Essays on Entrepreneurial Finance: Small firms and their banks

Anoosheh Rostamkalaei

B.Eng, M.Sc

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Department of Entrepreneurship, Strategy, and Innovation

Lancaster University

Declaration

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree. I certify that any help received in preparing this thesis and all sources used have been acknowledged.

Anoosheh Rostamkalaei

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Abstract

This thesis is a collection of four empirical essays. The essays are linked by their concern with a particular topic in the financing of smaller businesses – viz. small firms and their banks. The first essay discusses the pricing of the bank loan for growing SMEs. The second essay examines the role of financial advice to small firms in alleviating credit constraints. The third essay explores patterns of SMEs' discouragement towards borrowing in the aftermath of the 2008 financial crisis. The final empirical essay introduces a novel concept ("informal turndown") designed to further illuminate contemporary discussions of discouraged borrowing amongst SMEs and empirically compares the profile of firms who discouragement stems from informal talks with their banks with those that feared rejection. These empirical essays draw on two UK datasets: UK survey of SME Finance (2007) and UK SME Finance Monitor (2011-2016).

Acknowledgement

I dedicate this thesis to my wonderful partner in life, Pedram. Without his kindness, support, and encouragement, this Ph.D. journey would have been impossible. Thank you! I would like to extend my dedication to my baby girl, Aphra, hoping one day she reads these lines and smiles.

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Finally, I would like to acknowledge my parents and my mother in law for their love and helping me to take care of Aphra, my friends in Ottawa for their cheerfulness, and my family and friends in Tehran and all around the world for their love. Cheers to you all!

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Essays on Entrepreneurial Finance: Small firms and their banks

Introduction

In an efficient capital market, when both demand and supply sides are well informed and with the help of price adjustment mechanisms, good projects are funded and adverse selection doesn't exist (Parker, 2002; Stiglitz and Weiss, 1981; Storey, 2003). Rarely, though, do these conditions prevail, especially for smaller firms. For financial institutions, financing SMEs entails more risk and greater costs compared to financing large firms. SMEs higher rate of failure (Bates and Nucci, 1989), lack of credit history, lack of audited financial statement (Binks and Ennew, 1997), and proportionately high costs of due diligence (Riding et al., 2012b) all serve to undermine 'informedness' and introduce the prospect of adverse selection. Higher information asymmetry may lead to credit rationing or to the over-supply of credit (de Meza, 2002; Stiglitz and Weiss, 1981). If some good projects are not funded because lenders fail to establish a price that justifies the estimated (perceived and actual) risk, credit-rationing occurs and there is a "funding gap" (Cressy, 2002; Parker, 2002).

Growing small firms require financial capital to invest in working and human capital and explore new opportunities (Beck and Demirguc-Kunt, 2006; Wiklund and Shepherd, 2003). When access to external sources of capital is restricted, entrepreneurs are constrained to rely on internal sources that, in turn, may retard the rate of the growth (Casson, 2003; Rahaman, 2011). The importance of access to bank facilities in the development of small firms lies at the significance of debt as the most used external source of financing (Robb and Robinson, 2014). Entrepreneurs, after exhausting internal sources, would prefer debt

over equity financing (Myers and Majluf, 1984) to retain control and ownership over their firms and enjoy lower costs of due diligence (Berger and Udell, 2003).

Financial institutions employ different verification techniques and design detailed contract to ease SMEs' access to debt financing (Berger and Udell, 2006, 2003). Banks gather hard and soft information on their customers based on their financial statements, years of personal relationships, and credit risk ratings acquired from third parties. If they decide to lend to a customer, contracts are tailored according to the level of perceived riskiness by asking for collateral and personal guarantees, designing covenants, varying maturity terms, or offering menu pricing - or a combination of these(Berger and Udell, 2006, 2003; Besanko and Thakor, 1987). Given the use of these varied techniques and contracts, empirical studies (largely in the UK and the US) typically find limited evidence of credit rationing in general and over the long term (Vos et al., 2007). However, some (sometimes perceived) financial constraints have been identified among specific groups of SMEs, such as innovative firms (Colombo and Grilli, 2007; Freel, 2007; Lee, 2014; Riding et al., 2012a), and ethnic minorities (Mitchell and Pearce, 2011; Park and Coleman, 2009). These studies investigate, *inter alia*, the effects of banking structure, firm demographics, and the entrepreneurs' characteristics on the SME's access to the banks.

Beyond simple "access" issues, there are other facets of the SME-bank relationship that bear upon the nature and quality of access *per se*. These include such items as the terms and conditions of loans (Drakos, 2013; Grunert and Norden, 2012), the benefits of soft and hard supports in mitigating credit constraint for SMEs (Riding and Haines Jr., 2001; Wren and Storey, 2002), and the cost of capital (Dietrich, 2012; Howorth and Moro, 2012; Nitani and Riding, 2013; Vander Bauwhede et al., 2015). Moreover, illuminating "how" small

firms obtain bank loans is important in understanding the credit constraints faced or reported by entrepreneurs. Two essays in this thesis fall into this stream of research by investigating 1) the relationship between firms' growth and the price of bank loans, and 2) the effect of financial advice on entrepreneurs' access to bank facilities.

However, an important element of the SME-bank credit landscape is not captured by most studies of access to external financing – viz. discouraged borrowers. Kon and Storey's (2003) theoretical model of discouraged borrowers opened a relatively new stream of research (Chakravarty and Xiang, 2013; Chandler, 2010; Cowling et al., 2016; Ferrando and Mulier, 2015; Freel et al., 2012; Xiang et al., 2015) by including those who need credit but 'fear of rejection' stops them from acting upon their need (Kon and Storey, 2003). Although discouragement does not connote credit rationing when a potential "good" applicant refrains from submitting a formal application, the implications are the same: a good project is not funded. Two essays in this thesis fall into this stream of research by investigating: 1) trends in SME discouragement in the UK in the aftermath of a credit shock of 2008, and 2) the means of discouragement by examining the role of banks in discouraging potential borrowers. These essays aim to add to our knowledge of credit constraints from the demand perspective.

The remainder of this chapter provides a brief description of each of the essays that comprise the thesis, a short description of the data used and methodologies employed (with reflection upon the methodological choices made and the compromises that these entailed, and statements of the authorship and consolidated bibliography.

Summary of essays

The cost of growth: small firms and the pricing of bank loans

Rostamkalaei, A. and Freel, M., 2016. The cost of growth: small firms and the pricing of bank loans. Small Business Economics, 46(2), pp.255-272.

Presented at the International Council for Small Business Conference(ICSB), Dublin, June 2014

This essay employs the 2007 UK survey of SME Finance (Cosh et al., 2008) to examine the relationship between growth and the price of the loan. Growing firms are more likely to have constrained access to bank finance (Freel, 2007; Riding et al., 2012a), but the majority, despite their riskiness, have their loan applications approved when they ask for credit (Vos et al., 2007). One of the barriers to the growth, it is argued, might be the price they pay to have their requests approved. The essay hypothesizes that growing firms (measured by both past growth and growth intention) are more likely to pay more for external finance. Moreover, the essay anticipates that the riskiness of the growth mode is also reflected in the price. After controlling for sample selection bias with Heckman's (1979) two-stage, the results show that firms that experienced growth in the past three years and those who experienced growth and still plan to grow substantially in the future are more likely to contract at a higher interest rate on their bank loans. Although firms that intend to grow are not more likely to pay a higher price, firms that intend to grow by introducing a new product to the market face higher probability of more expensive debt. While the banks are not risk-funders, growing firms mainly finance their activities through the banks. Their riskiness is translated into higher risk premium paid to banks.

The manuscript was submitted to *Small Business Economics* and received two rounds of revisions prior to its acceptance.

Business advice and lending in small firms

Rostamkalaei, A. and Freel, M., 2017. Business advice and lending in small firms. Environment and Planning C: Politics and Space, 35(3), pp. 537-555.

Presented at the Institute for Small Business and Entrepreneurship Conference(ISBE), Glasgow, November2015

Drawing upon data from the UK SME Finance Monitor(2011-2014), this essay focuses on the role of business advisors in preparing entrepreneurs for making financial decisions. This work argues that an important step towards a successful request of external finance is the entrepreneur's knowledge in realizing the appropriate time and the process of making a formal application. It speculates that entrepreneur's characteristics and credit need affect the likelihood of seeking for advice and using advice. The essay reasons that some entrepreneurs are more diligent in realizing the incrementality of business advice and ask for finance specific support when they decide to apply for finance. Also entrepreneurs with high risk businesses are more likely to search for additional information and financial advice. The second part of the essay argues that advice-seeker entrepreneurs are more likely to analyze and consider (or discard) the advice appropriately. Accordingly, they face a higher probability of successful bank application. Financial specific advice reduces the risk of adverse outcomes for credit applications.

The analyses show that more diligent entrepreneurs are more likely to seek advice prior formal application; however, their chance of successful application does not change by

advice-seeking. Moreover, innovative firms are more likely to seek finance related advice for a loan application. Advice offered in their case increases the likelihood of an approved application. The findings show that there is a merit in attending to demand-side intervention by promoting business support services to help SMEs with ameliorating subjective riskiness and reducing information asymmetry.

The manuscript was submitted to *Environment and Planning C: Politics and Space* and was accepted for publication after one round of revision.

Discouraged borrowers aftermath of financial crisis: a UK study

Rostamkalaei, A., 2017. Discouraged borrowers aftermath of financial crisis: a UK study. Journal of Small Business and Enterprise Development, 24(2), pp.394-410.

This essay looks at the pattern of discouraged borrowers among UK small businesses aftermath of the 2008 financial crisis. Previous studies show that the rate of discouragement in the UK market increased after 2008 with a lag from the onset of the crisis (Cowling et al., 2016). This essay argues that the effect of the credit squeeze and the boost in loan application turndown had a prolonged effect among entrepreneurs. To test this effect, data from UK SME Finance Monitor (2011-2016) was used. Two datasets were combined and the sample weights were adjusted. The analyses show that while the rate of loan application turndown is not significantly different in the years following the crisis, a significant decrease in the rate of discouragement starts in 2013 (comparing to 2010). It seems it takes time for entrepreneurs to adjust their subjective fear of rejection. Given that discouraged borrowers in this sample have a mixed set of high and low-risk profiles, some entrepreneurs

self-ration themselves adversely. This essay tries to shed light on the hidden demand for credit and review one of the aspects of the prolonged effect of a financial crisis on SMEs.

The manuscript was initially submitted to *Internal Small Business Journal* and had been rejected after one round of review. After some modifications, the manuscript was submitted *to Journal of Small Business and Enterprise Development* and was accepted after one round of review.

Borrower Discouragement: The role of Informal Turndowns

Rostamkalaei, A. Riding, A. and Nitani, M. 2017. Borrower Discouragement: The role of Informal Turndowns. Working paper.

Presented at the 2nd Entrepreneurial Finance Conference, Ghent, July 2017

The essay taps into the notion of "Informal Turndown" by Wynant and Hatch (1991): Banks' mechanism of deterring a potential borrower from credit market by a verbal rejection during an informal inquiry about credit availability. Informal turndowns could lead to discouragement. However, the fear of rejection, in this case, is accurate. There are a variety of reasons that may deter an entrepreneur from approaching credit market (Chandler, 2010), yet, our knowledge of the mechanism through which an entrepreneur is informed about the likelihood of a rejection is low. This essay tries to fill this gap.

For many firms, the lending process starts with an informal inquiry about the availability of the credit and then follows through a formal application. With entrepreneurs seeking to finance growth and survival of their firms and avoid potential rejection, and with lenders under pressure to maximize profits, it therefore makes sense that informal discussions

would be employed to reduce information asymmetry on both sides of the transaction. The paper seeks to understand the means of discouragement and to do so, the main focus is on the informal turndown and discouragement due to subjective fear of rejection. It is expected that comparing to non-applicants who fear rejection, business owners who experienced informal turndown would be larger and older firms and have better relationship with their banks. The owners of smaller and younger firms, or those who do not have a good relationship with their banks, are more likely to ponder over their application based on their own judgement and fear of rejection. In addition, entrepreneurs who seek for finance rigorously are more likely to initiate an informal inquiry and then deter their applications.

Drawing upon data from UK SME Finance Monitor (2011-2015), the analyses find that more established firms are more likely to refer to their banks and defer formal applications following an informal turndown rather than to be discouraged by their own judgement. We explain this effect through the length of banking relationship. Unexpectedly, firms who have a satisfying relationship with their banks are more likely to be discouraged by their own fear rather than being told by their banks. It is possible that entrepreneurs with satisfactory relationship with their banks, see themselves in a better position to judge their credit worthiness and the credit availability at their banks and do not initiate an informal process. Also, entrepreneurs who need credit to a greater extent are more likely to seek their banks' opinions and then defer their applications.

The main limitation of this research is that the data do not reveal which applicants applied for a bank loan as a result of an informal talk with bank. Nor do we know the outcomes of those applications. Therefore, the analysis is constrained to compare the various types of discouraged borrowers.

This essay is currently not published.

Surveys

This thesis employs two similar surveys on UK small business financing practices. These two surveys (UK SME Finance Monitor (2011-2016) and UK Survey of SME finance (2007)) are parts of similar questionnaires surveyed over the years from 2004 by different survey conductors (BDRC Continental, 2017; Cosh et al., 2008; Fraser, 2013, 2009, 2006). Datasets are deposited in and accessible via https://discover.ukdataservice.ac.uk/. The UK SME Finance Monitor is still an ongoing project and I have tried to use the most recent version when working on each project. Ideally, I would like to use UK SME Finance Monitor (2011-2016) for all the analyses, however, the omission of some questions (such as interest rate) necessitated using the earlier survey.

UK SME Finance Monitor (2011-2016):

This survey is being conducted quarterly by BDRC Continental. The survey combined the first and second quarter of 2011 with 5000 observations and after that, around 5000 observations are added quarterly.

The initial sample is provided by Experian and Dun & Bradstreet. All waves are conducted with the same quota profile. Sampling quotas were first assigned by the size of the business (measured by the number of employees except for the owner) and then sector and regions within each size group. This structure is used to calculate sample weights. Then a 20% share for start-ups is considered to adjust the sample weights.

The highlights of each quarter and the annual reports, as well as special reports, are publicly published by survey conductor at http://bdrc-continental.com/products/sme-finance-monitor/

The survey, initiated in 2010 by Business Finance Taskforce and British Bankers' Association, set up phone interviews with small business owners or managers to understand their perceptions of finance and business environment. Most of the questions are about the SMEs' experiences with using bank facilities especially bank loan and overdraft.

The first section of the survey checks the eligibility of the business to make sure it meets the selection criteria: having less than 250 employees, annual turnover less than £25 m., non- governmental, not a social enterprise, a for-profit organization, not owned by another company (more than 50% of share). The respondents of the survey are people responsible for the financial decision making (mainly owners or managers). Demographic information of the firm such as sector and legal status are double-checked in this section.

The second section of the questionnaire identifies which firm, in the past 12 months of the survey, was using, applied for, or have changed the status of the bank facilities. Depending on the answers, the respondents were asked questions about: the status of their facilities, the outcome of their applications, the issues with their banks throughout the process, advice sought before making applications, and decisions made after being notified about the results of applications. Initial questionnaires had data on the price of bank facilities which were dropped in the later waves. The survey asks from non-applicants whether they needed credit during the past 12 months and if they confirmed that they needed credit, it furthers the question by inquiring about the reasons why the firm did not apply for credit.

