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**Credit Where It's Due? Access
to Finance for High-Growth
SMEs in the UK**

By Ross Brown and Neil Lee

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Keywords: Entrepreneurship; High-growth firms; Gazelles; Access to finance; SME finance

JEL Codes: O31, G21, G32, L26

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1. Introduction

High growth firms (henceforth HGFs) – those achieving rapid growth in employment or turnover – are seen as vital for economic growth (Storey, 1994; Acs et al. 2008; Shane 2010). Originally detected by David Birch's (1981) pioneering work, in recent years these firms have become something of the 'holy grail' for policy makers (OECD, 2013a).

Unquestionably, the key attraction of these firms is their ability to generate 'jobs' (Coad et al. 2014a). Indeed, empirical studies consistently shows them to be a prodigious source of new employment (Henrekson and Johansson, 2010).

In recent years our knowledge of HGFs has extended considerably. Research has examined, *inter alia*, their impact on productivity (Du and Temouri, 2014), employment (Coad et al, 2014b), internationalisation (Brown and Mawson, 2014) and innovation (Colombelli et al, 2014; Segarra and Ternel, 2014). While this body of research has provided a solid evidence base on the nature of these firms, little research has considered the obstacles and challenges they face whilst growing (Lee 2014). Finance is seen as particularly important determinant of rapid firm growth (Vanacker and Manigart, 2010). It enables firms to invest in physical and human capital, develop new products/processes, reach new markets and grow organically or through acquisition. Yet, surprisingly, despite the importance of HGFs for both policy and theory "little is known about financial policy within high-growth companies" (Vanacker and Manigart, 2010 p. 66). More specifically, there is little evidence on the applications for finance made by HGFs, the types of finance sought and the success rates of these applications.

In contrast, in the aftermath of the financial crisis there has been considerable attention focused on access to finance for small and medium sized enterprises (SMEs) both in the UK (Fraser, 2009a; Cowling et al. 2012; Lee et al. 2014) and across the EU (Canton et al. 2013). Indeed, there is a firm belief that difficulties accessing finance could be a major factor behind the UK's tepid economic recovery (Cowling et al. 2012; Armstrong et al. 2013). Research has highlighted a clear problem in the general supply of credit for small firms for some considerable time (Berger and Udell, 1998; 2006). The view that SMEs face structural impediments in accessing external sources of finance has become something of a 'stylised fact' within the small business literature for some time (Hughes, 1997; Beck and Dermirguc-Kunt, 2006). Although this matter is contested by a number of scholars (Vos et al. 2007; Mina et al. 2013), the knock-on effect from this deeply embedded perception is that high

levels of ‘discouraged borrowers’ are thought to exist within the SME population (Freel et al. 2010; Kon and Storey, 2003)¹. Typically, however, within this body of literature little differentiation is made between low or high growth SMEs.

To rectify these omissions, this paper aims to take the debate on small business funding a stage further by specifically examining access to finance in rapidly growing SMEs. Evidence on firms’ perceptions suggests that HGFs are more likely to perceive access to finance as a significant barrier to their growth than other firms (Lee, 2014). The reasons for this are potentially complex and multi-dimensional. Rapid growth can be erratic, difficult to manage and risky (Garnsey et al. 2006; Hözl, 2014), therefore hard for banks to understand and estimate the degree of associated ‘risk’. HGFs are particularly likely to be innovative (Stam and Wennberg, 2009) and innovative assets can be hard to value which may lead to problems in the supply of finance (Mina et al. 2013). It might alternatively be that HGFs are reliant on specialist sources of finance, such as that provided by venture capitalists (Lerner, 2010) or alternative sources of finance such as peer-to-peer lending, crowdfunding and trade credit (Collins et al. 2013; Mollick, 2014).

This paper investigates the factors underpinning the applications for finance made by rapidly growing SMEs; the types of finance they apply for; the reasons for the applications and the success of these applications. A novel aspect of the paper is the comparisons it draws between high growth SMEs and non-high growth SMEs across these variables. We draw on a survey of over 8,000 UK SMEs which were surveyed during 2007/8, 2010 and 2012 and use a combination of both new descriptive statistics and regression models. The paper is structured as follows. In section two we outline the literature on access to finance and HGFs, and suggest a set of hypotheses to examine. In section three we describe our data and present descriptive statistics on applications for finance made by HGFs. Section four extends this analysis to regression models which test whether firms experiencing rapid growth are more or less likely to successfully access finance. In the penultimate section, we discuss implications of the work for both theory and policy. In the final section brief conclusions and future research suggestions are drawn.

¹ This occurs when “a good borrower may not apply to a bank, because they feel they will be rejected” (Kon and Storey, 2003 p. 37)

2. Literature Review

The availability of finance for SMEs is of considerable interest to academics, policy makers and business people (Berger and Udell, 2006). The idea that smaller firms face particular ‘market failures’ in credit markets has become deeply entrenched within public policy circles in the UK, although evidence for it is mixed (Hughes, 1997). Many observers attribute this problem to information asymmetries faced by SMEs in relation to lenders (Binks et al. 1992; Berger and Udell, 1998). Within this perspective, information asymmetries are seen as the main barriers preventing small firms being able to receive the levels of finance necessary to expand (Becchetti and Torvato, 2002; Berger and Udell, 1998)). Information asymmetries arise when buyers know more about the product than their customers. In contrast to neo-classical economics which assumes perfect information, there is now a widespread belief that a lack of information creates adverse selection effects (Akerlof, 1970). Asymmetric information raises the risk of loans and is one of the most important reasons why external finance is more costly than internal funds (Binks et al. 1992; Berger and Udell, 1998).

