The Foreign Business and Domestic Enterprise Relationship: Its Implications for Local Entrepreneurial Resilience

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This paper was published by Sage in *Local Economy* and can be found online at:
http://dx.doi.org/10.1177/0269094218756817

Please cite as:

Thompson, P. and Zang, W. (2018) 'The foreign business and domestic enterprise relationship: its implications for local entrepreneurial resilience', *Local Economy*, 33 (1), 10-37.

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Abstract: Both domestic SMEs and FDI are often seen as key parts in helping economies to withstand and recover from shocks. What is less clear is the impact that a greater presence of foreign owned firms has on domestic enterprises' ability to withstand such shocks and for entrepreneurial activity to renew itself after economic shocks, described as local entrepreneurial resilience. To examine how foreign influence affects local entrepreneurial resilience rather than considering the relationship between foreign influence and domestic firm births or deaths at a given point in time, this study takes a more dynamic perspective. The relationship between foreign influence and the change in local firm births, deaths, and their overall impact in terms of net births and business churn, after the financial crisis is examined. UK data is examined at the local level to account for the within region heterogeneity of foreign investments that will lead to quite different outcomes being found for domestic enterprises in the same regions. The results indicate that those areas with greater foreign business influence in the labour market are likely to have seen firm birth rates remain higher and recover more quickly. There are policy implications for localities with both higher and lower levels of foreign business ownership.

Key words: foreign direct investment; firm births; firm deaths; small and medium sized enterprises; foreign owned firms; economic resilience; local economic development.

1 Introduction

The financial crisis has highlighted the need to consider not just current growth and development, but the resilience of local economies to negative external shocks (Christopherson et al., 2010; Pike et al., 2010). Increasing globalisation means that all economies are to some extent influenced by events outside their borders such as the financial crisis (Rae et al., 2012). The UK experienced a fall in real output of 6.4 per cent from pre-recession peak to trough, employment fell

by 580,000, and the unemployment rate rose from 5.2% to 7.8% between 2008 and 2010 (Bell and Blanchflower, 2010). According to the Office for National Statistics Business Demography figures in terms of entrepreneurship and business ownership the effects were similarly as large with the number of businesses being created in 2010 falling by 36,518 (13.7%) compared to the average for the four years preceding the recession, whilst firm deaths increased by 50,396 (22.7%) in 2009 compared to the pre-recession average. However, such impacts on unemployment, output and entrepreneurship were not evenly distributed. For example, compared to the pre-recession average, firm births per 10,000 population in South Lakeland in the North West at their nadir were 47.8 firms lower, whilst Westminster in London actually saw a rise of 30.9 firms per 10,000 population compared to the pre-recession average. For firm deaths St Albans in the East of England saw gross firm deaths rise by 121.1 firms per 10,000 population, whilst Wolverhampton in the West Midlands saw firm deaths fall by 8.9 per 10,000 population. The figures above show that the UK was strongly affected by the global financial crisis, but the international connections driving the shocks and ability to withstand and recover from them may differ greatly.

One particular connection for localities to the global economy is through foreign direct investment (FDI), which may help struggling economies to recover, but is often characterised as footloose (Phelps et al., 2003; Mata and Freitas, 2012). Equally domestic entrepreneurship is seen as helping local economies to recover by providing flexibility and adaptation (Martin, 2012; Martin and Sunley, 2014). What is less clearly understood is the relationship between foreign business ownership and domestic entrepreneurship, particularly when considering periods of recession and high economic uncertainty. This paper examines the relationship between foreign influence in the local labour market (as captured by the proportion of employment within foreign owned firms) and domestic firm births and deaths. This allows the paper to explore the impact that foreign influence has on local entrepreneurial resilience (Huggins and Thompson, 2015). This is a key relationship that has not been explored previously and is of great importance for the long term prosperity of local economies. The nature of this relationship is of great importance to local and national policy makers by enabling them

to understand how policies aimed at attracting FDI may have consequences for domestic enterprises allowing relevant support to be developed and provided. Although, the study utilises data from the Great Recession that affected economies globally after 2007, the focus on resilience means that the results will have important implications in preparing for future shocks. With the UK's decision to leave the European Union (EU) in 2016 being associated with a considerable negative shock and forecast reduction of 3% of UK Gross Domestic Product (GDP) by 2020, the findings have clear relevance for the local economies in the UK and its trading partners (Kierzenkowski et al., 2016). Although, impacts may be uneven it is considered that localities across the UK will be negatively affected (Clayton and Overman, 2017).

With any macroeconomic shocks foreign owned plant closures could have major negative effects on domestic small and medium sized enterprises (SMEs) reliant on the demand they create (Lee and Makhija, 2009). Equally where foreign firms remain they may compete for key resources such as labour (Anderson et al., 2010). The other side of the coin is that foreign businesses may reduce reliance on domestic consumers allowing for international entrepreneurship (Barbosa and Eiriz, 2009). Technological and managerial knowledge spillovers may also increase the ability of domestic SMEs to withstand shocks (Blalock and Gertler, 2008). This means that the overall effect is unclear.

Much of the previous research examining the foreign ownership – domestic enterprise relationship has concentrated on the national picture, or at best the regional situation. However, studies have found foreign investments to be attracted to particular locations within regions, such as where clusters exist generating agglomeration externalities (Yehoue, 2009). In Italy, for example, it is found that FDI is attracted to those localities with characteristics of industrial clusters and have an existing concentration of foreign firms (Majocchi and Presutti, 2009). This may reflect a reinforcing effect where particular localities within regions host more foreign owned firms and generate an environment that attracts more foreign investment further strengthening this attraction, whilst other localities do not experience such investments (Driffield and Munday, 2000). Therefore the impact of

foreign business ownership is likely to be much greater in some localities than others (Figlio and Blonigen, 2000; Hu, 2007). Within the UK these local differences in foreign investment are found to have ramifications for domestic business both in terms of new firm creation and exporting behaviour (Thompson and Zang, 2015, 2016), thus meaning that foreign firm ownership potentially has both direct and indirect influences on the local economic conditions. In terms of policy development in the UK, the coalition government elected in 2010 also shifted the emphasis of development policy from the regional scale to a smaller more localised scale (HM Government, 2010a, 2010b; Crowe, 2011). Although, this may allow for more context specific policy being utilised, others fear that the limited resources (financial and human) available to the new Local Enterprise Partnerships (LEPs) relative to that of the Regional Development Agencies (RDAs) could lead to even greater variation in attraction of FDI and local enterprise performance (Almond et al., 2015).

Bearing in mind those papers indicating a need for a more localised understanding of the impact of foreign business ownership (Figlio and Blonigen, 2000; Hu, 2007; Lee et al., 2014), this study examines the relationship between foreign influence and entrepreneurial resilience at the sub-regional local level for the UK. For the purpose of the paper the local level is defined as the local authority district level. This provides access to the widest range of data allowing a comparison between the period leading up to the recession (2004 to 2007) to the nadir experienced between 2008 and 2015. This follows the approach used by Kitsos and Bishop (2016) that allows for different delays in the effects between areas. In order to measure the impact of FDI on the local labour force, foreign influence is measured as the percentage of employment accounted for by foreign businesses. Within this paper entrepreneurship is examined from the perspective of new business formation. Given the importance of considering resilience in periods of rapidly changing economic conditions (Pike et al., 2010), the paper focuses on the impact of foreign influence on the evolution of firm deaths as well and the overall dynamics this causes in the SME population of a locality. For the data currently available it is not possible to distinguish between births and deaths by size of firm at the local authority level, but in 2007 prior to the recession 99.54% of enterprises in the UK had less than 250 employees

(European Commission, 2003), therefore a vast majority of firm births and deaths will relate to SMEs. In order to control for other local factors that may influence the creation and survival of domestic enterprises, and SMEs in particular, a regression approach is utilised.

The remainder of the paper is structured as follows. The literature associated with local economic resilience and its links to entrepreneurship are examined in the next section. Section 3 then examines the literature that considers the links between FDI and domestic enterprise. The fourth section outlines the data and methods of analysis that are utilised within the study. The results of the analysis considering the domestic firm births and deaths and the influence from foreign ownership are outlined in section 5. Section 6 discusses these results in the context of economic resilience and draws policy conclusions from the analysis undertaken.

2 Local Economic Resilience

This section explores the disputed concept of economic resilience and outlines the various meanings attributed to the concept (Christopherson et al., 2010). The different approaches to capturing measures of resilience in empirical studies are then covered. The section then concludes by outlining the role attributed to entrepreneurship in generating local economic resilience.