The next section asked how the respondents evaluate their relationships with their banks, choosing from a 5-item Likert scale from very satisfied to not at all satisfied. The data does not capture the length of the relationship with the main bank; a variable that is usually used to control for the effect of relational lending. To alleviate this problem, some other variables are added to the models hoping that it partially captures the effect of relational lending such as the level of satisfaction, use of other sources of finance with the bank, working with the main bank, and experience with bank application in the past. The survey also asks whether the respondents are considering a new source of external financing in near future, what source and for what purpose. There are short questions that measure the owner's knowledge of other sources of financing such as venture capitalists and business support services.

The last section has questions about the firm's' growth history and growth intention, profitability and the sale in the past 12 months. It also collects information about the owner or principal owner in case of partnerships: gender, age, the level of education. Ethnicity is captured in the data but due to a high rate of missing values are not considered in the analyses.

Sample providers inserted data on credit risk rating. The classification of the risk rating is different between Experian and Dun & Bradstreet. The classification of the risk rating is more elaborated in Experian than that of Dun & Bradstreet. Therefore, the Experian scale has been matched with Dun & Bradstreet (BDRC Continental, 2015a). Overall, 15% of the observations, mainly smaller firms, do not have risk ratings, therefore, the analyses are presented with and without the risk rating for comparison.

UK Survey of SME Finance (2007)

This survey stands with two similar surveys conducted in 2004 and 2008. The 2007 survey, with 2514 observations, consists of information on UK private SMEs with less than 250 employees (Cosh et al 2008). All selection criteria are similar to those of UK SME Finance Monitor (2011-2016). The data was collected by Continental Research with telephone interviews. The sample was provided by Dun & Bradstreet. Additional data on start-ups was acquired from Experian. The response rate is 10%. Unweighted results are biased towards larger firms. Unlike the UK SME Finance Monitor, this survey captures the interest rate paid on the most current loan. Also, the length of the relationship with the main bank is measured with a categorical variable.

Methods

The details of the methodology, techniques, and definitions are explained in the essays. However, some extra explanations which are not reflected elsewhere are discussed below.

Definitions:

The definitions of some variables are slightly different from the survey conductors. For example, BDRC Continental (2015) defines the discouragement as a situation when a SME does not "apply to borrow because it had been put off directly […] or indirectly…"(pp. 22). However, in the essays presented in this thesis, discouragement is considered when an entrepreneur does not apply for a loan, despite the need, mainly because of a subjective fear of rejection. This is a narrower definition. In addition, discouragement because of the costs of borrowing is considered in alternative definitions for robustness checks. These definitions are still different from Kon and Storey's (2003) definition of discouraged

borrowers because I am unable to use quality of the non-applicants. However, it is consistent with previous studies of discouraged borrowers.

Some definitions in the available dataset were not flexible. For example, both datasets did not report the precise values of interest rate, sales, the length of banking relationship, or the size of the loans. Instead, only categorical values are available to the public. This affected the definition of the variables. All the variables are either binary or categorical. To have balanced number of observations in each item of categorical variables, some items are combined. For example, the survey differentiates between firms with between 50 to 100 and 100 to 249 employees. However, to have a balanced set of observations across each category, the last two categories are combined to have firms with more than 50 employees.

The location of the firms is captured with 12 regions of Nomenclature of Territorial Units for Statistics (NUTS1). A firm's location is controlled in all the models to capture the potential effect of business and banking environments. However, since the focus of the analyses were not on difference across different locations, NUTS1 had not been fully used in the models. Instead, a categorical variable is used to measure whether a firm is in London, South East, or the rest of the UK. The justification for such a change is that London and South East of the UK have the highest figures in Gross Value added and Gross Domestic Product in the UK (Harari, 2016).

Techniques:

Weighted analysis:

Both surveys used in this thesis are stratified into size (number of employees), sector, and location. After conducting the interviews and considering the non-respondents, it became

apparent that larger firms are overrepresented in the sample. Survey conductors calculated the sample weights. The analyses use weighted methods in three out of four empirical essays. In the first essay, the over-representation had been addressed as a limitation of the study. (After the paper had been published, I attempted to replicate the analysis employing sample weights. The results are substantially the same.)

For the two essays that used more than 10 waves of the surveys in the analyses, it was necessary to adjust the sample weights after combining unique waves. The first way to do this was to assume the quota of SMEs within sector, size, and regions stay the same over the years. This assumption seems reasonable because similar figures are reported by the survey conductor over the years. Then, it is assumed that the risk of cross-sampling is low. Even if a firm is presented in two waves (the possibility of having such an issue is not reported by survey conductors), it is treated like a new firm. Therefore, a weight is an attribute of each firm to show how many firms it represents and it does not change over time. Weights were changed by multiplying in the ratio of 4.5 million businesses divided by Estimated population in appended data. Descriptive statistics show that firms' demographic information is close enough to population estimates after this adjustment. However, for robustness check, I have used the *ipfweight* (add-on) procedure in Stata to replicate the weight calculations on the appended dataset and compared the results with the descriptive statistics.

The released data only contains information on firms that completed the survey, it was not possible to test for non-respondent bias. It is hoped that by implementing weight this potential problem is alleviated.

Missing values

The share of missing values for some of the variables is high. For example, in both surveys the ethnicity is measured; however, there are a lot of missing values (Ethnicity is added in later waves in UK SME Finance Monitor). Although including ethnicity might have given interesting information about the situation of SMEs in the borrowing market, the results could have been biased towards specific groups. In a situation like this, such variables are not included.

About 15% of the credit risk rating is missing from the datasets. The analyses are presented with and without risk ratings. It had been speculated that credit risk rating, obtained from third parties, could reveal important information about the creditworthiness of clients - Both to banks and entrepreneurs themselves. Therefore, I decided to present the results with and without the inclusion of risk rating. Another way to address the problem of missing values is imputing. However, missing values were not missing-at-random (Schafer and Graham, 2002). Most firms without credit risk rating are smaller and new firms (BDRC Continental, 2015a). In addition, the details of the calculation of credit risk rating were not known to us; therefore, imputation method could not be implemented.

Non- experimental data

Data employed in this thesis is non-experimental; therefore, it is necessary to deal with the complications of not randomized data (Blundell and Costa Dias, 2000). For example, in evaluating the effect of advice in easing credit constraints, ideally and in a pure random experiment, advice should be offered randomly to SMEs. Moreover, we deal with occasional missing data. For example, we don't know which non-applicants would obtain credit should they applied for it. There are different methods for addressing the problems

raised by the non-random assignment of the intervention or missing variable. Some of them had been tried in the essays of this thesis, however, not being used or reported.

One of the methods that have been tried was Heckman's (1979) two-stage model for correcting selection bias on the dependent variable. In investigating the effect of advice, one cannot know whether a non-applicant would seek for advice should they needed credit. Or, in the studies of discouragement, one cannot know whether a non-applicant would be an applicant or a discouraged borrower if they needed credit. The samples in both cases are selected among those who needed credit and did not consider those who did not need credit. This may cause sample selection bias. To alleviate the problem, it has been tried to model credit neediness as a function of firms' characteristics and growth intention. Then, Inverse Mill's Ratio (IMR) was calculated and implemented in the second stage model. Growth intention was used as exclusion criteria. However, in three studies, IMR was not significant. There were no other variables that seemed appropriate to explain the credit neediness, but not the equations of interest. In the absence of such variable and of a reason for believing that there is not sample selection bias, the problem has been acknowledged as a research limitation.

Another technique for reducing bias in the sample that had been tried is matching methods (Stuart 2010). The aim of using matching methods (Propensity Score Matching in this thesis) was to reduce the bias and create a balanced sample with similar distributions over observable covariates. For example, if one considers advice as a treatment, the initial idea was to have observations which are observationally similar over a set of covariates with only difference is the receiving advice. The aim was to run the regression models on the balanced sample to find out whether advice is associated with successful application. For

several reasons, this method was not finally used. First of all, the covariates used for matching did not seem to help with selection bias problem. Yet, the balanced sample used in the analyses was concerned with the firms who applied for credit. Second, it does not seem to add anything to the model. With all categorical and dummy variables as matching covariates, most observation were matched and a limited number of observations left out. Therefore, the regression results were not substantially different. Notwithstanding low efficiency in using matching technique, the assumption of ignorable treatment assignment seems violated: treatment is independent of the potential outcome (Rosenbaum and Robin) (for example, advice and successful application). For these reasons, matching technique have only been tried but not finally used.

Software:

For all the analyses, Stata 11 and 13 have been used.

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Statement of Authorship

24 July 2017

Statement of Authorship

To whom it may concern:

Ms. Rostamkalaei and I co-authored two published papers - (Rostamkalaei and Freel 2016, 2017). In detail these were:

Rostamkalaei, Anoosheh, and Freel, Mark. 2016. "The Cost of Growth: Small Firms and the Pricing of Bank Loans." *Small Business Economics* 46 (2): 255–272.

———. 2017. "Business Advice and Lending in Small Firms." *Environment and Planning C: Politics and Space* 35 (3): 537–555.

This note is intended to outline the contribution Ms. Rostamkalaei made to both papers. In both cases, Ms. Rostamkalaei led the drafting of the paper and undertook the econometric work involved.

I am happy to provide further clarification as required.

Sincerely

(Prof.) Mark Freel
Lancaster University Management School and Telfer School of Management, University of Ottawa
freel@lancaster.ac.uk; freel@telfer.uottawa.ca

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Essay 1- The cost of growth: Small firms and the pricing of bank loans

Abstract

Drawing upon data from the 2007 UK Survey of SME Finance, the current analysis is concerned with the extent to which growth firms are discriminated on price in loan markets. Or, more simply, the extent to which growth firms pay more for credit. Given relatively small turndown rates historically, higher credit prices may be a more substantial growth constraint than the access to finance issues that have dominated the academic literature to date. To this end, we observe, *inter alia*, that firms who have recorded recent high growth are more likely to pay higher interest rates for the loan they obtained. Moreover, small sized firms who intend to grow through the introduction of new products exhibit a higher probability of paying more for credit than their peers. Finally, acknowledging that banks are not risk funders, we discuss the potential policy implications of these findings.

1.1. Introduction

It has long been recognised that a small group of high growth firms create the bulk of the net new jobs in an economy. These are Storey's (1998) "ten percenters" or Birch's (1990) "gazelles". Unsurprisingly, these firms have been the focus of considerable academic research (Henrekson and Johansson 2010) and policy attention (Hoffman 2007). Indeed, informed recent debate has focused on the merits of further shifting the emphasis of entrepreneurship policy away from the creation of new ventures to the support of high growth firms (cf. Shane 2009; Mason and Brown 2011). This view is consistent with recent evidence that suggests that the presence of "ambitious entrepreneurship" is a stronger predictor of macro-economic growth than entrepreneurial activity in general (Stam et al. 2007). In this light, identifying and supporting growth firms are key priorities.

Much of the extant academic research has been concerned with the characteristics of growing firms (Barringer, Jones, and Neubaum 2005; Baum, Locke, and Smith 2001) or with the (often institutional) determinants of growth (Davidsson and Henrekson 2002; Barkham, Gudgin, and Hart 2012). Less attention has been paid to the issue of barriers to growth; that is, to the obstacles faced by firms as they expand rapidly (Lee 2013). However, an important subset of barriers that has received attention relates to finance (Becchetti and Trovato 2002; Beck, Demirgüç-Kunt, and Maksimovic 2005; Beck and Demirguc-Kunt 2006). In general, this line of research has explored the extent to which limits to access to various forms of external finance constrains the growth of smaller firms. A prominent finding in this literature is that growth firms are likely to be less successful loan applicants (e.g. Freel 2007). Failure, from this perspective, is typically defined in terms of simple loan

turndowns or loan scaling; such that growth firms are more likely to either receive no loan or a smaller amount than applied for. These firms are credit rationed: that is, assuming that these growth firms are otherwise observationally indistinct from successful applicants, banks are rationing credit on some basis other than price.

However, whilst growth firms may disproportionately face turndowns or loan scaling, it still remains that the majority receive the loans they apply for (Vos et al. 2007). In these cases, it is the terms of the loans which are of interest. In particular, if growing firms are shown to pay systematically higher prices for debt, then this may be of greater concern than the smaller numbers who are credit rationed. Whilst higher price may reflect higher risk, higher loan prices may also hinder firm development, as the resources required to invest in growth are diverted to the loan provider. This question is the focus of the current study. Drawing on data from the 2007 UK Survey of SME Finance (Cosh et al. 2008), we model the price firms paid for variable rate loans. Our models contain information both on past growth and future growth intentions; including the proposed growth strategies. We find evidence that both past growth and future growth intention, conditional on strategy, associate with higher loan prices.

The manuscript is structured as follows: Section 2 briefly reviews the literature on bank financing of small firms, with particular emphasis on growth firms, and develops three hypotheses that link loan pricing and firm growth. Section 3 describes our data. Section 4 elaborates on our models and modelling choices. Section 5, presents our empirical results. And section 6 offers concluding remarks, drawing out initial implications for entrepreneurs and policymakers.

1.2. Literature review

In accessing bank finance, compared to large and established companies, small firms are disadvantaged by their information opacity, the relative scarcity of collateralizable assets, and disproportionately high monitoring costs (Beck and Demirguc-Kunt 2006; Berger and Udell 1998). For start-ups, lack of credit history and high rates of failure also contribute to their unfavourable situations. In consequence, the small firm sector has long been thought to be subject to credit rationing (Parker 2002; Stiglitz and Weiss 1981; Vos et al. 2007, among many): a situation in which some borrowers are denied credit or receive a lower amount of credit than they applied for. An important condition holds that these firms are, in all other respects, indistinguishable from those who have received (full) credit (Parker 2002). In such a situation, a firm is known as credit rationed. It does not receive the money it requested despite being willing to pay a higher interest rate (de Meza 2002). In short, banks are seen to ration credit on some basis other than price.

In practice, credit institutions use a variety of techniques to distinguish between good and bad borrowers; employing different contract terms such as higher pricing, collateralisation and sub-optimal loan sizes (Parker 2002). If banks were to use similar contract terms, employing a pooled interest rate for all types of borrowers, good borrowers will likely either exit the loan market (Parker 2002; Stiglitz and Weiss 1981) or subsidize lower quality borrowers (de Meza 2002). Using different contract terms is a means to reveal the types of borrowers (Parker 2002) and to recognise varying risks of default. For example, collateral is perceived as a sign of entrepreneurs' commitment and confidence in their success. The willingness to secure a loan with collateral, frequently through personal asset, acts as a

positive signal to banks about the qualities of the entrepreneur as a good borrower (Berger and Udell 1998; Binks and Ennew 1996). In the presence of such instruments, and accounting for borrower heterogeneity, there is limited evidence of broad-based credit rationing in the small firms' literature (Freel 2007). However, the absence of credit rationing does not necessarily entail the absence of discrimination. Indeed, given differing risk profiles attendant upon varying firm characteristics and strategies, banks must inevitably discriminate one firm from another in the terms of contracts they offer for credit. In this case, banks seek to ration credit on the basis of price and price-related characteristics.

