Entrepreneurship and the Determinants of Firm Survival within Regions: Human Capital, Growth Motivation and Locational Conditions

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Abstract

Despite a growing body of research on firm survival, little is known about the factors impacting upon survival rates at a micro-spatial level. This study, therefore, analyses firm survival across local environments in the context of a peripheral region; namely, the case of Wales in the UK. It examines how theories relating to human capital, growth motivation and locational conditions may explain survival within a region. Drawing on data of survival patterns for a cohort of firms, it is found that each of the three theories at least partly explain firm survival, with it being clear that human capital relating to the experience of entrepreneurs, as well as the growth motivation of their firms resulting from the strategic choices they make, impact upon rates of survival. It is also found that the local environment contributes to the likelihood of its survival. In particular, it is found that locational factors have a potential influence on the human capital allocated to enterprise, as well as how this capital is utilised via growth motivation. This suggests that not only do locational factors contribute to differing rates of entrepreneurship, but that such factors also impact on the durability of firms over time.

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Key words: entrepreneurship; firm survival; human capital; growth motivation; locational conditions; regions; localities; Wales.

JEL Codes: L26; L53; O1; R11.

1. Introduction

Existing studies of firm survival have suggested that a whole host of factors may influence the extent to which entrepreneurs are able to establish viable business concerns. The most prominent underlying influences concern the human capital of entrepreneurs (Gimmon and Levie 2010; Rauch and Rijsdijk 2013), the growth motivation of entrepreneurs in terms of the development of their firms (North, Leigh, and Smallbone 1992), as well as external environmental factors relating to the spatial location of the firms and the industrial structure within which firms operate (Renski 2011; Stephan 2011; Pe'er, Vertinsky, and Keil 2016). Most studies have analysed survival within or across nations and regions, and have generally indicated that the role of entrepreneurial capacity and orientation alongside locational and environmental factors play a stronger or weaker role on survival rates contingent upon the types of firms considered and the contextual parameters employed by the researchers (Bartelsman, Scarpetta, and Schivardi 2003; Fotopoulos and Louri 2000; Fritsch, Brixy, and Falck 2006; Helmers and Rogers 2008).

       Overall, the growing body of scholarly research on firm survival means that there is quite a nuanced understanding of why some firms survive and others wither. However, a potential gap in our knowledge is the extent to which the factors most commonly impacting

upon survival rates are significant when analysing firms at a more micro-spatial level. In particular, the current research base has largely ignored the factors influencing the survival of firms located *within* a particular region. This would seem to be an important omission given the growing recognition that differences in localised sub-regional contextual and cultural factors are found to impact upon entrepreneurship (Huggins and Thompson 2014; 2015). Given this, it may well be the case that localised micro-spatial environments have a role to play in determining the survival of a firm. This is of particular relevance to entrepreneurship and business support policy, and the need for such policies to be sufficiently attuned and tailored to local business environments (North and Smallbone 2006; Thompson, Jones-Evans, and Kwong 2012). Such relevance is likely to be highly significant for localities situated in peripheral regional landscapes as manifest by low levels of economic development and sustainable entrepreneurship.

As a result of an apparent knowledge gap, the aim of this paper is to analyse the factors impacting upon firm survival across the micro-spatial local environments of a peripheral region, based on the case of Wales in the UK. The paper seeks to analyse the extent to which the human capital, growth motivation and location theories of firm survival best explain the *within* region context. It attempts to outline how these theories, although operating at different levels, may be integrated. In particular, it aims to contribute to both scholarly and policy level debates that increasingly acknowledge the heterogeneity of regional environments, and the requirement for differentiated solutions across these environments. In doing this, it attempts to move beyond analyses that have traditionally focused on the study of success factors in leading economic regions, and aims to provide new findings on the determinants of firm survival in the multitude of regions that remain relatively peripheral to the core regional engines of economic growth within national economies. Drawing on data from over 1,000 firms formed in the late 1990s, a multivariate approach is adopted to isolate the impact of variables through the use of binary logistic regression modelling.

The remainder of the paper is structured as follows. Section 2 outlines the nature of entrepreneurship in peripheral regions and how this affects survival before outlining the concepts framework and hypotheses covered by the study. Section 3 introduces the data used within this study and the methods used to analyse the various relationships hypothesised in Section 2. The results are presented in Section 4. Section 5 discusses the implications for the role of entrepreneurship and firm ownership in economic development as well as the

implications for policy to support entrepreneurial endeavours, with Section 6 concluding the paper.

2. Theories of Firm Survival

This section begins by discussing the importance of the role played by entrepreneurs and SMEs in more peripheral regions such as the case study region of Wales studied in this paper. The remaining subsections present and critique the key theories relating to firm survival - human capital, growth motivation and locational conditions – as a means of generating a series of hypotheses for empirical analysis.

Entrepreneurship and Survival in the Periphery

Entrepreneurship is often associated with highly successful regional economies where knowledge spillovers provide opportunities for entrepreneurs, and the SMEs they run, due to their flexible and innovative natures (Audretsch, Hülsbeck, and Lehmann 2012; Lawton Smith et al. 2013). However, other regions which are more peripheral and less successful often look to boost entrepreneurship to try to aid economic development (Stephens and Partridge 2011; Huggins and Williams 2011; Baumgartner, Pütz, and Seidl 2013; Stephens, Partridge, and Faggian 2013). Empirical evidence confirms the links between new firm creation, business ownership (particularly in high growth sectors such as the creative industries) and economic growth and development (Piergiovanni, Carree, and Santarelli 2012; Koster and van Stel 2014), although this is not necessarily the case for more rural areas (Anderson, Wallace, and Townsend 2015).

The longstanding nature of uneven regional spatial development within and across nations has meant that there has long been an interest in core-periphery divides (Krugman 1991; Forslid and Ottaviano 2003). Various definitions have been used to understand and describe what constitutes a peripheral region, and the extent to which this relates to being economically - particularly in relation to the financial system (Gardiner et al. 2013) - or geographically peripheral, although the two often coincide (Combes and Overman, 2004). Dinis (2006) describes peripheral regions as those that are distant and remote territories. For example, in assessing which regions can be classed as peripheral, Keeble, Owens and Thompson (1982) use proximity by road to economic activity within the EU as one measure. Others, however, have argued that the development of information and communications technologies (ICT) have made such proximity less important (Irvine and Anderson 2008). It can also be argued that spatial proximity forms but one dimension of proximity along with

cognitive, organizational, social, institutional and other forms (Boschma 2005). It should also be noted that although regions that are relatively rural in nature are often those considered to be peripheral, this is not always the case, and the two concepts are distinct (Dinis 2006).

In the context of the empirical analysis presented in the paper, Wales can be viewed as a peripheral and relatively less successful region. Situated on the West of the British Isles, it is also one of the most sparsely populated regions of the UK, with much of the region being rural in nature, with the exception of some larger agglomerations mostly along the south coast. Overall, the performance of the Welsh economy has lagged that of the UK as a whole over the latter part of the twentieth century and into the twenty first century (Chatterji and Dewhurst 1996; Jones and Henley 2008). It is one of the 12 government office regions (GORs) of the UK, and along with Northern Ireland and Scotland has a degree of autonomy over policy through the formation of its own government in 1999, allowing it to develop its own entrepreneurship support policies (Yoo, Mackenzie, and Jones-Evans 2012; Jones and Colwill 2013; Jones-Evans 2015; Rhisiart and Jones-Evans 2016). Nevertheless, according to the Global Entrepreneurship Monitor (GEM) study, entrepreneurship as captured by those starting and running new businesses is lower in Wales than the UK average (Levie and Hart, 2013).

Like other weaker regions, there is also evidence of the persistence of low entrepreneurship rates, so that future entrepreneurial activity along with the survival of existing entrepreneurship are affected through the social norms and legitimisation of entrepreneurship generated alongside limited role models and networking opportunities (Andersson and Koster 2011; Bosma et al. 2012; Fritsch and Wyrwich 2014; Bastesen and Vatne 2014; Kibler, Kautonen, and Fink 2014). Policy interventions have often looked to bring entrepreneurs together, although the degree of success is often dependent on the infrastructure and institutions developed (Fuzi 2015; Murphy, Huggins and Thompson 2015).