SMEs are also sometimes denied finance owing to their lack of security and loan track record (Storey, 1994; Hughes, 1997). This is often associated with firm size and is consistent with the ‘*growth cycle theory*’ of small firm financing which states that access to credit generally increases as firms grow in size (Gregory et al. 2005). Smaller firms are unlikely to have substantial assets to act as security against borrowings and many, particularly newer firms, may not have a long-standing relationship with a bank. Plus, unlike larger firms, SMEs may not have audited financial statements which again increases ‘informational friction’ between borrowers and lenders (Pollard, 2003). Indeed, “the degree of informational opacity is a key feature that drives the financial growth cycle and that distinguishes small business finance from large business finance” (Berger and Udell, 1998, p. 660). This problem has been accentuated by the removal of localised decision making structures within UK banks which has led to more mechanistic assessments of SME credit ratings which typically favours larger firms (Durkin et al. 2013).

A notable feature of the large literature on access to finance has been the tendency to treat all SMEs the same. Apart from a few recent exceptions (Vos et al. 2007; Vanacker and Manigart, 2010), little research has specifically examined the funding issues and constraints facing high growth SMEs. Yet, for obvious reasons, access to finance is a particularly pressing issue for high growth SMEs as most high growth companies “have considerable

outside financing needs” (Vanacker and Manigart, 2010, p. 54). Financial capital is vital both to support and achieve growth in businesses (Binks and Ennew, 1996). While it can be expected that rapidly growing firms may be more likely to seek sources of external credit than other SMEs, these firms are also strong generators of cash from their business activities. This raises the possibility for these cash-generative firms to invest using their own resources. Indeed, one of the few studies assessing the demand for funding in high growth companies undertaken in Belgium discovered “the importance of retained earnings in the financing of investment projects by high-growth companies” (Vanacker and Manigart, 2010, p. 67).

In terms of availability or the supply of finance, the evidence seems quite mixed whether fast growth firms find accessing finance more difficult than other firms (Cowling et al. 2012). Early work on this issue concluded that “high growth firms are typically cash-starved” (Hambrick and Crozier, 1985, p. 41). Indeed, research on HGFs in Northern England found that they were more likely to have experienced problems with their banks than slower-growing counterparts (Storey et al. 1989). In contrast, research by Binks and Ennew (1996) found that credit constraints faced by growing firms were no greater than other firms. However, they did find that firms who expect to achieve rapid growth in the future perceive the existence of tighter credit constraints. Firms operating in areas of high-technology were found to be the ones most likely to perceive funding issues as an impediment to rapid growth (Westhead and Storey, 1997). According to more recent research, HGFs often perceive access to finance more problematic than less rapidly growing firms and nearly 20% of high growth ventures consider access to funding to be the single most important barrier to growth they face (compared to 13% for other firms) (Lee, 2014). These problems may have worsened since the financial crisis, as funding institutions increasingly gave credit to larger firms, irrespective of their growth ambitions (Cowling et al. 2012). This leads to our first set of hypotheses:

Hypothesis 1 High-growth SMEs are more likely to seek external sources of funding than less rapidly growing firms

Hypothesis 2 High-growth SMEs find it more difficult to obtain external funding than non high-growth firms

Hypothesis 3 High-growth SMEs are more likely to use retained earnings to finance their growth than less rapidly growing firms

Scholars have noted the increasing tendency by banks to use transactional lending practices using quantitative credit scoring ‘data’ to assess SME loans rather than relational connections with firms formed between individuals (Berger & Udell, 2006). In line with this, the literature on access to funding within SMEs often ignores the reasons why firms seek access to external sources of credit despite the fact this can have important implications for ‘valuing risk’ for the lender. Indeed, the overall issue of SME funding is treated as something of a ‘black box’ where firms are depicted as requiring similar quantities of funding for (broadly) similar purposes. Part of this may reflect the fact that the overwhelming majority of research is of a quantitative nature which often overlooks the nuances surrounding the nature of ‘demand’ for funding on behalf of SMEs.

However, it is now widely acknowledged that firm growth manifests itself in a variety of different ways (McKelvie and Wiklund, 2010; Wright and Stigliani, 2013). Therefore different types of firms -especially those experiencing periods of very rapid growth- will require funding for different purposes. While some will require funding to undertake capital investment in new plant and equipment more service-oriented firms will probably need investment for softer forms of investment such as marketing, new product development and human capital development. One expectation is that high growth SMEs would be more inclined than others to undertake funding for more ‘risky’ growth-oriented initiatives rather than using funding for working capital. It would be also expected that strategic investments in things like R&D (and new product development) or acquisitions would be more likely for high growth SMEs rather than less rapidly growing firms. The corollary of this is that less rapidly growing firms are more likely to be risk averse and cautious, perhaps using funding to invest in factors with guaranteed resale value such as property of plant and equipment. This leads us to the following set of hypotheses:

Hypothesis 4 High-growth SMEs are less likely to use external funding to fund working capital than non high-growth firms

Hypothesis 5 High-growth SMEs use funding for riskier strategic investments than non-high growth firms