Firm strategy and performance are principal sources of borrower heterogeneity that may bear upon risk. As noted above, only a small proportion of small firms make much of a contribution to net job creation, innovation, or increased productivity (Shane 2009; Organisation for Economic Co-operation and Development 2013, 60). Due to their importance, small growing firms have been the subject of numerous studies aiming to describe the growth cycle and to identify the factors supporting or impeding growth (Dobbs and Hamilton 2007). Financial structure and access to finance at the time of growth are common themes in these studies. Of course, access to finance does not directly cause growth; but credit constraints may affect growth by suppressing it (Binks and Ennew 1996; Vickery 2008), or forcing managers to rely on internal funds as a source of growth investment (Rahaman 2011). Internal sources of financing, often personal wealth or retained earnings, are typically the first option of an entrepreneur (Vos et al. 2007; Berger and Udell 1998). However, internal sources are likely to be limited and this limitation may act to constrain the growth of the firm (Beck and Demirguc-Kunt 2006). Indeed, Rahaman (2011) shows that as external financial constraints lessen, firms switch from internal to

external funds as a means to finance growth. Moreover, this patterns of transition from internal to external funding is most pronounced in small unquoted companies (Rahaman 2011). These firms are more likely to be financially constrained and to face information problems. However, there is likely to be an important complementarity between internal and external finance: "Access to internal sources of finance may play the twin roles of proxying for internal financial capacity as well as providing a signal about the quality of future growth opportunities. Such signals, in turn, reduce the external financial constraint" (Rahaman, 2011, p. 723). In short, small growing firms are eventually likely to view external sources of finance as a complement to internal sources and to increasingly use external sources to fund growth. Crucially, of these external sources, banks are consistently identified as the primary provider of external funds for small firms (Robb and Robinson 2014).

In this vein, for instance, Beck et al (2005), based on data from a firm level survey conducted by the World Bank, find that financial obstacles are perceived as the most important barriers to growth. The identified barriers largely revolve around bank finance and include: the provision of collateral; the bureaucratic procedures of banks; the social networks of borrowing; and, the price of finance. In other studies, perceived financing constraints are also shown to have a positive association with growth intention (Binks and Ennew 1996; Nitani and Riding 2013). Firms intending to grow expect to encounter more problems than firms which actually experienced growth. That is, growing firms (who are often smaller and younger firms) anticipate that lack of credit history and an established relationship with banks will result in tighter credit availability (Binks and Ennew 1996).

Consistent with the perception of finance as a barrier to growth, recent empirical research has provided evidence that growth firms are more likely to have their loan applications refused (Riding et al. 2012), face loan scaling (Freel 2007) and identify themselves as discouraged borrowers (Freel et al. 2010). Typical rationalisation of these findings focuses on the higher risk associated with growth firms. However, despite this risk, most loan applicants go on to successfully borrow all or some of the money they sought. For instance, using data from the US National Survey of Small Business Finance, Levenson and Willard (2000) estimated that only 6% of firms "had an unfulfilled desire for credit"; of which 2% were actually denied funding and 4% were discouraged from applying. More specifically, Vos et al. (2007) observed that fast growing small firms in the UK and US, respectively, applied for and obtained more sources of financing than non-growth firms. It follows that, if most applicants are successful, the focus of the discussion should shift from credit access to terms of credit. Central to credit terms are the prices firms pay for their loans.

To the extent that higher loan prices reflect higher borrower risk (Berger and Udell 2003; Berger, Frame, and Miller 2005), one would anticipate growth firms facing higher loan rates. Firm growth implies change: change in, *inter alia*, employment, sales, market share, or assets. Rapid growth implies rapid change. These changes occur over a specific period of time (Dobbs and Hamilton 2007) and research has shown small firm growth to be episodic (Brush, Ceru, and Blackburn 2009). In other words, growth is a temporary and dynamic phase that many firms experience (Nightingale and Coad 2014), and growing firms undertake several alterations in their business processes and products. Not only are the outcome of these changes uncertain, but the pace of change makes it more difficult for banks and credit institutions to monitor growing firms and evaluate their performance

(Binks and Ennew 1996). Past research has shown that the price of obtaining funds rises as the valuation of the firm becomes less straightforward for its investors (Strahan 1999). In this way, the increased levels of information asymmetry attached to growing firms increases their risk and consequently the financial constraints they face (Beck and Demirguc-Kunt 2006; Beck, Demirgüç-Kunt, and Maksimovic 2005; Binks and Ennew 1996; Nitani and Riding 2013). Higher loan price, reflecting higher risk (Strahan 1999), may be a key manifestation of financial barriers for growth-oriented entrepreneurs.

The foregoing leads us to two linked hypotheses:

H1. Firm which experienced growth in the near past pay higher interest rates on loans.

H2. Firms which intend to grow in near future pay higher interest rates on loans.

Small firms may take a variety of paths to growth (Garnsey, Stam, and Heffernan 2006). The variety in paths is likely to be underpinned by variety in strategy. Importantly, the various growth strategies that entrepreneurs take impose different levels of additional risk to their firms. For example, Wiklund and Shepherd (2005) report research that suggests that 'tried-and-true' strategies lead to higher mean performance, whilst risky strategies – with higher performance variety – may lead to both greater individual successes and more frequent failures. This is consistent with the view that innovation only spurs growth in a "handful of 'superstar' fast growth firms" (Coad and Rao 2008); whilst for the bulk of firms innovative investments lead to zero or negative returns.

To the extent that banks primarily provide non-syndicated commercial loans to small businesses (Berger and Udell 2003), banks are not providers of risk capital. That is, banks

do not share in the upside gain of spectacular growth. Accordingly, the greater risk of failure is likely to bear on the lending decision and on the price of the loan; more than the prospect of dramatic success. In this vein, Freel (2007) provides evidence that innovators were less likely to get access to *all* of the funds they seek from their banks (i.e. to face loan scaling). Similarly, Nitani and Riding (2013) find that costs of borrowing are higher for R&D intensive firms. In short, the foregoing leads us to anticipate that firms seeking to grow through innovation will face higher borrowing costs than firms seeking to expand by simply doing 'more of the same'.

H3. Loan pricing is related to growth modes, such that more aggressive growth strategies will associate with higher interest rates and safer strategies will be associated with lower interest rates.

1.3. Data and methodology

The data used in this study are a sub sample drawn from the 2007 *UK Survey of SME Finance* (Cosh et al. 2008). Since the data was collected in autumn 2007, we anticipate that our results are not greatly influenced by the major changes in banking environment starting from December 2008 in the United States. However, we reflect upon the implications of the timing of the study in our concluding remarks. Respondents to the survey were owners or managers of firms, excluding public and not for profit organizations, with less than 250 employees or/and £35 Million turnover. The initial sample was provided by Dun and Bradstreet with more than 82,000 firms. However, after considering the survey criteria, survey quota and accessibility, around 25,000 firms were contacted. The response rate was 10%. This response rate might increase the risk of sampling bias; however, the proportion of responses is the same across all sizes of companies (Cosh et al. 2008). Testing for non-

response bias was not possible. In addition, weighting the respondents based on size, sector and region and comparing them with break-down of 4.3 million businesses in the UK show that firms with zero employees represent relatively less than population statistics. We bear these limitations in mind for interpretation of our results. The survey collected information on a variety of financial tools firms had been using (within the three years prior to the survey date) for business purposes including largest single outstanding loan. For these loans, data on interest rate and other terms of contract were collected.

The survey includes 2,500 firms; however, for the purpose of this study, 247 firms are the focus. These are the firms which use banks' commercial loans and mortgages, with variable interest rate, at the time of data collection. Interest rates incorporate elements of both the prevailing riskiness of the economic environment and the perceived (or measured) riskiness of the individual borrower. By focusing only on variable rates loans, we hope to control for the former and address only the latter. Variable interest rates comprise of a base rate plus some premium above base[1]. The former may be thought to capture the economic conditions at any given time; whilst the latter addresses the riskiness of the entrepreneur or firms. By focusing on the premium paid over the base rate, variations in absolute rates that may reflect different underlying economic conditions at the time of loan granting are largely controlled for. Crucially, whilst our loans were all outstanding on the survey date, they were not all awarded contemporaneously. The survey collected data on the premium paid over the base rate, rather than the final interest rate. We hold that changes in rate premiums largely reflect the dynamics of the lending environment and firm level characteristics, and much less the underlying economic conditions. Unlike several studies (Binks and Ennew 1996; Beck and

[1] In the UK, this is typically the Bank of England base rate plus some premium determined by individual banks.

Demirguc-Kunt 2006; Beck, Demirgüç-Kunt, and Maksimovic 2005; Vos et al. 2007) regarding financial constraints or loan pricing, our research deals with an objective measure of higher or lower price.

In contrast to variable rates, and to the extent that they do not vary over time, fixed rates are likely to reflect borrower riskiness and economic conditions only at the time at which they were awarded. Accordingly, fixed loan rates for loans awarded at different times are not directly comparable. We set them aside in the current analyses[2].

1.3.1. Dependent variable

In constructing our dependent variable, we use a survey question that asks respondents the rate they paid for their largest outstanding bank loan. The questions were only directed at those firms who reported using bank loan and mortgage facilities at the time of data collection (around 25% of sample firms). Of these, 41% provided information on the variable interest rate. The remainder held fixed rate loans. Firms holding variable rate loans were offered a categorical response variable, which expressed the rate in percentage points above base. Specifically, firms could indicate the rate they paid in one of seven rate ranges. The lowest range was 0-2%; thereafter the next four categories increased by 2 percentage points at a time. The two final categories indicated variable interest rate in the ranges of 10-15% and more than 15% over the prevailing base rate. However, no firms reported paying more than 10% over base rate.

Figure 1 represents the distribution of contracted rate premiums in the sample. The majority of loans falls in the first category of 0-2% premium rate (57%), followed by the second

[2] To confirm our intuition, we performed a similar suite of analyses on fixed rate loans. As expected, these models were poor predictors of loan rate, with few significant variables. The results are available on request.

category of 2-4% (33%). Because of the small number of observations for premium rates of more than 4%, we recoded all these categories into one category. Accordingly, our final dependent variable has three orderings: 0-2%, 2.01-4%, and greater than 4%. The ordered nature of our dependent variable is reflected in our choice of analytical method – ordered probit – which we outline below.

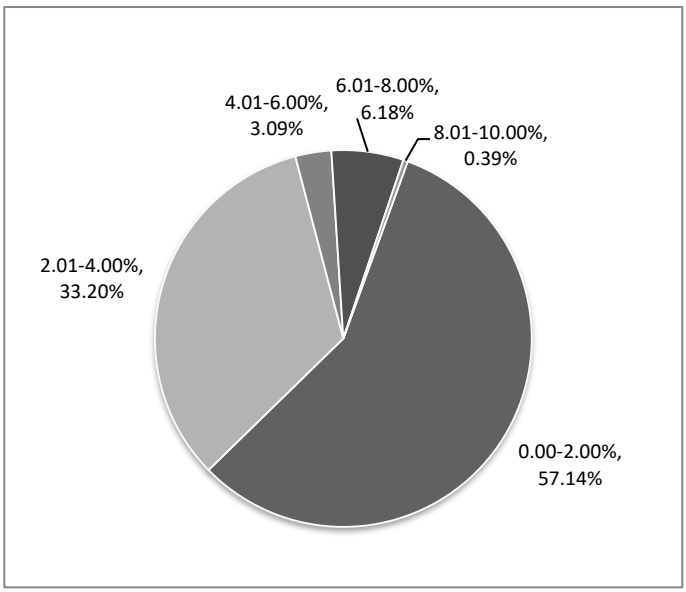

Figure 1.1. Frequency of premium rates in the sub-sample of firms using loan and mortgages with variable interest rate.

1.3.2. Independent variable

Our independent variables are constructed to allow us to test hypotheses 1-3. Accordingly, they are concerned with growth and growth strategies. To this end, the data allow us to construct three measures of growth. In the first instance, and in line with H1, we focus on the growth history. Firms are considered to experience past growth if respondents declared they experienced 30% increase in sales turnover for each of the three years preceding the survey date[3]. This is a fairly high threshold and these growth firms may reasonably be

[3] The survey question specified the 30% threshold.

thought of as 'super growth' firms (Delmar, Davidsson, and Gartner 2003). In practical terms, these high growth firms were coded 1, with all other firms coded as 0.

To address H2, our second independent variable focuses on growth aspirations. The relevant survey question captures the owner managers' growth intention over the three years subsequent to 2007. Owner managers' growth intentions are not trivial in distinguishing between actual growers and non-growers. Indeed, there is a longstanding view that "one of the most important factors [in influencing growth] is the commitment of the leader of the company to achieving growth" (Smallbone, Leigh, and North 1995, p. 59). In this instance, respondents were asked whether they planned for their firm to "grow substantially", "grow moderately", "stay the same" or "become smaller". We coded firms intending to grow substantially or moderately as 1. Respondents who indicated that they wished their firms to stay the same size or to become smaller were coded as 0[4].

However, since questions relating to growth intentions are likely to be prone to both a normative bias and the over optimism of the entrepreneurs, we also focus on specific growth strategies. By this means, we investigate our third hypothesis. To this end, the survey included a question on how firms intended to grow (directed only to those firms indicating a growth intention). Specifically the question identifies four possible growth strategies: "move into new markets", "introduce new products or services", "increase sale with existing products and services", and "hire more employees". These strategies are not mutually exclusive and firms could indicate all, some or none. In line with our stated hypothesis, we consider "new market" and "new products or services" to be higher risk,

[4] As a robustness check, we coded only those firms declaring an intention to grow substantially as 1, otherwise 0. The results were unchanged.

more aggressive strategies; whilst "sales of existing product" and "hiring more employees" are lower risk, less aggressive strategies. In each case, firms indicating the intention to follow one of the strategies were coded 1, otherwise firms were coded 0. This results in 4 binary dummy variables that are entered into the models. Respondents had the option to add to these strategies, but because of small number of observations those responses are excluded from the analyses.

In addition to the variables that allow us to directly test our hypotheses, we also estimate models incorporating a 'super growth' variable. This variable was defined by the survey investigators (Cosh et al. 2008), such that firms characterised as 'super growth' experienced more than 30% increase in turnover each of the 3 years prior to the survey *and* intend to sustain the growth moderately or substantially over the three years subsequent to the survey. This measure reflects the past and future orientation of the firms, excluding start-ups (firms in business for less than two years). In essence, this variable is an interaction term between realised past growth and future growth intentions.

1.3.3. Control variables

In modelling small firm loan prices as a function of our independent variables, it is important to control for other influences on price. These are likely to be factors which lower or raise perceived risk. Two factors, in particular, are commonly considered in the empirical literature: the role of collateral and relational lending. Credit institutions consider collateral as a positive signal that alleviates lending constraints by reducing information asymmetries or default risks (Berger and Udell 1998; Parker 2002). The information asymmetry between banks and entrepreneurs retards banks' ability to distinguish between good and bad entrepreneurs. However, the entrepreneur, aware of their situation, and trying to avoid

imperilling their assets, increases their effort to succeed. Strahan (1999) argues that collateral makes post-investment monitoring activities easier but does not affect the price, and the riskiness of a firm is reflected in the price it pays. While pledging collateral may not necessarily lower the risk (price) for growth firms, it is not an unambiguous merit (Binks and Ennew 1996). That is, as the risks of these firms increase, the gap between the banks' valuation of the assets (at the time of probable default) and the costs of obtaining those assets from the firm rises. Hence, growing small firms, comparing to other small firms, are more prone to under-evaluation of their assets or "inadequate collateral". To mitigate this problem and respond to growing firms' increasing demands for funds, banks may rely on relationship lending (Binks and Ennew 1996).