2.1 Conceptualising resilience

In more challenging economic conditions the previous growth of a region may be of less importance than expected in predicting future growth (Christopherson et al., 2010). When economic conditions change quickly a concept of greater relevance is economic resilience (Pike et al., 2010). Resilience has become a more popular concept in the last decade and whilst potentially being considered an element of local or regional competitiveness it can be distinguished as focusing on the reaction of a local economy to a shock (Martin and Sunley, 2017). However, given that it is drawn from other fields of study, such as physics, engineering, and ecology, this has led to a variety of different definitions

(Martin, 2012). There are concerns that it has become a fuzzy concept (Markusen, 2003; Pendall et al., 2010).

Di Caro (2017) considers the difference between engineering resilience where the emphasis is on the return to a pre-shock equilibrium (Holling, 1996; Martin and Sunley, 2014), and ecological resilience where the emphasis is on the degree that a system can withstand a shock before moving to another equilibrium (Holling, 1996; Martin, 2012). Such views of the sensitivity of the local economy can be of value as those least affected are most likely to recover quickly (Simmie and Martin, 2010). However, others consider the importance of adaptation and evolutionary perspectives where a new development path is achieved through reorganisation and adaptation (Hudson, 2010; Bristow and Healy, 2014; Martin and Sunley, 2014).

2.2 Measuring resilience

The measurement of resilience has been undertaken in a variety of manners, in part reflecting the lack of consistency in the theoretical definition (Modica and Reggiani, 2015). Martin (2012) considers the issue of how we may attempt to empirically capture the resilience of localities and regions, suggesting that there are a number of different dimensions to the concept: resistance - the sensitivity or depth of reaction to a shock; renewal - the extent to which a place renews its previous growth path; recovery or bounce-back (Pendall et al., 2010) - speed and recovery from a shock; and re-orientation and adaption to a shock.

Di Caro (2017) using a smooth-transition autoregressive (STAR) model that explores when regional employment moves from one regime to another of lower employment, finds that the response of Italian regions over the period 1992 to 2012 is mostly consistent with ecological resilience. There are differences found in resilience across the country with some regions able to withstand much higher levels of national unemployment before a regime change occurs.

However, there are also issues of resilience of what. Some studies have concentrated on income based measures, whilst others have considered employment. Cellini et al. (2017) show quite different patterns of resilience can be found across Italy dependent on which is used. This means that patterns of local resilience in terms of entrepreneurship may be quite different from those captured by these other measures (Huggins and Thompson, 2015), although as will be discussed below entrepreneurship itself is often seen as a source of local or regional economic resilience.

Whilst a majority of studies are regionally focused, Kitsos and Bishop (2016) examine employment resilience at the local level. Their focus is on the initial impact phase of the recession, looking at the magnitude of the decrease in employment after 2007. They also highlight the fact that not all local authorities reached their nadir at the same point, and therefore they consider the drop from the average of the 2004 to 2007 period to the lowest recorded employment level between 2008 and 2014.

2.3 Local economic resilience and entrepreneurship

When looking for the factors that drive economic resilience it is generally accepted that entrepreneurial activity and small business ownership have a key role to play in ensuring the resilience of local or regional economies (Martin, 2012; Martin and Sunley, 2014). A vibrant SME sector may play a key role in providing the embedded diversity that helps dissipate shocks (Tolbert et al., 1998; Dawley et al., 2010). Unlike their larger counterparts SMEs are regarded as more flexible and therefore able to adapt to exogenous shocks (Smallbone et al., 2012). It is even argued that SMEs through innovative activities can actually take advantage of economic shocks and the disequilibrium created from the withdrawal of the public sector and large firms to emerge stronger than before (Simmie and Martin, 2010; Grilli, 2011; Cowling et al., 2015). These characteristics mean that SMEs may be more likely than larger firms to pursue growth orientated strategies in recessions (Latham, 2009), thus boosting local economic resilience.

Williams and Vorley (2014) consider the example of the Sheffield City Region (SCR) in northern England and highlight how entrepreneurial led restructuring is likely to play a more important long term role than traditional policy led restructuring in determining the resilience of local economies. They highlight how the region emerged from the consequences of deindustrialisation in the 1990s with high levels of public sector investment. However, this did not provide sufficient flexibility to manage the consequences of the latest economic shock associated with the global financial crisis. This means that it is not just the level of entrepreneurship that is important, but the quality of the entrepreneurship (Williams and Vorley, 2014; Huggins and Thompson, 2015). This is consistent with Kitsos and Bishop's (2016) finding that local authorities with higher levels of firm births prior to 2007 experience larger falls in employment. There is what is described as an entrepreneurial quality effect, where in periods of growth more entrepreneurs of lower quality are attracted to business ownership, but exit when a recession strikes, so that the average quality of entrepreneurs rises (Kitson, 1995). However, the disequilibrium associated with shocks creates new opportunities for entrepreneurs (Cowling et al., 2015), meaning there is no reason to presume that any entrepreneurial quality effect will be driven purely by exits.

It therefore becomes important for local economies to not only attract, but also to retain entrepreneurial individuals (Hudson, 2010; Hospers et al., 2008). Huggins and Thompson (2015) suggest that it can be argued that local or regional entrepreneurship itself can display varying degrees of resilience. This is the focus of this study. In particular, the study focuses on how entrepreneurial resilience may be affected by foreign business ownership as will be indicated in the following section.

3. *Influence of foreign ownership on domestic enterprise*

The previous section indicated the importance of new and existing entrepreneurship for local economic resilience. In this section the links between foreign business ownership through its influence in the labour market and entrepreneurial activity are examined.

Foreign business ownership could influence entrepreneurial resilience in a variety of ways. Studies have suggested that there are two overriding effects of FDI on domestic enterprise and entrepreneurial activities, the competition effect and the demand effect (Barbosa and Eiriz, 2009). The competition effect refers to the negative impact that foreign affiliates have upon domestic businesses by increasing the competition for customers and factors of production, specifically labour (De Backer and Sleuwaegen, 2003). The demand effect reflects the additional business opportunities that FDI creates both directly through its demand for intermediate products and indirectly through the changes in production and managerial processes (Rodríguez-Clare, 1996; Markusen and Venables, 1999). Domestic enterprise may learn from the presence of foreign firms in the domestic market. This may take the form of knowledge spillovers associated with geographical proximity (Girma et al., 2001; Foray, 2006; Buckley et al., 2007). The way these effects impact on entrepreneurial resilience is now considered through firm births and deaths in turn.

3.1 Foreign influence and firm births

As noted above the competition effect will reduce the expected profits of starting a new enterprise (Grossman, 1984). As foreign firms may skim the most skilled and entrepreneurial individuals (Girma et al., 2001; Martins, 2011), this can have a further effect of not only reducing the number of entrepreneurs, but also the quality of the average entrepreneur (De Backer and Sleuwaegen, 2003). Evidence from Hong Kong suggests that the higher remuneration and security of working for a multinational means that graduates are drawn away from the SME sector (Moy and Lee, 2002). The overall suggestion is that although studies have found economic resilience to be greater where human capital is higher (Di Caro, 2017), the role that greater foreign influence plays in conjunction with this has not been explored, particularly its impact on the domestic entrepreneurs.

This negative effect on firm entry, however, ignores some long-term consequences that will affect local economic resilience in the event of a negative shock. Studies have suggested that the owners of many successful businesses worked previously for foreign multinationals, forming contacts and

learning about technological advances before striking out on their own (O'Malley and O'Gorman, 2001; Bandelj, 2008). Studies such as Barry et al. (1999) and Acs et al. (2007) note the importance of such experience working in multinationals for the Irish software industry. The proportion of entrepreneurs in this sector that previously worked in foreign companies rises from one third to two thirds in later studies. About half of these owners were also found to have worked abroad in software or related industries. This shows the value of policies adopted by development agencies such as Ireland's Industrial Development Authority in targeting high value sectors such as electronics, software, biotechnology and healthcare (Acs et al., 2007), although Ireland was less successful in harnessing spillovers in other sectors beyond IT and software (Bailey et al., 2016). In some respects this is consistent with the knowledge spillover theory of entrepreneurship where entrepreneurs take advantage of uncommericalised knowledge of large incumbent firms (Acs et al., 2013). Those working for foreign affiliates are best placed to learn about such knowledge.