Business owners can finance growth in a variety of different ways but the fundamental decision for many is whether or not to relinquish ownership of part of their business to external investors. Under the ‘pecking order hypothesis’ of fund raising (Myers and Majluf, 1984), many entrepreneurs are opposed to relinquishing control of their business to external

investors and, wherever possible, resist equity dilution (Carter and Van Auken, 2005). Therefore, firms have a pecking order of preferences in terms of finance which begins with the use of internal funds generated by retained earnings; then recourse to debt finance from banks; and then, as the least preferable option, equity finance which dilutes ownership of a business. In line with this hypothesis, HGFs prefer to finance their resources from internal sources of finance or through debt funding (Barclay et al. 2006). As a last resort equity funding is sought. Some researchers have discovered that some SMEs only seek out venture capital owing to the rent-seeking behaviour by their main bank (Berger and Schaeck, 2011). This contrasts to financing for new start-ups, especially new technology based firms, which often seek venture capital funding owing to the high levels of risk associated with these ventures. In accordance with the ‘pecking order hypothesis’, we posit the following final hypothesis:

Hypothesis 6 High growth SMEs will seek non-equity dilutive sources of funding

3. Data and Definitional Issues

3.1 Data

The data for this study is the combined Small Business Survey (SBS) for 2007/8, 2010 and 2012.² This is an SME survey commissioned by the UK Department for Business, Innovation and Skills (BIS). The survey is conducted as a Computer Assisted Telephone Interview (CATI) and questions were asked of owners or senior decision makers in each firm. Firms are selected using a stratified sample, with quotas for nation/region, size and sector. Within this, firms are selected randomly from the Dun & Bradstreet database. The survey includes firms across the UK, although weights are used in the analysis to account for oversampling of some regions or nations.

For the purposes of this study two sets of firms were removed from the data. First, as is standard in the literature on HGFs (Anyadike-Danes et al. 2009), firms with less than 10 employees in the initial year of analysis are excluded. Including very small firms in the measure would bias the interpretation of high growth, as it is easier for a small firm to achieve rapid growth than one which starts larger (for example, a sole trader taking on a

² Note that in 2007/8 this survey was called the Annual Small Business Survey.

single employee would be counted as having doubled in size although the absolute increase is minimal). Second, firms with missing values for the variables used are excluded. This is largely a random process as some firms are only asked a sub-set of questions in each year. This resulted in a total sample of 8,830 firms, of which 4,060 were sampled in 2007/8, 2,145 in 2010 and 2,625 in 2012.

3.2 Identifying high growth firms

Employment growth is used as a measure of firm growth. There are debates in the literature on high growth firms about whether to use a turnover or employment measure of high growth (Delmar et al. 2013). However, the SBS only includes actual data on past employment, but not turnover (although it does ask whether turnover has increased).

A methodological challenge for the paper is *when* to investigate the financing decisions of HGFs. Success in accessing finance may be endogenous with the ability to achieve high growth, as firms which do not obtain finance may not be able to achieve growth as a result. So we choose to consider firms who have achieved some growth and believe they will be able to sustain it. In line with other research using this dataset (Lee, 2014), HGFs are defined as those which have grown at 20 percent for one year and which predict 20 percent growth in the next. As an additional check, firms which say that they have not achieved 'growth' in a further question are excluded. While this is not a perfect measure of firm growth it does correlate strongly with actual firm growth measures.³

This strength of this method is that it avoids the conceptual problem that firms which do not achieve external finance may not then be able to grow, yet there are two important considerations. First, firms may not be able to reliably predict future growth. This may lead to a bias either towards optimistic firms, who are more likely to be seen as high growth, and away from pessimistic firms which are less likely to be seen as high growth. A second problem is that by only using a two year time period, rather than the three year period used in other recent UK studies (although there is significant variation in the definitions used for HGFs, Henrekson and Johansson, 2010), this may overestimate the share of firms which achieve high growth relative to other work. However, the advantage of this method is that it

³ The 2010 wave can be linked into the Business Structure Database which gives actual employment growth over the subsequent year. Using this method to test the robustness of firm predictions shows a strong and positive correlation between expected growth and actual growth of 0.8 ($p = 0.0000$). While these predictions will be wrong for a minority of firms, the majority of firms seem able to predict employment growth over the forthcoming year with some degree of accuracy.

captures firms who are undergoing a spell of rapid growth, rather than those who have exited it. Plus, analysis of the same factors using other data suggests the main results are robust using alternative definitions.⁴

Table 1 shows the share of HGFs in the sample using this method. Of the full sample, just fewer than 5 percent are high growth firms (4.7%). More firms were high growth before the financial crisis in 2007/8 (5.4%), than immediately after in 2010 (3.6%) or in 2012 (4.5%). However, there was a significant uplift between 2010 and 2012. These figures are slightly below other estimates for the earlier periods: some scholars estimate six percent of firms achieved high growth (Anyadike-Danes et al. 2009). This provides some evidence to suggest the results of this project are not unduly affected by optimism bias. Note that the results of this project will differ from those of Anyadike-Danes et al. (2009) as this project only considers SMEs, whereas they consider all firms with more than 10 employees.

Table 1 around here

4. Descriptive statistics: Financing high growth firms

Applications for finance and rejection rates

A number of variables on access to finance are constructed, following Lee et al. (2014). First, applications for finance: HGFs are significantly more likely to apply for finance than other firms (see Table 2 below). Exactly a third of all firms in the survey had applied for finance in the previous 12 months. But 44 percent of HGFs applied, a statistically significant difference ($p=0.000$). This provides strong evidence in support of hypothesis 1, that HGFs will be more likely to seek external finance.