The severity of information opacity can be mitigated by relational lending. Relationships allow banks to gather information about the firm and entrepreneur over time and to shift the emphasis of lending decisions from hard to soft criteria (Beck and Demirguc-Kunt 2006). This reduced problem of information asymmetry may translate into greater access to bank finance at lower prices (Binks and Ennew 1996). However, there is no general consensus about the effect of relationship banking. Sharpe (1990) suggests that banks, relying on the fact that firms are locked-in, internalize the benefits of the relationship. Peterson and Rajan (1994) conclude that there is no significant association between length of lending relationship and lower interest rate; excepting an insignificant effect where the bank also provides other financial services to the firm. Moreover, loan pricing may also exhibit a cyclical pattern. That is, when firms switch to new banks, interest rate decreases in order to lock in the new customers. However, after a while, firms are charged the same price that they should have paid if they had stayed with their initial bank (Ioannidou and

Ongena 2010) or an even higher price to compensate the early subsidies (Kim, Kristiansen, and Vale 2012). Finally, when banks collect enough information about the firm's performance, the interest rate decreases again (Kim, Kristiansen, and Vale 2012).

Yet, despite the equivocal literature, the provision of collateral and the existence of longer term relationships are likely to be important control variables in loan pricing models. In our model, these two variables are part of a set of controls intended to capture important aspects of the loan contract. Collateral is measured as a simple dummy variable taking the value 1 if the firm was asked to provide collateral in securing the loan, and 0 otherwise. Relationship banking is proxied by the length of relationship with the firm's primary bank. This information was captured categorically, with the smallest category indicating a banking relationship of 0-3 years. Firms in this category were coded 0, indicating no relationship banking, otherwise firms were coded 1.

In addition to these 2 variables, we also include indicators of the purpose of the loan and of the source of the loan. In the first instance, we are able to observe whether the intended use of the loan was for working capital or for the purchase of assets. Physical asset, purchased with a loan, can have a similar function as collateral (Berger and Udell 1998) and imply lower risk. We code loans sought for the purchase of physical assets as 1, otherwise we code them as 0. In terms of loan source, this describes the relationship between the banks and the firm further. Specifically, firms were asked whether their main bank was the only provider of the loan, one of the providers, or whether the loan was provided by a bank other than the firm's primary bank. In the last instance, we would anticipate that the 'external' bank would have had less information about the quality of the firm and the entrepreneur. In general, we anticipate that working with a new bank or

securing a loan from multiple sources may impact the price of loan (Kim, Kristiansen, and Vale 2012; Peterson and Rajan 1994; Vos et al. 2007). In addition, we controlled for the access of the entrepreneur to other sources of external finance. Entrepreneurs may use more than one source of external finance to fund their company; and the various forms available may be more or less sensitive to information asymmetries and require more or less information disclosure or firm monitoring. To this end, the pecking order hypothesis (Myers 1984) posits that firms exhibit a preference hierarchy in seeking sources of finance; starting from internal sources to debt and then equity financing. To the extent that external equity is rare and that other forms of debt instrument (e.g. leases and overdrafts) entail lower agency costs, term loans may be at the bottom of the hierarchy. In this case, firms may view term loans from banks as funding of last resort. Those who approach banks later, having exhausted all other avenues of funding, may be viewed as more risky than those who approach banks early, confident in their ability to repay principal and interest and to satisfy monitoring requirements[5]. Alternatively, using multiple sources may signal to banks good management and lessen the risk. Regardless, it is clear that the financing decisions of the entrepreneur prior to or at the time of the loan request may affect the perceived riskiness of the business. The issue is one of sequencing (i.e. when the bank was approached in relation to other sources of finance). Unfortunately, our data does not allow us to directly address this issue. Rather, to reflect the idea that the entrepreneur has exhausted less costly sources of financing, and those which entail a lower agency burden, we build a proxy based upon the number of sources of external finance the firm had used during the 3 years prior to, or were using at the time of, the survey. Ideally, we would like

[5] We are grateful to an anonymous reviewer for raising this possibility.

detail on the financing of the firm before the loan request, but the data did not provide any information to shed light on the historical financing activities. The index is a simple count of identified use of loans from the owner, loans from family and friends, leasing and higher purchase agreements, credit cards, and overdraft funding.

Our second set of control variables is intended to capture firm heterogeneity. The first of these variables is a 'usual suspect' in empirical studies of small firms – viz. size. Size has been shown to affect both access to and price of credit (Aterido, Hallward-Driemeier, and Pagés 2011; Beck, Demirgüç-Kunt, and Maksimovic 2005; Binks and Ennew 1996; Freel 2007; Vos et al. 2007). Even within small firm samples, larger firms are less likely to suffer (or to suffer less) from information opacity and their performance may be more easily evaluated (Berger and Udell 1998). In this study, size is measured by the number of employees and coded into four size-bands: zero employees, 1-9, 10-49 and more than 50 employees. The zero size-band provides our reference category. We also control for broad sectoral variation at the SIC division level. Here, agriculture acts as our reference category. Finally, we also include the age of the business as a control variable. As the firm grow older, one expects that the credit history and reputation of the firm act as risk mitigating factors. Due to the structure of the questionnaire and number of observations, we defined age of the business as 1 if it is older than 10 years and zero otherwise.

Beyond these structural characteristics, banks also rely on information they have on the quality of the owner of the business (as a borrower) (Berger and Frame 2007). To this end, we were able to incorporate in our models measures of entrepreneurial experience, and owner-manager's age and gender. However, when these are included with business age in our models, collinearity becomes a concern. In the final analyses we use age of the

entrepreneur in preference to entrepreneurial experience. Importantly, our key findings are robust to this choice. Lastly, we control for gender of the principal owner. This is measured as a simple binary variable taking the value 1 if the principal owner was male, and 0 otherwise[6].

1.4. Descriptive statistics

Table 1 presents descriptive statistics for the variables used in our analyses. As the data in panel A illustrate, most of the firms are active in the service sector; have between 10-49 employees; and are older firms. For almost two-thirds of firms, their main bank is the only provider of the loan. From the data in panel B, 82% of firms are principally owned and managed by men; the remaining 18% of firms are run by women or jointly. Seventy-seven percent of sample firms had a banking relationship extending more than 3 years and 76% of firms were required to collateralize the loan of interest.

[6] This would include cases where the principal ownership was female or shared.

A.	Freq	Percent	Cum.	B.	Mean	Std. Dev
Sector				Business older than 10 years	65%	
Agriculture etc.	21	8.11	8.11	Age of the owner (years)	50.88	10.36
Manufacturing	20	7.72	15.83	Male ownership	82%	
Construction	30	11.58	27.41	Purchased asset with loan	53%	
				More than three years relationship		
Wholesale/Retail	32	12.36	39.77	with bank	77%	
Service sectors	156	60.23	100	Collateral	76%	
Size						
0 employee	16	6.18	6.18	Super growth	17%	
1-9 employees	66	25.48	31.66	Past growth	19%	
10-49 employees	105	40.54	72.2	Growth intention	71%	
50-249 employees	72	27.8	100	New Market	25%	
Loan provider				New Product	31%	
Only main bank	168	64.86	64.86	More sale	55%	
Main bank one of						
the provider	57	22.01	86.87	More employees	34%	
Main bank not a						
provider	34	13.13	100			
Number of sources						
of finance used [a]						
0	12	4.63	4.63			
1	34	13.13	17.76			
2	78	30.12	47.88			
3	80	30.89	78.76			
4	45	17.37	96.14			
5	10	3.86	100			

a Including leasing, loan from owner, loan from family and friends, credit cards, and overdraft

Table 1.1. Frequency table of the characteristics of firms, owners, and loan for firms using loan and mortgages with variable rate.

Panel B also records the distribution of firms across our key independent variables, such that: 17% of firms were classed as “super growth” firms (i.e. firms experiencing growth more than 30% in each of the three years preceding the survey and intending to growth in the three subsequent years). This figure is largely constrained by the 19% of sample firms that were recorded as having experienced growth in the previous three years. Perhaps unsurprisingly, 71% of firms reported an intention to pursue growth in the coming years. This large figure may speak to normative biases or over-optimism. However, only around 25% of firms indicate an intention to “grow substantially”, which is closer to the number of past growers. In terms of growth strategies, 22% of firms indicated their intention to seek growth through penetrating into new markets, 30% expect growth through new product or

services, 55% expect to increase the sale of existing product in the same market, and 34% plan to recruit more employees. As noted, these strategies were not mutually exclusive and firms could select more than one strategy for growth.

1.5. Methods

To examine the relationship between firm growth and the price of loans, and given the ordered nature of our dependent variable, we estimate a series of ordered probit models (Greene and Hensher 2009). However, only a proportion of the sample report loan rates, since only a proportion of our sample have outstanding loans. Focusing only on these firms may result in sample selection bias. This bias may result from two selection issues: firstly, we only deal with firms that applied for and were offered loans and, secondly, amongst those firms, we opt to consider only those that received variable rated loans. To control for potential issues of selection bias, we estimate a two-stage model (Heckman 1979). For completeness, we present the results of both the simple ordered probit and the two-stage ordered probit in tables 3 and 4 (the details of the selection model used in the two-stage Heckman model is detailed in the following section). Ordered probits, along with other forms of regression, are sensitive to collinearity amongst the independent variables. For this purpose, table 2 also displays Variance Inflation Factors (VIFs) for all the explanatory variables - calculated in regressions excluding and including the Inverse Mills Ratio (IMR). In no cases is there evidence of multicollinearity.

Variables	VIF[a]	VIF[b]	Variables	VIF[a]	VIF[b]
			Relationship with bank (>3years		
Age of the owner	1.40	1.45	=1)	1.20	1.19
Male Ownership	1.23	1.35	Collateral (yes=1)	1.13	1.19
			Count of financial resource [c] - Ref		
Sector-Ref: Agriculture			:0		
Manufacturing	1.98	2.12	1 type	3.77	4.35
Construction	2.42	2.59	2 types	6.07	7.87
Wholesale/Retail	2.40	2.51	3 types	6.09	7.93
Service sectors	3.61	3.77	4 types	4.36	5.61
Size-Ref: zero			5 types	2.02	2.48
1-9 employees	4.59	5.87	past growth	4.98	6.49
10-49 employees	5.90	8.38	Future growth	2.54	2.64
50-249 employees	5.40	8.68	Super growth	5.81	7.05
Business older than 10 years	1.55	1.77	New Market	1.48	1.46
Asset Purchased with loan	1.15	1.21	New product	1.64	1.58
Loan provider- Ref: only					
main bank			More sale	1.80	1.79
main bank one of the provider	1.17	1.22	More employees	1.79	1.85
Main bank not a provider	1.20	1.27	IMR	--	1.71

a.Matrix of variables excluding IMR, b. Matrix of variables including IMR, c. use of credit card, overdraft, leasing, loan from the owner, and loan family and friends

Table 1.2. Variance Inflation Factor

1.6. Results

Table 3 presents the result of the simple ordered probit models. All the models are statistically significant at 99%. In the first instance, our base model considers the control variables that are intended to proxy firm heterogeneity. Here, we note that firm size associates with loan pricing. That is, as the size of the firm increases loan price decreases. This is consistent with our expectations. Beyond this, we observe that older firms, the use of funds to purchase assets and the provision of collateral are significantly negatively related to the probability of paying higher interest rates. To restate, if a firm used the loan to purchase fixed assets and/or provided collateral for the loan, then the probability of paying a higher price for the loan falls. In contrast, there is tentative evidence that the probability of paying a higher loan rate rises with the age of the entrepreneur.

The second model includes all our control variables along with past growth. The significant variables from our base model continue to associate with loan prices, except for the age of

the business. However, we also now note a negative relationship between loan syndication and the probability of paying higher interest rates. Importantly, and in line with hypothesis 1, firms that experienced rapid growth in the past have a higher probability of paying more interest.

Model 3 is concerned with growth intentions. In this, our control variables largely act in the same manner. However, we do not find any support for our second hypothesis. There is no evidence that firms declaring an intention to grow in the future pay higher rates of interest. Our initial intuition was that this was likely to relate to the high proportion of firms reporting a growth intention. Over 70% of firms in the sub-sample declared an intention to grow over the three years following the survey. However, recoding the variable to indicate only those firms planning to growth "substantially" does not change this finding. It would seem that banks pay little regard to broad growth intentions in pricing loans. However, it may also reflect the countervailing effects of different intended strategies (see below).

As a supplementary analysis, we introduce an interaction term to model 4. It indicates that, when coupled with past growth, growth intentions do associate with higher loan prices. That is, firms enjoying growth in the past and planning to grow in the future are more likely to have paid higher rates of interest on their loans. The survey team termed such firms 'super growth', but one may also think of them as sustainable growers. Regardless, this result provides further evidence in support of the global hypothesis that growing firms are discriminated on price in loan markets. These firms differ from 'future growth' firms to the extent that, despite having proven past success, they continue to pay more for loans than their non- and less growing peers.

The final model in table 3 is concerned with the relationship between different growth strategies and loan prices. Here the results are broadly in line with H3. Of our four growth modes, growth through new product introduction is positively associated with loan rates, whilst growth through sales of existing products is negatively associated with growth rates. In other words, firms pursuing a 'more of the same' strategy appear to pay less for loans than those pursuing more aggressive, innovative strategies. In our analysis, penetrating into new market or hiring more employees are not significant explanatory variables in predicting the probability of higher or lower interest rates. These results support our speculations about the associations between modes of growth and loan pricing; whereby riskier strategies are associated with more expensive bank financing. Conversely, firms intending to sell more of 'tested-and-tried' products are associated with lower cost of financing. The countervailing effects of aggressive and conservative intended strategies may also help explain the lack of a significant finding in support of H2.

As noted earlier in the paper, the foregoing analyses may be susceptible to selection biases arising from our focus only on those firms who held variable rate loans. To control for the potential sample selection bias, the Heckman (1979) two-stage model has been used. In the first stage, we estimate a Probit model of the probability of accessing loans for all the observations in the sample. To calculate the probability of having loans in firms, we introduce the following selection equation:

p(accessing to loan)= f (export, innovation, capital expenditure, size, assets, legal status, age of the business)

In our selection equation, we try to consider not only the variables that ease access to loans (e.g. firm size, asset base and legal status) (Beck and Demirguc-Kunt 2006; Berger and Udell 1998; Berger and Udell 2006; Freel 2007), but also variables that may affect the demand for loans (e.g. export activity, innovation, and recent capital expenditure). In this way, we see loan utilisation as a function of both firms' demand and banks' willingness to supply. Exporting, innovation, and capital expenditure are reported by the owners or managers. From this equation, we calculate the Inverse Mill's Ratio (IMR) which is subsequently used as an additional explanatory variable in the second stage model. As table 4 records, the coefficient of the IMR is statistically significant in four models out of five[7]. This suggests the presence of selection bias (Jones 2007, 36–37); although our data does not support the existence of selection bias in one of the models[8].

