.14, p<0.001, V=0.09). Conversely, firms that sell to overseas markets have markedly lower levels of capabilities in raising finance compared to their domestically-oriented counterparts (χ^2(1, N=1881)=6.00, p=0.014, V=0.06). This could be related to the growth strategy character of market served, with domestically selling firms investing in building their UK presence, whilst more productive exporters

typically selling spare capacity.

Table 4.5: Capabilities and Internationalisation Activity

	Non-internationalised new ventures	internationalised new ventures
People Management	62.2%	64.1%
Business Management	90.2%	92.8%
Innovation in Product or Service	82.1%	90.6%
Raising Finance	51.9%	44.4%
Innovation in Operations	88.5%	90.6%

Internationalisation activity may require additional finance outside of new venture's cash flows in order to stimulate business growth through market expansion. Table 4.6. shows that a higher proportion of internationalised new ventures have made applications for finance in the past 12 months than their non-internationalised counterparts, a statistically significant result ($\chi^2(1, N=1881)=7.19$, $p=0.007$, $V=0.06$). on examining the type of finance the sampled firms used, it is observed that a significantly greater proportion of internationalised new ventures used equity-type finance ($\chi^2(1, N=678)=0.41$, $p=0.522$, $V=0.03$), with statistically significant difference observed for firms that used debt ($\chi^2(1, N=678)=11.73$, $p=0.001$, $V=0.13$) or other types of finance ($\chi^2(1, N=678)=0.14$, $p=0.710$, $V=0.01$). In other words, the analysis suggests that internationalised new ventures are twice as likely to be using equity type of finance, with 22% of these firms reporting that this was indeed used, compared with 11% of their non-internationalised counterparts.

Table 4.6: Finance and Internationalisation Activity

	Non-internationalised new ventures	internationalised new ventures
Applied for Finance in past 12 months	19.0%	25.6%
Finance Used: Debt	69.2%	72.1%
Finance Used: Equity	11.1%	22.5%
Finance Used: Other	40.1%	41.9%

Table 4.7 depicts differences between the two groups with respect to the particular types of innovation they undertake. The results indicate that, overall, internationalised new ventures are more innovative than their domestically-orientated counterparts, as a greater proportion of internationalised new ventures report engagement in (63.1%) either

product or service, or process innovation (63.1%) than non-internationalised firms (43.9%), a difference that is statistically significant (χ^2(1, N=1881)=39.46, p<0.001, V=0.14). Breaking the analysis down into product or service innovation a similar pattern is observed; in particular, nearly 39% of internationalised new ventures engaged in product innovation, whilst only approximately 20% of non-internationalised new venture firms do, a statistically significant difference (χ^2(1, N=1864)=49.56, p<0.001, V=0.16). Similarly, service innovation is more dominant among internationalised new ventures firms (48.1%) than among domestically-selling ones (38.9%), again this result is statistically significant (χ^2(1, N=1868)=9.29, p=0.002, V=0.07).

Table 4.7. Innovation Type and Internationalisation Activity

	Non-internationalised new ventures	**internationalised new ventures**
Product	20.4%	38.8%
Service	38.9%	48.1%
Product/ Service/ Process	43.9%	63.1%

Table 4.8 depicts the differences between the two groups with regards to their awareness of UKTI support. There is a substantially higher level of awareness of UKTI support among internationalised new ventures (54.1%) than their domestically-focused counterparts (35.9%). The difference between the two cohorts of firms was found to be statistically significant (χ^2(1, N=1881)=36.94, p<0.001, V=0.14).

Table 4.8. UKTI Support Awareness and Internationalisation Activity

	Non-internationalised new ventures	**internationalised new ventures**
UKTI Support Awareness	35.9%	54.1%

With respect to future expectations of performance, the results suggest that internationalised new ventures tend to have a higher level of optimism. A higher proportion of these firms reported that they expected to see increasing turnover (χ^2(2, N=1829)=6.79, p=0.034, V=0.06), employment increase over the new 12 months (χ^2(2, N=1864)=8.79, p=0.012, V=0.07), as well as an increase in their sales over the next 3 years (χ^2(1, N=1881)=15.51, p<0.001, V=0.09).

Table 4.9. Future Expectation and Internationalisation Activity

	Non-internationalised new ventures	internationalised new ventures
Turnover: Increase	62.3%	69.9%
Turnover: Decrease	5.8%	3.8%
Turnover: No Change	31.9%	26.3%
Employment: Increase	39.9%	48.3%
Employment: Decrease	5.6%	6.3%
Employment: No Change	54.6%	45.5%
Sales Increase	80.4%	89.7%

The following section examines ceteris paribus effects of internationalisation activity, in particular, investigating whether the bivariate results hold when other effects are accounted for.