Table 2 around here

Next, we consider rejection rates and the extent to which HGFs were refused funding. We consider two potential results: having difficulty obtaining finance from the first source, and

⁴ It is possible to investigate the results here using a smaller sample of 1,300 firms linked into administrative data on turnover growth. The results suggest that neither use of turnover rather than employment nor our mid-growth definition of HGFs alters the main results. Results are available on request.

being unable to get any finance from any subsequent source. Hypothesis 2 suggests that HGFs will find it harder to access finance than other firms. Yet the results here suggest HGFs have no more, or less, of a problem accessing finance than other firms. Thirty four percent of firms who applied for finance had trouble, with 32 percent of HGFs. The latter were slightly less likely to fail to get any finance from any source (13 percent compared to an average of 16 percent for non-HGFs). None of these differences are statistically significant and provide reason to reject hypothesis 2.

Sources of finance for high growth firms

An important consideration is whether HGFs are more likely to fund their growth through internal resources, such as retained earnings, rather than through external sources of finance. Hypothesis 3 suggests that because of their relatively stronger cash-flows, HGFs are more likely to use internal finance. In the SBS, firms which aimed to grow were asked whether they would fund this expansion using internal or external finance in both the 2007/8 and 2010 surveys. This information is used to assess whether HGFs are more likely to seek to fund growth using internal resources, although for a smaller sample. Table 3 gives the results.

Insert table 3 around here

The results show that HGFs are particularly likely to fund expansion using a combination of both internal and external finance. Thirty four percent of them would do this, compared to 24 percent of other firms. This shows that HGFs are more inclined to use a ‘cocktail’ approach to funding, involving both retained and external sources of finance. In contrast, HGFs are less likely to only use internal finance (only 51 percent of firms compared to 61 percent of others).

Note, however, that HGFs are more likely than other firms to apply for finance. To test if this affects the results, we also include the share accessing each type of finance from the share of all firms, regardless of whether they apply for finance (given in parenthesis). When considering all firms, HGFs are particularly likely to finance growth using all three measures. The largest gap, however, is that HGFs seem particularly able to look to finance growth through both internal and external resources: 10 percent of all firms look to finance growth in this manner, whereas 20 percent of HGFs do.

This suggests that it is not possible to reject hypothesis 3 (i.e. HGFs are more likely to use retained earnings to finance their growth). But the results are more nuanced than expected. Internal finance is unable to wholly satisfy the strong appetite for external sources of finance clearly shown within HGFs. This contrasts Belgium study which found that HGFs had a stronger preference for using internal sources of finance such as retained earnings (Vanacker and Manigart, 2010).

Reasons for applying for finance

An important secondary consideration is that HGFs may be applying for finance for different reasons to other firms. Hypothesis 4 suggested HGFs would be less likely to use external finance to fund working capital; hypothesis 5 suggested they would use funding for ‘riskier’ strategic investments than other firms. This may then affect their likelihood of receiving finance. For example, banks may be more willing to lend to a firm to purchase buildings or capital equipment than to lend to one aiming to invest in R&D owing to the higher ‘sunk costs’ involved in such activities. The SBS contains data on a number of reasons for accessing finance, although sample sizes are relatively small.

Insert table 4 around here

Table 4 presents the results of the breakdown and shows that HGFs differ significantly in their reasons for accessing finance. Indeed, they are significantly *less* likely to be accessing finance to use as working capital than other firms (36 percent relative to 47 percent)⁵, although a high share are still likely to be doing so. Many HGFs are accessing capital to invest in buildings or equipment. Hypothesis 4 suggested high-growth SMEs were less likely to use external funding to fund working capital than non-HGFs. We therefore find strong evidence to support hypothesis 4.

Only a small proportion of firms apply for finance for research and development (R&D). R&D spending is dominated by large firms, not SMEs, so this is not surprising. Yet we might expect high-growth SMEs to be more likely to be investing in R&D than other SMEs. One potential explanation is the small sample size. Another is that HGFs may have applied in the past, with the funding application predating rapid growth. An alternative explanation is given

⁵ “Working capital” is everyday finance used by a firm to pay basic outgoings, rather than finance used for a specific source such as investment.

in Mason and Brown (2013) who suggest that many HGFs use customers and end-users as innovation inputs rather than formal R&D spending as their main source of innovation.

There is little difference between HGFs and other firms in the share of applications made for buying or improving buildings (19 percent) or those acquiring capital equipment or vehicles (26 percent). Yet HGFs are more likely to apply for finance for two important growth-related reasons: to buy another business (7 percent of HGFs, compared to 2 percent overall) and to ‘fund expansion’ (9 percent compared to 3 percent). Both these differences are statistically significant. That HGFs are more likely to be buying other businesses suggests that the general perception of the increasing importance of external growth is correct (McKelvie and Wiklund, 2010). These different patterns of growth create demand for a different composition of long and short-term funding which requires further investigation (Armstrong et al. 2013).

Overall, this finds some partial support for Hypothesis 5, that high-growth SME use funding for riskier investments than other firms. HGFs are more likely to use finance to fund expansion and growth through acquisition but no more or less likely to be seeking external finance for R&D.

Types of finance sought by high growth firms

Next, we consider the types of finance firms seek. The SBS asks firms who apply for finance what type of finance they seek, and a number of responses are given (ranging from bank loans to Community Development Finance). However, many of the smaller categories are only asked in single waves and can have very small sample sizes. To prevent this from biasing the results, only seven base categories of finance are considered: bank loans; bank overdrafts; venture capital; grant, leasing and hire purchase; loans from family / business partners / directors, and; mortgages for property purchases / improvements.