A counterforce working in the opposite direction is that entrepreneurship is persistent and this occurs due to the formation of an entrepreneurial culture with positive role models and legitimisation of entrepreneurial activity (Bosma et al., 2012; Kibler et al., 2014; Fritsch and Wyrwich, 2015). Where more of the skilled workforce are employed in SMEs rather than large foreign affiliates this is likely to better promote the development of such a culture (Parker, 2009; Williams and Vorley, 2014).

The demand effect clearly suggests that new entrepreneurial opportunities will be created, so that gross firm creation may rise (Rodríguez-Clare, 1996; Markusen and Venables, 1999; Javorcik, 2004; O'Malley and O'Gorman, 2001; Aldrich and Ruef, 2006; Pitelis and Teece, 2010; Thompson and Zang, 2015). However, as with the competition effect, other researchers have suggested alternative relationships with firm creation, particularly when considering a negative economic shock. This further indicates the importance of understanding the difference between growth during more supportive economic periods and resilience during downturns. A lack of embeddedness may become apparent in economic downturns when foreign firms close down or reduce production leading to increased

unemployment (Pike and Tomaney, 1999; Görg and Strobl, 2003; Gao and Eshaghoff, 2004; Lee and Makhija, 2009; Blanchard et al., 2016). Ireland is one such country that has experienced such losses of FDI as foreign firms seek out cheaper alternative sources of labour in recent years leaving particular localities suffering large declines in aggregate demand (Bailey et al., 2016). As noted in the introduction foreign firms are found to locate in clusters of related firms (Yehoue, 2009) or in similar locations to other foreign owned firms (Majocchi and Presutti, 2009; Villaverde and Maza, 2015). In the case of the former in particular this is likely to reduce fears associated with footloose FDI as the choice to locate in clusters is usually linked to the agglomeration economies, information flows and knowledge spillovers available that are harder to replicate elsewhere (Rocha, 2013).

A potential weakness of those businesses created to serve foreign affiliates is their reliance on a single large customer, which reduces their independence (Román et al., 2011). Danakol et al. (2014) conduct a panel data analysis of the relationship between domestic firm entry and FDI using data from 70 countries for the period 2000 to 2009 and find a negative relationship at the aggregate and inter-industry level. Although this is compatible with greater competition for resources, such as skilled labour, by covering the period as a whole the outcomes within downturns cannot be fully understood. Rather the demand effect and potential to release entrepreneurial talent as found by Stoerring and Dalum (2007) are expected to be more important leading to the following hypothesis:

H1: Where foreign influence is greater new firm creation will fall less

3.2 Foreign influence and firm deaths

Existing SMEs may be weakened if they are unable to compete for the most talented and skilled employees (Spencer, 2008). Given the importance of human capital assets in providing small ventures with the flexibility to adapt and innovate (Gray, 2006), potentially allowing adjustment to changing conditions (Soininen et al., 2012), the loss of this skilled workforce may lead to a greater level of attrition in downturns. Cowling et al. (2015) find that although not associated with greater SME sales or employment growth during the UK recession after 2008, those with higher human capital were

more likely to display a growth orientation. They link this to innovation, risk taking and pursuit or proactive strategies, all parts of an entrepreneurial orientation (Miller, 1983). Williams and Vorley (2014) note that the overall effect of dominance by larger firms or the public sector within local employment is to reduce the creativity and flexibility present.

Perhaps more importantly studies of entrepreneurial exit decisions, as noted above, have highlighted the importance of alternative rewards, the opportunity cost of remaining in entrepreneurship (Gimeno et al., 1997). Where the foreign owned enterprises offer high remuneration for skilled employees the required rate of return would be greater. Thus any negative shock could weaken any pull into business ownership and see a greater number of entrepreneurs exiting to become employees, even if their enterprises still remain profitable. Grilli (2011) studying the Italian Information and Communications Technology (ICT) services sector in the aftermath of the dot.com crash finds no significant effect from education, but they do find work experience, particularly that specific to the ICT services industry, to increase the likelihood of exit. Generic experience makes business closure more likely, but industry specific experience potentially increases the success of the business, so that exits are via acquisitions of the going concern. However, Grilli's (2011) focus is on industry specific shocks in an immature industry and it is unclear how such findings relate to an economy wide shock, such as the global financial crisis.

Where SMEs are created to serve foreign affiliates if they can be too reliant on a single customer and there is a danger that like the homeworkers studied by Fritsch and Wyrwich (2015) the independence of these enterprises might be blurred, becoming what Román et al. (2011) describe as dependent self-employed. Rather than resilience, Modica and Reggiani (2015) suggest that this is actually better described using the concept of vulnerability. In effect the foreign affiliates have connected the local SME sector more strongly to the global economy and shocks are therefore transmitted more strongly to the local economy. On the other hand, other studies have suggested that foreign firms may actually act as stabilisers given their ownership advantages which help with

accessing finance and the latest technology (Desai et al., 2008; Varum and Rocha, 2011). They may also focus on international markets, so are less severely affected by local/national downturns (Alvarez and Görg, 2009), although dominance of a single foreign affiliate in a local economy could reduce SMEs' other export activities (Thompson and Zang, 2016).

Prior studies therefore suggest that foreign influence through the competition effect could weaken the SME sector, which makes exit more likely. It is unclear what impact foreign influence will have on local aggregate demand as foreign demand may act as a support for domestic SMEs, but may also be withdrawn with devastating consequences. Studies in other countries also cast doubt as to whether any domestic enterprises created to serve foreign affiliates will make the same contribution to the development of an entrepreneurial culture that encourages further business creation through role models and legitimisation. Overall it would appear that the negative competition effect will lead to the hypothesis:

H2: Where foreign influence is greater the increase in gross domestic enterprise exit rates will be larger.

The predicted positive effect of foreign influence on firm births, may be offset through increased exit rates. This means that the overall impact on entrepreneurial resilience in terms of net firm births may be unclear. However, firm churn rates would be expected to increase. This might be expected to be associated with greater adaptation:

H3: Where foreign influence is greater the increase in domestic enterprise churn rates will be larger.

4. Data and methods

4.1 Measuring foreign influence

Although studies of FDI have examined the economic impact at a regional level, this can often hide the impact that these multinational firms have on localised labour markets (Figlio and Blonigen, 2000). This study examines the impact that FDI has on the change in the firm birth and firm exits at the local authority district level of spatial disaggregation. In Great Britain there are 380 non-overlapping areas

at the local authority district level. These subdivisions are imperfect in being based on administrative responsibility rather than any economic or community based grouping, but provide access to a wider array of secondary data than alternative spatial divisions. Data availability issues result in three of the local authority districts having to be excluded from the main analysis, Cornwall, the Isles of Scilly, and the City of London.

Unfortunately, there are difficulties in capturing the patterns of FDI investment flows and stocks at the local level as no official data is available for the location of such investments in Great Britain (Billington, 1999). Some studies have used the number of projects as a proxy, but this doesn't necessarily capture the varying impact of investments of different sizes (Wren and Jones, 2011; Dimitropoulou et al., 2013). Capital invested, or worse projects, may not reflect the influence of foreign owned businesses on the local labour force (Barbosa and Eiriz, 2009).

Given that the decision to enter or exit business ownership is not just a function of returns from the potential business, but also the alternative opportunities available (Gimeno et al., 1997), the impact on employment by foreign firms needs to be captured. In this study, we employ the proportion of the workforce that can be attributed to working in foreign owned firms to represent the degree of foreign influence in the local economy. This data is drawn from the Office for National Statistics's (ONS) 'Foreign Ownership of Businesses in the United Kingdom Analysis' (ONS, 2010), created from Value Added Tax (VAT) and Pay As You Earn (PAYE) registered units. Unfortunately, this does mean that the smallest least formal organisations are not included, but these are less likely to provide the employment opportunities that will substantially influence the exit decisions of business owners. It is not possible to determine the ownership of some businesses within the sample, but there is no reason to assume that there will be any systematic differences across localities with regard to these businesses with unattributable ownership. As with other measures of regional or local distribution of FDI in Britain the data only relates to a single year, 2010. However, this does allow the relationship

between this foreign influence and changes in entrepreneurial activities to be examined since the global financial crisis.