Frequently, these regions have a traditional reliance on heavy industry, which has declined with deindustrialisation (Benneworth 2004; Tödtling and Trippl 2005). This has led to higher levels of unemployment and limited growth, which reduces the opportunities for business starts and can lead to those that do start being more marginal (Lee, Florida, and Acs 2004). Local economic conditions are also likely to play an important role in firm survival given the reliance that small firms often have on their local markets for custom (Gorton, 1999; Williams et al. 2009). Also, lower levels of agglomeration with a more rural or inaccessible nature can limit the markets readily available for output. Studies of peripheral regions across the world indicate that a lack of access to major markets is perceived to be a

problem for survival despite the existence of potential opportunities (North and Smallbone 2000; Tödtling and Trippl 2005; Felzensztein, Gimmon, and Aqeveque 2013; Amorós, Felzensztein, and Gimmon 2013).

The exclusion from important markets can limited the potential to innovate and as such may jeopardise the adaptability and survival of enterprises in more peripheral areas (McAdam, Reid, and Shevlin 2014). This can make efforts to boost networking, internationalisation and the provision of relevant infrastructure key in overcoming the problems imposed by a region's peripheral nature (Arbuthnott and von Friedrichs 2013; Besser and Miller, 2013). On the order hand, it should also be acknowledged that rural areas even in peripheral regions often have a strong tradition of small business ownership (Keeble and Tyler 1995; Warren-Smith and Jackson 2004; North and Smallbone 2006; Brooksbank, Thompson, and Williams 2008). This means that the factors affecting the survival of businesses in peripheral regions such as Wales are likely to vary considerably across the region, with some areas more distant from larger markets whilst others contend with the effects of deindustrialisation.

The weaker enterprise culture and economic conditions present could lead to entrepreneurs rationally relocating from peripheral lagging regions to more dynamic successful core regions (Kaufmann and Malul 2015). This can also occur within regions, as is found to be the case for more educated Welsh speakers moving from West Wales to East Wales, particularly the capital city Cardiff (Drinkwater and O'Leary 1997; Jones-Evans, Thompson, and Kwong 2011). This obviously creates a negative spiral, particularly with the withdrawal of strong role models for future entrepreneurs to follow (Bosma et al. 2012). This migration would also tend to reduce the survival prospects of firms in the peripheral region. A wider issue is that poorer employment prospects in general will tend to lead to an outward migration of more educated and creative individuals as well possibly suppressing human capital acquisition of those that remain (Malul 2015). This reduces the quality of latent entrepreneurs in the population and reduces the talent available for existing enterprises, limiting their likelihood of success (Millán et al. 2014).

As outlined above entrepreneurship, is frequently seen as key to generating economic development in more peripheral regions such as Wales, but conditions in such regions are not necessarily conducive to encouraging entrepreneurship or ensuring its survival. The following sub-sections now move on to outlining the key theories relating to those factors associated with survival that might help to explain differences in entrepreneurial survival within peripheral regions.

Location, Human Capital and Growth Motivation

As outlined above entrepreneurial activity in peripheral regions is frequently encouraged as a source of growth (Huggins and Williams 2011; Baumgartner, Pütz, and Seidl 2013; Stephens, Partridge, and Faggian 2013), but the nature of the location as well as the work force skills and motivations behind entrepreneurial engagement can limit the prospects and even survival of these firms (Bosma et al. 2012; Amorós, Felzensztein, and Gimmon 2013). Gimeno et al.'s (1997) threshold model of entrepreneurial exit illustrates that the decision to exit entrepreneurship is in part determined by the performance of the business venture. However, there is no particular level of performance for all entrepreneurs below which businesses are closed. Instead, it is argued that entrepreneurs have individual performance thresholds that must be met, which vary depending on the: alternative employment opportunities available, non-pecuniary benefits of entrepreneurship, such as pleasure of being your own boss and time flexibility; and the practical difficulties of moving to alternative employment, the switching costs (Gimeno et al., 1997). This means that exit can be made more or less likely through a factor affecting performance and/or the threshold of performance. Given that the threshold of performance is hard to capture, studies have generally considered the overall effect of factors on performance and the threshold through survival (Criaco et al. 2014; Di Tienne and Cardon 2012).

In general, locational, human capital and growth motivation factors may impact at different levels on the survival prospects of the firms. The potential influences on firm survival prospects at the three different levels are illustrated by Figure 1.

In terms of locational factors, although firms operating in any region will still be affected by national or internationally originating macroeconomic shocks (Congregado, Golpe, and Parker 2012), the local economic conditions and resources available may also impact on survival (Lee, Florida, and Acs 2004; McAdam, Reid, and Shevlin 2014). Therefore, the location of the firm may increase or decrease the likelihood of survival through the threats faced and opportunities available that originate from outside the firm. Local economic conditions will also have an impact on the performance threshold. Greater aggregate demand from a thriving local economy will boost performance making survival more likely, but at the same time it has the potential to raise the performance threshold as the outside options available also become more attractive.

PLEASE INSERT FIGURE 1 ABOUT HERE

At the micro level of the firm, the entrepreneur clearly plays a key role in the future of her firm (Brüderl, Preisendörfer, and Ziegler 1992; Acs, Armington, and Zhang 2007). The entrepreneur's influence can be delineated into two levels: the resources that they bring to the firm, in terms of their skills, as well as their desires and motivation for the firm. In the case of human capital, it is often associated with improved entrepreneurial performance (van der Sluis, van Praag, and Vijverberg 2008). Higher levels of human capital is associated with greater ability to identify and exploit opportunities (Ramos-Rodríguez, Medina-Garrido, Lorenzo-Gómez, and Ruiz-Navarro 2010). Understandably other studies find that certain types of human capital are associated with the survival of the firm (Criaco et al. 2014). More general or industry level human capital may actually lower survival prospects by opening up further employment opportunities, which raises the performance threshold that must be achieved to remain entrepreneurially active (Criaco et al. 2014).

Along with the importance of human capital, there is the issue of how such resources are utilised. The motivation behind a business start and the strategies pursued may be more or less commercially focused, with lifestyle factors often of particular importance to some entrepreneurs (Herslund 2012). Here the presence or otherwise of human capital resources may influence the achievement of strategies that increase the survival prospects of the firm (Wiklund and Shepherd, 2003). If the entrepreneur chooses alternative development paths for their venture, this makes the ability to grasp growth opportunities less important. This is reflected in the connection between growth motivation and the performance threshold through its influence on psychic income (Hansen and Hamilton 2011).

It is important to recognise is that locational, human capital and growth motivation influences may be interrelated. For example, the influences from the location may reduce competition and expose entrepreneurs to a culture where the acquisition of wealth and personal success are less important (Huggins and Thompson 2015). Equally, locational factors in peripheral regions may be part of a process that leads to a depletion of human capital resources (Kaufmann and Malul 2015; Malul 2015), so that the average latent entrepreneur will be less well placed to exploit available opportunities (Millán et al. 2014). These factors may also influence the types of entrepreneurial activities and ambitions sought by legitimising or otherwise certain activities through the community culture created (Etzioni 1987; Jack and Anderson 2002; Anderson and Smith 2007). For less skilled entrepreneurs, ambitions associated with growth and longer term success may be perceived to be out of

reach, reducing entrepreneurial resources by placing bounds on the opportunities available and subsequently altering the behaviours undertaken (Capelleras et al. 2016).

However, the levels, i.e. the three factors, having the greatest importance on the survival prospects of firms in more peripheral areas remains unclear. If policymakers wish to encourage entrepreneurship that is lasting and acts as a key element of regional development, they should consider all three levels. However, the policies that will encourage firm survival at each level will differ considerably in nature. This means that in order to prioritise resources it is of importance to identify which is the most influential level. The following subsections consider the three levels of influence on survival in more detail and establish a number of testable hypotheses in relation to each.

Locational Conditions

The locational conditions thesis suggests that the spatial environment within which a firm operates will have an effect on survival prospects (Hannan and Freeman 1977; Singh and Lumsden 1990; Vaessen and Keeble 1995; Burger, van Oort, and Raspe 2011; Stephan 2011). Figure 2, which seeks to disaggregate in more detail the factors relating to the three broad theories of firm survival shown by Figure 1, indicates that location will have both direct and indirect effects by influencing the growth strategies that may be followed by firms based on their geographical location and scope (Etzioni 1987; Jack and Anderson 2002; Morrison, Breen, and Ali 2003; Anderson and Smith 2007). For example, some locations may be more sensitive to economic shocks than others, but it is the ability to adapt and recover in the aftermath which often marks out more resilient locations (Martin 2012b). This means that as well as potentially lacking entrepreneurial activities to aid readjustment, weaker locations may also lose existing entrepreneurship where recoveries does not occur in time to prevent the exit of those overly reliant on local demand.

