What really happens to small and medium-sized enterprises in a global economic recession? UK evidence on sales and job dynamics

Marc Cowling

Weixi Liu

Exeter Business School

Andrew Ledger

Department for Business Innovation and Skills

Keywords: smaller firms; job dynamics; sales dynamics; financial crisis

Abstract

We use UK data to consider how small and medium enterprises coped during the financial crisis. This is important as SMEs are major contributors to job creation, but are vulnerable to falling demand. We find that 4 in 10 SMEs experienced a fall in employment during the recession, and 5 in 10 a fall in sales. Within 12 months of the recession, three-quarters of entrepreneurs had a desire to grow. This suggests that whilst the immediate effects of recession are severe, entrepreneurs recover quite quickly. Importantly, recessionary growth is hugely concentrated amongst entrepreneurs with the highest human capital.

1. Introduction

"There has been limited attention from the academic community in examining its [the Great Recession of 2008] effect on entrepreneurial activity and the sustainability of the small business sector" Saradakis (2012: p.733)

The financial crisis, which began in September 2008, contributed to a fall of 6.4% in UK GDP in the subsequent six quarters that constituted the official recession. This represents the loss of three years of trend level economic growth for the UK economy. At a time when larger businesses shed vast numbers of employees, and general unemployment rose by 674,000, policy-makers increasingly looked to small and medium enterprises (SMEs) to provide new employment opportunities and help drag the economy out of recession (Department for Business, Innovation and Skills, 2013). The implicit assumption being that (a) SMEs are more flexible and resilient (Smallbone, et al., 2012; Bednarzik, 2000; Binks and Jennings, 1986), and, (b) SMEs are more labour intensive (Cowling, 2003; Robbins, et al., 2000), and, (c) that periods of disequilibrium create new opportunities for entrepreneurs (Schumpeter, 1942; Parker, et al, 2012).

Yet even if we generally believe that the small business sector of the economy is more dynamic and opportunistic than the large firms sector, SMEs are not immune to large contractions in the general demand for goods and services. But within the small business sector there is evidence that periods of disequilibrium and economic instability are precisely the times when the best entrepreneurs are able to take advantage of new opportunities as large firms and the public sector withdraw from markets (Acs and Storey, 2004; Grilli, 2010). This is an entrepreneurial quality effect, in effect separating the wheat from the chaff (Kitson, 1995). This occurs as in periods of economic growth more people become willing to pursue

an entrepreneurial career path, but the marginal quality of the last entrepreneur declines. In recessions, low quality, marginal, entrepreneurs exit the market.

It is the intention of this paper to use a unique longitudinal data set for the UK, which spans the period leading up to the financial crisis in September 2008 and all through the subsequent recession, to address 4 key questions;

- How many SMEs have still managed to grow in the current recession?
- Has the small business sector being able to maintain its employment levels during the current recession?
- What types of entrepreneurs and SMEs have shown the capability to grow and create jobs during the current recession (is there an entrepreneurial human capital (EHC) effect)?
- Can SMEs provide the future growth that will create new employment opportunities as the economy emerges from recession?

In doing so, we hope to add to our general understanding of what really happens to the smaller business sector during a severe economic downturn. This will enable us to speculate about the potential contribution of the small business sector to future economic growth. This is of great importance given the political onus placed on the small business sector to provide new jobs and economic prosperity in the future. Our results also make a contribution to the future theoretical development of entrepreneurial growth models in periods of economic disequilibrium and turbulence.

The value added of our paper is fourfold. Firstly, we use a unique and up to the minute data set covering a full, and severe, economic recession cycle. Secondly, we have multiple measures of actual growth and an additional future growth orientation variable. Previous empirical studies of growth tended to use single performance measures, with Delmar (1997), in an analysis of 55 growth studies, finding only 18.2% used more than one measure, and

Unger et al (2011), in a recent analysis of 70 growth studies, finding that the use of multiple growth measures had only marginally increased to 21.4%. Thirdly, our data set contains a rich set of entrepreneur and business level characteristics which allows us to broaden the theoretical and empirical scope of our analysis. Fourthly, we are able to explicitly test whether general relationships (for example between entrepreneurial human capital, EHC, and growth) hold during a severe recessionary environment or whether these relationships lose their effect.

The rest of the paper is organised as follows. In the next section we review some of the key literature relating to the measurement of growth and its determinants. We also formulate our hypotheses. Section 3 presents out data and discusses key variables to be used in our analysis. Section 4 presents the results of our empirical analyses. Section 5 explores the significance and relevance of the results of our study and draw out the implications for policy-makers and practitioners. The last section concludes the paper.

2. Small Business Growth: Measurements and Determinants

The growth literature has put too little emphasis on the measurement of growth (Delmar, 1997). Only recently has growth started to be treat as a multidimensional, heterogeneous and complex construct (Achtenhagen et al., 2011; Leitch et al., 2010). This study uses multiple indicators to measure small business growth, namely changes in employment and sales. The reasons for choosing employment and sales as growth measures are three-fold. First, it is widely argued that small businesses make a positive contribution to economies mainly through employment and productivity (Acs and Storey, 2004; Audretsch et al, 2008; Cowling, 2006), making employment and sales two natural candidates and mostly used variables for growth measures (Achtenhagen et al, 2011; Delmar, 1997; Unger et al, 2011; Weinzimmer et al, 1998). Second, recent reviews of small business growth literature found that previous studies tended to use single performance measures and this approach often leads to results

that are not comparable with each other (Achtenhagen et al, 2010; Delmar, 1997; Weinzimmer et al, 1998). Delmar (1997) suggests the use of multiple growth measures as they might "best represent the theoretical concept of growth (p. 203)". Third, as suggested in Achtenhagen et al (2010), current entrepreneurship studies tend to 'simplify' growth outcomes to easily observable measures such as employee numbers, and ignore 'the multidimensionality and complexity of growth processes', thus creating a gap between the growth defined and measured by academics or policy makers, and what is meaningful and relevant to entrepreneurs. This appears not to be so much of a concern in our study as when asked the question in the Annual Small Business Survey, on which this research is based, more than 4 out of 5 entrepreneurs regard increasing turnover as means to achieve their longer term growth plans. This ensures that the practical and policy implications derived from our empirical analyses are meaningful and relevant to practitioners and policy makers.

After justifying our choice of growth measures, we then draw on studies that have adopted a multivariate approach to examining the determinants of growth, from which we develop our main hypotheses to be tested using multivariate regression analysis. Compared to large firms, small businesses often lack the relevant resources and network capabilities to achieve growth (Storey, 1994). Facing this greater uncertainty toward the external environment than large firms, SMEs have a higher tendency to innovate products and services in order to sustain continuous evolution and change (Garengo et al, 2005). Therefore, the ability to undertake entrepreneurial activities, or the level of entrepreneurship, is critical for small businesses' survival, growth and success. In this study, the level of entrepreneurship is linked with four broader categories of variables: business characteristics, entrepreneur characteristics and human capital, growth orientation and access to finance. However as found in Cassar (2007), the achieved venture growth by SMEs can also vary due to heterogeneous career reasons and growth preferences of entrepreneurs, which are two areas not pursued in this study.

2.1. Business characteristics

Industry sector, age and size are three of the most common business characteristics to be linked with small business growth. Regarding industry, we might expect to observe an empirical relationship including economies of scale, barriers to growth, competition, overall market growth etc. In line with our *a priori* thinking, we note that in a majority of studies that have tested for any such effects a significant industry effect is apparent. The most common sectors associated with higher growth rates are businesses services and manufacturing. And those associated with lower growth rates are personal household and other services. Reassuringly, this result holds across countries (see Durand and Coeurderoy, 2001, for French evidence, Cooper et al, 1994, for US evidence and, Meager et al, 2004, for UK evidence).

The age of businesses can also have an effect on realised growth. Literature on small business survival suggests that younger businesses in their formative years are more likely to be concerned with survival than growth if they do not fail within the first few years of starting up (Cowling, 2006). Therefore, growth should be observed in more matured businesses which have passed the 'survival mode' (Audrestch and Mahmood 1994; Watson, 2012). On the other hand, older firms may also suffer from the owners' lower commitment and involvement compared to young firms (Churchill and Lewis, 1983), so a firm's performance is usually found to be diminishing as the firm ages (Chandler and Hanks, 1993 and 1994; Durand and Coeurderoy, 2001; Nunes, 2013).

Business size at start-up is also an important variable included in a number of empirical studies. Although the famous Gibrat's law (Gibrat, 1931) suggests no relation between size and growth, in the small business sector we might predict that size is an indicator of resource availability, both in financial and human capital terms, and in particular quality of the entrepreneur or entrepreneurial team. Also, bigger firms may enjoy greater economies of

scale, compared with smaller firms (Dass, 2000). As such size should be associated with higher growth rates, which is confirmed by some empirical studies (e.g., Cowling et al, 2008; Sapienza and Grimm, 1997; Zhao et al, 2011). However, there is a trade-off between firm size and efficiency (Dean et al, 1998), which ultimately influences the firm's performance. According to this trade-off theory, small firms may have a tendency to remain small (Heshmati, 2000; Power and Reid, 2003).