4.2 Assessing the Antecedents of internationalised new ventures

This section presents the results of the regression analysis exploring the antecedents of internationalised new ventures in order to identify the characteristics that promote and negate a new venture's propensity to export. Tables 4.10 and 4.11 report the results of the logit regression models. In total, four models are presented; Model 1 presents a base model with basic characteristics of the firms (total employment, age, turnover, sector, and regional location); Model 2 builds in characteristics of the owners, capabilities, networks of support organisations, and innovation activity; Model 3 includes a broader exploration of innovation, and Model 4 includes future expectations. These four models represent the most complete coverage of the dataset, including over 1300 observations (as not all firms answered all questions our sample size is slightly restricted). Two further models, which incorporate productivity variables (again reducing the sample size to c.600 observations), can be found in Appendix 2.

The results highlight a number of interesting findings. Firstly, we find that the age of the venture has a positive influence on propensity of new

venture to internationalise; thus as new ventures develop and, more importantly, survive they are increasingly more likely to internationalise. Consequently, the internationalisation of a new firm can be seen as a sign that is likely to survive the initial years after start-up, or has survived the initial start-up phase and is developing export markets as their liability of newness recedes.

There is evidence that the gender of the business owner has some influence on the propensity of a new venture to internationalise but that their ethnicity does not. The analysis found evidence to suggest that new ventures led by women have a lower propensity to internationalise. However, this result may not be directly related to gender, but instead to the types of new ventures started by females as further examination of the data found higher proportions of female owners in sectors that tend to be more 'untraded' in nature, particularly consumption-based services and the education and health care sectors.

The types of innovation activities undertaken by new ventures have a significant effect on their propensity to internationalise. The analysis highlights the fact that innovation activities that focus on the introduction of new goods has a positive effect on the firm's propensity to internationalise. Conversely, no significant relationship is observed with respect to innovation activities that focus on the introduction of new services.

Table 4.10. Logistic Regression of Internationalisation Activity

	Model 1		S.E.	Model 2		S.E.
Employment ['000]	0.307		0.003	0.861		0.004
Turnover [£m]	0.020		0.013	0.022	*	0.013
Age	0.200	***	0.054	0.181	***	0.056
Manufacturing	2.245	***	0.371	2.262	***	0.384
Business Services	1.508	***	0.319	1.493	***	0.327
Consumption-Based Services	0.860	**	0.339	0.866	**	0.348
Education & Personal Services	-0.111		0.448	0.095		0.461
East Midlands	-0.536	*	0.325	-0.466		0.340
East of England	-0.228		0.281	-0.253		0.295
North East	-1.012	*	0.565	-1.055	*	0.593
North West	-0.866	***	0.317	-0.671	**	0.331
South East	-0.275		0.238	-0.215		0.253
South West	-0.345		0.278	-0.208		0.294
West Midlands	-0.715	**	0.342	-0.746	**	0.359
Yorkshire & the Humber	-0.318		0.310	-0.304		0.325
Scotland	-0.511		0.320	0.144		0.379
Wales	-0.320		0.403	-0.330		0.421
Northern Ireland	0.190		0.384	0.814	*	0.429
Women-led business				-0.507	**	0.227
MEG-led business				-0.147		0.271
People Management Capabilities				0.014		0.167
Business Management Capabilities				-0.022		0.279
Innovation in Product or Service Capabilities				0.671	***	0.246
Raising Finance Capabilities				-0.468	***	0.155
Innovation in Operations Capabilities				-0.071		0.260
UKTI Support Awareness				1.037	***	0.191
Support Awareness				-0.168	***	0.044
Innovation in Goods/Services/Processes				0.461	***	0.156
Constant	-2.956	***	0.393	-3.269	***	0.534
DF	19			29		
N	1356			1356		
Hosmer-Lemeshow Test	7.04			11.98		
Hosmer-Lemeshow Test p	0.53			0.15		
Percentage Correct	80.24			81.27		
-2LL	1224.17			1152.18		
Nagelkerke R^2	0.13			0.21		

Note: ***significant at the 1% level; **significant at the 5% level; *significant at the 10% level.