Insert table 5 around here

As shown in Table 5, the most common type of finance applied for is a bank loan (40 percent of firms in the sample). Forty nine percent of HGFs applied for bank loans, compared to 39 percent of other firms (this difference is statistically significant). The second most common form of finance is bank overdrafts, which 26 percent of firms apply for. However, in this

case HGFs are significantly less likely to apply (18 percent compared to 27 percent). As bank loans tend to be offered on cheaper interest rates than overdrafts, this suggests HGFs may in fact have access to less expensive capital than other firms. It may also reflect the greater reliance of other firms on working capital, rather than growth finance.

Hypothesis 6 suggested that HGFs were more likely to seek non-equity dilutive finance. This appears to be supported to some degree, as they are more likely to apply for bank loans than other firms. Yet because a far higher share were interested in venture capital than non-HGFs, albeit a small overall proportion (<5 percent), the hypothesis does seem contestable up to a point.

5. Model and estimation strategy

Empirical Model

Hypotheses 1 and 2 both considered the extent to which HGFs applied for finance and their likelihood of rejection. To test whether these results are driven by their status as HGFs, or the other characteristics of firms which are likely to achieve high growth, a set of probit regression models are estimated. These estimate the likelihood of firms finding it hard to access finance as a function of both high-growth status and other variables such as size, sector and age.

Our methodology develops from contributions such as Fraser (2009b) in using simple probit models alongside Heckman selection models to investigate this research question (see also Mina *et al.* 2013; Lee *et al.* 2014). The basic model is as follows:

$$\text{FINANCE}_i = \alpha + \beta_1 \text{GROWTH}_i + \beta_2 \text{FIRM}_i + \beta_3 \text{OWNER}_i + \beta_4 \text{YEAR}_i + \phi_i + \varepsilon \quad (1)$$

For firm ‘i’. Where ‘FINANCE’ is one of a series of variables for difficulty in obtaining finance (as outlined in table 2 and 3), α is the constant, ‘GROWTH’ is whether the firm is undergoing high growth, FIRM is a series of firm level characteristics such as size and age, OWNER is the characteristics and qualifications of the owner or management team, ϕ are sectoral controls and ε is the error term.

The estimation method takes two forms. First, simple probit regression results are estimated. However, a complication is that certain firms are more likely to apply for finance, and this

may be correlated. To address this in a second set of models selection effects are controlled for, and estimate a two-stage heckman probit regression. This requires a variable to be included in the selection equation (which estimates the probability of applying for finance) but not in the basic regression (which estimates likelihood of problems obtaining finance, corrected for the likelihood of applying). Legal status is used as the selection variable.

Control variables

Other factors may influence the ability of firms to access finance or not. To ensure these are not affecting the link between HGFs and access to finance, the model controls for a series of other potential explanatory variables. The full set of controls is given in Table 6.

Table 6 around here

First, the sample of firms spans a 5-year time period which included both major economic change and significant variation in the supply of credit. Bank lending tightened considerably following the financial crisis which began in 2008 (Cowling et al. 2012; OECD, 2013b). To control for this cyclical effect, two binary variables are used which take the number one if a firm is sampled in 2010 or 2012. The reference category is before the recession (2007/8) and so we expect both variables to be positive.

Size will also be an important determinant of lending decisions (Cowling et al. 2012). Larger firms will often represent safer investments, and size is sometimes used a proxy for risk by banks. Because of this, we expect larger firms to be better able to access finance. The model controls for this using three size dummies, based on total employment in the year before the survey.

Similarly, age will be important for firms. Older firms will have longer-track records and so seem a 'safer bet' for investors. Two dummy variables (which take the value 0 or 1) are used to account for this, whether firms are 5-9 years old, or 10+. The reference category is young firms under five years old, and we expect each dummy variable to be positively related to difficulties accessing finance.

Entrepreneur characteristics and access to credit have been a controversial area of research. Because banks often make decisions based on firm size, age and balance sheets, rather than the characteristics of entrepreneurs, it might be argued that this is unimportant. Research on whether ethnic entrepreneurs find it harder to access finance supports this interpretation and

finds less impact (Fraser, 2009b). Our model controls for three entrepreneur characteristics: whether firms are female-led, ethnic-led and whether the entrepreneur has a qualification. We expect positive signs on the first two but, as human capital is important for entrepreneurial success, the latter to have a negative impact.

An additional variable for entrepreneurial human capital is the number of directors. Where firms have more directors, and so more experience, contacts and knowledge, they may be better able to access finance. The growth ambitions of a company may also be important and a variable for whether firms aim to grow is included. Clearly, aiming to grow is likely to be positively related to applications for finance. Firms which aim to grow will, on the one hand, make more ambitious applications, yet they may also have better business plans and/or more attractive financial projections. Because of this, the sign of the coefficient is ambiguous.

Finally, two legal dummies for whether a firm is a partnership or a limited company are included. Past research has shown a link between legal structure and applications for finance, but shows little relationship with the success of applications (Mina et al. 2013). Because of this, this is included in regressions controlling for selection bias as the ‘selection variable’

Results

The basic models for access to finance are included in Table 7. The first set of models (1 – 3) are estimated as simple probit regressions, without controlling for selection. For ease of interpretation, we present marginal effects. The next (models 4 – 5) use the standard Heckman correction for selection effects.