4.2 Business ownership entry and exits

To examine entrepreneurial resilience from Martin's (2012) perspectives of resistance, renewal, recovery and re-orientation a number of different measures of entry and exit are considered. Resistance might be best captured by gross exit rates to establish the ability of domestic enterprise to withstand shocks. Renewal would come from gross entry rates to capture the continuing creation of new enterprises/entrepreneurs. Net firm births will fit with recovery in terms of new overall entrepreneurship being created. Business churn on the other hand could reflect re-orientation as loss of poor quality entrepreneurs will not necessarily be problematic if replaced with higher quality enterprises and entrepreneurs. The data on both firm entry and exits are drawn from the ONS Business Demographics publication. These data are not restricted to limited liability firms, being based on the interdepartmental business register, but may still miss some of the smallest least formal start-ups.

For all measures we adapt Kitsos and Bishop's (2016) approach of comparing the average rate of entrepreneurship in the period leading up to the recession (2004 to 2007) with the minimum (or maximum in the case of firm deaths) based on the average of the four lowest (highest) values in the period after the recession (2008 to 2015). We also undertake more descriptive analysis of entrepreneurial activity up to 2015.

To account for the differing sizes of local economies, all entrepreneurship measures used in the analysis are scaled by the existing business stock, described as the ecological approach (Audretsch and Fritsch, 1994). This approach better helps the analysis to investigate the impact of foreign influence on the vulnerability/resilience of the local economy in terms of the business community.

4.3 Analysing entrepreneurship dynamics and resilience

As outlined in subsection 2.2 and above in 4.2 there are a number of different ways that resilience can be measured and captured, with different measures of entrepreneurship appropriate for capturing each. Some of the perspectives are possible to capture through the examination of the relationship between the variables of interest. The recovery dimension of entrepreneurship, however, really requires a time dimension to be taken into account. To explore this in a simple fashion we split the local authorities into quartiles based on the degree of foreign influence present. The pattern of entrepreneurship is then examined over time. Graphically the resilience of entrepreneurship can be examined for those localities with greater or lesser foreign influence by observing the extent that entry rates fall and exit rates rise above the pre-crisis average. Renewal and re-orientation can be examined in a similar manner to consider the post crisis levels of net venture creation and business churn. Recovery, would instead reflect the time taken for these measures to return to their pre-crisis levels, if they do so.

In order to make comparisons easier the data for the four groups of localities are normalised, so that preceding the crisis the average entrepreneurship rates are identical for the four groups. We use all data currently available, up until 2015, so that patterns beyond the initial stages of recovery will also be captured here. This analysis provides an initial examination of the differences between the four groups of localities and any obvious differences in their paths after the crisis before more detailed analysis using regression analysis to control for other factors potentially influencing the entrepreneurship rates as outlined below.

4.4 Regression estimation approach

As the entry and exit rates of local enterprise are likely to be influenced by a variety of factors beyond foreign influence this study also adopts a multiple regression approach to account for these other influences. The other variables included in the estimations are intended to capture the: industrial and urban structure; the labour force structure; and local economic conditions. Appendix 1 provides a summary of the variables used with more detailed discussion below.

A majority of the variables use data from 2007 to capture the conditions prior to the recession. This is intended to help reduce issues of reverse causality. In addition to the variables discussed in more detail below dummies are also included to represent the nine English regions and two devolved regions of Wales and Scotland. These are intended to capture any unobserved effects not captured by the main independent variables, such as potential lasting effects from the previous economic development policies of the regional development agencies.

4.5 Industrial and urban structure

The industry and urban structure can provide a number of factors that pull entrepreneurs into entrepreneurship through raising the rewards associated with such activities. Although more rural areas are often perceived to have a stronger tradition of business ownership (Stathopoulou et al., 2004), they also lack the potential: knowledge flow (Vernon, 1960), access to thick specialised labour markets (Baker et al., 2005), and knowledge spillover (Delgado et al., 2010), benefits associated with an agglomeration. This means that local enterprises may experience stable less competitive market conditions and display greater embeddedness, which aids their survival, but in the long run competitiveness may be eroded and survival prospects reduced (Anderson et al., 2010). It is unclear which of these mechanisms will dominate. Kitsos and Bishop (2016) find that for employment, greater population density reduces resilience. For the sake of consistency, a simple measure based on population density (population per square kilometre) is utilised based on data from the midyear population estimates. As the manufacturing sector is potentially where domestic enterprise can benefit most from the demand effect and supplying intermediate goods the proportion of employment in the manufacturing sector is captured using data from the Annual Population Survey (APS) for 2007.

As well as the proportion of employment in particular sectors the relationship between firms may provide an important role as Rocha (2013) finds that entrepreneurship is greater in German clusters as the networks and knowledge spillovers present provide opportunities for firm formation.

We follow Fotopoulos (2014) in using measures of industry diversity and industry specialisation to account for these factors in 2007. Industry diversity is based on Theil's (1972) entropy measure, whereas a relative specialisation index is used to capture industry specialisation. The data uses four digit SIC07 employment data from the Annual Business Inquiry.

A final variable included in this group of controls is the stock of SMEs per head of population in 2007. This is intended to capture the unobservable factors that lead to an entrepreneurial culture (Uhlaner and Thurik, 2007). Previous high levels of gross firm formation will have led to a higher stock of SMEs. It may also reflect role model effects that encourage others to start their own businesses (Politis, 2008).

4.6 Labour force structure

In terms of labour market characteristics, Harding (2007) finds that the entrepreneurial propensity is highest in the UK for the 35 to 44 year old age group. This reflects a need to acquire some experience prior to start-up (Baum and Silverman, 2004; Collins et al., 2004), whilst retaining enough time to recoup the investment made (Lévesque and Minniti, 2006; Kim, 2007). As survival rates are lowest for firms in their early years of operation (Agarwal and Gort, 2002), this measure is also included in the exit regressions. Education plays a potentially important role in terms of the opportunity cost of business ownership (van der Sluis et al., 2008), however, like general experience it can act as a pull factor by raising the relative returns from employments as a business owner (Davidsson and Honig, 2003). To capture this the proportion of the population holding university level qualifications (equivalent to National Vocational Qualification (NVQ) level 4 or higher), is included from the Annual Population Survey (APS). In times of economic uncertainty the public sector can play an important role in supporting the local economy, and SMEs in particular, through their direct procurement and support of growth and innovative activities (Tödtling and Trippl, 2005; Murray, 2009; Pickernell et al., 2011). However, austerity measures introduced by the national government have led to considerable budget cuts and job losses within the UK public sector and reduced demand both directly and

indirectly (Price et al., 2013). Others have also suggested that a larger public sector can reduce the creativity and flexibility of local economies (Williams and Vorley, 2014). Ideally we would include measures to capture all contributions of the public sector and policy in supporting the local economy, but as such measures are not available (Kitsos and Bishop, 2016), we are restricted to controlling for employment in the public sector as provided by the APS.

4.7 Local economic conditions

Local economic conditions are likely to be important influences on firm entry and exit rates. Where conditions are weaker this is likely to reduce the returns from business ownership (the positive pull factors), but also the alternative employment opportunities creating a push into entrepreneurship. To represent these changes in local aggregate demand leading up to the recession we consider the growth of both income and the population. Where median income growth is lower it is perhaps the former pull factor, which will have the greatest bearing as consumers will have less spending power and liquidity constraints may play a greater role (Geroski et al., 2010; Saridakis et al., 2012). Data to capture this is drawn from the Annual Survey of Hours and Earnings (ASHE) covering the period 2003 to 2007. Growth of the working age population is also included as an alternative measure with this drawn from NOMIS mid-year population estimates again covering the period 2003 to 2007.

Where unemployment rates are rapidly rising the alternative employment opportunities are likely to diminish considerably pushing individuals into entrepreneurship (Santarelli et al., 2009). The unemployment rate used in the study is the claimant count rate (those claiming Job Seekers allowance and equivalent benefits) measured as a proportion of the population drawn from NOMIS data. This measure is used to represent the competition for job vacancies becoming available rather than alternative measures, which would include those withdrawing more fully from the labour market due to weak conditions. To avoid collinearity problems, the change in unemployment rate in 2010 compared to the average for the preceding five years is utilised to capture the extent that there are additional unemployed individuals who may be pushed into starting a business.

5. Results

Before considering the regression results exploring the relationship between foreign influence in the labour market and the entrepreneurial measures the overall patterns are examined for the period 2004 to 2015. Figures 1 and 2 cover the births and deaths of businesses for the four groups of localities split by degree of foreign influence. These figures are scaled by the existing firm population and therefore are those associated with ecology approach and have been normalised so the average for 2004 to 2007 has been set equal to zero.