PLEASE INSERT FIGURE 2 ABOUT HERE

Locational factors generally relate to the local industry within which a firm operates, or alternatively - and potentially important for peripheral regional economies - the local economic conditions in the market as a whole. Research considering the particular characteristics of industries have suggested a number of influences that are often interrelated: the level of competition, clustering, stage of industry cycle, technological intensiveness, barriers to entry, as well as demand conditions and a minimum efficient scale (Cefis and

Marsili 2005; Fritsch, Brixy, and Falck 2006; Helmers and Rogers 2008; Wennberg and Lindqvist 2010; Raspe and van Oort 2011). In terms of competition, where entry and exit costs are higher and involve a greater sunk component, the probability of failure is reduced (Helmers and Rogers 2008; Fotopoulos and Louri 2000). This switching cost effect operates through the threshold of performance as shown by Figure 2.

In terms of the location of the start-up, local industry density may also play a role. Two opposing relationships are suggested between industry density and survival: a negative competition effect (Stuart and Sorenson 2003); and a positive benefit from localisation effects (Renski 2011). Weterings and Marsili (2015) indicate that no single rule applies, finding that whilst business exits by closure fall when industry density is greater, the probability of exit via a merger or acquisition by another firm increases. They also suggest that whilst survival and 'successful' exits via mergers and acquisition are increased for manufacturing firms, the opposite is true for services, where competition has an overall negative impact on survival, making closure more likely. Renski (2015) finds mixed evidence and suggests that much of the positive effect of localisation economies reflects the greater industry specific work experience of founders. Although evidence is mixed, it does appear that industry density tends to support survival when wider geographical areas are considered (Renski 2011; De Silva and McComb 2012):

Hypothesis 1a: A greater local concentration of firms in the same industry will increase the probability of survival.

As entrepreneurs generally tend to create ventures close to their homes (Mueller and Morgan 1962; Sorensen and Audia 2000), it is likely that successful entrepreneurs will generate greater levels of local economic development (Blackburn and Ram 2006). Furthermore, there is evidence that those areas with higher rates of GVA growth and employment growth have higher firm survival rates (North et al. 2003; Fritsch, Brixy, and Falck 2006):

Hypothesis 1b: Local economic growth will positively influence the probability of firm survival.

Conversely, depressed rates of local employment and income are likely to reduce the performance of firms, as well as reducing alternative employment opportunities (Gimeno et al. 1997; Fotopoulos and Louri 2000; Audretsch and Dohse 2007). Thus, local economic

conditions influence both the performance of enterprises and the threshold of performance through the outside options available (Figure 2).

Within the context of more peripheral regional economies, one group of entrepreneurs that often attract considerable attention from the media, policymakers and academia are those entering from unemployment (Taylor 1996; Kosanovich et al. 2001; Kelly, Mulvey, and Lewis 2002; Blanchflower 2004; Santarelli and Vivarelli 2007). Although entrepreneurship has been seen as a potential solution for long term persistent unemployment, others have noted that its potential to overcome deprivation as a whole may be limited (Blackburn and Ram 2006; Thompson, Jones-Evans, and Kwong 2012). Lower opportunity costs for the unemployed may make entrepreneurial entry more attractive (Evans and Leighton 1989), but studies also find that exit is more likely (Gray 1990), as the unemployed are likely to have access to fewer resources and will be less aware of the opportunities that are available (Arenius and De Clercq 2005). This means that locational influences will potentially have an indirect effect on survival through the brain drain effect noted above and shown in Figure 2 (Kaufmann and Malul 2015; Malul 2015).

In general, locational context is likely to play an important role not only in the rationale for undertaking entrepreneurial activities (Birley and Westhead 1992; Jones-Evans Thompson, and Hill 2008; Santarelli et al. 2009; Williams and Williams 2014), but also the nature of the activities undertaken (Frankish, Roberts, and Storey 2010), as well as the hurdles that need to be overcome in order to survive (Rouse and Jayawarna 2006; Williams and Williams 2011). It is clear that weaker locations, with higher unemployment and lower wages may induce entrepreneurship due to necessity driven motives that reduce the likelihood of survival (Bergmann and Sternberg 2007; Santarelli and Vivarelli 2007).

Hypothesis 1c: Higher levels of unemployment will reduce firm survival rates.

Although peripheral regions need not be rural in nature, the definitions usually applied relate to a degree of isolation from the largest most vibrant core economic regions (Dinis 2006). This means that the scale of proximate markets may influence survival. The urban-incubator hypothesis suggests that larger urban areas will provide an environment more conducive for start-up activity from increased information circulation with customers and suppliers (Vernon 1960; Renski 2008; Lejpras and Stephan 2011; Pe'er, Vertinsky, and Keil 2016). This is particularly important for innovative and rapidly changing sectors (Malecki 1990; Agarwal 1996, 1998; Agarwal and Audretsch 1999; Renski 2011). Consistent with this, empirical

evidence finds that agglomeration effects are most important for smaller firms (Fotopoulos and Louri 2000). Haapanen and Tervo (2009) suggest that weaker labour markets in rural areas of Finland actually decrease the likelihood of exit in the first five years of a firm's existence, but beyond this point it appears that enterprises operating in urban areas may benefit from the agglomeration effects. US evidence also indicates that the relationship between urbanisation and survival may vary across industries with both positive and negative results found (Renski 2011). In general, however, it can be hypothesised that agglomeration effects will be positively related with firm survival rates.

Hypothesis 1d: Local agglomeration will increase the probability of firm survival.

Human Capital

In most firms the entrepreneur as the dominant decision maker has a considerable influence on both the performance and future survival of the firm (Brüderl, Preisendörfer, and Ziegler 1992; Acs, Armington, and Zhang 2007). In particular, their human capital is likely to not only influence the performance of the business, but as indicated in Figure 2 the threshold relevant to continued activity as it influences the opportunity cost faced through the alternative employment opportunities available (Bosma et al. 2004; van der Sluis, van Praag 2008). Based on this approach, studies of entrepreneurial exit have traditionally used an expected utility framework, in which entrepreneurs attempt to maximise the return on their human capital (Becker 1965). This profit stream will be net of opportunity costs, for example those associated with alternative employment opportunities, and may also incorporate intangible benefits such as flexibility and feelings of independence and freedom (Blanchflower and Oswald 1990; Carter et al. 2003). Figure 2 shows how human capital's influence on this psychic income will be indirect operating through the growth motivation as it imposes limitations on the strategies open to the entrepreneur (Morrison, Breen, and Ali 2003; Capelleras et al. 2016). Although some studies particularly those concentrating on high-technology or knowledge intensive sectors have also found generic human capital of this type to be insignificant (Grilli 2011), others have found human capital represented by formal education to positively influence survival (Millán, Congregado, and Román 2012), which leads to the following hypothesis:

Hypothesis 2a: Human capital from formal education will positively influence firm survival.

In general, human capital theory suggests that there are general and specific forms of human capital, where the former is easier to transfer from one occupation to another, but the latter is likely to yield higher returns in the appropriate context (Becker 1975; Saridakis, Mole, and Storey 2008; Ganotakis 2012). Within the context of longer term firm survival, the general human capital associated with education and work experience is expected to boost both firm performance and survival through greater access to resources allowing for more successful identification and exploitation of opportunities (Bates 1990; Davidsson and Honig 2003; Gimmon and Levie 2010; Ganotakis 2012; Millán, Congregado, and Román 2012).

Experience as captured by age may act as an additional source of human capital, but opportunity costs of time (Becker 1965) and risk aversion are also likely to increase with age (Morin and Suarez 1983). For instance, both factors are likely to increase the incentive to exit and harvest any value, or minimise any losses rather than continue with uncertain returns, thus operating indirectly through growth motivation (Lévesque and Minniti 2006; Grenadier and Wang 2007; Van Witteloostuijn 1998). Given the counteracting forces of age and experience, it is understandable that some studies have found an inverted U-shaped relationship (Cressy 1993; Holtz-Eakin, Joulfaian, and Rosen 1994; Wennberg et al. 2010). Nevertheless, the weight of evidence suggests a positive relationship between general human capital and firm survival:

Hypothesis 2b: Human capital from experience will positively influence firm survival.

Alongside general human capital factors, more specific human capital associated with elements of entrepreneurship gained through experience such as prior business ownership and management experience have been associated with increased survival prospects (Townroe and Mallalieu 1993; Starr and Bygrave 1992; Politis 2005; Gimmon and Levie 2010). Even business failures could provide valuable knowledge and skills to be utilised in future business starts (Audretsch and Thurik 2001), as well as a less negative view of failure (Politis 2008). As a counter to this, scholars including Starr and Bygrave (1992), Rerup (2005) and Simon, Houghton, and Aquino (2000) highlight the potential of prior entrepreneurial experience to bring liabilities including conservative inflexible approaches, a fixation on the past and lower motivation. In particular, empirical evidence suggests that business failure is less likely for more experienced entrepreneurs entering a new spell of business ownership (Taylor 1999; Holms and Schmitz 1996; Quandrini 1999; Unger et al. 2011; Rauch and Rijsdijk 2013):

Hypothesis 2c: Rates of entrepreneurship specific human capital from prior business ownership will positively influence firm survival.