Table 7 around here

Column one gives the results for whether firms apply for finance. They show that HGFs are around 9 percent more likely to apply for finance than other firms, a finding which is statistically significant. This reflects the descriptive statistics presented earlier in Table 2, which showed no reason to reject the hypothesis that HGFs will be more likely to seek external finance than other firms.

The results also suggest other drivers of finance applications. As expected, firms which aim to grow are considerably more likely to apply for finance. Firms with qualified owners are also more likely to apply for finance, a finding which reflects a large literature on this topic, and the fact that qualified owners are more likely to help achieve firm growth (Barringer et al, 2005). Multiple directors may be a proxy for more systematic top management teams. Larger firms are also more likely to apply for finance, although age does not appear to matter.

Columns two and three consider whether applications are successful. In no case is the HGF variable significant, although it is positive in each case. Despite their increased likelihood of applying, HGFs are no more or less likely than other firms to find it hard to access finance. The effect is similar across all four measures of difficulty.

Other factors are also important in determining success of applications for finance. It is clear that the credit crunch worsened conditions. Controlling for recent growth, firm and owner characteristics, firms in 2010 were over eight percent more likely to say they had difficulty obtaining finance than those in 2007/8. Size is also important. Applications made by larger firms are more likely to be successful, perhaps reflecting an increased use of company scale as a risk metric by firms (Cowling et al. 2012). And there is some evidence that older firms are less likely to be rejected.

Neither ethnicity or gender seems to matter without selection effects (Marlow and Patton, 2005; Smallbone et al. 2003). With selection effects, however there is tentative evidence that ethnic run firms find it harder to obtain finance (significant only at the 10% level). Gender, however, appears unimportant.

In columns 4 and 5, the models control for selection and the likelihood of firms applying for finance. Note that we do not report the first stage selection equation as this is essentially the same as the regression for applications presented in column 1. When controlling for selection effects, HGFs actually appear, if anything, to find it easier to obtain finance. While no effect is significant, the results are negative and in some cases are close to significance at standard levels (for column 1, $p=0.156$). This suggests that financing problems are no more acute for HGFs than they are for other SMEs.

Overall, these results run counter to Hypothesis 2: that high growth SMEs find it more difficult to obtain external finance than other firms. Indeed, if anything there is evidence to

suggest that the relationship is the reverse. Contrary to expectations, there is no penalty associated with fast growth when applying for finance.

As with the simple regression models, even controlling for a changed probability of applying for finance, it was harder for firms to obtain finance after the recession. Size is particularly important though, and larger firms are more likely to obtain finance. Controlling for their size, firms operating from multiple sites are also less likely to find it easier to access finance.

6. Discussion and Policy Implications

Attention may now be drawn to some of main issues that have emerged from this research. The empirical findings reported both endorse and contradict previous research as well as offering original insights into the funding dynamics of these firms. The findings also point towards a number of potential policy implications.

An interesting finding was the prevalence of debt financing within high growth SMEs which resonates with other recent research examining HGFs (Vanacker and Manigart, 2010). Despite this, a key dimension of the literature on entrepreneurial finance is its strong focus on private equity funding (e.g. Baum and Silverman, 2004; Lerner, 2009), with much less research examining the funding situation confronting the majority of high-growth SMEs who typically use a wider variety of funding sources, especially traditional forms of debt finance and retained earnings. It appears the strong focus within enterprise public policy on equity financing may over-emphasise this type of funding source for HGFs (Brown et al. 2014). Perhaps greater attention should be placed on the full array of methods used by firms to fund their growth, especially bank debt funding and newer alternative sources of funding such as crowdfunding and peer-to-peer lending (Collins et al, 2013).

The work also revealed that HGFs are significantly (i.e. 9%) more likely to apply for finance than other SMEs. This was an expected finding, corroborating previous research showing external finance to be a fundamental part of the growth process (Vos et al, 2007; Vanacker and Manigart, 2010). A less expected finding was that high-growth SMEs do not have any greater problems accessing finance than other firms. Therefore, in spite of being more likely to apply for finance they are no less likely to find it harder to obtain from the first source of finance they approach. In some respects, this is unsurprising. Banks are less interested in the value of the firm, and more interested in the ability of firms to repay credit. And cash

generative HGFs are presumably more able to service debt which less rapidly growing firms cannot. Even during the peak of the recent recession covered by the data, our results are consistent with the idea there is no discernible ‘funding gap’ for growth-oriented firms (Binks and Ennew, 1996; Vos et al, 2007).

The research results were also contrary to other recent research. Recent studies on HGFs found them to have a strong reliance on retained earnings (Vanacker and Manigart, 2010). However, the high-growth SMEs analysed were less likely to only use internal finance to fund business growth than other firms. They were also more inclined to use a mixed ‘cocktail’ approach to funding, involving both retained earnings and external sources of finance. This use of funding cocktails may have been stimulated by the onset of the financial crisis which has exacerbated the supply of credit within the UK economy (Cowling *et al.*, 2012; OECD, 2013b). One potential explanation for this approach is that HGFs mitigate the risk of external borrowings by ‘co-funding’ capital investment through internal sources. This assumption merits further investigation however.