Table 4.11. Logistic Regression of Internationalisation Activity

	Model 3		S.E.	Model 4		S.E.
Employment ['000]	1.386		0.004	0.001		0.004
Turnover [£m]	0.020		0.013	0.020		0.013
Age	0.186	***	0.056	0.193	***	0.058
Manufacturing	2.138	***	0.389	2.087	***	0.391
Business Services	1.551	***	0.328	1.544	***	0.330
Consumption-Based Services	0.843	**	0.348	0.797	**	0.351
Education & Personal Services	0.129		0.464	0.210		0.466
East Midlands	-0.394		0.343	-0.329		0.347
East of England	-0.230		0.298	-0.158		0.301
North East	-1.102	*	0.595	-1.020	*	0.599
North West	-0.654	*	0.335	-0.635	*	0.346
South East	-0.194		0.256	-0.150		0.260
South West	-0.188		0.298	-0.108		0.302
West Midlands	-0.688	*	0.364	-0.612	*	0.368
Yorkshire & the Humber	-0.309		0.327	-0.272		0.337
Scotland	0.140		0.383	0.127		0.393
Wales	-0.295		0.425	-0.241		0.430
Northern Ireland	0.864	**	0.430	0.912	**	0.433
Women-led business	-0.482	**	0.227	-0.496	**	0.230
MEG-led business	-0.139		0.270	-0.123		0.274
People Management Capabilities	0.034		0.169	-0.032		0.176
Business Management Capabilities	0.017		0.281	0.076		0.292
Innovation in Product or Service Capabilities	0.598	**	0.247	0.512	**	0.253
Raising Finance Capabilities	-0.509	***	0.157	-0.549	***	0.160
Innovation in Operations Capabilities	-0.030		0.262	-0.051		0.269
UKTI Support Awareness	1.026	***	0.193	1.002	***	0.195
Support Awareness	-0.162	***	0.044	-0.153	***	0.045
Innovation in Goods	0.740	***	0.174	0.732	***	0.176
Innovation in Services	-0.047		0.166	-0.102		0.169
Expectation of Employment Change (12m): Increase				-0.090		0.337
Expectation of Employment Change (12m): Decrease				-0.172		0.342
Expectatoin of Turnover Change (12m): Increase				0.057		0.192
Expectatoin of Turnover Change (12m): No change				-0.524		0.401
Expectation of Sales Growth (3y)				0.300		0.262
Constant	-3.294	***	0.536	-3.387	***	0.669
DF	30			35		
N	1343			1318		
Hosmer-Lemeshow Test	11.71			4.56		
Hosmer-Lemeshow Test p	0.16			0.80		
Percentage Correct	82.06			82.17		
-2LL	1133.87			1106.79		
Nagelkerke R^2	0.22			0.22		

Note: ***significant at the 1% level; **significant at the 5% level; *significant at the 10% level.

The findings suggest that the firms' capabilities influence their propensity to internationalise. Importantly, we find that those firms reporting higher levels of capabilities in terms of innovation management are more likely to internationalise, providing further evidence that innovation is one of the key determinants of the internationalisation of new ventures. Conversely, there is evidence that new ventures firms reporting higher levels of financial acumen are less likely to internationalise. This finding suggests that possessing higher levels of innovative capabilities is likely to enable a firm to expand its markets through internationalisation. Equally, those

possessing higher levels finance seeking acumen may instead be focussed on raising funds rather than market growth, possibly as the business may require repeated cash injections to survive.

Awareness of specific support organisations influences their propensity to internationalise, as the results show that those firms that are aware of UKTI, the UK's export support agency, have a higher propensity to internationalise. Conversely, the results show that a general awareness of support organisations actually has a negative effect on the propensity to internationalise. Thus, it appears that it is the specificity of knowledge that is the key to internationalisation and interacting with a specialist organisation that can provide specific help to the firms in this particular activity.

Table 4.12: Summary of results

Variable	**Influence on Propensity to Internationalise**
Age	Positive effect
Employees	No effect
Female manager	Negative effect
Ethnic minority manager	No effect
Innovator	Positive effect
Goods innovator	Positive effect
Service innovator	No effect
Capabilities	Significant effect
People Management Capabilities	No effect
Business Management Capabilities	No effect
Innovation Management Capabilities	Positive effect
Finance seeking Capabilities	Negative effect
Operational innovation capabilities	No effect
Sector	Significant effect
Primary and construction	No effect
Manufacturing	Positive effect
Business Services	Positive effect
Consumption-based Services	Positive effect
Education and Health Related Services	No effect
Sales focussed	Positive effect
Location	Weak effect
North-East Region	Significantly lower than base region (London)
North-West Region	Significantly lower than base region (London)
West Midlands	Significantly lower than base region (London)
All other regions	Not Significantly different to base region (London)
Finance	Weak positive effect
Sought finance in past 12 months	No effect
Sought equity finance	No effect
Sought debt finance	No effect
Sought other finance	No effect
Turnover	Positive effect
Support	
Awareness of specific export support	Positive effect
Awareness of network of general support	Negative effect

4.3 The Geographic Distribution of internationalised new ventures

The relative neglect of geographic factors with respect to internationalised new ventures means that there is very little analysis of both their location and the locational factors that may influence the number of these firms in a given region. In order to begin to address this issue, this section presents work on the geographic distribution of these firms as well as an initial examination of regional factors that may affect the number of internationalised new ventures found in a given region.