Growth Motivation

Overall, the human capital possessed by an entrepreneur may help explain why some entrepreneurs and their firms within a regional economy are more likely to survive and remain within the market. However, this does tend to imply that the entrepreneurs themselves have no control over their fates. One particular course of action that could have profound implications for survival is the capability to grow and accumulate sufficient resources to withstand external shocks (Caliendo, Fossen, and Kritikos 2010; Coad et al. 2013; Coad et al., 2016). However, a counter argument to this thesis is provided by Delmar, McKelvie, and Wennberg (2013) who find a negative relationship between growth in one period and survival in the next in the case of knowledge intensive start-ups, which they suggest may relate to growth itself being a risky activity. A stream of literature has modelled the growth of ventures as following a random walk due to competition from rivals, making it difficult to identify factors leading to better performance, particularly for new ventures with little previous history (Gibrat 1931; Levinthal 1991; Henderson, Raynor, and Ahmed 2012). This would mean that although growth may increase the chances of survival, it is extremely difficult to identify which firms will grow, with only a small proportion of variance captured by models (Coad et al., 2016), and therefore making it just as difficult to identify firms that are more likely to survive.

Despite these difficulties, however, it is recognised that not all entrepreneurs have the same ambitions, and intentions for their businesses, with some seeking to grow their businesses, whilst others may only seek greater independence and autonomy (Mochrie, Galloway, and Donnelly 2006; Block and Wagner 2010; Hansen and Hamilton 2011; Douglas 2013). A heightened growth motivation has been associated with those entrepreneurs who seek opportunities, innovate and are instinctive in their nature (Morrison, Breen, and Ali 2003). It is argued that the actual growth they achieve is strongly linked to these intentions and ultimately to an entrepreneur's' belief that they can achieve the desired outcome (Gray 2000; Maki and Pukkinen 2000; Morrison, Breen, and Ali 2003). Empirical studies have found evidence linking growth aspirations and intentions with achieved growth levels (Barringer, Jones, and Neubaum 2005; Delmar and Wiklund 2008; Moen, Heggeseth, and Lome 2016). This relationship, as suggested above, is likely to be moderated by the

resources available, including those associated with human capital (Wiklund and Shepherd 2003).

Unlike the data used in this study, many datasets do not include data on the growth motivations of entrepreneurs. Growth, as discussed above, is therefore assumed to be random, and only after time passes and resource accumulation is realised does it become easier to predict survival (Coad et al., 2016). In this study we are able to hypothesise that those entrepreneurs with a greater general growth motivation will be more likely to survive, as they are more likely to have sufficient accumulated resources to withstand negative competitive and macroeconomic shocks.

Hypothesis 3a: Firms established by entrepreneurs that are generally growth motivated are more likely to survive.

Closely linked to sales growth, is a desire to expand markets served geographically (Moen, Heggeseth, and Lome 2016). Those entrepreneurs with an orientation toward geographical market expansion may provide a particular commitment and platform for rapid growth, with firms targeting their products at national rather than local markets found to be more likely to survive (Brüderl, Preisendörfer, and Ziegler 1992; Sapienza et al. 2006; Boso, Story, and Cadogan 2013). Closely related to this, a greater dependence on a narrow range of customers and/or a smaller variety of products may reduce the probability of survival (Reid 1991; Reid and Smith 2000). This appears to imply that where local markets are weaker, it is important that firms attempt to expand geographically to overcome the limitations on growth this imposes (Lee et al. 2012).

Coeurderoy et al. (2012) indicate that with regard to internationalisation, it is not internationalisation per se that increases survival, but rather a strong commitment to either low or high degrees of internationalisation. A peripheral regional context may influence the role played by an entrepreneur's growth motivation in terms of survival if there is less competition between businesses, and small niche businesses are able to operate successfully (Stearns, Carter, and Reynolds 1995). In many regards, this is an unexplored element of many survival studies. Entrepreneurs may fall into two categories: those operating in relatively geographically constrained but less competitive niches; and those operating in markets served by firms based in a larger geographical area, but with a wider variety of growth opportunities available. Overall the diversification of selling to a wider spread of customers would be expected to boost survival:

Hypothesis 3b: Firms established by entrepreneurs with a relatively geographically wide market orientation are more likely to survive.

3. Data and Methods

This study of firm survival makes use of survey data originally collected in 2001 and updated in 2012. The data was originally collected as part of the evidence base for the Welsh Development Agency's (WDA) *Entrepreneurship Action Plan* (EAP). This data relates to firms initiated between 1995 and 1999, so all firms had progressed beyond the start-up stage and were relatively established at the initial point of contact. This means that the sample will tend to capture the persistence of business ownership and entrepreneurial activities rather than the initial selection mechanism that leads to many new ventures failing to complete the start-up process. The sample of surveyed firms was selected to be representative of the business population in Wales. This sample was derived from two sources: the Financial Analysis Made Easy (FAME) database of UK incorporated firms from Bureau van Dijk; and the Equifax database, which contains additional information on non-incorporated businesses. The data derived from those two sources was then merged and cleaned to remove duplicate listings. As a result, the sample population consisted of 3,251 ventures commencing operation in Wales between 1995 and 1999.

Data collection was based on a telephone survey utilising an external telemarketing company, which resulted in 1,572 responses (a response rate of 48.3 per cent). The survey was originally intended to provide information about those members of the Welsh population who successfully created businesses and the nature of these businesses. As such, data was collected that provides insights into the following: general business information covering turnover, operating status, main export markets; demographic characteristics of entrepreneurs including their gender, age, ethnicity, educational attainment; entrepreneurial history such as previous business ownership and employment histories plus perceptions of management skills; details of business development including support services accessed and required, reasons for establishing businesses, and business constraints.

A small group of 14 businesses indicating their legal status as a social enterprise were excluded from the analysis as they were likely to be atypical of the sample. The sample of responses with complete data after excluding social enterprises and those firms where postcodes could not be matched to the national postcode databases consists of 1,425

businesses. A vast majority of these firms (1,279 firms; 89.8 per cent) are micro-enterprises with less than 10 employees. Of the remaining firms, 137 (9.6 per cent) are small (10 to 49 employees) and 9 (0.6 per cent) are medium (50 to 249 employees) sized firms. This is a good match for the proportions from the full population of businesses in Wales: 90.3 per cent micro, 7.9 per cent small, and 1.4 per cent medium sized firms.

The analysis presented below investigates the survival of these businesses over the ten years following the initial survey and data collection. As firms in the original sample took a variety of different legal forms a variety of methods had to be employed to establish the continuing existence or otherwise of the businesses. For those registered as limited companies, their continuing existence has been identified through the current FAME database, as this contains listings for all limited companies and organisations with charitable status. To confirm their existence and active trading status, their names and telephone numbers were checked using an Internet search to identify the presence of an up-to-date web presence. Sole traders and partnerships were harder to identify, and the first stage of establishing their continuing existence was through the use of telephone directories. Again a search for a web presence was used as a confirmatory step. This was undertaken for both firms identified through the business directories and those that were not. Where a web presence was found for a sole trader or partnership, but no phone listing was found, the FAME database was searched in case there had been a change in legal form since the initial survey in 2001.

The method of identifying the survival or otherwise of the firms, means that the survival variable relates to the enterprise created rather than the status of the entrepreneur. This means exits will relate more frequently to what Wennberg et al. (2010) describe as liquidation, rather than harvest sales. Where a business is successful, an entrepreneur moving to alternative employment is likely to seek a sale of the enterprise and therefore the business itself will continue to exist. It is possible that some firms will close when relatively successful because of the alternative employment opportunities available to the entrepreneur and no opportunity to sell is available, but this is likely to be very rare. Some businesses may be bought by rivals, and therefore cease to exist as independent entities (Grilli 2011). Ideally, the date of exit would be used here to model the survival prospects of the businesses over the period of study. Unfortunately, data recording the exit dates of sole-traders and partnerships over longer periods, as studied here, are extremely difficult to obtain. As a vast majority of SMEs in the UK are not limited companies, in order to examine the long term persistence of these businesses it is therefore necessary to utilise a dependent variable that only captures

whether the firm survived or exited during the period of interest, rather than the specific timing of the exit.