From our general review of the literature it is clear that business characteristics play a significant part in determining the rate of growth of firms. In a recessionary economic environment we predict that these effects will maintain, or even become more important in terms of magnitude and their ability to distinguish between growing, stable and declining firms. This might occur as external resources become scarcer during recessions so firms are forced to rely on internal resources and strategic reserves.

H1: Business characteristics (age, size, sector, etc.) will impact on the rate of small business growth in both recessionary and non-recessionary periods.

2.2. Entrepreneur characteristics and human capital

Entrepreneurs' personal characteristics and their potential impact on small business growth performance are important considerations for both scholars and policy makers especially when there is perceived discrimination against certain groups of entrepreneurs such as women or ethnic minorities.

Perhaps the most interesting feature to note is that relatively few studies actually test for these effects. And the vast majority of studies that do are European. On gender, for example, only the US based studies of Sapienza et al (1997), which reports no gender effect, and Cooper et al (1994), which finds a positive effect for males, explore the gender issue. In European studies, Cowling (2002) in an EU wide study finds a positive effect for males, which is in line with the Bosma et al (2002) Netherlands study, the Bruderl and Preisendorfer

(1998) German study. Only Cowling (2003) finds a positive female effect for those using a publicly funded business start-up programme in deprived areas of England.

Concerning other personal characteristics, the empirical evidence is significantly less voluminous. On ethnicity, for example, only Cooper et al (1994) for the US and Cowling (2003) for deprived areas of England, find any ethnicity impacts. In both cases they identified a positive effect for white people. This contrasts with the UK based study of young people starting a business of Meager et al (2004) which found no such effect. Again, there is a significant gap in our knowledge and understanding about relative growth rates of ethnic minority businesses compared to white owned businesses.

A survey of recent literature on small business performance has shown that human capital is generally positively linked to success (Unger et al, 2011). Cowling (2006) divided entrepreneurial human capital (EHC) into two categories: formal and informal. The former is commonly proxied by the entrepreneur's education level, and the latter usually by variables such as the age, health, family, and prior experience.

In terms of formal human capital, there is fairly strong empirical support, across a number of empirical studies, for the notion that businesses with more educated entrepreneurs experience faster early stage growth (e.g. Cowling, 2002; Dimov and Shepherd, 2005; Rauch, 2005). Further, these studies also cover a reasonable time span, and different types of businesses, which might suggest that we can generalise with more confidence about this formal human capital effect.

However, empirical evidence on the impact of informal human capital is far less conclusive (Cowling, 2006). This is probably due to the fragmented measures of informal human capital used in the previous literature. For example, whilst there is virtually no evidence found between performance and the age of entrepreneur, some studies have found a

positive relationship between experience and small business performance (Burke et al, 2000; Honig, 1998; Watson et al, 2003; Westhead et al, 2003; Zarutskie, 2010).

Again our general review of the EHC literature shows that entrepreneurs' characteristics play a significant part in determining the rate of growth of firms. In a recessionary economic environment we predict that these effects will become relatively more important in terms of magnitude and their ability to distinguish between growing, stable and declining firms. This might occur as external resources become scarcer during recessions so firms depend more on the skills and capabilities of the entrepreneur to manage through recession.

H2a: Entrepreneurial human capital (education, experience, etc,) will have a positive impact on the rate of small business growth.

H2b: The positive impact of EHC on the rate of small business growth will be magnified during a period of economic recession.

2.3. Growth orientations

The ambition to grow reflects the entrepreneur's propensity towards innovation, risk taking and strategic proactiveness, which are all essential elements of *entrepreneurial orientation*[1] (Miller, 1983). Entrepreneurial orientation (EO) provides the firm with a basis for entrepreneurial decisions and actions (Wiklund & Shepherd, 2003) and has been extensively studied in the entrepreneurship literature. Miller (1983) argued that firms may benefit from adopting an EO with uncertainties in the market, which require firms constantly seek out new opportunities. This is especially relevant for smaller businesses given their obvious competitive disadvantage against larger firms in terms of resources or network.

In an analysis of 51 empirical studies on EO, Rauch et al (2009) found a positive correlation between EO and firm performance especially for micro businesses. Whilst most

[1] We have to stress that our measure of growth orientation is just a very general indication of whether the business aim to grow or not. Therefore, it may not be put into direct comparison with the more itemised and systematic measures of EO in the previous literature.

studies on EO is focused on developed countries especially the US, the same relationship is often not found in emerging economies (e.g., Tang et al., 2008; Wang, 2008). This leads to the argument that the positive effect of EO is subject to constraints faced by firms operating in different contexts (Lumpkin & Dess, 2001; Tang et al, 2008). For example, Zhao et al (2011) considered organisational learning as a possible intervening variable between EO and performance for a sample of Chinese enterprises and found that there is a learning process before firms with EO start to grow.

Whilst achieved growth is, in part, a reflection of the entrepreneurs' willingness to act on opportunities identified, in a recessionary environment, when the flow of potential opportunities diminishes, even entrepreneurs with a willingness to seek growth may be constrained by a lack of feasible opportunities and resources. Thus we predict that the generally positive effect of EO will be moderated during periods of economic recession.

H3a: There is a positive relationship between growth orientation and small business growth.

H3b: The positive growth orientation effect on small business growth will diminish during a period of recession

2.4. Access to finance

The availability of credit to entrepreneurs with good investment opportunities is one of the key drivers of economic growth and competition (Beck & Demirguc-Kunt, 2006; Marlow & Patton, 2005; Cassar, 2007). It is widely recognised that entrepreneurial activity, and the growth of small businesses, can be are constrained by limited access to financial resources arising from imperfections in capital market allocations (e.g., Cooper et al, 1994; Honig, 1998; Marlow & Patton, 2005; Revest and Sapio, 2010; Westhead & Storey, 1997).

Small firms' access to finance is directly linked to capital structure and types of financing used, which in turn are found to be associated with firm and entrepreneur characteristics (Cassar, 2003 and 2004). Other studies also link financial capital to human capital. Chandler

and Hanks (1998) suggested that human and financial capital may be substitutes for each other. Their analysis showed that firms with either high levels of founder human capital or high levels of financial capital perform similarly with firms having high levels of both. On the other hand, Brinckmann et al (2011) shifted their attention from supply side to demand side and argued that the financial management competence of a firm's founding team can help overcome resource restrictions of new firms and foster their growth. Their empirical results, however, are mixed. They found a more significant role of finance-seeking (external and internal finance) skills than strategic financial management skills on new venture growth.

Whilst the availability of finance is generally important to support the development of new investment opportunities at the firm level, we predict that during an economic recession with credit rationing at the heart of it firms that are able to successfully secure finance will achieve much greater relative growth than would be the case in a more stable economic environment. This is, in part, because relatively few firms are able to secure finance, and hence only these firms are able to take advantage of any remaining opportunities for growth.

H4a: Small business growth is positively associated with the availability of finance.

H4b: This positive availability of finance effect on small business growth will be magnified during a period of recession.

2.5. Macroeconomic conditions

Economic downturn and unfavourable financial market conditions will undoubtedly affect the operation and survival of firms. Given the economic importance and vulnerability of small businesses, a better understanding on how adverse macro economic conditions influence entrepreneurial activities is crucial to effective crisis management by small businesses (Herbane, 2010).

Several studies have indicated that the relationship between small business survival or growth and its common determinants can be undermined during economic downturns (e.g.

Hilmersson, 2013) and since the outburst of the current financial crisis, there have been some timely studies investigating the impact one of the severest recessions has on the SME sector (e.g. Cowling et al., 2012; Smallbone et al., 2012a). Generally speaking, there are two contradicting views, in the sense that recession either influences small business sector negatively, or have no effect (a summary of recent studies on the recession-performance relationship can be found in Table 1). With respect to the first view, it is argued that SMEs are more vulnerable to economic downturns because their comparative *disadvantage* against larger firms is likely to be exaggerated during a recession. Factors influencing SME performance during a recession include access to resources especially availability of finance (Cowling, et al., 2012), and bargaining power with external stakeholders such as suppliers and customers. Empirical studies have found that during an economic recession, small businesses are likely to perform less well and eventually, their chance of survival will be reduced (Fotopoulos and Louri, 2000; Smallbone et al., 1999 and 2012a; Storey, 1994). The rationale behind the 'SME immune to economic downturn' view is that SMEs are more flexible in adjusting resource inputs, processes, prices and products (Reid, 2007) and therefore more likely to pursue growth-oriented strategies (Latham, 2009). Moreover, it is argued that the decision and outcome of growth for entrepreneurial firms could lie within the entrepreneur level (Westhead and Wright, 2011; Wright, 2013) or even be modelled as a random process (Coad, et al., 2013), which may be less affected by macroeconomic conditions. For example, Requena and Silvente (2005) find that small- and medium-sized enterprises (SMEs) base their export decisions on 'typical' export behaviour, which is not affected by economic recessions.