PLEASE INSERT FIGURE 1 ABOUT HERE

The figures show that similar patterns are present regardless of the degree of foreign influence present with some minor, but potentially important differences. Generally there is a large fall in gross firm births from 2008 onward, which only recovers to pre-crisis levels in 2013. This suggests that there is no effect on the average recovery aspect of resilience from foreign labour market influence as the four groups bounce back to pre-recession levels in 2013 (Pendall et al., 2010). However, there are some differences in the patterns observed between the start and recovery. For those localities with higher foreign influence represented by the solid line higher relative gross firm birth rates are retained for longer, so initially in 2008 more renewal appears to be present with a significant difference between those localities with the most and least foreign influence in the labour market (*t*-test 3.106, d.f. 186, p-value 0.002). This may reflect the lower reliance on the UK domestic market (Barbosa and Eiriz, 2009). All localities independent of levels of foreign influence on average hit their lowest point in 2010. However, the difference in gross firm births between those localities with the least and most foreign influence in the labour market is not significant for 2009 (*t*-test 1.644, p-value 0.108) and 2010 (*t*-test 1.933, p-value 0.055). Thus, foreign influence may initially aid localities in renewing their enterprise, but as any footloose tendencies come into play this benefit may disappear (Phelps et al., 2003; Mata and Freitas, 2012). After 2010 the rally in gross firm births for those localities with more

foreign influence is quicker and significant differences are found, potentially reflecting the release of skilled workers who start their own businesses (Stoerring and Dalum, 2007).

PLEASE INSERT FIGURE 2 ABOUT HERE

Firm deaths show a slightly more complicated pattern. After the start of the crisis firm deaths rise, peaking in 2009 before falling back in 2010 and 2011. However, there is a second peak in 2012. This may reflect the exit of some entrepreneurs to alternative employment as the labour market recovers and the push effect weakens (Geroski et al., 2010; Saridakis et al., 2012). Again the patterns between the four groups are similar with changes over time suggesting very similar patterns of recovery, but there is evidence that resistance appears a little lower for those localities with the highest foreign influence in the labour market at the peak points of 2009 (*t*-test 2.059, p-value 0.041) and weaker evidence for the following year (*t*-test 1.898, p-value 0.059). This may be reflective of a reliance on a single large firm for some drawn into entrepreneurship by the demand effect (Román et al., 2011). However, after 2010 the pattern effectively disappears those localities with more foreign influence having lower (but not statistically significant) relative firm exit rates in 2011 and 2012. This may potentially reflect the higher productivity from knowledge spillovers promoting survival for the remaining firms even where demand has been reduced (Rodríguez-Clare, 1996; Markusen and Venables, 1999; Martins, 2011).

Figures 3 and 4 below show that net firm births and business churn are also similar for the four groups of firms when scaled by stock of firms.

PLEASE INSERT FIGURE 3 ABOUT HERE

PLEASE INSERT FIGURE 4 ABOUT HERE

Both net firm creation and business churn fall after the start of the crisis. The figures show that when normalised to make the pre-crisis data comparable it is actually those areas with the highest levels of foreign influence that display the greatest renewal and re-orientation through the early stages of the

crisis. The normalised net firm births are significantly higher in 2008 (*t*-stat 4.649, p-value 0.000), although this gap becomes insignificant in 2009 and 2010 it returns from 2011 onwards (*t*-stat 2.436, p-value 0.016). In terms of business churn after 2009 until 2015 localities with most foreign influence display higher relative levels (*t*-stat 2.002, p-value 0.47) reflective of higher firm births and deaths. Potentially this shows the dangers for more insulated localities, with lower foreign involvement, that take longer to re-orientate for new conditions.

Table 1 presents the correlation matrix for those variables used in the regressions. The results indicate that foreign influence in the labour market has significant relationships with the measures of entrepreneurial resilience driven by gross firm births, but not firm deaths alone. The lack of relationship with firm deaths contrasts with the t-statistics found for the groups as a whole, but this may reflect the variation in the timing of the troughs of entrepreneurial performance for the individual localities.

PLEASE INSERT TABLE 1 ABOUT HERE

As discussed in the preceding section it is also possible that other characteristics associated with local economic conditions, the labour force, and industrial structure may also influence entrepreneurial resilience. The regressions that follow determine whether the foreign influence has any impact on entrepreneurial resilience after taking account of these. In terms of relations between other characteristics there are strong correlations between the change in unemployment and the existing presence of SMEs. However, the variance inflation factors do not indicate a problem with multicollinearity with the largest value being 3.1 for population density, well below the conventional cutoffs.

Table 2 presents the regression results considering the relationship between foreign influence in the labour market and gross firm births when controlling for other local economy characteristics. The level of variance explained in the change in gross firm birth rates from before to the lowest point

after the financial crisis is around 40% or higher. All the regressions are collectively significant according to the F-tests.

PLEASE INSERT TABLE 2 ABOUT HERE

After controlling for other characteristics the positive relationship between foreign influence and the change in gross firm births pre and post 2007 remains. This provides further evidence that higher influence of foreign firms in the labour market has a positive effect on local economic resilience from the perspective of the ability to recover through new firm creation (*hypothesis H1*). The other significant variables are the stock of SMEs, proportion of the population holding university degrees, employment in manufacturing in 2007, and the increase in the unemployment rate. The stock of SMEs variable is intended to pick up the role model effects and unobservable factors that have generated an entrepreneurial culture in the locality (Politis, 2008; Uhlaner and Thurik, 2007). Although there was no guarantee that these factors would continue to have a positive relationship in recessionary periods, as well as the lead up to the recession, this appears to be the case. As well as the specialised human capital potentially related to existing business ownership experience there is also evidence in Model 1 that more general human capital in the form of the proportion of graduates in the population also has a positive effect. Both of these effects appear to pull members of the labour force into entrepreneurship by raising potential returns, whilst a rise in unemployment also has a positive effect reflecting a push due to limited alternative opportunities (Santarelli et al., 2009). As suggested by studies such as Williams and Vorley (2014) a greater share of employment in the public sector, however, seems to reduce the flexibility and limits the potential to recover through identifying and exploiting new opportunities.

Table 3 reports the relationship between gross firm deaths and foreign influence in the local labour market. The regressions perform less strongly than those for gross firm births with approximately 12 percent of the variance explained.

PLEASE INSERT TABLE 3 ABOUT HERE

As with the simple correlations the coefficients estimated for foreign influence are positive, but insignificant. This means that although there is no support for *hypothesis 2* it is also notable that foreign influence although encouraging new entrepreneurial activity is not having the same effect of protecting existing enterprise. This means that in terms of the resistance dimension of local entrepreneurial resilience foreign influence does not have a supportive effect. In model 2 there is weak evidence of a stronger SME sector helping to create a more resilient entrepreneurship, potentially through a more embedded and networked business community less reliant on large businesses (Román et al., 2011).

The above results mean that when the effects of foreign influence on the labour market are examined in relation to the combined impact on gross firm births and deaths the patterns are quite interesting. For the change in net firm births 44 percent or more of the variance is explained (Table 4).

PLEASE INSERT TABLE 4 ABOUT HERE

In both models foreign influence in the labour market is positively associated with net firm births, suggesting the potential for a positive demand effect seems to outweigh any negative competition effect. As before the stock of SMEs has a positive effect on net births, but there is also some evidence of a recession push effect from the change in unemployment (Ghatak et al., 2007). Interestingly contrary to expectations the proportion of the population in the prime age group has a negative effect on net firm births (Model 1). This may reflect the other family responsibilities that this group has, which lead to them seeking safer employment in periods of uncertainty.

PLEASE INSERT TABLE 5 ABOUT HERE

Table 5 indicates that consistent with the patterns shown in Figure 4 the adaptation dimension of economic resilience is positively linked to the influence of foreign firms in the local labour market, supporting *hypothesis H3*. Industrial specialisation and diversity are both negatively associated with the business churn rate. The results in Table 2 suggest that this might be driven mostly by fewer new

firms being created. Industrial diversity's negative relationship may reflect the benefits of employment being associated with a related group of industries benefitting from cluster effects (Rocha, 2013). However, too great a specialisation compared to the industrial structure of Britain as a whole, could potentially leave a locality vulnerable to shocks (Modica and Reggiani, 2015).