The research also augments our knowledge of ‘how’ high-growth SMEs grow. Very little previous work has examined the processes through which firms undergo periods of high growth. Indeed, a key criticism of the literature on firm growth has been the tendency to focus on the ‘how much’ firms growth rather than ‘how’ growth occurs (McKelvie and Wiklund, 2010; Coad and Guenther, 2014). By examining the reasons for accessing funding, it revealed clear differences between the high and low growth SMEs. What this evidence shows is that investment in innovation seemed of equal importance to high and low growth SMEs. On the other hand, acquisition, while often associated with larger firms, appears to be a more important for high growth SMEs. Clearly, acquisitions will necessitate quite sizeable investments often requiring recourse to external lending. The critical importance of external growth and SME funding is something which is worthy of further empirical investigation. This also has important policy implications since organic growth creates more new jobs than acquired growth (Daunfeldt et al, 2015).

The research findings also have important implications for theory. As other scholars have noted (Vanacker and Manigart, 2010), the emphasis on non-equity dilutive sources of funding within HGFs is consistent with the ‘pecking order hypothesis’ (Myers and Majluf, 1984). However, in other important respects the findings contradict this model. The delineation of funding preferences -between internal sources of funding, debt and equity- seems less rigid

within high growth SMEs. High growth SMEs were less inclined to just utilise internal sources of funding than low growth SMEs, which is not consistent with the hypothesis.

The impact of the global financial crisis may also be altering the nature of different sources of finance for SMEs (Berger and Black, 2011; Durkin et al, 2013). Beset by the confluence of adverse economic conditions coupled with new transactional lending practices, firms may now view debt funding on a par with equity funding in terms of their perceived loss of autonomy. This corroborates other tentative evidence which shows that the rent-seeking behaviour of the banks in countries like the UK is promoting other forms of equity dilutive lending such as venture capital within SMEs (Berger and Schaeck, 2011). Following this line of argument, the funding preferences of high growth SMEs may be much more ‘fuzzy’ than the pecking order hypothesis suggests owing to the changes in the ways different sources of funding are now perceived. Time will tell whether these changes become enduring features of the funding landscape.

The findings also have implications for public policies. Some authors have noted that while a consensus exists that HGFs are an important stimulus of economic growth, these positive attributes alone do not provide a rationale for policy intervention (Nightingale & Coad, 2014). Taken at face value the findings suggest little rationale for government intervention aimed at increasing credit availability specifically for HGFs. Equally, it would infer that policy makers are correct to direct efforts at improving the availability of credit at smaller firms with the potential to grow. This kind of targeted approach is already evident within the Enterprise Finance Guarantee scheme, the UK’s main scheme designed to alleviate funding constraints within SMEs (Cowling and Siepel, 2013). Yet the problem with loan guarantee schemes such as these is they do little to stimulate the demand for credit within ‘discouraged borrowers’. Enticing those firms to use external finance may prove a more protracted issue for policy makers to overcome.

7. Limitations and Further Research

This research is not without limitations and the results raise a number of avenues for future research. First, the research relates to the UK case, where there is a highly concentrated banking system. Further similar research in other spatial contexts would provide useful comparative insights. Second, another interesting area for further work would be to explore

the relationship between external and internal sources of funding used for growth. To date, the complex interplay of factors mediating the utilisation of different sources of funding have been largely overlooked by researchers. Finally, scholars have noted the scope for further research “into the internal structures and evolution of HGFs” (Coad et al. 2014b, p. 318). We agree. Our cross-sectional data provides insights into firm behaviour at certain time periods, but a useful extension would be to use longitudinal data to better control for firm performance and the dynamic relationships between funding and growth. This would help address concerns about the endogenous relationship between finance and growth outcomes. Relatedly, this will also help shed further light on the relevance (or otherwise) of existing theoretical constructs for explaining the financial behaviour within these dynamic businesses.

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Tables

Table 1. The sample: High growth firms by year

		2007/8	2010	2012	Total
Non-high growth	%	94.6	96.4	95.5	95.3
	Number	3,806	2,052	2,477	8,335
High growth	%	5.4	3.6	4.5	4.7
	Number	254	93	148	495
Total	%	100	100	100	100
	Number	4,060	2,145	2,625	8,830

Source: Small Business Survey, 2007/8, 2010; 2012. Notes: Percentages weighted to ensure they are representative of SMEs. Number of firms unweighted..

Table 2. Applications for finance and reported difficulties

	Percentage of firms which		
	Applied for external finance	Of those who applied:	
		Had trouble obtaining finance from first source	Did not get any finance from any source
Non-HGF	32.82	34.22	15.81
HGF	43.68	31.65	13.29
Overall	33.33	34.06	15.66
P-value	0.000	0.537	0.405

Sample: 8830, 3051 of whom applied for finance. Source: Small Business Survey, 2007/8, 2010; 2012. Weights applied.

Table 3. External and internal sources of finance

Do you expect to fund your business growth using internal finances or from external sources?			
Source of finance	Not high growth	High growth firm	Total
Percentage of firms which <i>apply</i> :			
Internal finance	61.4	50.7	60.7
External finance	15.2	14.9	15.2
Both	23.5	34.4	24.1
Percentage of <i>all</i> firms:			
Internal finance	11.3	13.6	11.4
External finance	7.4	12.1	12.1
Both	10.5	20.5	11.0

Source: Small Business Survey, 2007/8 and 2010. Sample: 4,860 firms from 2007/8 and 2010 surveys – all of which aim to grow. Weights applied. Percentages may not total to 100 due to rounding.