Recent studies have shown that recessions are more likely to hit SMEs in certain sectors (Bank of England, 2010; ONS, 2011) or with certain characteristics, whilst other SMEs are more resilient (Kitching, et al., 2009 and 2011; Smallbone, et al., 2012). For example,

Kitching, et al. (2009) note that the current credit crunch affects UK small businesses in various ways, and that "all small businesses necessarily suffer during periods of generalised credit restrictions must be rejected". Grilli (2010) found that established start-up firms with more experience entrepreneurs are actually less likely to survive during negative industrial shocks. Grilli's argument is that more experienced entrepreneurs have a wider range of career options so may voluntarily exit the market during an industry crisis when the opportunities to stay is too high. The bottom line, therefore, is there are certain kind of smaller businesses more likely grow during adverse market shocks.

Insert Table 1 Here

3. Method

This section describes the data source for this study and the survey method from which the data is derived, followed by a discussion on both the dependent and independent variables in the analysis.

3.1. Sample

This study is intended to analyse existing data from two previous survey sources which cover information of small businesses in the pre-recession and recessionary periods, respectively.

The pre-recession data is derived from Annual Small Business Survey (ASBS) in 2007/08. The ASBS survey has been conducted on an annual basis[2] since 2003 and the 2007/08 survey involved a large-scale telephone survey conducted by IFF Research Ltd between November 2007 and March 2008 to monitor key trends in the characteristics and perceptions of small business owners and managers. The main purpose of the survey is to gauge the needs and concerns of small businesses and identify the barriers that prevent them from fulfilling their

[2] After 2008, the survey will be conducted biennially.

potential. A total of 9,362 SMEs (businesses with fewer than 250 employees) were interviewed using a stratified random sample selection method evenly across thirteen regions in the UK and the samples were randomly drawn across all commercial sectors of the economy. Amongst the pre-recession sample SMEs, 45% are micro enterprises (0 to 9 employees), 38% are small enterprises (10 to 49 employees) and 17% are medium enterprises (50 to 249 employees).

Conducted by the UK Department for Business, Innovation & Skills, a sample of the SMEs entering the 2007/08 ASBS were re-contacted in a series of 'Business Barometer' surveys to determine how well or badly they have performed in the previous year, and to assess their levels of business confidence going forward. On average 500 SMEs were re-surveyed using questions similar to the 2007/08 ASBS in each of the seven 'Business Barometer waves', starting from December 2008 to February 2010 with intervals of two to three months. The survey period coincides the latest financial crisis therefore gives us the opportunity to investigate how business attitudes and access to finance by UK SME change pre- and post-recession. The 'matching' of the 2007/08 ASBS and 'Business Barometer' surveys yield a dataset of 3,506 SMEs. The composition of within recession sample SMEs is fairly similar to the pre-recession sample, with 44% being micro enterprises, 33% small enterprises and 23% medium enterprises.

3.2. Dependent variables

Two measures of performance are used in this study, namely percentage changes in employment (*EGROWTH*) and sales (*SGROWTH*). In both surveys, questions were asked explicitly on the firm's current number of employees and turnover, as well as the performance the year before. Pre-recession growth is calculated as the percentage change in employment and sales between the 2007/08 ASBS and the previous year. Within-recession growth is calculated as the percentage change in employment and sales between the

'Business Barometer' surveys and the 2007/08 ASBS. In both cases, the performance variables are winsorised at 1% level to remove the effect of outliers.

As well as exploring recent actual performance, this study seeks to understand the future growth aspirations of smaller firms going forward. To measure growth orientation, both sets of surveys asked business owners whether or not they aimed to grow their firms over the next two to three years. Accordingly, we define growth orientations (*ORIENTATION*) as a binary variable that equals 1 if the answer to the above question is a 'yes' and 0 otherwise.

3.3. Explanatory variables

Independent variables in this study can be classified into four groups: business characteristics, owner/entrepreneur characteristics, access to finance and recessionary time indicators.

The main business characteristics include firm size, age, sector, region, corporate structure, sector and so on. Firm size is measured by employee numbers (*EMP*). Business age is reported in the dataset as banded variables (up to 10 years, 11 to 20 years and more than 20 years, labelled as *AGE_10LESS*, *AGE_11TO20* and *AGE_20MORE*, respectively). Variables on corporate structure include whether or not a business is family owned (*FAMOWN*) or incorporated (*CORP*).

Owner/entrepreneur characteristics measure the firm's human capital and consist of owner age (*OAGE*), gender (whether or not the business is women led, *WLED*), race (whether or not the business is minority group led, *MLED*), prior experiences and level of education. An experienced employer (*EXP*) is defined as having previously set up a business, charity or been self-employed. The level of education (*DEGREE*) is measured by whether or not the owner has a university degree or above.

Both the 2007/08 ASBS and the 'Business Barometer' asked whether a firm applied for finance during the last 12 months and if so, the outcome of the application. Based on the

outcomes of financing applications, a firms is defined as 'fully constrained' if its application was denied (*NOACCESS*) and as 'partly constrained' if it only obtained some but not all of the finance required (*PARTACCESS*). The base category is firms either with no need for external finance or those that have successfully obtained all the finance required (*FULLACCESS*). Last, seven recessionary time indicators (*WAVE1* to *WAVE7*) are defined to match the timing of the seven 'Business Barometer' surveys covering the entire duration of the economic recession.

3.4. Empirical Methodologies

The primary objective of this study is to investigate the recessionary growth performance of the small business sector, and the determinants of growth outcomes. Since both growth measures (percentage change in employment and sales) are by construction continuous variables, an OLS model specification allowing for clusters effect is used with adjustments made for robustness of the standard errors. In this way, our analysis is able to capture the possible unobservable group effects (e.g. within sectors) in our data set. Further, we would also like to examine entrepreneurs' growth intention going forward. In doing this, we use probit regression models since the dependent variable is binary and coded 1 if the entrepreneur has an explicit growth orientation for the future and 0 otherwise. The model uses maximum likelihood estimations and the model chi-square and log likelihood are reported to test the model's goodness of fit.

4. Results

This section first reports sample descriptive statistics for the variables and then the empirical results from multivariate regression analysis.

4.1. Descriptive statistics

Table 2 reports the descriptive statistics of dependent and independent variables. There are 3,067 firm-level observations for the analysis of small business performance during the recession, whereas the sample size for pre-recession analysis from the 2007/08 ASBS is 6,597[3]. Since most of the variables are dummies variables, it is worth noting that the mean of each dummy is equivalent to the percentage of observations where the variable takes a value of one.

From the 2007/08 ASBS data, the average employment and sales growth are 2.6% and 5.2%, respectively. The average absolute change of sales is £87,050 and the average employment change is 1.3. In addition, over 70% of smaller firms had an explicit growth ambition. During the current recession, whilst employment has actually grown by a higher rate (3.3%), the average turnover has decreased by almost 9%, which translates to an average decrease in sales of £113,000. Figure 1 and Figure 2 illustrate how the proportions of respondents reporting sales/employment increase and intention to grow in the future have changed over time before, and during, the recession (between September 2008 and February 2010). It can be seen that both employment and sales performance is significantly lower compared to pre-recession levels, whilst the growth ambition of small businesses has picked up as the recession approached its end.

Insert Figure 1 Here

Insert Figure 2 Here

Table 1 also presents the univariate mean-comparison test results for firms before and during the latest financial crisis. It is shown that, compared to pre-recession periods, firms

[3] We also try to 'match' the pre- and within-recession samples and do the same analysis for the matched sample as a robustness check. However, this does not alter our empirical findings significantly but has increase the value of error terms due to the considerable decrease in sample size.

during the recession generally have lower growth ambitions, and are more likely to be financially constrained.

Insert Table 2 Here

4.2. Multivariate regression results

The starting point was to econometrically model the dynamics of business sales and employment growth before and during the period of economic recession. As we are particularly interested in how performance changes when the economy moves into recession, we estimate separate pre-recession and within recession models.