As addressed above, the existing literature indicates that survival may be influenced by a large variety of factors. To test the hypotheses set out in section 2 it is necessary to adopt a multivariate approach. This allows the hypotheses to be tested simultaneously whilst controlling for other influences. As the survival variable is discrete rather than continuous in nature ordinary least squares regressions are inappropriate. Instead a binary logistic regression approach is adopted here.

As outlined in the preceding section three main groups of variables linked to survival can be identified: human capital (general and entrepreneurially specific), growth motivation; and locational factors. The operationalisation of the individual variables are outlined in more detail below. Starting with the human capital variables, three separate measures are included. General human capital is captured by formal education and experience (age). In the case of formal education, dummies are included to represent the two extremes of the range, those with no formal qualifications and those with university degree level qualifications or higher. Experience is captured by the age of the entrepreneur and is represented by dummies for those older and younger than the prime business ownership range of 35 to 49 years of age. This comparison is based on the findings of studies such as the Global Entrepreneurship Monitor (GEM), which indicate that the 35 to 44 years age group are most likely to be involved in starting or running a new business (Hart et al. 2015). As noted previously, this is where the need to acquire more experience is balanced by the requirement for sufficient time to achieve a return on investment (Kim 2007). Outside of this range, the expectation is that the survival of the enterprise will be compromised either through a lack of relevant experience or a desire to retire (Andersson Joona 2010; Haapanen and Tervo 2009).

It is acknowledged that the survival of the enterprise is not solely reliant on the human capital of the entrepreneur, but that they will be able to draw upon the human capital of their employees, especially as these enterprises have moved through the start-up phase. However, scholars such as Blackburn, Hart and Wainwright (2013) and Hansen and Hamilton (2011) note how the owner-managers of SMEs play an important role in determining the strategies pursued, are a key resource for small firms, and ultimately have an important influence on the performance achieved by the firm. These direct and indirect influences on survival are shown by Figure 2, with influences on both the performance of the firm and the performance threshold. The specific human capital variables are those associated with entrepreneurial experience that are likely to be of value in the business. Recent experience is ascertained

through responses to the question: 'What where you doing before you established your current businesses?' with the following response categories available: out of work, full time education, self-employment, or employed by others. The first four are included as dummies in the regression and compared to the base category of being employed by others.

With regard to the growth motivation of firms, we test for the positive effects of growth motivation in general and more specifically a wider geographical market orientation as hypothesised above. To capture the general growth motivation of the entrepreneur, respondents were asked 'how do you see your business developing over the 3 – 5 next years?'. Those indicating they expected fast or steady growth, in contrast to staying the same size or declining, we defined as growth orientated in the general sense. In relation to the geographical market orientation of firms and survival, much of the literature has considered the decision to internationalise. Many of these studies have considered high-technology sectors or more innovation focused businesses, but for a majority of businesses in peripheral regions such a focus is not necessarily appropriate (Skuras, Tsegenidi, and Tsekouras 2008). The survey therefore asked respondents 'Where is the main market in which your business operates?'. Respondents were asked to choose between the following, mainly local (within 25 mile radius), Wales-wide, UK-wide, and outside the UK. For the purposes of analysis the last of these two groups were combined, as exporting activities were rare in the sample.

Following the existing literature outlined in section 2, the locational conditions within which the firm operates fall into two main groups: those relating to the local economic environment; and those relating to the industrial competition faced. The market scale element of the local economic environment is represented by the settlement type of the firm's location. The Office for National Statistics (ONS) definition of areas at the mid super output area is employed with areas categorised as: urban, town and fringe, or village and isolated hamlet (ONS 2004). The economic strength of the local authority area is captured by growth in GVA per capita for the period 1997-2002, as well as changes in the labour market between 2002 and 2012, as captured by the unemployment benefit claimant count. The final locational factor is associated with the negative competition (Helmers and Rogers 2008; Fotopoulos and Louri 2000), and positive industry clustering (Wennberg and Lindqvist 2010) effects from industrial density. The variable included in the regression takes the form of a location quotient with the proportion of employment provided by the industry (measured at the 2-digit SIC level) in the local authority area reported as a ratio of the proportion of employment it provides throughout Wales. Data used to create these location quotients were drawn from the UK Annual Business Inquiry (ABI).

To control for other firm level influences that may affect the survival of the firms, dummies representing broad industry sectors are also included (manufacturing, construction, others) and compared to a base category of the retail and wholesale sector. A dummy for high technology manufacturing (HTM) or knowledge based services (KBS) industries as defined by Eurostat (2009) is also included. These industry controls are included to capture factors such as barriers to entry and sunk investments, which may make survival more likely (Helmers and Rogers 2008). Linked to this, dummies are included for firms taking more formalised legal structures, i.e. partnerships and limited liability companies, in contrast to sole traders. Where more formalised or others are included in the ownership structure switching costs are raised, making exit less likely. The size of the firm is captured by its employment level with firms categorised as micro or small and medium. This is to control for the resources that greater scale provides that have been linked to higher survival through an ability to withstand shocks (Geroski, Mata, and Portugal 2010; Coad et al. 2013). Studies such as Boden and Nucci (2000) suggest that businesses started by female entrepreneurs have lower survival rates. This may reflect a variety of factors that affect the nature of businesses started such as: risk aversion, labour market experience, direct discrimination, and access to finance (Caliendo, Fossen, and Kritikos 2009; Manning and Swaffield 2008; Gicheva and Link 2013; Mueller and Conway Dato-on 2013). Therefore, a gender dummy is included to control for possible differences in survival rates (although some recent studies find limited roles for gender (Coad et al. 2013)).

The main regressions are run using the whole sample of 1,425 firms. As the medium sized firms that make up only 0.7 per cent of the sample are potential outliers we repeated the analysis with these firms excluded, but found no substantial differences in the results produced. However, given the importance of firm size in prior studies we also repeat the analysis on subsamples of micro-firms and the remaining small and medium sized firms.

4. Results

Of the 1,425 firms examined within the analysis, 783 (54.9 percent) survived the entire period from 2001 to 2011. This may initially appear high compared to the five year survival rate of firms of 44.4 percent reported for Wales for the period 2005 to 2010 (ONS 2011). However, these figures are not directly comparable, as the Office for National Statistics data refer to the survival rate of newly formed firms, whilst the survey data here included firms that are relatively more established at the point of the survey, so potentially the least viable and less committed entrepreneurs had already exited by this stage (Jovanovic 1982).

Table 1 shows the proportions of firms surviving when the sample is categorised by the main variables of interest associated with growth motivation, human capital and locational factors. With regard to growth motivation, the chi-square statistics indicate that businesses run by entrepreneurs with general growth motivations are statistically more likely to survive (58.3 per cent survival) than those with no general growth motivation (47.8 per cent). Although a smaller proportion of those businesses with a more restricted local geographical market orientation survived (54.1 per cent) than those selling to regional (56.8 per cent) or national markets (56.1 per cent), the chi-square statistic indicates that survival does not vary by geographical market orientation at a statistically significant level.

Of the human capital measures it is interesting that those measures associated with experience and prior work status are those with significant variation between the groups of firms. The prime age group (35 to 49 years) has the highest survival rate (59.0 per cent). In the case of prior work status, those who were previously self-employed have survival rates similar to the sample average (59.0 per cent). Interestingly, it is those entering from education and training whose businesses are most likely to be still operating, with nearly two thirds of firms still active. Those entering business ownership from unemployment are the least likely to have survived (36.8 per cent).

The highest proportion of firms surviving are found outside agglomerations, with 57.7 per cent surviving in villages and isolated hamlets compared to 53.0 per cent in areas defined as urban. In terms of economic conditions, it is no surprise that a higher proportion of firms survive in localities with higher growth and lower unemployment rises. Where industry density is greater, the proportion of firms surviving is higher. On their own and broken down into groups by above or below the median, of the locational factors only the change in unemployment has a weakly significant effect. Areas that have seen smaller rises in unemployment display higher survival rates. However, given the interconnections found in the literature, and illustrated in Figure 2, it is important to determine whether such factors have an impact when the other human capital and growth motivation variables are taken into consideration, given the uneven distribution of resources across regions such as Wales.

PLEASE INSERT TABLE 1 ABOUT HERE

In preparation for the multivariate regression analysis Table 2 reports the bivariate correlations between the variables. The Spearman rank non-parametric correlation

coefficients are reported as a large proportion of the variables are ordinal rather than continuous.