Turning to our two-stage ordered probit, with Heckman correction; table 4 takes a similar approach to table 3, but all models include the IMR calculated from the probit selection equation. Although the thrust of these results are broadly in line with regards our independent variables, there is one intriguing differences with respect to our control variables. Firm size, measured by the number of employees, was a negative and significant explanatory factor in the probability of paying higher loan prices in the absence of our control for potential selection bias. However, when selection is controlled for, size is no longer significant. It would seem that, whilst size may associate with holding a loan, it has no robust influence on loan pricing. However, syndication, collateralization and loan use

[7] The results of first stage probit regression are available on demand

[8] Another model, considering use of variable rate loans as the dependent variable of the probit (selection) model was also estimated. The results were broadly in line with the reported approach.

continue to be significantly negatively associated with the probability of paying higher interest rates.

In all but our ancillary ‘super growth’ model, the existence of sample selection bias is indicated. However, where this is controlled for, we continue to find evidence to support hypotheses 1 and 3 – though not hypothesis 2. In other words, firms which have recorded past growth or who intend to grow through innovation are likely to have paid higher rates of interest on their loans. Our sustainable, or ‘super growers’, are also likely to have paid a higher price for credit. These firms, whilst not denied credit, are discriminated on the basis of price. In the next section, we turn to the implications of these findings.

	Base Model		Past Growth		Future Growth		Super Growth		Modes of Growth	
One stage models	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age of the owner	0.0158*	0.008	0.0205**	0.009	0.0162*	0.008	0.0235**	0.009	0.0121	0.009
Male Ownership	-0.162	0.219	-0.192	0.220	-0.171	0.220	-0.338	0.240	-0.186	0.220
Sector-Ref: Agriculture										
Manufacturing	0.674	0.414	0.682	0.416	0.671	0.414	0.699	0.445	0.764*	0.425
Construction	0.526	0.395	0.504	0.396	0.519	0.395	0.44	0.409	0.65	0.413
Wholesale/Retail	0.389	0.383	0.34	0.385	0.394	0.383	0.291	0.391	0.413	0.387
Service sectors	0.108	0.333	0.0657	0.335	0.108	0.333	0.0936	0.341	0.118	0.335
Size-Ref: zero										
1-9	-0.0831	0.350	-0.0595	0.350	-0.0808	0.350	-0.0742	0.392	-0.00772	0.356
10-49	-0.714**	0.357	-0.721**	0.357	-0.710**	0.357	-0.703*	0.398	-0.648*	0.369
50-249	-0.776**	0.377	-0.809**	0.378	-0.784**	0.378	-0.772*	0.411	-0.798**	0.393
Business older than 10 years	-0.346*	0.206	-0.281	0.210	-0.334	0.209	-0.18	0.235	-0.316	0.213
Asset Purchased with loan	-0.432**	0.172	-0.433**	0.172	-0.425**	0.173	-0.404**	0.184	-0.475***	0.176
Loan provider-Ref: only main bank										
main bank one of the provider	-0.342	0.213	-0.402*	0.218	-0.342	0.214	-0.393*	0.224	-0.302	0.218
Main bank not a provider	-0.0392	0.259	-0.0102	0.260	-0.032	0.260	-0.065	0.293	-0.0366	0.267
Relationship with bank (>3years =1)	-0.2	0.210	-0.226	0.211	-0.191	0.212	-0.323	0.238	-0.207	0.213
Collateral (yes=1)	-0.540***	0.185	-0.513***	0.186	-0.541***	0.186	-0.425**	0.199	-0.498***	0.189
Sources of finance [A]-Ref:0										
1 types	0.683	0.452	0.737	0.453	0.691	0.453	0.848*	0.507	0.623	0.456
2 types	0.375	0.416	0.383	0.416	0.385	0.417	0.487	0.468	0.368	0.419
3 types	0.637	0.427	0.627	0.427	0.636	0.427	0.775	0.482	0.615	0.431
4 types	0.633	0.435	0.635	0.434	0.629	0.435	0.597	0.498	0.568	0.440
5 types	0.017	0.617	-0.16	0.633	0.00391	0.620	-0.0449	0.677	-0.0165	0.632
past growth			0.420*	0.219						
Future growth					0.0449	0.128				
Super growth							0.496*	0.261		
New Market									-0.0117	0.221
New product									0.504**	0.216

more sale								-0.389**	0.192
More employees								0.0358	0.212
/cut1	-0.763	0.828	-0.336	0.860	-0.667	0.872	0.0943	0.990	-0.878	0.852
/cut2	0.55	0.828	0.99	0.862	0.646	0.872	1.378	0.994	0.478	0.850
Number of observation	230		230		230		206		230	
Prob > chi2	0.0004		0.0002		.0006		0.0058		0.0002	
Pseudo R2	.1131		.1216		.1133		.1085		.1315	

Dependent variable is contracted premium rate on variable rate loans (1=0 to 2%, 2=2% to 4%, 3=More than 4%)

*** p<0.01, ** p<0.05, * p<0.1

Table 1.3. Results of one-stage Ordered Probit Model

	Base Model		Past Growth		Future Growth		Super Growth		Modes of Growth	
Two stage models	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age of the owner	0.0175*	0.009	0.0231**	0.010	0.0185**	0.009	0.0292***	0.010	0.0138	0.009
Male Ownership	-0.115	0.240	-0.15	0.242	-0.148	0.243	-0.349	0.271	-0.149	0.242
Sector-Ref: Agriculture										
Manufacturing	0.626	0.444	0.632	0.446	0.624	0.443	0.619	0.470	0.698	0.450
Construction	0.369	0.430	0.367	0.432	0.344	0.429	0.3	0.441	0.522	0.441
Wholesale/Retail	0.108	0.425	0.0697	0.426	0.119	0.424	0.0662	0.433	0.0882	0.425
Service sectors	0.0937	0.362	0.0608	0.363	0.0862	0.361	0.0368	0.369	0.0887	0.359
Size-Ref: zero										
1-9	0.462	0.420	0.506	0.421	0.474	0.422	0.331	0.473	0.59	0.431
10-49	-0.102	0.442	-0.109	0.444	-0.0965	0.444	-0.232	0.501	0.0351	0.465
50-249	-0.00638	0.488	-0.0495	0.490	-0.0195	0.489	-0.177	0.541	0.0396	0.511
Business older than 10 years	-0.465*	0.241	-0.373	0.246	-0.420*	0.247	-0.311	0.269	-0.441*	0.251
Asset Purchased with loan	-0.395**	0.190	-0.394**	0.192	-0.374*	0.192	-0.426**	0.204	-0.430**	0.195
Loan provider-Ref: only main bank										
main bank one of the provider	-0.471**	0.230	-0.555**	0.236	-0.478**	0.231	-0.552**	0.239	-0.454*	0.235
Main bank not a provider	-0.149	0.280	-0.132	0.280	-0.121	0.282	-0.302	0.324	-0.115	0.290
Relationship with bank (>3years =1)	-0.138	0.230	-0.171	0.231	-0.118	0.232	-0.282	0.258	-0.16	0.234
Collateral (yes=1)	-0.415**	0.200	-0.377*	0.201	-0.424**	0.200	-0.316	0.211	-0.363*	0.203
Sources of finance [A]-Ref:0										
1 types	0.716	0.508	0.739	0.508	0.754	0.510	1.002*	0.570	0.671	0.514
2 types	0.259	0.464	0.239	0.464	0.293	0.466	0.393	0.519	0.245	0.470
3 types	0.545	0.481	0.515	0.481	0.546	0.481	0.675	0.538	0.515	0.486
4 types	0.447	0.479	0.407	0.479	0.443	0.479	0.318	0.548	0.377	0.486
5 types	-0.143	0.646	-0.369	0.664	-0.169	0.651	-0.266	0.716	-0.173	0.663
past growth			0.499**	0.243						
Future growth					0.121	0.141				
Super growth							0.646**	0.275		
New Market									-0.0482	0.228
New product									0.603***	0.225

more sale									-0.25	0.206
More employees									-0.0164	0.232
IMR	0.955**	0.417	0.888**	0.421	0.983**	0.418	0.71	0.444	1.031**	0.422
/cut1	0.58	1.041	1.041	1.070	0.901	1.108	1.079	1.195	0.647	1.072
/cut2	1.905*	1.048	2.385**	1.079	2.226**	1.114	2.408**	1.204	2.018*	1.078
Number of observation	201		201		201		182		201	
Prob > chi2	0.0024		0.0010		0.0029		0.0054		0.0012	
Pseudo R2	.1168		.1280		.1188		.1267		.1381	

Dependent variable is contracted premium rate on variable rate loans (1=0 to 2%, 2=2% to 4%, 3=More than 4%)
*** p<0.01, ** p<0.05, * p<0.1

Table 1.4. Result of second-stage Ordered Probit model

1.7. Discussion and concluding remarks

Based on UK survey of SME Finance (2007), we find that growth firms pay higher interest rates on bank loans. This result holds after controlling for the effects of size, owner's experience, industry sector, loan purpose, collateral and relationship banking. In simple terms, firms that have successfully grown their businesses in the recent past paid higher interest rates. Even where these firms anticipated sustaining their growth, they exhibited a higher probability of paying more. That is, despite evidence of success and ambition, interest rates are higher.

Moreover, although intention to grow does not, on its own, show any association with higher price, we note that intended growth strategy associates with loan price. Specifically, more risky strategies, involving the introduction of new products and services, associated with higher interest rate; whilst, more conservative strategies, associated with increased sales of the same products in existing markets, associate with lower loan prices.

Crucially, none of the foregoing need imply a criticism of banks. Growth and innovation are likely to entail additional risks to small businesses. Although banks are the primary sources of financing when entrepreneurs decide to seek external financing (Robb and Robinson 2014), banks are not risk funders. Rather, in assessing loan applications, banks are interested in the "serviceability" of the firms not the value of the business: the ability to generate enough cash flow to pay the debt (Cowling, Liu, and Ledger 2012; Lee, Sameen, and Cowling 2014). In this sense, growing small firms may be perceived as less attractive to risk-averse banks. Other sources of external financing such as venture capital funds are presumed to be better suited to the financing of viable high risk projects. However, for

reasons of both supply and demand, venture capital is used by only a small proportion of firms. In our sample, only four out of 2500 firms sought venture capital financing in the three years prior to 2007 and only 11% reported that they may consider equity financing in future. If the risk of a project is too high that banks cannot offer any interest rate to hedge the risk, the project may declined or the loan downsized. More often, however, the interest rate rises (Parker 2002) and valuable capital is diverted to the loan provider in the form of a risk premium. This might open a door for interventions designed to ameliorate the apparent risk of growth firms.

Academic commentary has recently argued that interventions in the process of establishment or growth of SMEs are justified if targeted to growing and innovative firms (Shane 2009; Mason and Brown 2011; Nightingale and Coad 2014). If programs do not recognize the differences among the firms, their implementation will favour lower quality firms at the expenses of higher quality ones (Nightingale and Coad 2014). Supporting lower quality firms would decrease the investment rate of return and consequently would increase the price of capital for all type of firms (Nightingale and Coad 2014). Alas, it seems easier to call for support targeted to high growth firms than to provide practical guidance on how this may be achieved. In large part this is because "[high growth firms] are found across all sectors of the economy, a heterogeneity that is also reflected in their age, size, origin, and ownership (Mason and Brown 2011, p.222)".

We believe that focusing on the riskiness of growth firms may be a useful starting point for practical intervention. This rests on an appreciation of growth risk as both objective and perceived. To the extent that growth firms are objectively riskier, there is little policy can do other than offering to bear risk. This is what loan guarantee schemes (LGS) currently

do. Whilst belief in the existence of credit rationing is the fundamental rationale for loan guarantee schemes (Cowling 2010), in practice they encourage incrementality or additionality in lending (Riding et al., 2007). That is, they encourage lending to firms that would have received turndowns otherwise due to their higher risk of default (Zecchini and Ventura 2009). Crucially, guarantors typically apply a fee to cover defaults and protect the integrity of the scheme. Thus, raising loan price. Regardless, our concern is not with firms that would otherwise be turned-down for a loan. Rather, ours is with those [growth] firms who pay a higher price for loans. To this end, whilst Riding (1998) observes that "the objective [of LGS] is to assist small firms, not to subsidize risky ones", one might wonder if there was a role for a targeted schemes whose objective *was* to subsidize risk. Of course, the broader provision of grants to growing firms would be a more direct form of subsidy – providing some funds and signalling firm quality in the event of a loan application.

Regardless, in the absence of further evidence, we are agnostic on the desirability of interventions aimed at addressing the objective riskiness of growth firms – at least, beyond that which already exists. However, we are more convinced of the merits of potential interventions aimed at reducing perceived riskiness. Much of the banks assessment of small firm risk is likely to result from the greater information opacity attendant upon small firms generally and growing small firms specifically. Past evidence has suggested that, for SMEs, relationship banking may provide access to finance at lower costs (Binks and Ennew 1996). Relationships reduce information asymmetry. However, there may be other, more timely, ways of reducing information asymmetries. In this, an analogy may be drawn with the growing number of Investment Readiness programmes across Europe (Mason and Kwok, 2010). Mason and Kwok(2010) note that the primary reason that businesses are not

'investment ready' is one of information failure. In large part this involves presentational shortcomings: "Even if the underlying proposition is sound a business may still fail to raise finance if the business plan is poorly constructed and presented" (Mason and Kwok 2010, p.272). The parallels to 'debt readiness' are clear. Given the relative use of debt and equity even amongst growing small firms, interventions designed to improve the 'debt readiness' of growing firms may be well suited. In line with "investment readiness" (Mason and Harrison 2001), the main goal of such assistant to growth firms should be increasing the quality of loan application and also providing information on the different banking product and services, and their associate costs, potentially available for those firms.

In conclusion, based on the 2007 UK survey of SME Financing and information on the variable rate loans, we find that growing firms hold more expensive loans. Similarly, those whose future growth plans revolve around innovation are also more likely to hold higher priced loans. We interpret these findings to indicate a relationship between firm risk (both objective and perceived) and loan pricing. However, there are inevitably limitations to our research. In the first instance, higher loan rates may simply reflect the willingness of growth firms to accept poorer contract terms. Busy entrepreneurs must allocate precious time and resources to apply for a loan. In consequence, they are more willing to meet the higher loan price because of the higher opportunity/transaction costs they incur – relative to non-growth firms[9]. Secondly, for the firms that had grown in the three previous years, our data does not provide any information on whether the premium rate was contracted before, after or coincidental to growth. Still, the significant partial relationship between the modes of future growth and interest rate suggests that even if the loan is granted before initiating growth

[9] We are grateful to anonymous reviewer for raising this possibility.

process, it captures the higher risk profile. Moreover, the modal number of years firms had held loans in the sample was between 1 and 3 years. Thirdly, from all the bank facilities available to SMEs, our study was only concerned with term loans and only variable rate term loans. Overdrafts or lines of credit, which are likely to be important sources of working capital, are only a minor component in our financial 'bundling' explanatory variable. Future research might investigate the relationship among different risk profiles, the propensity to use broader bank facilities, and the price those facilities obtain. Although we loosely proxy the capital structure of the firm in terms of number of sources an entrepreneur uses, this sheds limited light on the perceived riskiness of the business prior to contracting loan terms and conditions. Further research, where data is available, may consider the riskiness of the business due to its proximate financing decisions.