Table 3 reports the coefficient estimates for both sales and employment growth equations. The first two specifications show the pre-recession employment growth. It can be seen that larger firms are more likely to experience employment growth ($\beta = 0.15$, $p < 0.01$) but the negative coefficient on the quadratic term indicates that there is a diminishing effect on the relationship between size and employment growth. Here, employment ceases to grow when the firm has over 120 employees[4], showing a diseconomy of scale. Younger firms or firms with younger owners are more likely to have their employment number increased. We include sales growth (employment growth in sales growth equation) as a control variable and find it significantly and positively correlated with employment change ($\beta = 0.44$, $p < 0.01$). Businesses that export their products and/or led by ethnic minority owners are more likely to have experienced increased employment in non-recessionary times. We include further controls for entrepreneurial growth orientation and access to finance in Model 2. On average, growth-oriented businesses' employment grow by 2.6% more than the rest of the firms, and compared to those with full access to finance, businesses with partial or no access to finance have suffered from lower employment growth rate by 8% and 5.8%, respectively.

[4] The number is derived by calculating the turning point of the employment growth function, as the absolute value of the ratio between the coefficient estimate of *EMP*, divided by 2 times the coefficient estimate of EMP^2.

Employment growth during the recession shows some remarkable differences (Models 3 and 4). It is only business characteristics variables that are significant in explaining employment growth during a recessionary period. Similar to non-recessionary period, larger ($\beta = 0.20$, $p < 0.01$) but younger firms with higher sales growth ($\beta = 0.30$, $p < 0.01$) exhibit greater capabilities to weather economic downturns than the other firms. The employment number of the whole small business sector seems not to be significantly affected by the financial crisis: although firms were not able to grow their employment size for the whole duration of the recession, there is no sign of decrease in employment, either. As predicted, the coefficient estimate for growth orientation is insignificant. However, we also could not find any significant evidence on the effect of financial constraints on employment growth.

Insert Table 3 Here

The rest of Table 3 reports the coefficient estimates for small business sales performance before (Models 5 and 6) and during the recession (Models 7 and 8). Similarly, the pre-recession growth in sales is positively related to the size of the firm and negatively related to firm age. Business that export outside the UK outperform those do not export by at least 2.3% in terms of sales growth. The growth ambition of firms has even a larger effect on sales than employment growth. Compared to businesses with no growth ambitions, growth-oriented businesses outperformed the other firms by over 5%. Again, it is found that financial constraints reduce sales growth.

Similar to recessionary employment growth, larger but younger firms are more likely to experience sales growth. Positive employment growth also tends to create a multiplier effect on sales growth during the recession ($\beta = 0.05$, $p < 0.01$). There is still no significant impact of human capital variables on recessionary sales growth. A clear time dynamic is identified, where sales performance continued to deteriorate during the recession even towards the end of the crisis. As shown in Model 8, growth orientation in a recessionary period has a positive

effect on sales growth (β = 3.04, p < 0.01). Moreover, businesses that failed to get any funding from their lenders were associated with a decline in sales by 3.2%, although the effect is even larger for those with only partial access to finance (β = 9.78, p < 0.01).

The final models estimate the probability that an entrepreneur will have a growth orientation. For ease of interpretation we report the marginal effects which show the probability that an entrepreneur or business with a specific characteristic will be more (or less) likely to have a growth orientation. We use a common set of variables identified in the previous growth models. The coefficient estimates for these growth orientation models are reported in Table 4.

The UK small business sector has maintained it growth ambition during the recession and SMEs' intention to grow in the future is not hindered by the actual employment performance of the firm, or even the shortage of financial resources. Moreover, there is a significant 'feedback' effect from sales growth to growth orientation (β = 0.001, p < 0.01). We find considerable similarities regarding the types of entrepreneurs and smaller firms that are growth-orientated before and during the recession. First, larger but younger firms are more ambitious on future growth. Second, businesses structured as formal corporations and/or involved in exporting are more likely to seek future growth while family-owned businesses are less ambitious. Third, key indicators of entrepreneur ability, especially education, have a positive and significant effect on businesses' growth orientations. Finally, entrepreneurs' personal characteristics have a less pronounced effect on growth ambitions except for the age of the owner, which shows that younger entrepreneurs are more likely to seek future growth. Regarding the dynamics of SME owners' growth intention during the recession, growth ambitions are more likely to be found at the start of the recession and as market conditions worsened during the recession, entrepreneurs simply became more 'realistic' on future growth until the crisis approached its end.

Insert Table 4 Here

5. Discussion

The summary results are presented in Table 5. First, we find business characteristics important in predicting pre-recession SME growth performance (e.g. size and age) also important determinants of within recession performance. Moreover, consistent with hypothesis H1, additional predictors of within recession performance have been discovered, such as sector effects. Second, contrary to business characteristics, EHC variables have little prediction power for both employment and sales growth during the recession thus hypothesis H2 is not supported. Third, we find partial support for hypothesis H3 in the sense that the positive effect of entrepreneurial growth orientation on growth disappears when looking at the employment performance during the recession. Similarly, hypothesis H4 is also only partially supported as better access to finance is crucial to achieving recessionary growth in sales but not employment.

In terms of the question as to how many firms are still capable of achieving growth during the recession, we note that between 20 and 30% of firms grew their sales which is much less than the 50% that grew in more favourable economic conditions prior to the recession. Equally, between 15 and 20% of firms grew their employment during the recession, but again this is lower than in the pre-recession period when 30% grew their employment. This suggests that the recession had a very strong adverse effect, at least in the first six months, on the ability of firms to grow. From this, and explicitly focusing on our second question concerning employment growth, we note that more firms were creating jobs as the recession continued, even when fewer firms were managing to grow their sales. This might suggest that after an initial downward employment correction as the recession unfolded, in general the small business sector was able to recover quite quickly as more and more firms were willing

to hire employees. To this end, it could be argued that SMEs are indeed more resilient and more capable of creating jobs as the economy slowly moves out of recession.

In terms of what types of firms and entrepreneurs were more likely to grow during a recession, we note that firms in all manufacturing sectors experienced significant declines in sales, and firms in construction were most likely to experience declines in employment. Taken together these results show that industry sector is an important determinant of growth outcomes during a recession. And the importance of this feature of economic growth is heightened by the fact that in periods of economic growth industry sector plays a very minor role in the determination of employment and sales growth which is fairly randomly distributed across all industry sectors.

Other firm characteristics were also found to be important in determining growth. Taken together, our results show that business characteristics are important determinants of growth in both recessionary and nonrecessionary period but this is not the case for entrepreneurial human capital (EHC). During the recession, it is the access to financial resources rather than the more subjective measures of human capital that are more important determinants of recessionary growth, especially regarding sales. This suggests that in more stable economic environments many more firms are able to take advantage of general growth in demand without having to compete vigorously with other firms and entrepreneurs. Nevertheless, during a recession when the whole small business sector is further constrained by limited resource, only the entrepreneurs that have access to essential financial resources can manage to achieve growth. Yet it is also the case that willingness to seek growth was found to be a positive attribute in more stable economic conditions, but this did not hold in a recessionary environment. This might suggest that exogenous forces, declining demand, reduced investment activity, overwhelm these generally positive effects.

As this global economic recession has its roots in the financial sector, our findings show that credit constraints at the firm level will inhibit a firm's ability to grow their sales, thus create a negative multiplier effect. The effect of capital availability on business performance especially sales is consistent with the traditional view that entrepreneurial activity, and the growth of small businesses, can be seriously constrained by limited access to financial resources (Auerswald and Branscomb, 2003; Revest and Sapio, 2010). However, this could also mean that firms refused any finance by lenders are indeed of poorer quality and less creditworthy (Nightingale et al., 2009), leading to their inferior performance. Importantly, the results show that credit rationing in recessions leads to a more substantial reduction in growth performance than was the case in the pre-recessionary period. This suggests that capital constraints magnify performance differences between firms and can lead to lower growth rates in the small business sector than would have been achieved otherwise. Generally, firms are not able to increase their sales during the recession especially during the later periods of the recession, when average firm sales decreased by £60,000 to £200,000. This has significant potential policy implications for governments seeking to promote growth and job creation in the smaller firm sector of the economy.

Further, we note that under any economic conditions there is a positive synergy between sales and employment growth. This positive relationship is only slightly diminished in terms of its effect size during recessions. What this does suggest is that any policy levers that stimulate either job growth or sales growth will be more likely to create a positive economic multiplier.

In relation to our fourth, and final, question relating to future growth orientations, we have several important insights. Firstly, general growth orientations do decline during a recession, with 10% fewer firms reporting these intentions, but this depressing effect begins to recover within six months of the onset of the recession. In terms of which types of firms and

entrepreneurs have growth orientations, we find that firm size has a positive effect, and firm age a negative effect. Family businesses were less likely to be growth orientated, but exporting firms more likely to be. In relation to entrepreneur effects, we find that younger entrepreneurs and those with a university education are more likely to be growth orientated during a recession. Taken together these findings suggest that certain types of entrepreneurs and firms tend to view recession as times to scale down their activities and try and weather the economic storm, whereas others see recessions as opportunities to gear up their firms for future growth.