Table 4. Reasons for applications for finance

Reason for applying for finance (percentage of firms which apply)						
	Working capital	Buying or improving buildings	Acquiring capital equipment or vehicles	Research and development	Buying another business	To fund expansion
Other firms	47.2	18.5	26.4	3.4	1.6	3.3
High growth	35.7	18.9	25.8	3.8	6.6	8.8
Total	46.5	18.5	26.3	3.4	1.9	3.6
P-value	0.007	0.905	0.881	0.761	0.000	0.003

Source: Small Business Survey, 2007/8, 2010 and 2012. Sample: 3,152 firms – all of whom apply for finance. Weights applied.

Table 5. Type of finance sought

What type of finance did you seek? (of those that applied):							
	Bank loan	Bank overdraft	Venture capital	Grant	Leasing / hire purchase	Loan from family / directors	Mortgage
Not high growth	39.0	26.8	1.0	8.1	12.9	2.1	5.8
High growth	48.6	18.4	4.8	5.9	12.5	2.2	5.7
Total	39.6	26.3	1.2	8.0	12.9	2.1	5.8
P-value	0.025	0.020	0.001	0.238	0.868	0.945	0.943

Source: Small Business Survey, 2007/8, 2010 and 2012. Sample: 3,232 firms who applied for finance, of which 230 were high growth. Weights applied.

Table 6. Variables and definitions

Variable	Definition
Year: 2010	Firm sampled in the Small Business Survey, 2010
Year: 2012	Firm sampled in the Small Business Survey, 2012 (reference category = Annual Small Business Survey 2007/8)
Size: 100 +	Firm has 100 or more employees
Size: 50 - 99	Firm has 50 – 99 employees (reference category < 50 employees)
Female led	Firm is majority female led
Ethnic led	Firm is majority ethnic led
Qualified owner	Owner is qualified to degree level or above
Multiple directors	Firm has multiple directors
Aims to grow	Aims to grow
Age: 10 +	Age: 10 +
Age: 5 – 9	Age: 5 – 9 (reference category < 5 years)
Partnership	Firm is a partnership
Limited Company	Firm is a limited company

Table 7. Probit model: High growth firms and difficulty accessing finance

	(1)	(2)	(3)	(4)	(5)
Estimation method	Probit			Probit with heckman selection	
Dependent variable:	Firm applied for finance	Firm applied and had difficulty obtaining from first source	Firm obtained nothing from any source	Firm applied and had difficulty obtaining from first source	Firm obtained nothing from any source
High growth firm	0.0903*** (0.0302)	0.0251 (0.0205)	0.00277 (0.0114)	-0.0595 (0.0415)	-0.0425 (0.0544)
Year: 2010	0.0196 (0.0213)	0.0826*** (0.0174)	0.0271*** (0.0101)	0.141*** (0.0486)	0.0970** (0.0467)
Year: 2012	-0.0249 (0.0191)	0.0308** (0.0143)	0.0121 (0.00945)	0.113*** (0.0333)	0.0814* (0.0476)
Size: 100 +	0.0518** (0.0221)	-0.0234* (0.0123)	-0.0228*** (0.00640)	-0.128*** (0.0375)	-0.124 (0.0753)
Size: 50 - 99	0.0611*** (0.0190)	-0.000892 (0.0116)	0.00123 (0.00799)	-0.0786*** (0.0276)	-0.0335 (0.0386)
Female led	-0.0214 (0.0257)	0.0134 (0.0189)	0.000990 (0.0104)	0.0582 (0.0368)	0.00839 (0.0438)
Ethnic led	-0.000226 (0.0365)	0.0395 (0.0287)	0.0234 (0.0210)	0.107* (0.0569)	0.120 (0.0789)
Qualified owner	0.0362* (0.0190)	0.0229* (0.0122)	0.0114 (0.00704)	0.00615 (0.0307)	0.0267 (0.0301)
Multiple directors	0.00578* (0.00302)	0.00241 (0.00189)	0.00146 (0.00109)	-0.00125 (0.00417)	0.00187 (0.00413)

Aims to grow	0.0736*** (0.0201)	0.0275** (0.0128)	0.0172** (0.00700)	-0.0312 (0.0356)	0.0219 (0.0380)
Age: 10 +	0.0205 (0.0173)	-0.0142 (0.0107)	-0.00853 (0.00668)	-0.0645** (0.0281)	-0.0542 (0.0369)
Age: 5 - 9	-0.00240 (0.0426)	-0.0216 (0.0264)	-0.00671 (0.0156)	-0.0675 (0.0581)	-0.0352 (0.0667)
Constant	0.0182 (0.0463)	-0.0128 (0.0354)	0.00679 (0.0165)	-0.0474 (0.0665)	0.0230 (0.0686)
Sector dummies	Yes	Yes	Yes	Yes	Yes
Observations	8,186	8,078	8,117	8,072	8,030
Pseudo R ²	0.0200	0.0417	0.0479		
LR Test				5.27	0.33
P-value				0.0217	0.5684
Log-likelihood				-690.6281	-631.9703

Source: Small Business Survey, 2007/8, 2010 and 2012. Marginal effects presented. Robust standard errors in parenthesis. *** p<0.01; ** p<0.05; * p<0.1. All models also include 16 sector dummies. Where sample sizes vary this is because the dependent variable is perfectly predicted by independent variables. Regressions 1 – 3 are estimated as probit regressions. Regressions 4 and 5 are probit regressions with Heckman correction. The selection variable is legal status.



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