Fourthly, we concentrated on variable rate loans and the premium above base rates. Our expectation was that base rates control for macro fluctuations. Nonetheless, our results may be context specific. The UK banking system is relatively concentrated on supply side (Competition Commission Report 2002). As reported by Competition Commission (2002), SME owners mainly work with one bank for all their required services and rarely change their banks for better prices. Owners of course have the option to seek quotes from different banks, but the associate costs and the perceived importance of banking relationship to the owners, make bargaining difficult (Competition Commission Report 2002). Moreover, the scope for 'shopping around' is more limited than would be the case in a more fragmented banking market. In the UK SME loan market, lending relationship becomes important for banks and SMEs: Banks try to lock-in their customers, as SMEs are less likely to switch to new banks, and SMEs use relationship banking to access finance more easily or on better

terms (Berger and Udell 2006). Concentration in banking markets has been shown to associate with the extent of relational lending (Ashton and Keasey 2005). Moreover, establishing a long term relationship would aid banks to assess SMEs activities with lower degree of information opacity (Ashton and Keasey 2005). In such a market, growing and innovative firms maybe more likely to accept higher fees in order to keep their relationship with their banks and ensure their access to finance at the time of cash flow difficulties. However, increasing competition among banks may increase customers' bargaining power and lower the price of loans (Rice and Strahan 2010).

The final consideration is the pertinence of our findings given the current situation in the UK loan market following the financial crisis. Small firms' access to bank facilities experienced a sharp decline from 2008. Whilst SMEs decreased their demand for finance, the supply side was marked by a "U-shaped pattern"; with an initial decline and subsequent recovery to the levels experienced before December 2009 (Cowling et al., 2012). Small businesses, in the early part of this period, experienced higher rejection rates comparing to previous years. But the situation eased considerably after 2009 (*Financing SMEs and Entrepreneurs 2014: An OECD Scoreboard* 2014). These patterns held for all types of SMEs. Intriguingly, in the case of growing and innovative firms, firms intending to grow reduced their demands, but firms who had achieved growth before the crisis maintained the same level of debt demand (Cowling, Liu, and Ledger 2012). Nonetheless, Lee et al. (2014) show that access to bank finance for innovative firms became more difficult after the financial crisis (based on 2007-2012 loan applications) and that these firms were more likely to be unable to secure debt financing from any bank. Yet, the average credit scoring of innovative and non-innovative firms did not differ significantly during this period,

suggesting that assessments of objective risk remained at the same level (Lee et al., 2014). One possible explanation of higher rates of loan refusal for innovative firm might be banks' increased perceived risk about their activities. In the recessionary period, the most significant factor affecting the loan appraisal decision was the size of businesses, with growth orientation apparently ignored in the process of decision making (Cowling et al., 2012). Regardless, given the recovery of loan approval rates to before crisis levels, we anticipate that banks are likely to rely upon the same criteria to appraise loan applications as prevailed in the pre-recession period. In short, bank assessment of risk and subsequent pricing are likely to follow similar logics today as when our data was collected[10].

[10] Informal conversations with British banking professionals suggests that this is a reasonable supposition. The things that 'mattered' stayed the same. Rather, it is the thresholds at which they matter that changed during the crisis.

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Essay 2- Business advice and lending in small firms

Abstract

The literature on lending to small firms has primarily focused on the mechanisms and methods used to evaluate entrepreneurs and businesses and on the types of firms that are more likely to experience unfavourable application outcomes. That is, the focus of most empirical research is on supply-side decisions. The current research attempts to shed some light on demand–side considerations. Drawing upon data collected as the UK SME Finance Monitor (2011-2014), we identify links between entrepreneurs' diligence, business risk and finance-related advice-seeking prior to initiating loan and overdraft applications. The results show evidence of the usefulness of advice in ameliorating, both structural and strategic, business risk and improving the prospects of successful debt applications to banks.

2.1. Introduction

Support for the creation and development of small firms is a central component of the industrial policies of most nations (Blackburn, 2016). A central concern for policy in all countries has been with the difficulty SMEs may face in accessing bank loans (Beck et al., 2013; Canton et al., 2013). Due to relative information opacity, small firms represent riskier prospects to potential sources of finance (Berger and Udell, 2003; Kirschenmann, 2016; Stiglitz and Weiss, 1981). For banks, as the primary source of external finance, asymmetric information manifests in a greater risk of moral hazard and higher agency costs of debt. The firm owner, who is typically also the manager and key decision maker, has an incentive to pursue riskier projects since the costs of these risks are disproportionately borne by the lender (Berger and Udell, 2003; Stiglitz and Weiss, 1981). Lending to small firms (and lending smaller amounts) carries disproportionately higher costs of due diligence (Treichel and Scott, 2006); with these costs inflated in the face of limited credit histories or audited financial statements. Largely for these reasons, smaller firms have historically been identified as especially susceptible to credit rationing.

However, through the use of different lending mechanisms, evidence suggests that banks and small firms manage to avoid credit rationing on a general basis (Berger and Black, 2011; Kremp and Sevestre, 2013; Parker, 2002). The provision of collateral, the imposition of shorter maturity terms, the insertion of covenants, and the setting of varying prices gives the tool to banks and entrepreneurs to reach terms of contract that are acceptable to both sides(Berger and Udell, 2003; Peltoniemi and Vieru, 2013). Nonetheless, while recognising that most small firm applicants are ultimately able to obtain debt financing (Cowling et al., 2012; Vos et al., 2007), there is some evidence of

loan scaling1 or structural higher pricing faced by specific segments such as innovative and growing firms (Lee et al., 2014; Nitani and Riding, 2013; Rostamkalaei and Freel, 2016).

One potential source of market failure results from consumers being poorly informed about the quality and prices of alternatives in the market before making decisions (Storey, 2003). On the supply side, different lending technologies have been investigated and the potential effect of these methods on small firms have been discussed (Berger et al., 2005; Berger and Black, 2011; Berger and Udell, 2006). However, we are much less informed about the readiness of the entrepreneur to approach external financiers. An important part of successful lending processes depends on entrepreneurs' decisions about when, where, and how to apply for external financing. An example of the effect of imperfect information on the demand-side is the case of "discouraged borrowers" (Freel et al., 2012; Kon and Storey, 2003; Xiang et al., 2015). Discouraged borrowers do not apply for credit because they fear rejection – despite their declared neediness and despite being observationally indistinguishable from those who applied for and received money. There is also evidence that some entrepreneurs face initial rejection or are presented with unsuitable terms of contract at the first attempt and must re-apply, renegotiate, or switch banks for a better deal. For example, in the current data set, 40% and 25% of firms seeking loan and overdraft funding, respectively, report initial rejection or did not accept the initial terms of contract. Not being well informed about available alternatives and prices may lead entrepreneurs to avoid requesting external funds or increase the risks of initial rejection. In contrast, some applicants are likely to be more aware of potential information and resource gaps and,

[1] In the current context, loan scaling is the practice of being offered some proportion of the funds requested, but less than the full amount.

accordingly, will be better placed to make an ‘educated’ decision. In short, our concern is with how well the demand-side is informed about external financing before initiating the applications process.

Our research draws upon this idea and investigates the role of business advisors in preparing small businesses to request external finance. We speculate that higher financial awareness on the part of the entrepreneur and a higher degree of business risk will both associate with a higher probability of understanding the knowledge gap and, accordingly, of seeking advice. Our paper seeks to study this group of bank clients and the effect of advisory services in ameliorating resource access pressures. If business advice reduces information and risk asymmetries, by allowing firms to better present themselves to banks, then firms may experience better initial outcomes than similar non-advice seeking firms.

Drawing on data from the UK SME Finance Monitor, our paper considers applicants for new bank facilities in the UK during 2011-2014. As segue to our main analyses, we begin by modelling the use of borrowing-specific business advice. That is, we explore what types of entrepreneurs identify (and act upon) a need for advice before applying for external finance. Following this, we investigate whether accessing business advice helps applicants get satisfactory results at their first attempt of approaching banks. We hypothesize that the riskiness of the business and the diligence of the entrepreneur are good indicators of the probability of seeking advice, and of the ability to successfully exploit advice.

The paper is structured as follows: Section 2 briefly reviews the characteristics of firms or individuals that are linked with advice seeking behaviour. From this we develop our opening two hypotheses. Thereafter, it reviews evidence on the potential effect of advice on loan application success and in mitigating access to finance problems. From

this we form our remaining two hypotheses. Section 3 outlines our data and econometric choices; section 4 elaborates our findings; and section 5 discusses the implications of our results for entrepreneurs and policy.

2.2. Business advice and SMEs

Decision makers rarely operate in isolation. Rather, they draw upon internal and external sources of information to analyze a situation and to draft a plan. Entrepreneurs, faced with a dynamic business environment and dense regulations, frequently recognise the limits of their expertise. In such circumstances, entrepreneurs must search for additional information and expertise. Evidence on the use of advice by small firms suggests broad use of social networks, business networks, banks and accountants, private professional business services and publicly funded advisory services (Bennett and Robson, 1999; McGee and Sawyerr, 2003; Shaw and Bennett, 1999). Crucially, advice is different from static sources of information such as reports, regulatory documents, and internet content. Advice entails an interactive and iterative process of exchanging information, involving the advice seeker and advice supplier (McGee and Sawyerr, 2003). Advice is a recommendation (Bonaccio and Dalal, 2006) or an influence (Harvey et al., 2000) which is aimed at reducing complexity in the environment. The decision maker may utilize the advice or disregard it (wholly or in part), but in the process of exchanging information a new piece of knowledge or perspective is inevitably transferred. Through decreasing risk and complexity and adding knowledge resources, business advice may improve the prospects of small firms. The empirical evidence typically suggests a positive impact of business advice on small firms' competitiveness (Bennett and Robson, 2000; Chrisman et al., 2005; Chrisman and McMullan, 2004; Robson and Bennett, 2000).

The ability to recognise missing information or the likelihood of having limited confidence in one's decision-making are affected by the entrepreneur's human capital (Collis and Jarvis, 2002; Han et al., 2012; Johnson et al., 2007; Larsson et al., 2003; Scott and Irwin, 2009), the level of pre-advice confidence and the accuracy of past decisions (Yaniv, 2004), perceptions of the complexity of the environment and of the current challenges (Dyer and Ross, 2008; Trevelyan, 2008). Accordingly, advice seeking behaviour and information search activity is influenced by individuals' confidence in their decisions (Yaniv, 2004). At opposite extremes, being highly knowledgeable or knowing too little may lead to individuals' overconfidence about their skills and judgment (Bhandari and Deaves, 2006). Forbes (2005) demonstrates that 'comprehensiveness' is associated with overconfidence in entrepreneurs. In this way, we may anticipate a U-shaped relationship between diligence and overconfidence such that the likelihood of being overconfidence initially decreases with diligence, but at very high levels of diligence (i.e. 'comprehensiveness') overconfidence may return. However, the comprehensiveness required is likely to be extensive and, in a mixed sample of small firms, unlikely to be frequently observed. Rather, we hypothesize that better informed and more diligent entrepreneurs are more capable of recognising uncertainty in lending markets and take preventative actions to avoid disappointment. That is, they are more likely to seek external advice before applying:

Hypothesis 1a. Informed and diligent entrepreneurs are more likely to seek advice for their financing needs.

Entrepreneurs' need for external advice is also influenced by the characteristics of their firms. For instance, the size and age of the business are frequently shown to affect the probability and intensity of advice seeking (Boter and Lundström, 2005; Dyer and Ross,

2008; Johnson et al., 2007; Mole et al., 2008; Robson et al., 2008). Both size and age may be thought to indicate relative 'riskiness'. Although larger companies are likely to face more complex problems (Johnson et al., 2007), it is the resource constraints associated with smaller size that drives the "liability of smallness" (Aldrich and Auster, 1986). In a similar vein, the related concept of the "liability of newness" is likely to explicate the relationship between age and advice seeking (Stinchcombe and March, 1965). As businesses age, legitimacy improves, knowledge and resources are accumulated and the need for 'routine' external advice diminishes (Bennett and Robson, 2000).

However, firm risk may be strategic as well as structural. Irrespective of age and size considerations, firms adopting specific strategies may face increased risk and uncertainty. Riskier strategies increase perceived environmental uncertainty and, from the perspective of potential funders, information opacity. Entrepreneurs, in turn, must increase their efforts towards environmental screening (Dyer and Ross, 2008; McGee and Sawyerr, 2003). Higher perceived risk is reflected in the behaviour of entrepreneurs. For example, innovative firms are more likely to recognise the need to contact external sources of information to reduce uncertainty (Bennett and Robson, 2000; Johnson et al., 2007). In a similar manner, exporting, as a method of expansion and growth, also increases the complexity of operations and uncertainty (Bennett and Robson, 2000; Johnson et al., 2007). Moreover, growth history may also affect the propensity to seek advice (Bennett and Robson, 2000). Growing firms, recognising their higher risk, are likely to perceive of a higher level of difficulty in accessing external financial (Binks and Ennew, 1996; Westhead and Storey, 1997). Indeed, this financing difficulty for higher risk firm may not only be a perception. Recent empirical studies have provided evidence of loan scaling (Freel 2007) or higher pricing (Nitani and Riding, 2013) toward

innovative and growing firms. Following this, we hypothesise that increased risk, associated with both structural and strategic factors, reduces entrepreneur's confidence in obtaining external finance, and therefore:

Hypothesis 1b. Entrepreneurs whose firms exhibit a higher degree of risk are more likely to seek external sources of information before approaching banks.

Beyond use, measuring the effectiveness of advice and soft support is difficult. Advice is a perishable and intangible good (Bennett and Robson, 1999). Moreover, observing how the advice seeker reacts to the advice is not straightforward. Advisees assess the quality of the given advice based on their perceptions. They weigh the advice against their initial intentions (Bonaccio and Dalal, 2006; Yaniv, 2004). They utilize it, or discard it. Indeed, individuals may show reluctance to follow advice even when they know it is true and it is free (Harvey and Fischer, 1997). Nevertheless, in the process of exchanging information, the typical advisee receives reassuring information about their decision (Ramsden and Bennett, 2005). Studies frequently show that entrepreneurs see positive effects from advice and can link the advice to better performance (Bennett & Robson 2000; Berry et al. 2006; Boter & Lundström 2005; Scott & Irwin 2009). Evidence indicates that business advice may help small firms to survive or grow (Chrisman and McMullan, 2000; Wren and Storey, 2002). Broadly speaking, taking up advice has been shown to benefit advice seekers (Harvey and Fischer, 1997). Advice, even poor quality advice, is thought to decrease complexity (McGee and Sawyerr, 2003) and error variance (Harvey and Fischer, 1997). Both discounting and utilising advice are related to the entrepreneurs' confidence in their knowledge and reasoning. Better informed individuals are more capable of analyzing the information they receive. We speculate that more informed and diligent entrepreneurs are more likely to realize the

value of the advice they are offered and utilize or discard it effectively. Accordingly, we hypothesise that:

Hypothesis 2a: More informed and diligent entrepreneurs are more likely to benefit from external advice; with the benefits manifest in a successful financial application.