Insert Table 5 Here

6. Conclusion

To summarise our overall findings, we are drawn to the conclusion that recessions do take their toll on the smaller business sector, but these effects appear relatively short lived in general, and affect specific types of small businesses and entrepreneurs more than others. But perhaps our most significant finding is that in a stable, and growing macroeconomic environment growth in more randomly spread across all types of firms and entrepreneurs. This is not true in periods of economic downturns when only the best entrepreneurs, in terms of larger size and better access to finance, are able to grow their businesses.

For policy-makers our results suggest that helping firms' access finance may create a positive growth multiplier, and many countries have adopted this policy position. But more importantly, any policy levers that stimulate jobs or general spending in the economy will help create a positive jobs-growth multiplier as they tend to operate in parallel in smaller firms. As to the general capability of the small business sector to grow and help drag depressed economies forward, our findings do offer some support for the contention that SMEs are more resilient and flexible to cope with the disequilibrium caused by economic recessions.

In terms of potentially interesting avenues of future research, it would be helpful to establish the timescale over which any policy interventions in the small business sector take to manifest themselves in measurably better growth outcomes. Equally, the question of how long it takes for growth orientations to translate themselves into actual growth is important. Moreover, since there is clear evidence of a 'feedback' effect from actual growth (in sales) to growth orientation, it is worth of further investigation of the inter-relationship between growth performance and growth orientation in a longitudinal context. Finally, having broadly established that entrepreneurial quality is a fundamental determinant of growth during recessions, the question of how strong an economy has to be before good and bad entrepreneurs are capable of surviving and growing is hugely interesting and important.

References

Achtenhagen, L, Naldi, L, Melin, L (2010) Business growth - Do practitioners and scholars really talk about the same thing? *Entrepreneurship Theory and Practice*, 34: 289-316.

Acs, Z, Storey, D (2004) Introduction: entrepreneurship and economic development. *Regional Studies*, 38: 871-877.

Audretsch D.B, Bönte W, Keilbach, M (2008). Entrepreneurship capital and its impact on knowledge diffusion and economic performance. *Journal of Business Venturing*, 23: 687-698.

Audretsch, D B, Mahmood, T (1994). Firm selection and industry evolution: The post entry performance of new firms. *Journal of Economic Literature* 2:245–259.

Auerswald, P.E, Branscomb, L.M (2003) Valleys of death and Darwinian seas: financing the invention to innovation transition in the United States. *Journal of Technology Transfer*, 28: 227-239.

Bank of England (2010) *Agents' summary of business conditions, January 2010*, London: Bank of England

Beck, T, Demirguc-Kunt, A (2006). Small and medium-size enterprises: access to finance as a growth constraint. *Journal of Banking & Finance*, 30: 2931-2943.

Bednarzik, R (2000) The role of entrepreneurship in US and European job growth. *Monthly*

Labor Review, 123: 3-16.

Binks, M, Jennings, A (1986) Small firms as a source of economic rejuvenation. In: Curran J., Stanworth J., Watkins D. editor editors. The Survival of the Small Firm: The Economics of Survival and Entrepreneurship. Aldershot.: Gower Publishing.

Bosma, N, van Praag M, Thurik, R, de Wit, G (2002) The value of human and social capital investments for the performance of start-ups. *Small Business Economics*, 23: 227-236.

Brinckmann, J, Salomo, S, Gemuenden, H.G (2011) Financial Management Competence of Founding Teams and Growth of New Technology-Based Firms. *Entrepreneurship Theory and Practice*, 35: 217-243.

Bruderl, J, Preisendorfer, P (1998) Network support and the success of newly founded businesses. *Small Business Economics*, 10: 213-225.

Burke, A, Fitzroy, F, Nolan M (2000) When less is more: distinguishing between entrepreneurial choice and performance. *Oxford Bulletin of Economics and Statistics*, 62: 565-587.

Cassar, G (2004) The financing of business start-ups. *Journal of Business Venturing*, 19: 261-283.

Cassar, G, (2007) Money, money, money? A Longitudinal investigation of entrepreneur career reasons, growth preferences, and achieved growth, *Entrepreneurship and Regional Development*, 19 (1): 89-107.

Cassar, G, Holmes, S (2003) Capital structure and financing of SMEs: Australian evidence, *Accounting and Finance*, 43: 123-147.

Chandler, G, Hanks, S (1993) Measuring the performance of emerging business. *Journal of Business Venturing*, 8: 391-408.

Chandler, G, Hanks, S (1994) Market attractiveness, resource-based capabilities, venture strategies, and venture performance. *Journal of Business Venturing*, 9: 331-349.

Chandler, G, Hanks, S.H (1998) An examination of the substitutability of founders human and financial capital in emerging business ventures. *Journal of Business Venturing*, 13: 353-369.

Churchill, N C, and Lewis, V L (1983). The five stages of small business growth. *Harvard Business Review*, 61(3):30–50.

Coad, A, Frankish, J, Roberts R, Storey D (2013) Growth paths and survival chances: An application of Gambler's Ruin theory. *Journal of Business Venturing*, 28(5): 615-632

Cooper, A, Gimeno-Gascon, F, Woo, C (1994) Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9: 371-395.

Cowling, M, Liu, W, Ledger, A (2012) Small business financing in the UK before and after the financial crisis. *International Small Business Journal*, 30 (7): 778-800.

Cowling, M (2002) The contribution of the self-employed to employment in the EU. London.

Cowling, M (2003) Productivity and corporate governance in smaller firms. *Small Business Economics*, 20: 335-344.

Cowling, M (2006) Early Stage Survival and Growth. In: Parker S. editor editors. Handbook of Entrepreneurship Research: The Life Cycle of Entrepreneurial Ventures. pp. 477-504.

Cowling, M, Bates, P, Jagger, N, Murray, G (2008) Study of the impact of Enterprise Investment Scheme (EIS) and Venture Capital Trusts (VCT) on company performance. London: HM Revenue & Customs

Dass, P (2000) Relationship of firm size, initial diversification, and internationalization with strategic change. *Journal of Business Research*, 48: 135-146.

Dean, T.J, Brown, R.L, Bamford, C.E (1998) Differences in large and small firm responses to environmental context: strategic implications from a comparative analysis of business formations. *Strategic Management Journal*, 19: 709-728.

Delmar, F (1997) Measuring growth: methodological considerations and empirical results. In: Donkels R., Miettinen A. editor editors. Entrepreneurship and SME Research: On its Way to the New Millennium. Ashgate, Aldershot, UK, pp. 190-216.

Dimov, D.P, Shepherd, D.A (2005) Human capital theory and venture capital firms: exploring 'home runs; and 'strike outs'. *Journal of Business Venturing*, 20: 1-21.

Durand, R, Coeurderoy, R (2001) Age, order of entry, strategic orientation and organizational performance. *Journal of Business Venturing*, 16: 471-494.

Fotopoulos, G, Louri, H (2000) Location and survival of new entry. *Small Business Economics*, 14: 311-321.

Garengo, P, Biazzo, S, Simonetti, A, Bernandi, G (2005) Performance measurement systems in SMEs; a review for a research agenda. *International Journal of Management Reviews*, 7: 25-47.

Gibrat, R, (1931) Les Inégalités Économiques. Paris: Librairie du Recueil Sirey.

Grilli, L (2010) When the going gets tough, do the tough get going? The pre-entry work experience of founders and high-tech start-up survival during an industry crisis. *International Small Business Journal*, Online Version.

Herbane, B (2010) Small business research: time for a crisis-based view *International Small Business Journal*, 28: 43-64.

Heshmati, A (2000) On the growth of micro and small firms: evidence from Sweden. *Small*

Business Economics, 17: 213-228.

Honig, B (1998) What determines success? examining the human, financial, and social capital of Jamaican micro-entrepreneurs. *Journal of Business Venturing*, 13: 371-394.

Kitson, M (1995) Seedcorn or chaff? Unemployment and small firm performance. ESRC Centre for Business Research, Cambridge University, Working Paper No.2.

Kitching, J, Smallbone, D and Xheneti, M. (2009) Have UK small enterprises been victims of the 'credit crunch'? In: RENT XXIII Conference: Entrepreneurial Growth of the Firm; 19-20 Nov 2009, Budapest, Hungary.

Kitching, J, Smallbone, D, Xheneti, M, Kasperova, E (2011) Adapting to a fragile recovery: SME responses to recession and post-recession performance. In: 34th Institute for Small Business and Entrepreneurship (ISBE) Annual Conference: Sustainable futures: enterprising landscapes and communities; 9-10 Nov 2011, Sheffield, U.K.. ISBN 9781900862233

Latham, S (2009) Contrasting strategic response to economic recession in start-up versus established software firms. *Journal of Small Business Management*, 47(2): 180–201.