Throughout the analysis some of the independent variables traditionally associated with entrepreneurial activity display limited predictive power. This may be because they are better at picking up longer run patterns, than changes associated with shocks (analysis of resilience). In some cases this may reflect independent variables actually being only weakly associated with economic development, but rather themselves being consequences of unobserved cultural and social factors (Huggins and Thompson, 2017). More direct measures of individual level factors such as agency and power, alongside measures of knowledge flows allowing renewal of entrepreneurship if available in the future may allow a better understanding of entrepreneurial resilience.

6. Conclusions

This study has attempted to fill some of the gaps in knowledge relating to the impact of foreign firms on those economies that play host to their investments. Rather than considering national patterns this study has taken note of the prior studies suggesting uneven influences of foreign ownership (Figlio and Blonigen, 2000; Hu, 2007) and taken a local focus. The study has also concentrated not just on the relationship between foreign investment and domestic enterprise in general, but the resilience of this entrepreneurship in the face of a large exogenous shock.

The results found are consistent with positive demand and spillover effects dominating (Rodríguez-Clare, 1996; Markusen and Venables, 1999; Martins, 2011). There is evidence that localities with higher foreign influence in the labour markets do not exhibit the same sized declines in gross firm births (*hypothesis H1*), net firm births and display evidence of higher levels of business churn (*hypothesis H3*). Although there is no evidence that resistance, in terms of retention of existing

enterprise, is increased there is also no evidence of it being reduced beyond the initial stages of a downturn (*hypothesis H2*).

The results of this study are of importance for policymakers, particularly in the UK context where economic development decision making is now at least in part taken at a lower spatial scale than previously was the case (Pugalis and Bentley, 2013; Rossiter and Price, 2013). Included in this is a move to LEP economic strategies having more of an 'action plan' format with more specific projects included than their predecessors. Results of studies such as this may be important in identifying the ramifications of such projects, particularly as less time seems to be available for development of strategy plans (Rossiter, 2016). Although it should also be recognised that the move from RDAs to LEPs in some areas has also seen a shift in the role of public sector policymakers to providing technical expertise whilst community representatives drive the agenda more (Bowden and Liddle, 2018). Attracting FDI has been very tempting for struggling local economies looking to create employment, the results here suggest that it may also aid the resilience of the local economy in a number of ways. The greater new firm creation rates and business churn ensure they can reorganise and adapt (Hudson, 2010). This allows the local economy to develop the new development paths, which may be required where shocks prevent the return to the previous development path (Di Caro, 2017). The higher levels of firm churn in particular may ensure the retention of embedded diversity that will help dissipate any future shocks (Tolbert et al., 1998; Dawley et al., 2010). However, as Baily et al. (2016) discuss in relation to Ireland and Hungary it is not sufficient to just attract FDI, but to gain the full advantages a more holistic industrial development policy is required, otherwise there is limited evidence of any advantage from spillovers being obtained. Andreosso-O'Callaghan and Lenihan (2011) contrast the experience of Ireland where foreign firms dominate high-tech sectors to Sweden where a much greater balance is present, allowing its economy to recover much more quickly after the Great Recession.

The findings here have considerable importance due to the UK vote in favour of leaving the EU in 2016 given the predictions of some of a large fall and possible withdrawal of FDI (Dhingra et al., 2016). As such, it would be advisable that any changes to policy are made as immediately as possible, as the UK in 2017 has already experienced a slowing of growth (Office for Budget Responsibility, 2017). With regard to the benefits in terms of recovery and adaptation policy makers need to ensure that facilities are in place to aid the new firms created. The move to LEP organised business support may aid this as business support can be tailored to the types of firm that are to be created unlike the more centralised Business Link service that previously had responsibility of business support in England and its counterparts in the devolved regions (Williams and Vorley, 2014). Although this release of entrepreneurial talent may aid the development of self-sustaining clusters (Stoerring and Dalum, 2007), if weak economic conditions remain the prospects of these new enterprises may be limited. It should be remembered that where large foreign firms dominate the employment of skilled and entrepreneurial individuals the new ventures may lack the role models, which are suggested to play an important role in developing the right type of enterprises (Bosma et al., 2012). This could make mentoring and incubator services invaluable, however, from the Sheffield City Region case Williams and Vorley (2014) note an acknowledgement by LEPs that they may not be best placed to pick winners. Where foreign influence is lower, local economies may initially be insulated, but may suffer later negative consequences for longer. In this respect policy makers may need to encourage innovation and adaptation through subsidies to local existing SMEs. Otherwise they will still suffer high exit rates, but later at the same times as lower entry rates, meaning entrepreneurship is not renewed. The current centralised policy of tax credits for innovation is not engaged with uniformly across sectors (and therefore across localities), and is also not seen as having great success in encouraging the generation of product and service innovations (Cowling, 2016). While accepting the limited expertise and resources of LEPs, the ability to fine tune support for the strengths of the local economy would be beneficial and in keeping with the smart specialisation agenda (Aranguren et al., 2017). It would also reflect the experience of the Sheffield City Region and Nottingham's in not trying to radically

change their industrial structures completely, but build on their respective expertise in advanced manufacturing (Williams and Vorley, 2014) and pharmaceuticals moving towards biotechnology (Smith et al., 2016). This means not just providing funding for innovation itself, but finance and training to build the internal capacities to support innovation (Cowling, 2016).

In terms of future work, as noted in Section 4, a lack of local level data on foreign investment or foreign employment prevents the longitudinal analysis that would strengthen the identification of causal relationships between foreign influence and domestic enterprises' creation and survival. The motivations for FDI are also likely to change the relationships found above. Similarly it is not possible to distinguish at the local authority level whether businesses are based in the UK having been invested in by foreign businesses and therefore may remain more embedded in the local economy, or whether they are branch plants of large international corporations making greenfield investments. The difference in the degree of embeddedness may influence the results found compared to the aggregated results presented here. Clearly more detailed information on foreign firm influence in the local labour market would be of great value not just in quantitative, but also qualitative terms. Similarly there are also deficiencies in the data on firm exits. With the present data it is not possible to identify all entrepreneurial exits as some entrepreneurs may exit, but sell on businesses to others. Even where firm closures take place it is not possible to establish whether this is due to a voluntary exit decision to pursue alternative opportunities or is a forced exit where the business is no longer sustainable. Given the complexity of the entrepreneurial exit decision, and the varied support that the different groups will need, this information is vital for preparing policies and initiatives for future downturns. As noted above the data available to include as controls could also be strengthened to include variables capturing the relationships within localities (social capital) and the various policy interventions at the local level in terms of public sector investments of various kinds (Kitsos and Bishop, 2016; Huggins and Thompson, 2017). Many of these issues may be difficult to examine in studies that cover a majority of localities within a country. Instead focused data collection within selected areas that captures longitudinal information at the micro level will be important, allowing

individuals to be followed through time providing an understanding of their choices and subsequent behaviours.

The study has shown that when considering the influence of foreign firms on domestic enterprise it is important to consider local differences. Future studies need to take account of the different dimensions of entrepreneurial resilience as the study suggests that local economies will benefit in some regards, but not others. The results here suggest that foreign influence in the labour market can help renewal and adaptation of local economies, but when taken in combination with other studies of countries, such as Ireland, Sweden and Hungary (Andreosso-O'Callaghan and Lenihan, 2011; Baily et al., 2016), it is important that local policy makers look to avoid the local economy being overly dependent on such employers. It is important to support the SME sector to enable it to engage and form links with the foreign firms to benefit from any productivity spillovers. Linked to this foreign firms may help develop the local business community where it complements existing strengths in the local economy. As such, entrepreneurial resilience should be part of the considerations when approving developments of foreign firms and not considered separately by policy.