PLEASE INSERT TABLE 2 ABOUT HERE

Survival is found to be positively correlated with the entrepreneur's general growth motivation at the 1 per cent level. A weaker negative correlation is found for increases in unemployment over the period. The size of the firm clearly plays an important role with a positive significant correlation found with survival. Similarly, survival is correlated positively with firms possessing more formalised legal status, such as partnerships or limited liability companies, in contrast to sole traders. There is also found to be a weakly significant correlation suggesting that businesses started by male entrepreneurs are more likely to survive. Although there are other significant correlations between the independent variables, none of these appear likely to cause problems with multicollinearity as the estimated correlation coefficients are small. The variance inflation factors (VIF) from the regressions confirm this, with the highest value being 2.63 attached to the dummy representing those firms based in the most rural locations (villages and isolated hamlets). This is well below all conventional cut-off points where multicollinearity becomes an issue.

Before introducing the full regression results it is worth assessing whether the groups of variables associated with growth motivation, human capital and locational factors are found to collectively have a significant influence on the probability of survival. Table 3 reports the Likelihood-ratio (LR) test results associated with each group of variables. For the full sample, all groups of variables are found to have a significant effect on survival at the 5 per cent level or better. Growth motivation, human capital associated with business ownership and other prior work status along with location factors are significant at the 1 per cent level. Stratifying the sample by firm size does change the results slightly, with micro firm survival only weakly influenced by general human capital. For the smaller sub-sample of small and medium sized firms, only general human capital and locational factors remain significant at the 5 per cent level.

PLEASE INSERT TABLE 3 ABOUT HERE

The regressions themselves explain a relatively small amount of the deviation according to the pseudo R^2 values, with only 4.9 per cent explained by the full sample regression (Table 4). However, all three estimations are able to reject the null of constant

probability according to the LR-test. The Hosmer-Lemshow test cannot reject the null of a good fit.

PLEASE INSERT TABLE 4 ABOUT HERE

Confirming the descriptive statistics presented above, the logit regression indicates that growth motivation is significantly related to firm survival. Those firms started by entrepreneurs with a general growth motivation are 1.5 times as likely to survive as those who intend to maintain or contract the size of their business (*hypothesis 3a*). No significant effect is found for geographical market orientation (*hypothesis 3b*).

In terms of general human capital a positive relationship is found, as suggested by *hypothesis 2b*, as younger entrepreneurs with less experience (aged less than 35 years) are a third less likely to have businesses that survive than those in the prime age group. However, there is also weak evidence that the relationship may have an inverted U-shape, with the firms of older entrepreneurs less likely to survive at the 10 per cent level. Formal educational qualifications have no significant effect on firm survival, rejecting *hypothesis 2a*. Although there are significant differences in the probability of survival of businesses depending on the prior work status of their owners, there is no evidence to support *hypothesis 2c* as those entering from self-employment are no more likely to have businesses that survive than those entering from employment for others. However, those coming from education or training are more likely to have businesses that survive, whilst businesses started by previously unemployed entrepreneurs are only half as likely to survive.

Of the locational factors, the state of local economic conditions is the most important. Local growth rates prior to the survey significantly increase the likelihood of survival (*hypothesis 1b*) and there is also evidence that unemployment after the survey reduces the likelihood of survival (*hypothesis 1c*). However, there is no evidence that agglomeration (*hypothesis 1d*) or industry density (*hypothesis 1a*) have any impact on survival.

Of the control variables included, firm size is significant at the 5 per cent level. Small and medium sized firms are twice as likely to survive as their micro counterparts. The legal status of the enterprise does play an important role, but rather than limited liability companies being more likely to survive than sole traders, it is those formed as partnerships where survival is more likely. There is also weak evidence that knowledge intensive businesses operating in more uncertain fast moving industries are less likely to survive, whilst businesses started by men are more likely to survive. Finally, categorising the sample by firm size does

generally produce similar results, but there are some subtle differences. For those running micro businesses there is weak support for *hypothesis 2c,* with prior experience in self-employment having a positive effect. The opposite is true for those running small businesses, where a general growth motivation is also no longer found to be important for survival (*hypothesis 3a*).

5. Discussion

The model outlined in Figure 2 illustrates how locational, human capital and growth motivation factors potentially have both direct and indirect influences on firm survival. In particular, location factors determine the opportunities and threats present (Lee, Florida, and Acs 2004; McAdam, Reid, and Shevlin 2014), but also create an environment that determines the human capital available to the entrepreneurial sector (Kaufmann and Malul 2015; Malul 2015), as well as through legitimisation of the types of activities and ambitions that this human capital is driven towards (Etzioni 1987; Jack and Anderson 2002; Anderson and Smith 2007). However, it is the human capital available that allows those opportunities available to be exploited (Ramos-Rodríguez, Medina-Garrido, Lorenzo-Gómez, and Ruiz-Navarro 2010), whilst influencing the types of opportunity sought by affecting growth motivations (Morrison, Breen, and Ali 2003; Capelleras et al. 2016).

Overall, the analysis finds evidence to support the importance of growth orientation, human capital and locational factors on the survival of businesses in a peripheral region such as Wales. However, there is variable support for the particular elements and links within the proposed model. For example, it appears that educational attainment has no significant effect (*hypothesis 2a*). The desire of this study to understand the longer-run survival of SMEs means that implications for current educational provision need to be considered carefully. It does seem that previous university education does not necessarily provide entrepreneurs with the skills to create enduring businesses, although this may in part reflect more qualified entrepreneurs having a greater variety of employment alternatives (van der Sluis, van Praag, and Vijverberg 2008). However, support is found for general work experience leading to greater survival (*hypothesis 2b*), but with some evidence found for an inverted U-shape relationship. On the other hand, previous entrepreneurial experience has limited influence (*hypothesis 2c*).

For localities in peripheral regions that frequently have lower levels of human capital and are in danger of losing their most talented individuals to other more successful regions (Findlay et al. 2009; Iammarino and Marinelli 2011), or areas within the same region

(Drinkwater and O'Leary, 1997), this does not provide encouragement that entrepreneurial endeavours will be the best means of retaining such talent given the limited persistence of such enterprises. Studies indicate that aspects of broader well-being such as perceptions of safety and security are not promoted by migration (Iammarino and Marinelli 2011), so those leaving localities in peripheral regions can be encouraged to return due to social ties (Rérat, 2014).

Unfortunately, enterprises started by those moving to localities in more peripheral regions, particularly those with a more rural nature, are less likely to be growth orientated (Anderson, Wallace, and Townsend 2015), which this study indicates to be key for survival (*hypothesis 3a*). There have recently been calls for changes to the teaching within university business schools to ensure they equips their graduates with the entrepreneurial skills needed for the modern workplace, and generally for business schools to engage more directly with society and business (Rae 2010; Martin 2012a). As those entrepreneurs straight out of education are more likely to create lasting ventures, this may be a group to target with support before other life and employment experiences reduce their motivation (Kwong and Thompson 2016).

The evidence presented here suggests that although there is evidence of complementarities between traditional and entrepreneurial education missions (Philpott et al. 2011; van Looy et al. 2011), educational reform of some kind is needed or alternatively an acknowledgment that a different type and source of education is required to achieve entrepreneurial objectives. One possible solution is to target support and education at those already operating enterprises to provide the human capital that is appropriate for widening opportunities and promoting a growth motivation (Clifton et al., 2015).

The results relating to locational conditions can be interpreted as being both encouraging and discouraging at the same time. The lack of evidence to support the role of agglomeration (*hypothesis 1d*) and industry density (*hypothesis 1a*) in supporting survival is positive in the sense that no locality within a peripheral region is necessarily at a disadvantage because of the lack of such factors. This means that fears about rural and less developed areas in peripheral regions struggling to maintain an enterprise culture (North and Smallbone 2000; Tödtling and Trippl 2005) are perhaps not as big a problem as some studies suggest. However, negatively it is clear that output growth (*hypothesis 1b*) and lower unemployment (*hypothesis 1c*) do increase survival. This means that localities already struggling economically are those that are least likely to retain their existing businesses and

are understandably caught in a negative spiral. This means even within peripheral regions there are difficulties faced with continuing uneven development (Kaufmann and Malul 2015).

Although studies such as that of Cooke et al. (2016) outline the role of local government and educational establishments in encouraging entrepreneurship, the results from the present study indicate that local economic conditions may hinder the survival of these ventures. In particular, it may influence the type of human capital drawn into entrepreneurship, with the results indicating that for those coming from positions of unemployment success is less likely. Equally, although entrepreneurship may provide a quick solution to youth unemployment issues in localities within peripheral regions, it does not appear to produce enduring firms (Rotar 2014). Williams (2004) also warns against lasting negative effects from spells in entrepreneurship at a young age with regard to future career prospects. However, existing studies indicate that it is important for peripheral regions to engage in cross border cooperation whether this is between areas within the regions themselves or across international borders (Cooke et al. 2016; Burdack, Kriszan and Nadler, 2016).