Figure 4.1a: The Geographic Distribution of Early Internationalising Start-up Firms – England, Wales and Northern Ireland

Figure 4.1b: The Geographic Distribution of Early Internationalising Start-up Firms – Scotland

The first point with respect to the geography of internationalised new ventures is that the maps highlight a relatively uneven distribution across the UK (Figures 4.1a & 4.1b). Yet, while their distribution may be uneven internationalised new ventures can be observed within all regions of the UK. Two clear patterns emerge from the analysis; firstly, over 85% of these firms are located in England, with the devolved economies of Scotland, Wales and Northern Ireland accounting for 15%. Furthermore, the uneven distribution is more pronounced when it comes to early internationalising new ventures located within the London and South East regions, which account for around 16% of new ventures respectively (around one-third overall) but over 22% and 17% of internationalised new ventures respectively (just under 40% overall).

While the distribution of internationalised new ventures is geographically uneven, this does not mean that these firms are confined to a small number of areas. One interesting aspect of the maps presented in Figures 4.1a and b is the fact that these firms can be observed in rural areas of the country, for example mid-Wales, South West England and the border areas of Northern Ireland. In Scotland a clearer pattern is observed, with these firms mainly concentrated along the M8 corridor between Glasgow and

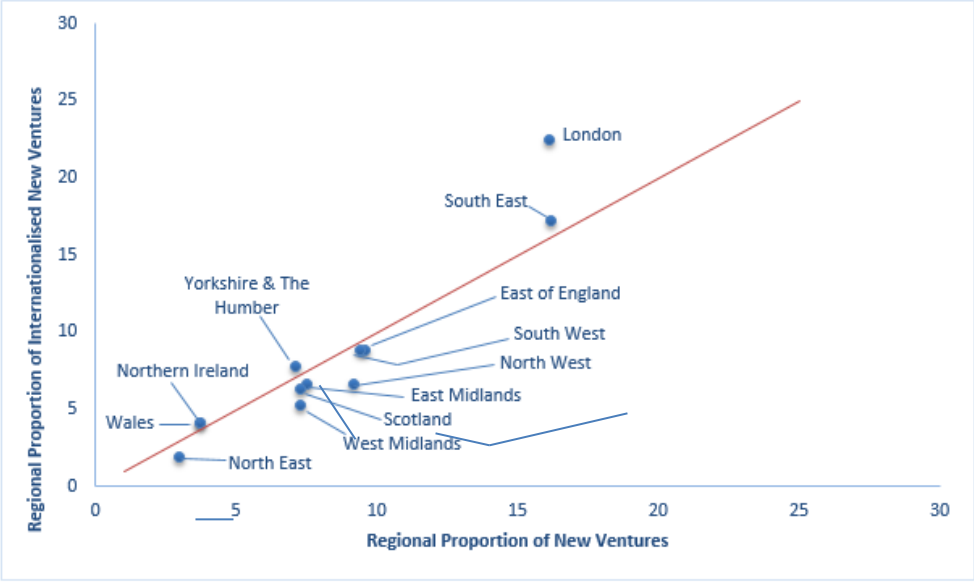
Edinburgh, as well as the Aberdeen area.

Table 4.13 Regional Distribution of Internationalised New Ventures

Region	Number of Internationalised New Ventures	Proportion of Internationalised New Ventures (%)
North East	6	1.9
North West	21	6.6
Yorkshire and The Humber	25	7.8
East Midlands	21	6.6
West Midlands	17	5.3
East of England	28	8.8
London	72	22.5
South East	55	17.2
South West	28	8.8
Wales	13	4.1
Scotland	20	6.3
Northern Ireland	14	4.4
England	273	85.3
Total	320	100

While the analysis demonstrates that internationalised new ventures are found in all regions of the UK, it is also true that a number of lagging regions (Northern Ireland, Wales, and Yorkshire and Humberside) have a higher proportion of internationalised new ventures compared with their population of start-ups overall (see Figure 4.2).

Figure 4.2: Regional Proportions of Internationalised New Ventures and all New Ventures Compared*



*Wales and Northern Ireland are have identical values

Furthermore, when using an alternative method of examining the regional distribution of internationalised new ventures by examining regional proportions with respect the overall size of the region's economy a different pattern emerges. Firstly, Figure 4.3 shows the proportion of these firms located in London is in fact commensurate with the size of the regional economy. Indeed, the analysis shows that a number of regions, Northern Ireland, East Midlands, Yorkshire and the Humber, South West and South East, actually have a higher proportion of internationalised new ventures compared to the proportion of their share of the UK GVA.