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PLEASE INSERT TABLE A1 ABOUT HERE

Table 1. Correlation Matrix

	1. Change in firm births	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2. Change in firm deaths	0.0025 (0.961)														
3. Change in net firm births	0.8375 (0.000)	-0.3183 (0.000)													
4. Change in firm churn	0.8409 (0.000)	0.2765 (0.000)	0.4498 (0.000)												
5. Foreign Influence	0.2538 (0.000)	-0.0104 (0.841)	0.1569 (0.002)	0.2821 (0.000)											
6. SMEs	0.1435 (0.005)	-0.1523 (0.003)	0.2209 (0.000)	0.0177 (0.732)	-0.1143 (0.026)										
7. Population density	0.3470 (0.000)	-0.0805 (0.119)	0.3430 (0.000)	0.2417 (0.000)	0.1675 (0.001)	-0.0157 (0.761)									
8. Population growth	0.1574 (0.002)	-0.0528 (0.306)	0.1932 (0.000)	0.1116 (0.030)	0.1253 (0.015)	0.0272 (0.598)	0.2507 (0.000)								
9. Income growth	0.0243 (0.638)	0.0063 (0.903)	0.0392 (0.448)	0.0131 (0.800)	0.0528 (0.307)	-0.0028 (0.956)	0.0741 (0.151)	-0.0167 (0.746)							
10. Industrial specialization	-0.0244 (0.637)	0.0003 (0.995)	0.0189 (0.714)	-0.0793 (0.124)	0.2555 (0.000)	0.1400 (0.006)	0.0652 (0.207)	0.0616 (0.233)	0.0491 (0.342)						
11. Industrial diversity	-0.2522 (0.000)	0.0294 (0.569)	-0.2759 (0.000)	-0.1433 (0.005)	0.1827 (0.000)	-0.0180 (0.727)	-0.4852 (0.000)	-0.1049 (0.042)	-0.0647 (0.210)	-0.0462 (0.371)					
12. Proportion in prime age group	0.2578 (0.000)	-0.0376 (0.466)	0.2213 (0.000)	0.2093 (0.000)	0.3755 (0.000)	0.1043 (0.043)	0.3024 (0.000)	0.0554 (0.283)	0.1249 (0.015)	0.0077 (0.882)	0.0274 (0.596)				
13. Unemployment change	0.0007 (0.989)	0.0956 (0.064)	-0.0716 (0.165)	0.0830 (0.108)	0.1932 (0.000)	-0.6049 (0.000)	0.0904 (0.080)	-0.0461 (0.372)	0.0001 (0.998)	-0.0778 (0.132)	0.1227 (0.017)	0.0234 (0.651)			
14. Degree	0.3291 (0.000)	-0.0641 (0.214)	0.3721 (0.000)	0.1803 (0.000)	-0.0416 (0.421)	0.4728 (0.000)	0.2528 (0.000)	0.0348 (0.500)	0.1094 (0.034)	-0.0588 (0.254)	-0.3586 (0.000)	0.3291 (0.000)	-0.4901 (0.000)		
15. Employment in manufacturing	-0.3426 (0.000)	0.0461 (0.372)	-0.3800 (0.000)	-0.1972 (0.000)	0.1650 (0.001)	-0.2435 (0.000)	-0.3452 (0.000)	-0.0967 (0.061)	-0.0892 (0.084)	0.1087 (0.035)	0.5907 (0.000)	-0.0183 (0.723)	0.2926 (0.000)	-0.4427 (0.000)	
16. Public sector employment	-0.2318 (0.000)	0.1233 (0.017)	-0.1948 (0.000)	-0.2023 (0.000)	-0.2840 (0.000)	-0.2848 (0.000)	-0.0524 (0.310)	-0.1717 (0.001)	0.0622 (0.228)	-0.0523 (0.311)	-0.2244 (0.000)	-0.2421 (0.000)	0.0281 (0.586)	0.0235 (0.649)	-0.1229 (0.017)

Notes: p-values in parentheses

Table 2 Regressions of Change in Gross Firm Births

	Model 1	Model 2
Foreign influence	**0.0537** (0.000)	**0.0566** (0.000)
Employment in manufacturing		**-0.0295** (0.036)
Degree	**0.0328** (0.000)	
SMEs	0.0099 (0.094)	**0.0144** (0.013)
Public sector employment	**-0.0271** (0.024)	**-0.0271** (0.026)
Population density	0.0000 (0.270)	0.0001 (0.191)
Population growth	0.0031 (0.892)	0.0007 (0.974)
Income growth	-0.0031 (0.529)	-0.0026 (0.597)
Industrial specialization	-0.8926 (0.119)	**-1.1661** (0.044)
Industrial diversity	-2.3660 (0.098)	-2.8332 (0.056)
Proportion in prime age group	-0.1017 (0.072)	-0.0203 (0.711)
Unemployment change	**0.0613** (0.001)	**0.0406** (0.021)
N	377	377
R^2	0.416	0.399
F-test	12.058 (0.000)	11.242 (0.000)

Notes: p-values in parentheses; emboldened values significant at the 5% level; regional dummies included but not reported for perseveration of space.

Table 3 Regressions of Change in Gross Firm Deaths

	Model 1	Model 2
Foreign influence	0.0109 (0.454)	0.0105 (0.469)
Employment in manufacturing		-0.0130 (0.487)
Degree	-0.0005 (0.969)	
SMEs	-0.0119 (0.135)	-0.0132 (0.088)
Public sector employment	-0.0085 (0.600)	-0.0095 (0.557)
Population density	0.0000 (0.519)	0.0000 (0.556)
Population growth	0.0093 (0.760)	0.0093 (0.760)
Income growth	0.0001 (0.990)	-0.0002 (0.973)
Industrial specialization	-0.2687 (0.728)	-0.1416 (0.854)
Industrial diversity	-2.2835 (0.237)	-1.7811 (0.367)
Proportion in prime age group	0.0318 (0.677)	0.0367 (0.614)
Unemployment change	-0.0207 (0.401)	-0.0192 (0.411)
N	377	377
R^2	0.118	0.119
F-test	2.263 (0.001)	2.289 (0.001)

Notes: p-values in parentheses; emboldened values significant at the 5% level; regional dummies included but not reported for perseveration of space.

Table 4 Regressions of Change in Net Firm Births

	Model 1	Model 2
Foreign influence	**0.3668** (0.006)	**0.4017** (0.003)
Employment in manufacturing		-0.2777 (0.111)
Degree	**0.3735** (0.000)	
SMEs	**0.1924** (0.009)	**0.2495** (0.001)
Public sector employment	-0.2876 (0.053)	-0.2824 (0.062)
Population density	0.0006 (0.206)	0.0007 (0.140)
Population growth	0.3202 (0.253)	0.2940 (0.300)
Income growth	-0.0156 (0.799)	-0.0091 (0.883)
Industrial specialization	-3.0666 (0.666)	-6.7107 (0.349)
Industrial diversity	-8.3894 (0.636)	-15.8532 (0.389)
Proportion in prime age group	**-1.5444** (0.028)	-0.6448 (0.342)
Unemployment change	**0.7234** (0.002)	**0.4829** (0.027)
N	377	377
R^2	0.457	0.442
F-test	14.217 (0.000)	13.378 (0.000)

Notes: p-values in parenthesis; emboldened values significant at the 5% level; regional dummies included but not reported for perseveration of space.

Table 5 Regressions of Change in Business Churn Rates

	Model 1	Model 2
Foreign influence	**0.6788** (0.000)	**0.7027** (0.000)
Employment in manufacturing		-0.2965 (0.073)
Degree	**0.2815** (0.006)	
SMEs	0.0302 (0.665)	0.0653 (0.338)
Public sector employment	-0.2439 (0.086)	-0.2468 (0.085)
Population density	0.0001 (0.859)	0.0001 (0.753)
Population growth	0.0341 (0.899)	0.0141 (0.958)
Income growth	-0.0262 (0.653)	-0.0233 (0.692)
Industrial specialization	**-16.6069** (0.015)	**-18.5504** (0.007)
Industrial diversity	**-34.0633** (0.045)	**-36.4587** (0.037)
Proportion in prime age group	-0.6660 (0.320)	0.0514 (0.936)
Unemployment change	**0.5400** (0.013)	0.3671 (0.076)
N	377	377
R^2	0.255	0.246
F-test	5.799 (0.000)	5.516 (0.000)

Notes: p-values in parenthesis; emboldened values significant at the 5% level; regional dummies included but not reported for perseveration of space.