Leitch C, H F, Neergaard H (2010) Entrepreneurial and business growth and the quest for a 'comprehensive theory': Tilting at windmills? *Entrepreneurship Theory and Practice*, 34(2): 249–260.

Lumpkin, G.T, Dess, G.G (2001) Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16: 429-451.

Marlow, S, Patton, D (2005) All Credit to Men? Entrepreneurship, Finance, and Gender. *Entrepreneurship Theory and Practice*, 29: 717-735.

Meager, N, Bates, P, Cowling, M (2004) An evaluation of Business Start-up Support for Young People. *National Institute Economic Review*, 186: 59-72.

Miller, D (1983) The correlates of entrepreneurship in three types of firms. *Management Science*, 29: 770-791.

Nightingale, P, Cowling, M, Dannreuther, C, Hopkins, M, Mason, C, Murray, G.C (2009). *From Funding Gaps to Thin Markets: the UK Support for Early Stage Venture Capital in the 21st Century*. London: BVCA and NESTA.

Nunes, P, Gonçalves, M, Serrasqueiro, Z (2013) The influence of age on SMEs' growth determinants: empirical evidence. *Small Business Economics*, 40(2): 249-272.

ONS (2011) *Output in the construction industry: Statistical bulletin Q1*. London: Office of National Statistics.

Parker, S, Congregado, E, Golpe, A (2012) Is entrepreneurship a leading or lagging indicator of the business cycle? Evidence from UK self-employment data. *International Small Business Journal*, 30 (7): 736-753

Power, B, Reid, G.C (2003) Performance, firm size and the heterogeneity of competitive strategy for long-lived small firms: a simultaneous equations analysis. CRIEFF Discussion Paper, Dept. of Economics, University of St. Andrews.

Rauch, A, Frese, M, Utsch, A (2005) Effects of Human Capital and Long-Term Human Resources Development and Utilization on Employment Growth of Small-Scale Businesses: A Causal Analysis1. *Entrepreneurship Theory and Practice*, 29: 681-698.

Rauch, A, Wiklund, J, Lumpkin, G.T, Frese, M (2009) Entrepreneurial orientation and business performance: an assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, 33: 761-787.

Reid G (2007) *The Foundations of Small Business Enterprise*. London: Routledge

Requena-Silvente, F (2005) The decision to enter and exit foreign markets: evidence from U.K. SMEs. *Small Business Economics,* 25: 237-253.

Revest, V, Sapio, A (2010) Financing technology-based small firms in Europe: what do we know? *Small Business Economics.*

Robbins, D, Pantuosco, L, Parker, D, Fuller, B (2000) An empirical assessment of the contribution of small business employment to US state economic performance. *Small Business Economics*, 15: 293-302.

Sapienza, H, Grimm, C (1997) Founder characteristics, start-up process, and strategy / structure variables as predictors of shortline railroad performance. *Entrepreneurship, Theory & Practice*, 22: 5-24.

Saradakis, G (2012) Introduction to the special issue on enterprise activity, performance and policy during times of crisis. *International Small Business Journal*, 30 (7): 733-735.

Schumpeter, J (1942) Capitalism, Socialism and Democracy. New York: Harper and Row.

Smallbone, D, Deakins, D, Battisti, M, Kitching, J (2012a) Small business response to a major economic downturn: Empirical perspectives from New Zealand and the United Kingdom. *International Small Business Journal*, 30 (7): 754-777.

Smallbone, D, Kitching, J, Kasperova, E, Xheneti, M (2012b) The resilience of small firms to a major economic downturn. In: 35th Institute for Small Business and Entrepreneurship (ISBE) Annual Conference: Creating Opportunities through Innovation: Local Energy, Global Vision; 7-8 Nov 2012, Dublin, Ireland.

Smallbone D, North D, Kalantaridis C (1999) Adapting to peripherality: A study of small

manufacturing firms in northern England. *Entrepreneurship and Regional Development* 11(2): 109–128.

Storey D (1994) *Understanding the Small Business Sector*. London: Routledge

Tang, J, Tang, Z, Marino, L.D, Zhang, Y, Li, Q (2008) Exploring an inverted U-shape relationship between entrepreneurial orientation and performance in Chinese ventures. *Entrepreneurship Theory and Practice*, 32: 219-239.

Unger, J, Rauch, A, Frese, M, Rosenbusch, N (2011) Human capital and entrepreneurial success: A meta-analytical review. *Journal of Business Venturing*, 26: 341-358.

Wang, C.L (2008) Entrepreneurial orientation, learning orientation, and firm performance. *Entrepreneurship Theory and Practice,* 32: 635-656.

Watson, J (2012) Networking: Gender differences and the association with firm performance. *International Small Business Journal*, 30(5): 536-558

Watson, W, Stewart, W.H, BarNir, A (2003) The effects of human capital, organizational demography, and interpersonal processes on venture partner perceptions of firm profit and growth. *Journal of Business Venturing*, 18: 145-164.

Weinzimmer, L.G, Nystrom, P.C, Freeman, S.J (1998) Measuring organizational growth: Issues, consequences and guidelines. *Journal of Management*, 24: 235-262.

Westhead, P, Storey, D.J (1997) Financial constraints on the growth of high technology small firms in the United Kingdom. *Applied Financial Economics*, 7: 197-201.

Westhead, P, Ucbasaran, D, Wright, M (2005) Decisions, actions, and performance: do novice, serial, and portfolio entrepreneurs differ? *Journal of Small Business Management*, 43: 393-417.

Westhead P and Wright M (2011) David Storey's optimism and chance perspective: A case of the emperor's new clothes? *International Small Business Journal* 29(6): 714–729

Wiklund, J, Shepherd, D (2003) Knowledge-based resources, entrepreneurial orientation, and the performance of small and medium-sized businesses. *Strategic Management Journal*, 24: 1307-1314.

Wright, M, Stiliani, I (2013) Entrepreneurship and growth. *International Small Business Journal*, 31(1): 3–22.

Zarutskie, R (2010) The role of top management team human capital in venture capital markets: Evidence from first-time funds. *Journal of Business Venturing*, 25: 155-172.

Zhao, Y, Li, Y, Lee, S.H, Chen, L.B (2011) Entrepreneurial Orientation, Organizational Learning, and Performance: Evidence From China. *Entrepreneurship Theory and Practice*, 35: 293-317.

Table 1

Summary of Recent Studies on the Performance-Recession Relationship

Study	Sample used	Main conclusion(s)
Bank of England (2010); ONS (2011)	UK private business: 2008 – 2010	Construction sector more depressed than other sectors, such as business services.
Coad, et al. (2013)	UK (private bank data): 2004 – 2010	Firm growth follows random patterns. Growth paths influence survival.
Grilli (2010)	Italian start-ups: 1995 – 2000	Established start-ups with more experience entrepreneurs less likely to survive during negative industrial shocks
Hilmersson (2013)	Swedish SMEs: 2007 – 2011	The scope and speed of internationalisation has a positive performance effect during market turbulence, but not the scale.
Kitching, et al. (2009 and 2011); Smallbone, et al. (2012b)	UK small businesses: 2009 – 2011	SME performance varies within- and post-recession, dependent on firms' adaptations to the recession.
Smallbone et al. (2012a)	UK and New Zealand SMEs: 2008 – 2009	Recession has no constantly negative effect on firm survival. Businesses shown performance resilience to the recession varies w.r.t. firm characteristics.
Wright (2012)	Theoretical	Entrepreneurial cognition helps to shape the patterns and types of growth. Entrepreneurs' role in shaping growth should be better understood, besides the commonly considered factors such as access to finance.