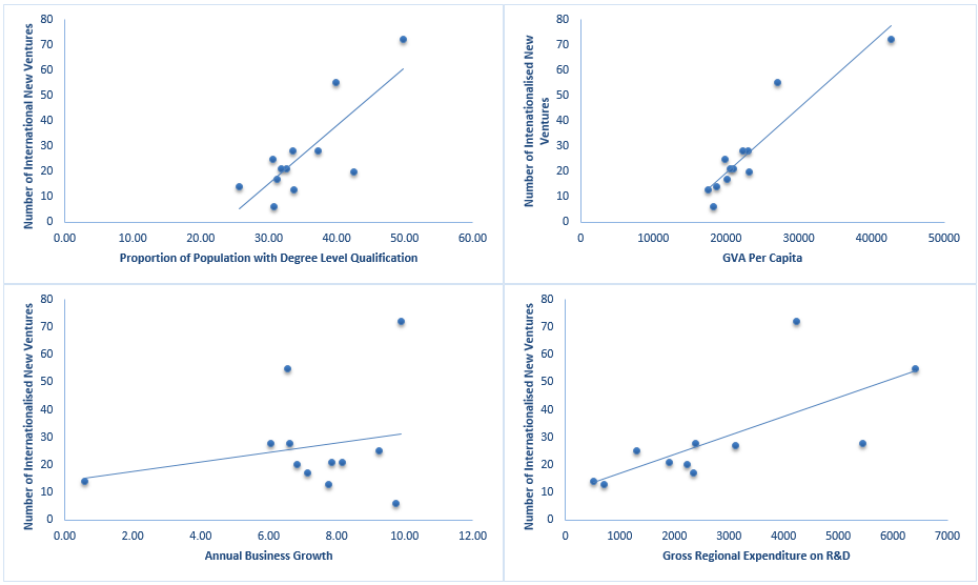
Figure 4.3: Regional Proportions of Internationalised New Ventures and Regional Share of UK GVA

Finally, with respect to location factors that may influence the number of internationalised new ventures found in a given region a number of interesting results were found. Figure 4.4 highlights a number of correlations between regional variables and the level of internationalised new ventures found there. While all show a positive influence, three are statistically significant; level of degree level qualifications in the region ($z=0.795$, $p<0.001$), regional GVA per capita ($z=0.929$; $p<0.001$); and regional gross expenditure on R&D ($z=0.711$, $p<0.05$). Thus, higher levels of dynamism with respect to regional economic performance in terms of higher levels of prosperity, a more qualified population, and a more R&D

intensive environment are related to higher levels internationalised new ventures.

As such, this analysis highlights a number of interesting findings with respect to the geography of internationalised new ventures and suggests that the regional environment is an important factor in the formation of international new ventures. Thus, these findings complement those from Section 4.2, which highlighted the antecedents of internationalised new ventures at the *firm* level, by suggesting that *both* firm level and spatial characteristics are important determinants of the internationalisation of new ventures.

Figure 4.4: Regional Socio-Economic Characteristics and Internationalised New Ventures



5. CONCLUSIONS AND RECOMMENDATIONS

5.1 The Characteristics of Internationalised New Ventures

The analysis presented in this report allows the development of a profile of internationalised new ventures in the UK, and highlights the difference between these and their non-internationalised counterparts. On average, an internationalised new venture has been trading for 4 years, employs 13 people, has a turnover of around £2m per annum and output per worker averages around £170,000. Furthermore, we find that internationalised new ventures outperform their non-internationalised counterparts in terms of turnover and output per worker, plus they have been trading for slightly longer on average. While internationalised new ventures appear to be making a larger contribution to the economy overall in terms of value adding activity, they do not create a higher number of employment opportunities. Yet, while they may not be creating a higher number of jobs that their non-internationalised counterparts, they may typically provide highly skilled, well paid, creative, knowledge-based jobs to the economy.

A number of other statistically significant differences between the two types of new ventures were noted; internationalised new ventures possess differing capabilities, they use different means of raising finance, they have different levels of awareness of relevant support institutions, and they are more innovative. Furthermore, internationalised new ventures have a different sectoral composition; for example, higher proportions of firms from the business services and manufacturing sectors were observed within this group.

5.2 The Antecedents of Internationalised New Ventures

The analysis provides further insights into the antecedents of internationalised new ventures, with both confirmatory and contradictory findings compared to the extant literature. The main finding is that the analysis confirms prior work that innovation activities are the key to the internationalisation of new ventures (Yip et al. 2000; Jones & Coviello 2005). Furthermore, these findings legitimise the current direction which

the international entrepreneurship literature is taking, with a growing interest in exploring the links between product and service innovation and internationalisation (Golovko & Valentini 2011; Hagen et al. 2014).