With respect to the efficacy of the advice in reducing risk; using external advice is likely to lower the perceived level of complexity (Ramsden and Bennett, 2005) and increases the entrepreneur's post-advice confidence (Dyer and Ross, 2008). Accordingly, we hypothesize that the advice sought specifically for external financing will help entrepreneurs reduce the uncertainty associated with their firm and increase the chances of favourable outcome:

Hypothesis 2b. Entrepreneurs with higher risk profiles are more likely to benefit from external advice when applying for external financing.

Seeking advice, valuing, utilizing, or discarding it are not solely dependent upon the decision maker. Rather, it is also affected by structure and the size of the advice market, types of task, rewards system, quality of advice, and trust and power distance between advisees and advisors (Bennett & Robson 2000; Berry et al. 2006; Gooderham et al. 2004; Larsson et al. 2003; Mole 2002; Harvey et al. 2000; Mole & Bramley 2006). Due to data limitations, our study cannot investigate the structure of advice taking-giving systems. Rather we are constrained to focus solely on the entrepreneur. In our study, sources of advice are treated as homogenous. However, we construct an objective index to measure the effectiveness of advice. We call an application a 'success' if the application is new and if funds are offered by the bank and accepted by the entrepreneur at the first attempt - before the entrepreneur and the bank engage in re-negotiating,

reduce the amount, or the entrepreneur switches banks. We believe that this measure can help us to understand whether seeking advice can save time and resources and prevent unnecessary stress to the entrepreneur.

2.3. Data and methodology

The data used in this paper is the series of cross-section surveys comprising the Small and Medium Sized Enterprise Finance Monitor (2011-2014) accessed from UK Data Archive (BDRC Continental, 2014). The first wave was conducted in 2011 and repeated quarterly2. In each wave, 5000 telephone interviews were conducted on a broad range of issues related to small firm finance. The respondents to the questionnaire were the persons in charge of making financial decisions within sample firms. Sample businesses are for-profit, non-governmental and independent, with less than 250 employees and less than £25 Million prior year sales turnover. The screening criteria remained the same during all waves of data collection. The sample is drawn from Dun and Bradstreet and Experian and captures a wide range of businesses across different sectors, sizes, ages, external risk ratings, and locations. In addition, the data provides information on business performance and strategy, planning, and human resource policies. Compared with the UK business population statistics, the dataset is over-sampled toward larger firms (BDRC Continental, 2015); therefore, analysis without weights would be biased towards those firms.

In our analysis, we used the probability sample weight calculated by BDRC Continental from the first quarter of 2012 to second quarter of 2014. The data, and sampling weight, is provided on a 10 waves rolling basis. The weighting is calculated based on population

[2] The last quarter conducted but not published by this date is second quarter of 2015.

figures for SMEs across numbers of employees, business sectors, 12 NUTS1 regions, and start-ups (see BDRC Continental, 2015). The total sample size is more than 50,000 observations, which represents more than 4.5 million businesses within the UK. All the presented analyses and statistics in our paper are weighted, unless otherwise stated. Given the large size of the dataset, we speculate that there is limited risk of cross sampling. Moreover, if a firm appears more than once in the dataset, as a loan applicant and overdraft applicant in the same year, they are treated as a single firm with identical covariates across independent and control variables.

We divided our sample on the basis of overdraft and loan requests separately. The reasons for requesting each type of facility are likely to differ: overdrafts, trade credit and lines of credit are mainly used to address working capital needs, whereas longer term loans are typically requested for the purchase of premises and equipment (Berger and Udell, 2003). In the unweighted sample, there were 2401 and 4572 firms that applied for, respectively, term loans and overdrafts and, in turn, 25% and 13% of these applicants sought advice prior to application. It appears that entrepreneurs perceive greater challenges when they decide to apply for term loans. The survey studied the demand for external financing in the 12 months preceding each wave of the survey. The survey explicitly asks, only from new applicants, whether the entrepreneur has sought external advice before applying for her new loan or overdraft facility3. This gave us the opportunity to investigate the characteristics of those managers who look for bank-related application advice, not general advice. We did not include firms who were asked by banks to re-negotiate the terms of contract, cancel an existing facility, lower or increase a loan or overdraft amount, since the decision to approach the banks was not

[3] The text of the question reads: "Did you seek any external advice before applying for your overdraft/loan facility?"

initiated by the entrepreneur. In addition, in the case of existing facilities, both sides are likely to be better informed about the condition of the facility and its riskiness.

Consequently, we prepared two different sub-samples: Loan applicants and overdraft applicants. Since the sample only deals with new applications, the problem of selection bias might exist (we do not observe how non-applicants and banks would behave should the entrepreneurs decided to apply for a facility). To control for selection bias, we hoped to estimate a two-stage Heckman procedure, modelling financial neediness in the first stage. However, from the variables available, it was not possible to meet the exclusion criteria. There are some questions which explore the reasons for seeking finance, however, those questions were only asked of applicants and cannot be used in a two stage analysis. With this in mind, we are cautious in not extending our findings to non-applicants.

To test hypothesis 1a and 1b, we model the probability of seeking advice prior to requesting external finance as a function of characteristics of the entrepreneur and potential sources of application risk alongside with a set of control variables. To investigate the effect of advice in mitigating risk, ideally we would like to employ advice-taking as an independent variable and assess its significance in explaining the probability of obtaining credit. However, since many of the variables hypothesized to influence advice seeking behaviour are also likely to bear on application success, this approach raises conceptual and empirical challenges. To overcome this challenge, one might seek to replace advice-seeking with its instrument. However, as is frequently the case in research of this kind, finding suitable instruments was not possible[4]. Accordingly, we chose to split the sample further and regress the probability of

[4] The pitfalls of using mis-specified two-stage models and invalid or weak instrument are explained by Puhani (2000) and Murray (2006) .

successful application for advice seekers and their counterparts separately. This allows us to compare the variables that improve or diminish the probability of application success for firms seeking advice and non-seekers of advice[5].

2.3.1. Dependent variables

In the first stage of our analysis, identifying the characteristics of advice seekers, we used a dummy variable equal to 1 if the entrepreneur sought external advice prior to applying for bank finance. As indicated, some applicants were referred to sources of advice by banks after initial rejection. We do not include these applicants as they approached external sources of advice to satisfy their banks, not to identify any potential gap proactively. This operationalisation of advice-seeking remained the same over all analyses.

For the dependent variable used in the second stage of our analysis, we employed a specific definition for application success. We consider an application successful if the bank and entrepreneur agree on a contract at the first attempt. This allows us to consider the effect of advice seeking prior to approaching banks and to control for the effect of appealing, renegotiating, re-applying, or switching banks. For this reason, our rate of successful application is lower than the ultimate success rate (unweighted, 62% and 75% success rate for, respectively, loan and overdraft based on our definition; and 80% and 88% for ultimate success defined by the survey conductor). To test the hypotheses, we estimate Probit regression models, since our dependent variables are binary.

[5] We also tested for multicollinearity problem by calculating Variance Inflation Factor (VIF). None of the variables showed VIFs greater than 10.

2.3.2. Independent variables

Our study investigates the effect of perceived knowledge gaps and business risk on advice seeking behaviour and on the usefulness of advice sought. We incorporated different measures to proxy these two elements. Firstly, we hypothesize that diligent entrepreneurs are more likely to recognise knowledge gaps, seek external advice (H1a) and use the advice effectively (H2a). It seems clear that entrepreneurs require some degree of absorptive capacity to realize the benefits of advice (Gooderham et al., 2004). To measure diligence, we first consider financial training. We speculate that training in financial management helps entrepreneurs understand external financing requirements and take the necessary steps to meet those requirements. Beyond this, we conjecture that if the long term plan of the business is clear, the entrepreneur is more likely to know the resources needed for development and act to acquire these. In line with this idea, we also use a dummy variable indicating the production of regular accounting reports. Generating systematic accounting information should help the owner identify sources of risk and to take the necessary steps to mitigate these. Periodic reporting is the most used indicator of the financial wellbeing of entrepreneurs and often signals a good relationship with lenders (Collis and Jarvis, 2002).

Our second concern is with the effect of potential business risk on the propensity to seek advice (H1b) and on the effectiveness of advice in mitigating risk (H2b). In the first instance, we use innovation as an indicator of riskiness. Innovation is an essentially speculative strategy, with innovative firms committing resources to an uncertain outcome. Past research on the financing of innovative small firms has shown them to be less successful in loan markets relative to their less innovative peers (Freel, 2007). As Mina and colleagues note (2013, p. 894), “uncertain innovation activities negatively affect the supply of finance, in line with the expectation that businesses undertaking

risky projects will incur higher external costs of capital and will have access to suboptimal levels of financial resources". In our analysis, a firm is innovative if they declared they developed a new product or service and/or significantly improved an aspect of the business in the three years prior to the survey.

Our second indicator of potential business risk is exporting. In the face of imperfect access to information, foreign market entry becomes a particularly risky and uncertain undertaking (Bennett and Robson, 2000; Hessels and Terjesen, 2010). We identify a firm as an exporter if they declare that they sell products or services outside of the UK. Ideally, we would also like to capture the effect of firm growth on perceived riskiness (see, for example, Rostamkalaei & Freel 2016). Indeed, data on the growth history of firms were available to us; however, the data were highly collinear with business age. That is, the majority of firms which experience substantial growth in sale turnover were the youngest ones. Accordingly, we only include the age of the business in our models. We also proxy business risk by firm size and age: reasoning that older and larger firms have improved access to resources, which lower their risk profiles. In addition, we expect younger, less experienced firms (and their entrepreneurs) to have accumulated less knowledge; therefore, they are expected to be more likely to perceive higher risks with their applications. Firm size is measured by number of employees and firm age by the years since business establishment. Both variables are measured categorically.

Our next measures relate to the relationship of the applicants with their banks. It has long been argued that established relationships between banks and their customers provide the basis for the exchange and accumulation of better quality data about entrepreneurs and the prospects of their businesses; leading to a decrease in the information asymmetry that is thought to mark small firm-bank relationships (Binks and Ennew, 1996). In this way, relational banking may increase small firms' access to

information asymmetry that is thought to mark small firm-bank relationships (Binks and Ennew, 1996). In this way, relational banking may increase small firms' access to bank facilities or, at least, lead to better terms of contract. For instance, in a study of the effect of bank provided business advice on the financial condition of small firms, Han et al (2012) found that better relationships with banks lowered the entrepreneur's perceptions of difficulties in accessing finance. In line with this, we speculate that applying to a firm's main bank will lower perceived risk for both the entrepreneur and the bank. However, we observe that almost all overdraft applicants applied to their main banks (table 1). For this reason, we excluded this variable from our overdraft applications estimations. In addition, we are able to identify first time applicants. This group are expected to know less about the application procedures and banks' lending criteria, and are more likely to seek advice prior to applying. We also control for the amount of facility sought; with the expectation that larger amounts signal more risk to both banks and entrepreneurs.

In evaluating the effectiveness of advice, we add one additional variable. For both term loans and overdrafts, we identify the reason(s) why the money was requested. We speculate that the reasons funds are sought may affect application outcome. For example, if the loan is sought to purchase assets, the risk taken on by the bank would be lower than a situation where the funds are sought to support firm growth. In the former case, firms can pledge the purchased asset to insure the loan; in the latter, money is used to fund a risky activity with an uncertain outcome.

Relatedly, in assessing the riskiness of the business, the ability of firms to provide collateral to partially insure the loan and reduce moral hazard has been widely discussed in the literature (e.g. Berger & Udell 1998; Parker 2002). Ideally, we would hope to include some measure of the firm's ability to pledge collateral, such as firm's assets or

entrepreneur's personal wealth. Unfortunately, this information was not available. We hope to capture some effect of asset availability by controlling for industry and business age.

2.3.3. Control variables

In order to estimate the unique effects of diligence and riskiness on the behaviour of entrepreneurs and banks, it is important to account for other possible influences on advice-seeking behaviour and application success. To this end, we include a number of control variables in our models. Firstly, we include a variable that indicates the location of the firm, since the density and quality of advisory services may differ and past research has shown that small firms typically use local providers for business advice (Bennett et al., 2000). The variable takes the form of a categorical variable that records whether firms were located in the dominant economies of London or the Southeast of the UK, with the rest of the UK acting as a reference group. We also include industry sector, since the objective and perceived risk of businesses may differ across different sectors (Michelacci and Schivardi, 2013). Moreover, some industries may draw upon their networks more for gathering external information. In addition, we incorporate a dummy variable equal to 1 if the business is mainly run by a woman (i.e. more than 50% of the firm belongs to a woman). Gender is a 'usual suspect' in studies concerned with small firms and their banks (e.g. Orser et al. 2006) and advice seeking (Mole et al. 2008). We control for the legal status of the business on the grounds that the number of proprietors may influence the need to seek external advice and the likelihood of application success (Demirguc-Kunt et al., 2006). Finally, since the survey was conducted after the credit crunch of 2008 and the subsequent 'healing' period (Cowling et al., 2012), we do not expect the perceived riskiness of the businesses would differ

across 2011-2014. However, as Cowling, Liu, and Ledger (2012, p.796) note, “For banks and small businesses, the way they react to a recessionary environment is quite different and not synchronised”. Accordingly, we control for the year in which each wave of the survey was conducted to account for the potential psychic effect of the credit crunch – viz. banks scaling down available credit and small businesses’ reluctance to approach banks.

2.4. Descriptive statistics

Table 1 presents descriptive statistics for the variables of interest used in our analysis. The data in the table are weighted. Accordingly, the bias towards larger firms, present in the unweighted data, is not apparent here. More than half of the firms in the weighted sample are zero-employees businesses. While 74% of small firms in the UK are zero-employee firms, only 20% of these firms were considered in the sampling protocol (BDRC Continental, 2014). This difference illustrates why it is important to consider sampling weight in our analysis. Beyond size, 22% and 17% of loan and overdraft applicants were less than two years old. These figures approach the 20% estimation reported by the survey conductor for the share of start-ups in UK small businesses population.

In the case of both loan and overdraft applicants, 50% of firms use regular accounting reports and more than 40% have formal business plans. Further, around 30% of entrepreneurs have been trained to manage their business’ financial tasks. In terms of innovators and exporters, given the definitions employed, half the sample report being innovators, whereas only 1 in 10 report exporting.

	Loan	Overdraft		Loan	Overdraft
Advice seekers	20%	10%			
Successful application	47%	63%	Applicants to main bank	89%	97%
Financial training	30%	28%	Age of Business		
Business plan	47%	42%	start-up	22%	17%
Accounting	51%	50%	2-5 yrs	22%	22%
exporter	11%	10%	6-10 yrs	27%	28%
Innovation	50%	50%	>15 yrs	29%	33%
first time applicant	46%	29%	Size		
Amount of facility			Zero employees	59%	57%
Less than 10k	41%	62%	1-9 employees	34%	37%
10K-100K	44%	32%	10-49 employees	6%	6%
>100k	15%	6%	>50 employees	1%	1%
Table does not include data on control variables: Gender, Location, Sector, Legal Status, Time of survey					

Table 2.1. Descriptive statistics (weighted) – as percentage of loan or overdraft applicants

2.5. Results

2.5.1. Advice Seeking

Turning to our main results, Table 2 reports the results of our first stage analysis – weighted Probit models estimating the probability of bank-specific advice seeking behaviour among loan and overdraft applicants. In the first instance, we hypothesised that better informed firms (proxied by regular financial reporting, formal business planning and financial training) would be more likely to seek advice prior to approaching banks for funds. In the loan panel, only formal business planning is associated with the increased probability of advice seeking. However, for overdraft funding, preparing regular accounting reports and the presence of a formal business plan both increase the probability of advice seeking. We take these results to partially confirm hypothesis 1a; which speculated that more diligent entrepreneurs would be more likely to perceive information/resource gaps and seek advice before requesting external finance. To rephrase, among applicants to banks, those entrepreneurs who show some degree of professionalism through regular accounting reports and preparing

business plan are more likely to realize a gap between what they know and what they need to know before completing a bank application.