Table 2

Variable Definition and Sample Descriptive Statistics

		(1) Pre-recession (N = 6,597)				(2) Within-recession (N = 3,067)				(1) vs. (2)
Variable	**Definition**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**
Dependent Variables										
EGROWTH	% Change in employee numbers over the past 12 months	2.55	29.67	-100.00	150.00	3.34	60.66	-95.56	336.36	***
SGROWTH	% Change in sales over the past 12 months	5.24	18.77	-50.00	100.00	-8.86	25.58	-100.00	33.33	***
ORIENTATION	Firm aiming to grow in the next 2-3 years (0, 1)	0.73	0.45	0.00	1.00	0.71	0.45	0.00	1.00	*
Independent Variables										
Business characteristics										
EMP	Number of employees	25.58	37.57	0.00	249.00	31.99	44.38	0.00	240.00	***
AGE_10LESS	Firm less than 10 years old (0, 1)	0.04	0.42	0.00	1.00	0.07	0.27	0.00	1.00	***
AGE_11TO20	Firm between 11 and 20 years old (0, 1)	0.21	0.41	0.00	1.00	0.39	0.49	0.00	1.00	***
AGE_20MORE	Firm more than 20 years old (0, 1)	0.75	0.43	0.00	1.00	0.54	0.50	0.00	1.00	
CORP	Firm is incorporated (0, 1)	0.81	0.39	0.00	1.00	0.87	0.34	0.00	1.00	
FAMOWN	Firm is family owned (0, 1)	0.64	0.48	0.00	1.00	0.62	0.47	0.00	1.00	
EXPORTER	Firm exports (0, 1)	0.26	0.45	0.00	1.00	0.29	0.45	0.00	1.00	***
Primary Industries	Sector dummy (0,1)	0.02	0.16	0.00	1.00	0.03	0.18	0.00	1.00	
Metals Manufacturing	Sector dummy (0,1)	0.10	0.29	0.00	1.00	0.15	0.36	0.00	1.00	***
Non-metals Manufacturing	Sector dummy (0,1)	0.04	0.19	0.00	1.00	0.05	0.23	0.00	1.00	
Other Manufacturing	Sector dummy (0,1)	0.10	0.30	0.00	1.00	0.13	0.34	0.00	1.00	**
Construction	Sector dummy (0,1)	0.33	0.47	0.00	1.00	0.25	0.43	0.00	1.00	***
Retail & Wholesale	Sector dummy (0,1)	0.07	0.25	0.00	1.00	0.06	0.24	0.00	1.00	
Transport &Communication	Sector dummy (0,1)	0.21	0.41	0.00	1.00	0.20	0.40	0.00	1.00	
Business Services	Sector dummy (0,1)	0.04	0.19	0.00	1.00	0.05	0.21	0.00	1.00	
Other services	Sector dummy (0,1)	0.07	0.25	0.00	1.00	0.05	0.21	0.00	1.00	*
Owner/Entrepreneur characteristics										
OAGE	Owner's age	50.39	10.41	19.00	88.00	51.55	9.74	21.00	87.50	
WLED	Women-led business (0, 1)	0.60	0.86	0.00	3.00	0.10	0.29	0.00	1.00	
MLED	Ethnic minority-led business (0, 1)	0.57	0.88	0.00	3.00	0.04	0.20	0.00	1.00	*
EXP	Employer with prior experience (0, 1)	0.04	0.18	0.00	1.00	0.18	0.39	0.00	1.00	
DEGREE	Employer with college degree or above (0, 1)	0.41	0.49	0.00	1.00	0.45	0.50	0.00	1.00	
Access to Finance										
FULLACCESS	Poor firm-bank relationship (0, 1)	0.96	0.22	0.00	1.00	0.92	0.28	0.00	1.00	**
NOACCESS	Firm-bank relationship neither good or poor (0, 1)	0.01	0.08	0.00	1.00	0.07	0.26	0.00	1.00	***
PARTACCESS	Good firm-bank relationship (0, 1)	0.02	0.13	0.00	1.00	0.01	0.10	0.00	1.00	*
Recessionary time indicators										
WAVE1 – WAVE7	Dec-08, Feb-09, April-09, Jun-09, Sep-09, Dec-09, Feb-10 Barometer Survey firms (0, 1), respectively									

* $p < .10$; ** $p < .05$; *** $p < .01$ for univariate comparison test of difference in means.

Table 3
OLS Regressions: Pre- and Within-recession Employment and Sales Growth

	Employment Growth				Sales Growth			
	Pre-recession		Within-recession		Pre-recession		Within-recession	
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
EMP	0.150***	0.141***	0.203***	0.201***	0.030***	0.021***	0.084***	0.076***
	(0.025)	(0.025)	(0.026)	(0.026)	(0.006)	(0.006)	(0.028)	(0.028)
EMP^2	-0.001***	-0.001***					-0.000	-0.000
	(0.000)	(0.000)					(0.000)	(0.000)
AGE_11TO20	-4.119**	-3.942**	-8.351*	-8.399*	-4.852***	-4.394***	-4.532**	-4.505**
	(1.978)	(1.977)	(4.366)	(4.370)	(1.240)	(1.229)	(1.824)	(1.822)
AGE_20MORE	-8.346***	-8.096***	-14.847***	-14.981***	-8.648***	-7.962***	-3.103*	-3.056*
	(1.911)	(1.912)	(4.374)	(4.391)	(1.193)	(1.184)	(1.835)	(1.838)
SGROWTH	0.444***	0.432***	0.300***	0.295***				
	(0.019)	(0.019)	(0.043)	(0.043)				
EGROWTH					0.175***	0.167***	0.053***	0.052***
					(0.007)	(0.007)	(0.008)	(0.008)
CORP	-0.473	-0.670	-7.482**	-7.693**	2.302***	1.775***	-0.616	-0.860
	(0.948)	(0.949)	(3.350)	(3.355)	(0.585)	(0.582)	(1.411)	(1.410)
FAMOWN	0.312	0.385	3.612	3.899	0.159	0.360	-1.249	-0.954
	(0.774)	(0.774)	(2.414)	(2.424)	(0.485)	(0.482)	(1.011)	(1.013)
EXPORTER	1.732**	1.562*	-0.934	-1.156	2.786***	2.305***	5.434***	5.067***
	(0.823)	(0.826)	(2.640)	(2.661)	(0.515)	(0.513)	(1.100)	(1.107)
Primary	-1.332	-1.695	-11.459	-11.155	-3.186	-3.917*	-6.972*	-6.764*
Industries	(3.224)	(3.223)	(9.124)	(9.131)	(2.020)	(2.003)	(3.814)	(3.808)
Metals	-0.678	-0.779	-15.289**	-15.041**	-0.805	-1.009	-13.632***	-13.392***
Manufacturing	(2.595)	(2.594)	(7.411)	(7.415)	(1.627)	(1.613)	(3.091)	(3.086)
Non-metals	1.285	1.069	-8.947	-8.689	-1.960	-2.364	-11.503***	-11.255***
Manufacturing	(2.900)	(2.897)	(8.209)	(8.215)	(1.817)	(1.801)	(3.425)	(3.420)
Other	0.536	0.512	-11.865	-11.620	-0.730	-0.672	-9.039***	-8.722***
Manufacturing	(2.595)	(2.593)	(7.444)	(7.451)	(1.628)	(1.613)	(3.109)	(3.105)
Construction	0.172	0.100	-14.000*	-13.695*	-2.727*	-2.820*	-3.682	-3.448
	(2.428)	(2.426)	(7.155)	(7.161)	(1.522)	(1.509)	(2.992)	(2.988)
Retail &	3.274	3.163	-5.888	-5.638	-2.644	-2.755	-7.359**	-7.148**
Wholesale	(2.697)	(2.695)	(8.095)	(8.099)	(1.691)	(1.676)	(3.382)	(3.376)
Transport	2.067	1.893	-11.798	-11.790	-1.462	-1.773	-9.168***	-9.194***
&Communication	(2.501)	(2.500)	(7.343)	(7.347)	(1.569)	(1.555)	(3.066)	(3.061)
Business Services	1.313	1.588	-9.039	-8.780	-4.704**	-4.542**	0.176	0.498
	(2.979)	(2.980)	(8.670)	(8.673)	(1.867)	(1.852)	(3.627)	(3.620)
Other Services	-1.665	-1.585	-1.886	-1.459	-2.880*	-2.746	-1.228	-0.807
	(2.750)	(2.748)	(8.606)	(8.612)	(1.724)	(1.709)	(3.596)	(3.591)
OAGE	-0.164***	-0.147***	-0.089	-0.078	-0.094***	-0.058***	-0.007	0.008
	(0.035)	(0.035)	(0.115)	(0.115)	(0.022)	(0.022)	(0.048)	(0.048)
WLED	-0.021	-0.032	0.710	0.726	0.502	0.447	-0.897	-0.866
	(0.919)	(0.918)	(3.741)	(3.742)	(0.576)	(0.571)	(1.565)	(1.562)
MLED	1.489*	1.493*	2.653	2.695	-0.221	-0.206	-1.204	-1.181
	(0.904)	(0.903)	(5.553)	(5.555)	(0.567)	(0.562)	(2.320)	(2.316)
EXP	-1.472	-1.521	1.704	1.463	-0.252	-0.442	0.863	0.621
	(1.973)	(1.971)	(5.662)	(5.665)	(1.238)	(1.227)	(2.368)	(2.363)
DEGREE	-0.894	-0.935	-2.263	-2.312	1.210***	1.032**	-0.573	-0.656
	(0.746)	(0.746)	(2.303)	(2.306)	(0.467)	(0.464)	(0.964)	(0.963)
ORIENTATION		2.575***		2.240		5.302***		3.037***
		(0.831)		(2.506)		(0.512)		(1.046)
PARTACCESS		-7.964*		-8.645		-5.373*		-9.775**
		(4.575)		(10.473)		(2.847)		(4.363)
NOACCESS		-5.759**		-4.788		-6.844***		-3.184*
		(2.591)		(4.155)		(1.611)		(1.732)
WAVE2			0.351	0.358			-0.648	-0.770
			(4.011)	(4.021)			(1.676)	(1.676)
WAVE3			-1.513	-1.676			-2.553	-2.793*
			(4.025)	(4.030)			(1.682)	(1.680)
WAVE4			0.072	-0.044			-2.569	-2.744
			(4.034)	(4.038)			(1.686)	(1.684)
WAVE5			2.553	2.445			-4.605***	-4.783***
			(4.049)	(4.055)			(1.690)	(1.688)
WAVE6			3.596	3.307			-2.627	-2.946*
			(4.041)	(4.046)			(1.688)	(1.687)
WAVE7			5.140	5.061			-5.454**	-5.594**
			(6.632)	(6.636)			(2.771)	(2.766)
N	6597	6597	3067	3067	6597	6597	3067	3067
Adjusted R^2	0.112	0.113	0.041	0.041	0.125	0.142	0.058	0.062
F statistics	25.358***	23.812***	4.523***	4.251***	29.653***	31.211***	5.976***	5.960***

* $p < .10$; ** $p < .05$; *** $p < .01$. Asymptotic robust standard errors reported in the parentheses.