However, this result is nuanced by the fact that it is not all innovation activity that has a positive influence, only the introduction of new goods, following previous work that has suggested that new products lend themselves more easily to export (Roper & Hewitt-Dundas 2015). Indeed, the production of niche products has been found to facilitate early internationalisation (Hennart 2014), and good innovators may be better placed to create more novel outputs.

The importance of innovation to the internationalisation of new venture is also reinforced by the findings regarding capabilities; the analysis confirms that these do indeed influence the propensity of new ventures to internationalise (Cavusgil & Knight 2015; Weerawardena et al. 2007; Oxtorp 2014), especially where these strengths are geared towards innovation. Thus, internationalisation is promoted where a new venture is able to to build on their strengths through the pursuit of new ideas and market growth. Indeed, as capabilities are a reflection of a venture's strengths (Teece 2010) it would seem sensible to suggest that internationalisation capitalises on these. Indeed, this is reinforced by the other finding which suggests that where strengths are geared towards seeking finance, the new ventures have a lower propensity to internationalise. This may mean that capabilities in this area signal a focus on raising investment in order to ensure survival rather than product and market development. Furthermore, the finding that the longer the venture has been trading increases its propensity to internationalise suggests that these capabilities may develop over time

As noted previously, the sector in which a new venture is based has a significant influence on its internationalisation. Distinct differences in the propensity for new ventures to internationalise were observed, confirming the extant literature's assertion that this is indeed important (Mudambi & Zahra 2007; Baronchelli & Cassia 2014). Furthermore, the results confirm

that new ventures in what have been described as 'traded' sectors of the economy (Thirlwall 1980), i.e. those that are not solely reliant upon local or domestic demand for their market, are more prone to internationalising. Furthermore, we find that new ventures in the manufacturing sector have the highest propensity to internationalise, a finding that may be related to the fact that they are doing so through the creation of new products, which has been shown to be an important factor.

As innovation has emerged as a key factor in the internationalisation process, the role of networks as sources of knowledge and expertise may be of importance. However, the evidence with respect to the new ventures' networks are mixed. While access to networks has been shown to be important for internationalisation (Sharma & Blomstermo 2003; Freeman et al. 2006), these findings suggest that the specificity of these networks is important. This is highlighted by the fact that an awareness of UKTI, the UK's export promotion agency, is an important factor in promoting early internationalisation. Conversely, a broader awareness of other support agencies has a negative effect, suggesting that establishing a focussed network is the essential ingredient for new ventures to internationalise early. Engaging in developing a network containing a broad range of support organisations may merely consume scarce resources (with one of the key challenges faced by these firms is to overcome their paucity of resources (Cavusgil & Knight 2015)) and, therefore, has a negative effect on the firm.

The findings highlight the fact that access to finance influences the internationalisation of new ventures. Yet, these results do not necessarily chime with the extant literature in terms of finding a relationship between availability or a lack of finance (cf. Bloodgood et al. 1996; Fernhaber & McDougall-Covin 2009), but more around the type of funding used. Here the results suggest that it is the use of equity finance that increases the new ventures' propensity to internationalise; thus, it may be that the influence of venture capital is positive in terms of providing networks and access to markets (Shane & Cable 2002), or that attracting equity finance may signal the uniqueness of a product or service, which facilitates

international expansion (Hennart 2014). The question this finding raises is whether a lack of finance through equity is a significant barrier to a new venture's internationalisation?

As the issue of female and ethnic minority involvement in international new ventures is, at present, under-researched, the findings in this area cast some light on their potential role. The results show that female owned ventures have a lower propensity to internationalise. This finding is interesting and has two potential interpretations; whether it is related to the characteristics of female entrepreneurs, or whether it is related to the types of new ventures created by female entrepreneurs? Further analysis suggests that it may be related to the types of ventures created; a higher proportion of female entrepreneurs started ventures in the consumption-based services and health and education services sector, which are more likely to be untraded in nature. With respect to ethnic minority involvement, no significant influence was found.

5.3 Spatial Variations of Internationalised New Ventures in the UK

This report marks the first look at the spatial distribution of internationalised new ventures in the UK. While the distribution of internationalised new ventures is clearly geographically uneven, with a clear bias towards London and the South East, particularly West London and the M3/M4 corridors, it must be noted that these types of venture *are* found nationwide. Indeed, the finding that rural areas of Northern Ireland, Wales and South West England are home to these ventures shows that location outside of the competitive core of the UK is not a necessary condition. Furthermore, the fact that the location dummies in the model suggest that regional conditions do influence the internationalisation of new ventures, plus the fact that a number of location factors are important shows that this is an interesting avenue for further exploration.