In relation to the findings on growth motivation, there have long been calls for policy to avoid trying to generate more firm starts per se, but rather to focus support on potential high-growth business starts (Shane 2009), and the results presented here suggest that overall growth ambitions are indeed important for survival, especially among micro-firms. Although 'picking winners' is undoubtedly beyond the capabilities of support agencies (Hindle, Yencken, and O'Connor 2011; Mason and Brown 2013), it may be possible to avoid backing some losers. It would appear that the increased scrutiny of the nature of business plans and their identified growth opportunities are areas where attention should be focused. In addition, policies that look to aid the unemployed with starting a business need to be carefully considered. Although there may be benefits for the individual, such businesses would appear to be less likely to benefit a lagging region or its constituent local areas, and may not be the best use of scarce resources. This means that when implementing such policies the links between location, human capital and growth motivation need careful consideration.

In terms of regional enterprise policy more generally, in order to utilise intervention in an efficient and effective manner an understanding of issues with regard to entrepreneurial heterogeneity within a peripheral regional context is clearly important (North and Smallbone 2006). Where policy can perhaps have most influence is in shaping the strategic choices of local small and medium sized enterprises (SMEs) through targeted support (Smallbone, Leigh, and North 1995; Honjo and Harada 2006). However, the results do not suggest a need

for support policies to formulated at a level that focuses on small scale locally-focused enterprise in deprived areas or for marginalised groups as a means of building capacity and overcoming the disadvantages faced within these communities (Amin, Cameron, and Hudson 2002; Morgan and Price 2011), as the relative opportunity cost of such initiatives is likely to be extremely high (North et al. 2003).

6. Concluding Remarks

This study has sought to provide an analysis and understanding of the factors underlying the longer-term survival of firms in a relatively peripheral regional economy. In particular, the impact of human capital, growth motivation and locational conditions were explored. Using the existing literature it was illustrated that these three factors, whilst operating at different levels, are interconnected and as such policies for promoting the survival of entrepreneurial ventures in localities within regions should take a more holistic approach. All three groups of variables were found to play a role, and the study's findings have important implications for future research in a number of respects, especially within the context of more peripheral regional contexts. When considering the influences of growth motivation on survival, it is clear that the strategic choices matter, but more research is required to understand what underpins differences in the decision-making of entrepreneurs within similar locations. Perhaps the most important result from the study is the finding that survival varies significantly within peripheral regions. However, futures studies may wish to explore the extent to which there are interactions between locational influences and the growth motivation and human capital factors. Only by separating out and understanding the influence of the individual linkages outlined in Figure 2 will it be possible to determine, for example, whether reduced growth motivations are an outcome of cultural influences, or the allocation of human capital within entrepreneurial and non-entrepreneurial activities. More generally, it is clear that much more work is required at a localised intra-regional level to fully understand the factors driving longer-term survival within peripheral less successful regions.

Furthermore, relatively little is known, at least qualitatively, about how different patterns of ownership and motivational differences lead to differing survival outcomes. This represents a fundamental issue for future research in the broader area of entrepreneurship and regional development. Although research has now produced a significant pool of evidence relating to the factors that help to initially create the foundations of entrepreneurially conducive local and regional environments, the factors that sustain such environments in the longer-run remain relatively unexplored. This undoubtedly partly due to a lack of relevant

data sources on survival compared with that available on start-up processes. This study has attempted to build on existing evidence, with the results based on data from a single region in the UK. Although the example of Wales provides a good example of a region with both a legacy of heavy industry and more remote rural areas, the nature of other peripheral regions will tend to vary. It is important, therefore, that future studies seek to draw on a wider pool of regions to assess the extent that the results found here are generalizable to other peripheral regions.

Further work using longitudinal data would provide valuable insights to the evolution of both business and entrepreneurial career development for those following the different entrepreneurial and strategic routes identified in this paper. As studies have highlighted the value of inter-area cooperation on policy (Cooke et al. 2016; Burdack, Kriszan and Nadler, 2016), future work is also required that examines in more depth the dynamics between neighbouring areas and their effect on entrepreneurial persistence. The model developed here has concentrated only on survival as an outcome, but it did incorporate non-pecuniary influences on the exit decision. In terms of investigating broader welfare maximisation and different entrepreneurial motivations (Anderson, Wallace, and Townsend 2015), there is room for further developing the model introduced here to make broader well-being the focus rather than firm survival.

Finally, the study has limitations both in terms of the way that the data was collected, and also the implications this has for the measure of survival. It is, unfortunately, not possible to determine the exact date that firms ceased to exist, and therefore no hazard function can be estimated. In addition, the reasons for non-survival are also unknown. Due to the way that the measure is devised, most non-survival will reflect entrepreneurial failure of some kind; although this is not guaranteed to be the case for all firms. Of further interest is the fate of not only the firms but also their entrepreneurs. It is possible that whilst firms have failed, entrepreneurs may have gone on to use this experience to improve the survival prospects of their subsequent businesses (Audretsch and Thurik 2001).

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Table 1: Percentage of firms surviving

		Percentage Surviving	N	chi-square	[d.f.]	(p-value)
General Growth Motivation	Non-Growth Orientated	47.8%	452	13.708****	[1]	(0.000)
	Growth Orientated	58.3%	973			
Geographical Scope	Main Market Local	54.1%	911	0.727	[2]	(0.695)
	Main Market Regional	56.8%	213			
	Main Market National or wider	56.1%	301			
Entrepreneur Experience	Under 35 years	54.1%	1181	1.969	[1]	(0.161)
	35 to 49 years	59.0%	244			
	50 years or older	51.9%	499			
Entrepreneurs' Education	No Formal Qualifications	51.2%	291	2.078	[2]	(0.354)
	Secondary Qualifications	55.8%	638			
	Graduate or higher	56.0%	496			
Prior Workstatus	Employed	54.1%	1013	15.944***	[3]	(0.001)
	Education or Training	66.0%	100			
	Out of Work	36.8%	68			
	Self-employed	59.0%	244			
Agglomeration	Urban	53.0%	773	2.659	[2]	(0.265)
	Town or Fringe	55.9%	186			
	Village or Hamlet	57.7%	466			
Gross Value Added	Below Median Growth	53.2%	616	1.268	[1]	(0.260)
	Above Median Growth	56.2%	809			
Unemployment	Below Median Unemployment Change	57.4%	673	2.987*	[1]	(0.084)
	Above Median Unemployment Change	52.8%	752			
Industry Density	Below Median Industry Density	53.3%	707	1.494	[1]	(0.222)
	Above Median Industry Density	56.5%	718			

Notes: *** significant at 1 percent level; ** significant at 5 percent level; * significant at 10 percent level

Table 1: Continued

		Percentage Surviving	N	chi-square	[d.f.]	(p-value)
Industry	Manufacturing	54.3%	254	1.105	[3]	(0.776)
	Construction	52.5%	202			
	Services	55.2%	833			
	Other Industry	58.1%	136			
Knowledge Intensity	Less Knowledge Intensive	55.9%	1095	1.699	[1]	(0.192)
	Knowledge Intensive	51.8%	330			
Legal Status	Limited Liability	59.7%	221	27.200***	[2]	(0.000)
	Partnerships	65.0%	360			
	Sole Trader	49.4%	844			
Size of Firm	Micro (less than 10 employees)	53.2%	1279	15.992***	[1]	(0.000)
	Small or Medium (10 to 249 employees)	70.5%	146			
Gender	Male	56.5%	1030	3.641*	[1]	(0.056)
	Female	50.9%	395			
	All	55.1%	1438			

Notes: *** significant at 1 percent level; ** significant at 5 percent level; * significant at 10 percent level