Table 4

Probit Regressions: Pre- and Within-recession Growth Orientations

	Pre-recession		Within-recession	
	Model 1	**Model 2**	**Model 3**	**Model 4**
Business characteristics				
EMP	0.002***	0.002***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
AGE_11TO20	-0.094**	-0.092**	-0.052	-0.051
	(0.038)	(0.038)	(0.036)	(0.036)
AGE_20MORE	-0.128***	-0.126***	-0.115***	-0.112***
	(0.028)	(0.028)	(0.034)	(0.034)
EGROWTH	0.001***	0.001***	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
SGROWTH	0.004***	0.004***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
CORP	0.080***	0.080***	0.061**	0.061**
	(0.015)	(0.015)	(0.026)	(0.026)
FAMOWN	-0.045***	-0.044***	-0.074***	-0.075***
	(0.012)	(0.012)	(0.018)	(0.018)
EXPORTER	0.108***	0.107***	0.139***	0.138***
	(0.012)	(0.012)	(0.018)	(0.018)
Owner characteristics				
OAGE	-0.007***	-0.007***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
WLED	0.011	0.011	-0.022	-0.022
	(0.014)	(0.014)	(0.028)	(0.028)
MLED	0.002	0.002	0.027	0.026
	(0.014)	(0.014)	(0.041)	(0.041)
EXP	0.047	0.046	0.060	0.062
	(0.030)	(0.030)	(0.042)	(0.042)
DEGREE	0.036***	0.035***	0.044**	0.044**
	(0.012)	(0.012)	(0.018)	(0.018)
Access to finance				
NOACCESS		0.098*		0.022
		(0.059)		(0.077)
PARTACCESS		0.082**		0.046
		(0.034)		(0.030)
Recessionary time indicator				
WAVE2			0.082***	0.080***
			(0.026)	(0.026)
WAVE3			0.067**	0.067**
			(0.027)	(0.027)
WAVE4			0.069**	0.068**
			(0.027)	(0.027)
WAVE5			0.078***	0.077***
			(0.027)	(0.027)
WAVE6			0.075***	0.075***
			(0.027)	(0.027)
WAVE7			0.072	0.071
			(0.047)	(0.047)
N	6597	6597	3067	3067
Pseudo R^2	0.129	0.130	0.098	0.099
χ^2	997.336	1004.022	361.466	363.660
Log likelihood	-3367.664	-3364.321	-1663.886	-1662.789

* $p < .10$; ** $p < .05$; *** $p < .01$. Marginal effects of the coefficient estimates are reported. Asymptotic robust standard errors are reported in the parentheses.

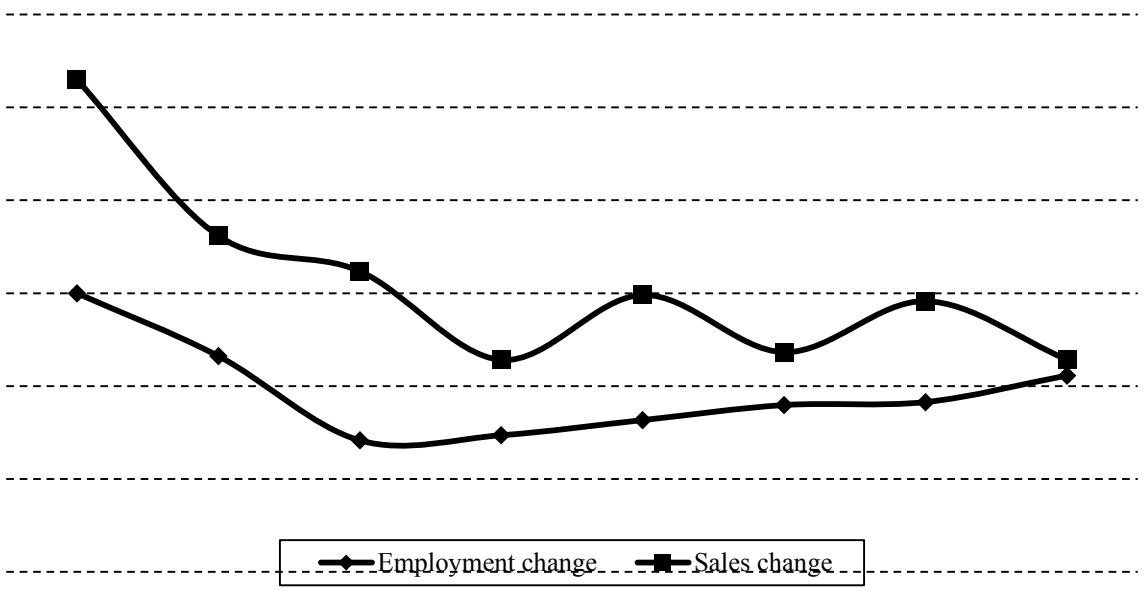
Table 5

Summary of Hypotheses and Empirical Results

Hypotheses	**Prediction**	**Result**
H1: Business Characteristics	More important during recession	Yes
H2: Entrepreneurs Human Capital	More important during recession	No
H3: Entrepreneurial Orientation	Less important during recession	Yes (partially)
H4: Access to Finance	More important during recession	Yes (partially)

Figure 1

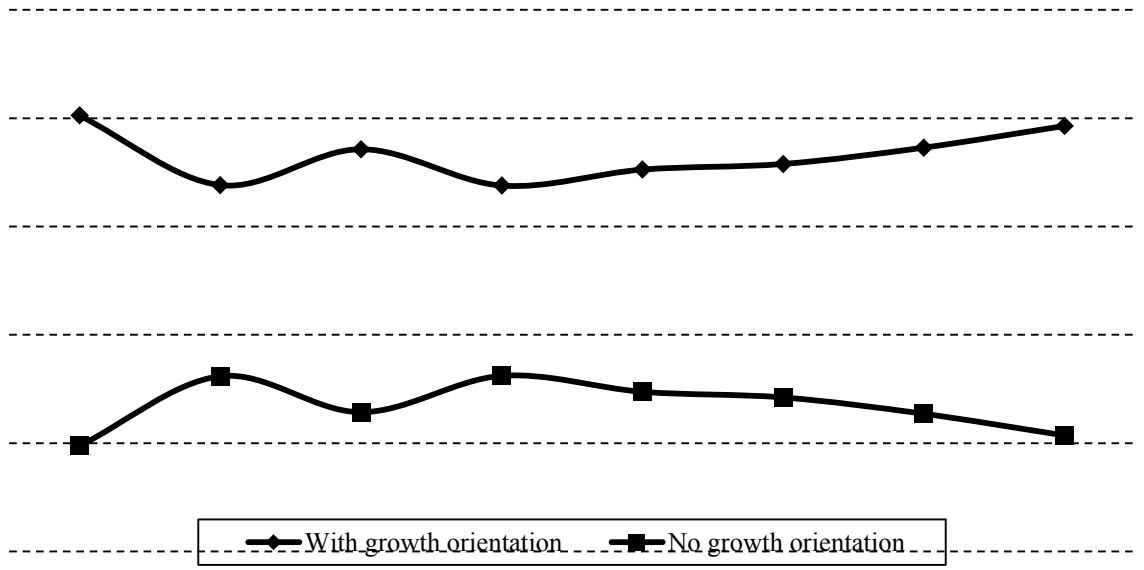
Proportion of business with increased sales and employment before and during the recession



*Base: All SME employers (weighted data); unweighted N = 2,396 (pre-recession N = 2,138).

Figure 2

Proportion of business with a growth orientation before and during the recession



*Base: All SME employers (weighted data); unweighted N = 2,396 (pre-recession N = 2,138).