The analysis presented here shows that location may potentially have a significant influence on the internationalisation of new ventures. Given the

importance of innovation and the capability to innovate to this process, regional characteristics such as higher levels of workers with degree level qualifications in a region and higher regional levels of R&D expenditure appear to be particularly pertinent. Thus, the fact that new ventures that are engaging in the innovation process are more likely to internationalise coupled with the fact that those regions that are richer in terms of knowledge inputs and more developed as knowledge-based economies account for higher numbers of these firms suggests that there is a link between the two.

Indeed, as innovation becomes to be considered to be more 'open' in nature and draws on a host of external actors through inter-organisational networks (Chesbrough 2003; Enkel et al. 2009), there appears to be scope to examine this area more thoroughly. Those firms that are able to draw on their region's knowledge resources through interaction with external actors are typically more innovative (Huggins & Johnston 2010; Kratke 2010; Moodysson & Jonsson 2007). Yet, while regional conditions may be an influence, this does not mean that only geographically proximate factors are the key (Lorentzen 2008; Torre & Rallet 2005). Indeed, the very essence of this type of new venture is their international profile, thus an interesting avenue of further research would examine the influence of both local/regional and global factors in their ability to innovate and internationalise.

5.4 Policy Implications and Recommendations

The profile of internationalised new ventures outline above shows the potential benefits they offer to the wider economy. As the report highlight the antecedents of new ventures that have a higher propensity to export, the findings that should be of use to policymakers in identifying new ventures that are likely to internationalise. As such, the report presents a number of policy recommendations.

Given the fact that internationalised new ventures are found across all regions of the UK it is important to ensure that support programmes do

indeed cover the entire country rather than focus on areas with a higher number of these firms. Likewise, as internationalised new ventures were found across all sectors, a broad rather than targeted programme of support may be required, i.e. it is not about 'picking winners' but offering support to all.

Consequently, it is recommended that the promotion of innovation should be accompanied with the promotion of internationalisation, as developing capabilities in one will enhance the capabilities in the other. Furthermore, new ventures should be supported with respect to developing their networks to gain both knowledge for innovation and also the expertise to support their exporting activities.

Furthermore, it may be useful for policy support to also be directed towards overcoming disadvantages faced by new ventures with a lower propensity to internationalise. Firstly, support programmes targeted at women owned businesses to develop export markets appears to be appropriate as these appear to be under-represented among new internationalised ventures. Secondly, support for service innovators may be of use in order to identify and overcome the barriers that may account for their relative lack of internationalisation.

5.5 Limitations and Directions for Further Research

This project has provided an in-depth analysis of internationalised new ventures in terms of how they differ from other new ventures, their antecedents, and their spatial distribution. While the analysis has highlighted a number of useful findings, there are a number of limitations. Firstly, in terms of internationalisation activity, the analysis is limited to examining exports as this is the only type of cross border activity the data covers. In addition, the extent of the new ventures' internationalisation is not known; this is an increasingly important factor as scholars come to distinguish internationalised new ventures not only through engagement in a broader range of entry modes but also by their 'international entrepreneurial orientation', 'global mindset' or 'global vision' of their

founders (Gabrielsson et al. 2008; Nummela et al. 2004; Nummela et al. 2009; Kuivalainen et al. 2007). Indeed, as innovation has been shown to be of importance to the internationalisation process, it would be interesting to examine the extent of the firms' engagement in international knowledge networks/innovation systems.

While the results highlight the factors that influence internationalisation of new ventures, it would also be useful to explore in more depth the barriers faced by those that have not. It is assumed in the analysis that each firm has the potential to internationalise; this poses the question whether those new ventures that have not internationalised as yet will internationalise at all? Additionally, are there firms in the sample that will eventually internationalise after five years of trading and are they significantly different from those that do it before they reach five? Furthermore, it will also be an interesting exercise to utilise further incarnations of the LSBS to examine the survival of these new ventures over the coming years to look at potential differences between internationalised and non-internationalised new ventures.

Finally, while the regional/location effects on the propensity of nerw ventures to internationalise are interesting further work is required in order to capture the individual effects of location on each firm. While the location of each new venture is known, what is unknown is the decision as to why the firms are located where they are located. In short, is location a deliberate choice?