Table A1. Description of Variables and Data Sources

Variable	Description	Scale	Source	Date
Gross Firm Births	Change between the pre-recession average (2004 to 2007) and the lowest post-recession rate (2008 to 2015)	Scaled by stock of firms at the beginning of year t	ONS *Business Demography*	2007-15
Gross Firm Deaths	Change between the pre-recession average (2004 to 2007) and the highest post-recession rate (2008 to 2015)	Scaled by stock of firms at the beginning of year t	ONS *Business Demography*	2007-15
Net Firm Births	Change between the pre-recession average (2004 to 2007) and the lowest post-recession rate (2008 to 2015)	Scaled by stock of firms at the beginning of year t	ONS *Business Demography*	2007-15
Business Churn	Change between the pre-recession average (2004 to 2007) and the lowest post-recession rate (2008 to 2015)	Scaled by stock of firms at the beginning of year t	ONS *Business Demography*	2007-15
Foreign Influence	Employment in foreign owned firms	Proportion of all local employment	ONS *Foreign Ownership of Businesses in the United Kingdom Analysis*	2010
Population Density	Residents in local area	Population per square kilometre	Mid-year Population Estimates	2007
Prime Age Population	Population aged between 35 and 44 years	Proportion of population	Mid-year Population Estimates	2007
Small and Medium Sized Enterprises	Stock of SMEs	Per 1000 population	ONS *Business Demography*	2007
Industrial Specialisation	Relative specialisation index (0 = same industrial structure as UK, 1 = one industry present)	0 to 1 based on Fotopoulos's (2014) 15 industries	Annual Business Inquiry	2007
Industrial Diversity	Theil's (1972) entropy measure (0 = employment in a single industry, 1 = employment in all 15 industries considered)	0 to 1 based on Fotopoulos's (2014) 15 industries	Annual Business Inquiry	2007
Population Growth	Change in working age population in lead up to recession	All people	NOMIS Mid-year Population Estimates	2003-07
Income Growth	Change in Median wage including overtime payments in lead up to recession	Pounds Sterling	Annual Survey of Hours and Earnings	2003-07
Unemployment Change	Proportion of population claiming job seekers allowance	Change on average rate for preceding five years (2005-2009)	Claimant Count NOMIS	2010

Employment in Manufacturing	Standard Industrial Classification (2007) C	Proportion in employment	Annual Population Survey	2007
Proportion with NVQ Level 4+ Qualifications	Population holding university level qualifications or equivalent	Proportion of population	Annual Population Survey	2007
Public Sector Employment	Employment in the public sector	Proportion in employment	Annual Population Survey	2007

Figure 1 Normalised Gross Firm Births (per 100 existing firms) by Foreign Business Influence in the Labour Market (2004 to 2015)

Figure 2 Normalised Gross Firm Deaths (per 100 existing firms) by Foreign Business Influence in the Labour Market (2004 to 2015)

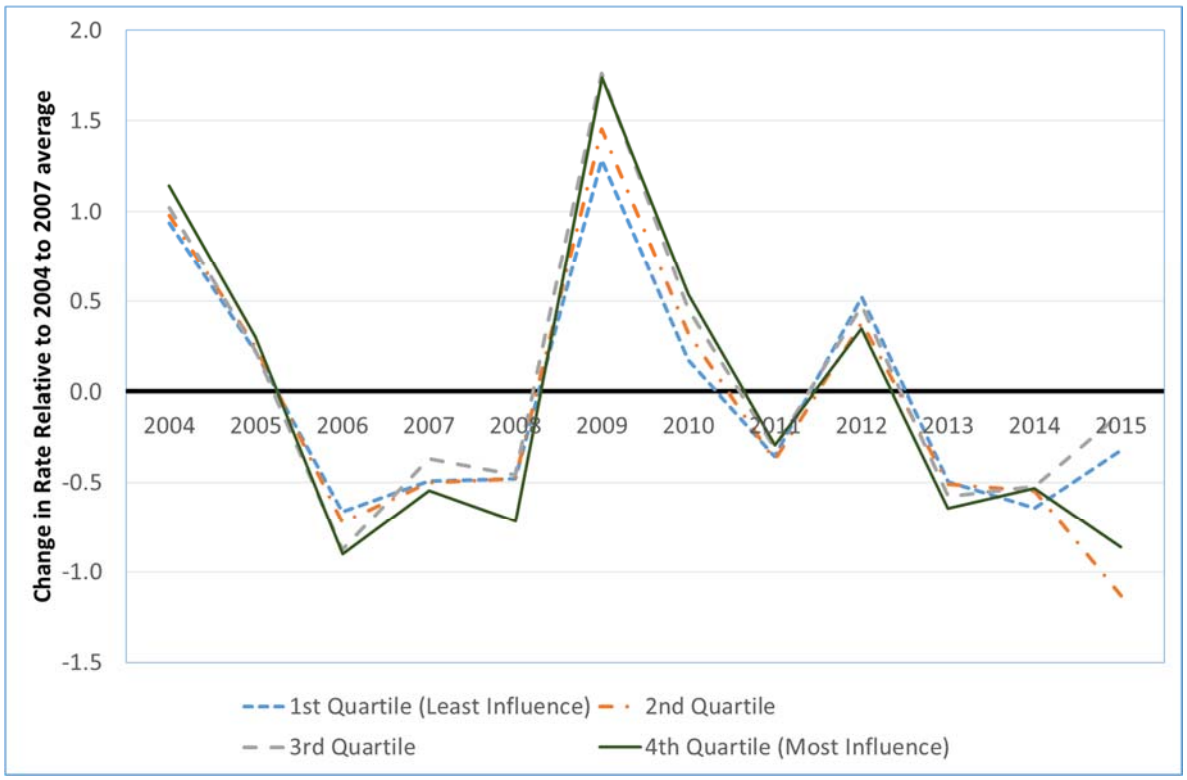

Figure 3 Normalised Net Firm Births (per 1000 existing firms) by Foreign Business Influence in the Labour Market (2004 to 2015)

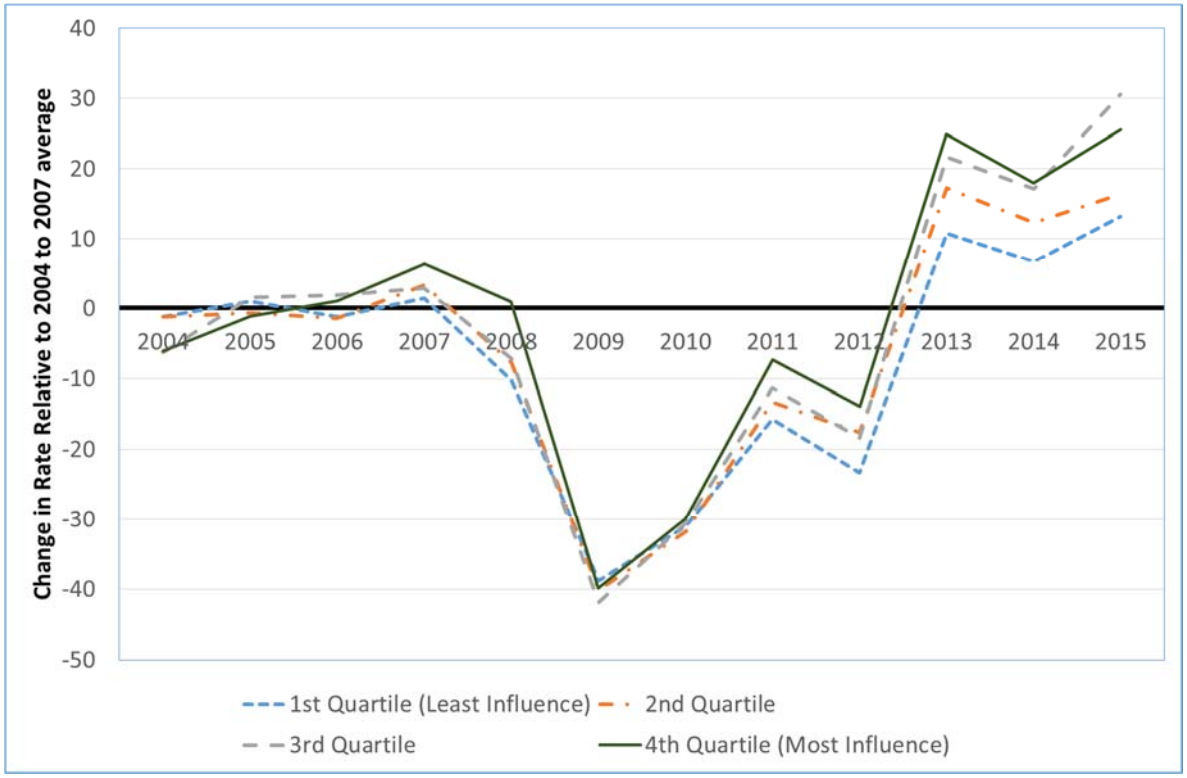

Figure 4 Normalised Business Churn Rates (per 1000 existing firms) by Foreign Business Influence in the Labour Market (2004 to 2015)