Table 2: Spearman rank correlations

	1. Survival	2	3	4	5	6	7	8	9	10	11	12	13
2. General Growth Motivation	0.098*** (0.000)												
3. Geographical Market Orientation	0.021 (0.432)	0.175*** (0.000)											
4. Entrepreneur Age	-0.016 (0.557)	-0.124*** (0.000)	0.043 (0.109)										
5. Entrepreneur Education	0.030 (0.255)	0.127*** (0.000)	0.181*** (0.000)	-0.082*** (0.002)									
6. Prior Self-Employment	0.037 (0.161)	0.038 (0.156)	0.044 (0.100)	0.097*** (0.000)	-0.048* (0.071)								
7. Agglomeration	-0.043 (0.103)	0.083*** (0.002)	-0.091*** (0.001)	-0.096*** (0.000)	0.010 (0.701)	-0.062** (0.019)							
8. GVA Growth	0.038 (0.154)	-0.026 (0.327)	0.007 (0.802)	-0.023 (0.378)	0.054** (0.041)	-0.070*** (0.008)	0.240*** (0.000)						
9. Unemployment Change	-0.047* (0.074)	0.056** (0.034)	0.028 (0.295)	-0.028 (0.289)	-0.005 (0.837)	-0.065** (0.015)	0.377*** (0.000)	0.314*** (0.000)					
10. Industry Density	0.019 (0.473)	-0.065** (0.014)	-0.053** (0.045)	0.011 (0.667)	-0.057** (0.032)	0.063** (0.017)	-0.066** (0.012)	0.028 (0.283)	-0.103*** (0.000)				
11. Industry Knowledge Intensity	-0.035 (0.193)	0.099*** (0.000)	0.159*** (0.000)	0.032 (0.225)	0.288*** (0.000)	-0.042 (0.113)	0.075*** (0.004)	0.069*** (0.009)	0.037 (0.160)	-0.124*** (0.000)			
12. Legal Status	0.122*** (0.000)	0.131*** (0.000)	0.258*** (0.000)	0.043 (0.108)	0.116*** (0.000)	0.065** (0.014)	0.013 (0.628)	0.013 (0.625)	0.048* (0.070)	0.012 (0.643)	0.012 (0.638)		
13. Firm Size	0.106*** (0.000)	0.121*** (0.000)	0.141*** (0.000)	0.003 (0.910)	0.078*** (0.003)	0.000 (1.000)	0.076*** (0.004)	0.033 (0.215)	0.070*** (0.008)	0.006 (0.813)	0.061** (0.020)	0.296*** (0.000)	
14. Male	0.051* (0.056)	-0.008 (0.771)	0.039 (0.146)	0.100*** (0.000)	-0.017 (0.529)	-0.014 (0.597)	0.068** (0.010)	0.011 (0.679)	0.028 (0.295)	-0.042 (0.115)	-0.009 (0.723)	0.020 (0.443)	0.064** (0.015)

Notes: p-values in parentheses; *** significant at 1 percent level; ** significant at 5 percent level; * significant at 10 percent level

Table 3: Likelihood ratio tests of factor influences on firm survival

		Full Sample	Micro Firms	Small Firms
Growth Motivation	LR-test	12.670***	13.690***	5.560
	[d.f]	[3]	[3]	[3]
	(p-value)	(0.005)	(0.003)	(0.135)
General Human Capital	LR-test	10.200**	8.300*	12.160**
	[d.f]	[4]	[4]	[4]
	(p-value)	(0.037)	(0.081)	(0.016)
Business Ownership Specific Human Capital	LR-test	13.200***	12.600***	5.750
	[d.f]	[3]	[3]	[3]
	(p-value)	(0.004)	(0.006)	(0.125)
Locational Factors	LR-test	16.000***	12.250**	11.320**
	[d.f]	[5]	[5]	[5]
	(p-value)	(0.007)	(0.032)	(0.045)

Notes: p-values in parentheses; *** significant at 1 percent level; ** significant at 5 percent level; * significant at 10 percent level

Table 4: Logit regressions of firm survival

		All Firms	Micro Firms	Small and Medium Sized Firms
Growth Orientation				
General Growth Motivation	Growth Ambitions	1.5357*** (0.001)	1.5971*** (0.000)	0.2831 (0.119)
Market orientation (base category Local)	Main Market Wales	0.9996 (0.998)	0.9522 (0.780)	2.6090 (0.166)
	Main Market UK wide or international	0.8547 (0.305)	0.8801 (0.434)	0.9589 (0.937)
General Human Capital				
Age (base category aged 35 to 49)	Aged under 35	0.6827** (0.015)	0.7928 (0.160)	0.1287*** (0.001)
	Aged 50 and above	0.7855* (0.056)	0.7762* (0.056)	0.4017 (0.105)
Educational attainment (base category qualifications below university level)	No Formal Education	0.7885 (0.116)	0.7607* (0.082)	2.0885 (0.355)
	University Education	0.9366 (0.621)	0.9609 (0.775)	1.0735 (0.895)
Business Ownership Specific Human Capital				
Work status prior to start-up (base category employed by someone else)	Education or Training	1.7542** (0.015)	1.7616** (0.020)	1.1251 (0.900)
	Out of Work	0.5329** (0.020)	0.5931* (0.058)	0.8694 (0.921)
	Self-Employed	1.1466 (0.368)	1.3170* (0.087)	0.2635** (0.021)
Locational Factors				
Settlement Type	Urban	0.7410* (0.084)	0.7799 (0.170)	0.2686 (0.128)
	Village	0.9347 (0.724)	0.9844 (0.937)	0.2235 (0.123)
Growth and development	Change in GVA	4.7827*** (0.002)	3.2934** (0.025)	358.9466** (0.011)
Labour market	Unemployment rate	0.9968** (0.033)	0.9966** (0.032)	0.9956 (0.496)
Industry Density	LA Industry Location Quotient	1.0134 (0.874)	0.9952 (0.956)	1.3342 (0.526)

Table 4 continued

		All Firms	Micro Firms	Small and Medium Sized Firms
Other Controls				
Industry Sector (base category services)	Manufacturing Sector	1.2632 (0.246)	1.2503 (0.293)	1.0965 (0.905)
	Construction Industry	1.3184 (0.111)	1.2351 (0.251)	3.5569* (0.063)
	Other Industries	1.1682 (0.554)	1.1458 (0.616)	0.2485 (0.457)
Knowledge Intensity	High-Tech or Knowledge Intensive Firms	0.7696* (0.073)	0.8188 (0.197)	0.3309** (0.045)
Legal Status (based category sole trader and others)	Limited Liability Company	1.1932 (0.322)	1.1612 (0.446)	1.7004 (0.391)
	Partnership	1.8206*** (0.000)	1.9458*** (0.000)	1.3863 (0.625)
Firm Size	Small or Medium Sized Firm (10 – 249 Employees)	1.9402*** (0.001)		
Gender	Male	1.3286** (0.028)	1.3600** (0.022)	0.9773 (0.973)
Constant		0.6823 (0.213)	0.6705 (0.215)	8.0454 (0.190)
	N	1425	1279	146
	Likelihood Ratio test (null of constant probability)	96.41 [23] (0.000)	77.87 [22] (0.000)	42.73 [22] (0.005)
	R^2	0.049	0.044	0.241
	AIC	1913.1	1736.1	180.3
	BIC	2039.4	1854.6	248.9
	Hosmer-Lemshow Test	9.48 (0.304)	6.05 (0.642)	7.40 (0.494)
	Percentage Correct	60.6%	59.1%	78.1%

Notes: p-values in parenthesis; *** significant at 1 percent level; ** significant at 5 percent level; * significant at 10 percent level
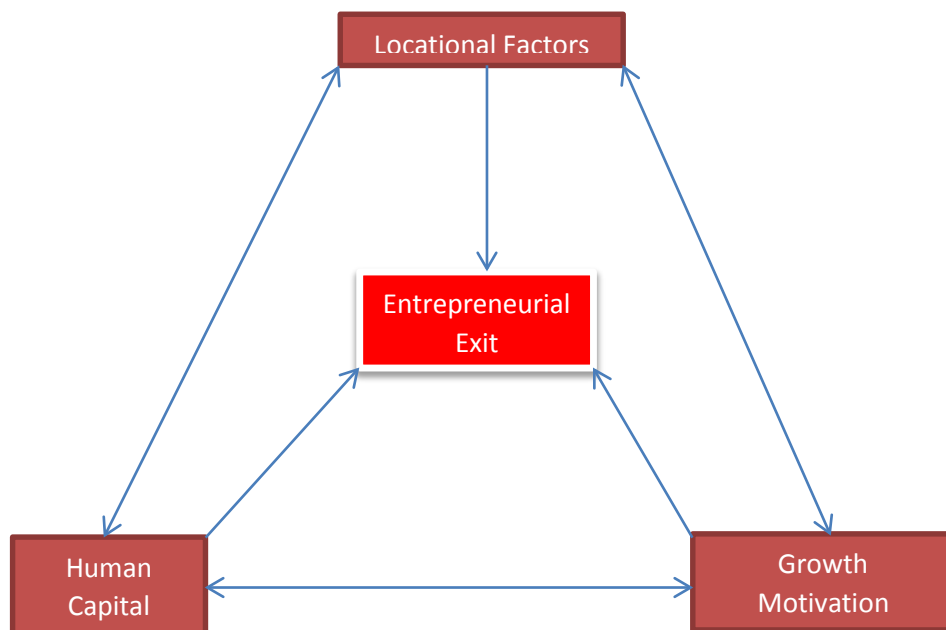
Figure 1: Three factors influencing entrepreneurial exit

Figure 2: Links between three factors