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Appendix 1

Number of Observations for Correlation Pairs

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1 Dependent Variable: Exporting	1881																																				
2 Employment	1861	1881																																			
3 Turnover [£m]	1356	1356	1356																																		
4 Age	1861	1861	1356	1881																																	
5 Sectors	1861	1861	1356	1861	1881																																
6 East Midlands	1881	1861	1356	1881	1881	1881																															
7 East of England	1881	1861	1356	1881	1881	1881	1881																														
8 London	1881	1861	1356	1881	1881	1881	1881	1881																													
9 North East	1881	1861	1356	1881	1881	1881	1881	1881	1881																												
10 North West	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881																											
11 South East	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881																										
12 South West	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881																									
13 West Midlands	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																								
14 Yorkshire & the Humber	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																							
15 Scotland	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																						
16 Wales	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																					
17 Northern Ireland	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																				
18 Women-led business	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																			
19 MEG-led business	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																		
20 People Management Capabilities	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																	
21 Business Management Capabilities	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881																
22 Innovation in Product or Service Capabilities	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881															
23 Raising Finance Capabilities	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881														
24 Innovation in Operations Capabilities	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881													
25 UKTI Support Awareness	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881												
26 Support Awareness	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881											
27 Innovation in Goods	1864	1864	1347	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864										
28 Innovation in Services	1868	1868	1351	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1868	1855	1868										
29 Innovation in Goods/Services/Processes	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1864	1868	1881									
30 Productivity [£m]	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	848	841	844	848	848								
31 Applied for Finance in past 12 months	1845	1845	1345	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1831	1834	1845	839	1845							
32 Finance Used: Debt	678	678	535	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	675	678	678	372	677	678						
33 Finance Used: Equity	678	678	535	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	675	678	678	372	677	678	678					
34 Finance Used: Other	678	678	535	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	678	675	678	678	372	677	678	678	678				
35 Expectation of Employment Change	1864	1864	1346	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1864	1847	1851	1864	840	1828	671	671	671	1864			
36 Expectation of Turnover Change	1829	1829	1338	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1829	1813	1819	1829	842	1797	664	664	664	1817	1829		
37 Expectation of Sales Growth	1881	1861	1356	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1881	1864	1868	1881	848	1845	678	678	678	1864	1829	1881	

Appendix 2

Regressions of Internationalisation Activity Specified with Reduced Observations

	Model 5		S.E.	Model 6		S.E.
Employment ['000]	2.416		0.004	-0.002		0.006
Turnover [£m]	0.009		0.017	0.042	**	0.018
Age	0.151	**	0.073	0.080		0.092
Manufacturing	1.744	***	0.451	1.786	***	0.609
Business Services	1.249	***	0.391	1.587	***	0.520
Consumption-Based Services	0.202		0.418	0.658		0.535
Education & Personal Services	-0.204		0.551	-0.619		0.899
East Midlands	-0.403		0.418	-0.463		0.677
East of England	-0.203		0.386	0.534		0.527
North East	-1.386	*	0.842	-1.548		0.942
North West	-0.792	*	0.425	-0.149		0.550
South East	-0.570	*	0.344	-0.233		0.459
South West	-0.468		0.424	-0.245		0.503
West Midlands	-0.739	*	0.444	-1.397	*	0.753
Yorkshire & the Humber	-0.308		0.393	0.613		0.541
Scotland	-0.355		0.503	0.794		0.633
Wales	-0.260		0.509	0.415		0.676
Northern Ireland	0.979	*	0.561	-0.039		0.912
Women-led business	-0.454		0.298	0.266		0.371
MEG-led business	-0.143		0.339	0.106		0.479
People Management Capabilities	-0.078		0.609	-0.235		0.302
Business Management Capabilities	0.848	*	0.492	-0.085		0.536
Innovation in Product or Service Capabilities	0.783	**	0.368	0.937	*	0.518
Raising Finance Capabilities	-0.369	*	0.202	-0.296		0.287
Innovation in Operations Capabilities	-0.076		0.364	-0.260		0.450
UKTI Support Awareness	1.280	***	0.251	2.120	***	0.366
Support Awareness	-0.165	***	0.058	-0.274	***	0.077
Innovation in Goods	0.824	***	0.218	1.039	***	0.289
Innovation in Services	-0.096		0.213	-0.296		0.285
Productivity [£m]	0.381		0.377			
Applied for Finance in past 12 months				0.039		0.331
Finance Used: Debt				0.477		0.300
Finance Used: Equity				0.296		0.368
Finance Used: Other				0.456		0.279
Constant	-3.716	***	0.945	-3.732	***	1.043
DF	31			34		
N	838			532		
Hosmer-Lemeshow Test	0.94			12.85		
Hosmer-Lemeshow Test p	1.00			0.12		
Percentage Correct	82.34			85.15		
-2LL	685.21			400.14		
Nagelkerke R^2	0.27			0.36		

Note: *** denotes significance at 1% level; ** denotes significance at 5% level; * denotes significance at 10% level.

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