Hypothesis 1b held that riskier firms would be more likely to seek advice – with riskiness measured by exporting and innovation activities; by the age and size of the business; by applications to other than the firm's main bank; by first time applications; and by the amount of funds requested. Our results suggest that innovative firms were more likely to seek advice prior to approaching banks for both term loans and overdraft funding. Exporting also positively associates with the probability of advice-seeking prior to applications for overdraft funding. We interpret these findings to show that entrepreneurs pursuing riskier strategies appreciate the greater risk to banks and increase their information-seeking/uncertainty-reducing efforts. Similarly, the coefficients on business age categories for both loan and overdraft applications indicate that as firms age, the probability of seeking external advice fall. In the same vein, as firms get larger, they are likely to accumulate more tangible and intangible assets and build relationship with their banks, such that they perceive fewer knowledge gaps and less risk with respect to bank finance. In this way, we expected firm size to be negatively associated with the probability of advice-seeking. Our results, however, only provide partial support: For overdraft applications, firms with more than 50 employees are less likely to seek finance advice than zero employee firms.

Continuing with the hypothesised influence of perceived riskiness on advice-seeking behaviour; the amount of facility sought is also a significant predictor of the likelihood of advice-seeking. For both loan and overdraft applicants, as the amount of requested facility increases, the entrepreneur's likelihood of engaging with external sources of information and advice increases. In general, these results support hypothesis 1b in

indicating that riskier firms were more likely to seek advice prior to approaching banks for finance; with this holding for a broad array of indicators of risk.

	Loan		Overdraft	
DV Advice sought=1	Coeff	S.E	Coeff	S.E
Financial training (yes==1)	0.124	0.154	0.154	0.114
Business Plan (yes==1)	0.314**	0.135	0.271**	0.118
Regular accounting reports (yes==1)	0.0768	0.145	0.414***	0.144
Export (yes==1)	0.269	0.227	0.234**	0.115
Innovation (yes==1)	0.345**	0.139	0.00513	0.113
First time applicant (yes==1)	-0.0461	0.141	0.281**	0.135
Application to main bank (yes==1)	-0.0115	0.204		
Amount sought (ref: <10k)				
10-100K	0.367**	0.164	0.151	0.115
>100 K	1.122***	0.184	0.414**	0.164
business age (ref: start-ups)				
2-5 yrs	-0.225	0.201	-0.259	0.181
6-15 yrs	-0.813***	0.221	-0.269	0.181
>15 yrs	-0.506**	0.221	-0.538***	0.178
Size (ref: 0 employees)				
1-9 emps	0.196	0.158	-0.0324	0.138
10-49 emps	0.00966	0.215	-0.0152	0.174
>50 emps	-0.252	0.261	-0.380*	0.214
Business run by female	0.337**	0.151	0.0343	0.11
Location (ref=rest of the UK)				
London	0.234	0.21	-0.173	0.132
South East	0.0666	0.184	0.00858	0.156
Sector(ref=community and personal services)				
Agriculture	0.142	0.244	0.406**	0.194
Manufacturing	-0.0456	0.305	0.117	0.234
Construction	-0.0156	0.256	0.147	0.204
Services	0.143	0.218	0.00853	0.176
Real Estate	0.0857	0.24	0.249	0.184
Legal (sole proprietorships==1)	0.258	0.164	-0.364***	0.14
Wave (ref==2011)				
2012	-0.233	0.165	-0.109	0.137
2013	-0.0768	0.193	-0.0187	0.144
2014	-0.00959	0.352	0.0676	0.231
Constant	-1.624***	0.343	-1.452***	0.291
Observations	1759		3955	
p-value	0		0	
Summer's D	66%		74%	
*** p<0.01, ** p<0.05, * p<0.1				

Table 2.2. Weighted Probit model for the effects of diligence and risk on the probability of advice seeking

2.5.2. Benefits of Advice

Turning to the second stage of our analysis: Table 3 displays the results of weighted Probit models of the probability of successful loan and overdraft applications for advice seekers and non-seekers. As mentioned, our definition of successful application is different from ultimate success in securing external funding. If bank and entrepreneur agree on terms of contract at the first attempt, we call that application a successful one. Considering the variables that are used to indicate the entrepreneur's diligence, the data provide no support for hypothesis 2a. Indeed, some results appear contrary to our speculations. For example, taking advice decreases the probability of accessing overdraft funding for applicants with financial training. It also decreases the probability of access to loans for applicants who generate regular accounting reports, while this measure has a positive influence on application success in the non-advice seeking group. The only positive significant effect of advice exists for overdraft applicants who had a business plan. These counter-intuitive results are certainly intriguing. One possible explanation might relate to the effect of advice in increasing the confidence of entrepreneurs. In such circumstances, confident entrepreneurs, with additional knowledge, are less likely to accept the bank's initial offer and more likely to engage in negotiation (in which case they would be erroneously classed as 'unsuccessful' here). If we use final funding outcomes as a measure of success, the negative effect of regular accounting reports does not exist. It is also possible that, while more diligent entrepreneurs are in a better position to realize the riskiness of their business and to seek advice, ultimately the advice cannot wholly ameliorate the risks involved. Whilst it is useful to speculate, these relationships would appear to warrant further research.

	Loan				Overdraft			
	No Advice		Advice		No advice		Advice	
DV Successful application=1	Coeff	S.E	Coeff	S.E	Coeff	S.E	Coeff	S.E
Financial training	-0.050	0.16	-0.103	0.243	0.048	0.115	-0.540**	0.245
Business Plan	-0.118	0.154	-0.077	0.284	-0.215**	0.109	-0.0785	0.237
Regular accounting reports	0.291*	0.164	-0.72***	0.27	0.181	0.158	0.108	0.267
Export	0.15	0.271	0.018	0.314	0.0122	0.103	-0.175	0.255
Innovation	-0.313*	0.165	0.456*	0.273	-0.226**	0.106	0.0079	0.239
First time applicant (yes==1)	-0.27	0.165	0.121	0.266	-0.99***	0.122	-0.664**	0.294
Application to main bank (yes==1)	-0.526**	0.243	0.934***	0.36				
Money for daily cash purposes					-0.043	0.171	0.322	0.328
Money for asset purchasing	-0.116	0.161	-0.179	0.264				
Money for funding growth	-0.185	0.169	-0.64***	0.236				
Amount sought (ref: <10k)								
10-100K	-0.144	0.169	0.238	0.357	0.00769	0.112	0.033	0.29
>100 K	-0.187	0.204	0.729*	0.381	0.124	0.186	0.0299	0.349
business age (ref: start-ups)								
2-5 yrs	0.203	0.248	0.457	0.373	0.365**	0.175	-0.0225	0.36
6-15 yrs	0.197	0.244	0.167	0.426	0.550***	0.177	0.232	0.384
>15 yrs	0.551**	0.244	0.279	0.443	0.599***	0.186	0.39	0.393
Size (ref: 0 employees)								
1-9 emps	0.296*	0.16	0.025	0.319	0.108	0.116	-0.411	0.299
10-49 emps	0.656***	0.219	0.660*	0.356	0.448***	0.152	-0.373	0.336
>50 emps	1.016***	0.292	1.110**	0.429	0.619***	0.211	0.605	0.422
Business run by female	-0.0107	0.178	0.703***	0.25	0.154	0.112	0.484**	0.235

Location (ref=rest of the UK)								
London	-0.440**	0.222	-0.421	0.391	-0.277*	0.15	0.508	0.342
South East	0.195	0.206	0.108	0.311	0.047	0.15	-0.145	0.326
Sector (ref= community and personal services)								
Agriculture	0.495	0.326	1.037**	0.453	0.00332	0.22	0.474	0.427
Manufacturing	-0.488	0.332	0.429	0.432	-0.22	0.247	-0.335	0.452
Construction	-0.409	0.326	0.661	0.513	-0.277	0.205	0.423	0.428
Services	-0.305	0.284	0.338	0.334	-0.452**	0.187	-0.276	0.373
Real Estate	-0.414	0.311	0.704*	0.409	-0.274	0.213	0.138	0.376
Legal (sole proprietorships ==1)	0.0549	0.183	0.257	0.281	0.0157	0.124	-0.304	0.302
Wave (ref==2011)								
2012	0.227	0.21	-0.0468	0.29	-0.136	0.122	-0.0431	0.273
2013	-0.0923	0.222	0.242	0.333	-0.229*	0.129	-0.379	0.284
2014	0.513	0.333	1.042*	0.546	-0.36	0.256	-0.41	0.557
Constant	0.402	0.521	-1.938**	0.771	0.725**	0.330	0.516	0.67
Observations	1228		416		3312		491	
p	0.0		0		0		0.00363	
Summer's D	72%		58%		77%		68%	
*** p<0.01, ** p<0.05, * p<0.1								

Table 2.3. Weighted Probit model for the effects of advice on the probability of successful application

Turning to measures of risk and hypothesis 2b, we find no evidence that exporting is a significant variable in explaining the probability of successful applications in both advice-seeking and non-seeking models. On the other hand, the negative effect of innovation on application success is absent from advice-seeking models and, indeed, is positively associated with successful loan applications. In both types of application, advice-seeking (and taking) benefits innovative firms.

Our results also suggest that advice-seeking reduces the negative effects of smaller size and younger age on application success. For both overdraft and loan applications in the non-advice seeking group, size and age of the business are significant factors in explaining the probability of successful application. As one would expect, smaller and younger firms occupy unfavourable positions in lending markets in comparison to their better resourced and experienced counterparts. However, in our advice-seeking group, age is no longer a significant predictor of success. In a similar way, advice seeking seems to mitigate the liability of smallness when applying for overdraft funds – although the effect on loan applications is only partial: In loan applications, the negative effect of size on smaller firms is removed relative to firms with 1 to 10 employees. However, firms with more than 10 employees are still more likely to achieve a successful outcome than zero-employee firms. In general, advice helps to remove the positive significant effect of age and size in applications for bank finance. Advice taking may have an important role to play in bridging the knowledge gaps of micro firms and start-ups and help them overcome 'liabilities' associated with newness and smallness.

Moreover, as anticipated, loan applicants are significantly less likely to enjoy initial application success when they apply exclusively to their main banks. However, this effect turns positive when applicants seek advice beforehand. It seems that advice may increase the entrepreneur's knowledge of credit markets and, in consequence, their

confidence in their ability to secure a loan from their main bank. Advice taking also increases the chance of a successful application for larger loans. In the advice-seeking group, larger applications have a better chance of being successful. In the non-advice seeking group, the size of the facility is not associated with success. Finally, in the case of overdraft applications, first time applicants are significantly less likely to be successful; and advice-seeking does not alter this observed relationship.

Taken together, we interpret the results to indicate support for hypothesis b2. That is, to the extent that advice-seeking ameliorates the risks associated with innovativeness, age, size and single sourcing, it improves the prospects of small firms. This is also in line with the reported association between use of advice and lower level of perceived difficulty in raising external finance (Scott and Irwin, 2009).

To summarize both stages of analysis; we find some evidence that more diligent entrepreneurs are more likely to seek external advice when they decide to apply for bank facilities. However, they are not more likely to benefit from the advice sought in terms of improved chances of application success. Of course, this need not be interpreted as 'no effect'. Rather, advice-seeking could result in increased knowledge and confidence and an unwillingness to accept the first offer. Unfortunately, our data does not allow us to explore this further and we are constrained to simply note the absence of an association with initial funding outcomes.

On the risk measures, we find that innovative firms are more likely to seek advice when the entrepreneur decides to apply for a bank loan and to benefit from the advice sought. Advice also improves the prospects of firms applying solely to their main banks. We speculate that this revolves around removing the negative effect of information restricted by the main bank and increasing the chance of successful application. Our strongest findings, however, relate to the effect of advice in attenuating difficulties in

obtaining bank facilities for newer firms and, to lesser degree, smaller firms. Younger firms across all models were shown to be the main consumers of pre-application advice and to benefit from the advice sought. In other words, newer and smaller firms that have accessed external advice appear to be more 'debt ready' than their counterparts who eschew advice. They are able to obtain what they need in shorter time, with less physic pressure, allowing the entrepreneur to spend more of their limited time and energy on developing the early stage firm.

2.6. Concluding Remarks

To date, the literature on small firms and their banks has been dominated by concerns with funding outcomes, with some limited work on supply-side lending technologies (Berger and Black, 2011; Cowling et al., 2012). The former often models application success as a function of a vector of firm and/or entrepreneur characteristics; to identify turn down rates or, more recently, adverse loan conditions among specific sub-sets of small firms (e.g. innovative, growing or exporting firms) or entrepreneurs (e.g. firms owned by women or visible minorities). This approach treats firms as islands of decision-making, which sits ill with longstanding evidence on the extensive use of external sources of advice by small firms (Bennett and Robson, 1999).

Although small firms may be susceptible to credit rationing, this phenomenon is less likely to exist in the long run when the finance market for small firms is in equilibrium: i.e. there is a price at which the supply and demand for credit are equal. However, the price mechanism works under several conditions. For small firms "the key assumptions most likely to be contravened are those of perfect information and the absence of externalities" (Storey, 2003, p. 476). Imperfect information can give rise to perceived riskiness and leads to risk overestimation. Although there is limited evidence of broad-based credit rationing, with turndown rates historically low, there is some evidence that

particular groups of small firms fare less well (e.g. the very young and small, innovative firms and growing firms). These groups are thought to be 'riskier'. And, since many of the sources of risk are thought to be intractable, the typical response is to call for supply-side interventions. For example, policies such as Loan Guarantee Schemes (LGS) reduce the objective risk to the lender by transferring much of the default risk to the government, encouraging the lender to fund projects which are not likely to secure debt without government intervention.

However, a focus on supply-side interventions appears to ignore the possibility that the risk involved is a combination of both objective and subjective risk. The former may well be intractable (and amenable only to transference), but the latter is surely not. Rather, it is likely to be a function of information-asymmetries and may well be responsive to demand-side actions. One example of such effort is the "investment readiness" initiatives in the UK, which aim to prepare firms for equity financing (Mason and Harrison, 2001). There may also exist scope for better equipping small firms for lending markets (Freel 2007). These efforts may help small, high-risk firms to reduce their perceived riskiness and increase their chance of accessing debt with less effort, in shorter time, and on more favourable terms.

In the current study, we are interested in the extent to which a particular form of demand-side action – advice seeking – acts to reduce identified liabilities in loan and overdraft applications to improve the prospects of small firms. Encouraging SMEs to access external advice has been a central plank of enterprise policy in most developed economies (Cumming and Fischer, 2012). In the UK, for instance, the government has sponsored the creation of a "mentoring gateway" (www.mentorsme.com), which seeks to link entrepreneurs with potential sources of advice in the public and private sectors. Outside of the UK, McCann and Ortega-Argilés (2016, p. 546), in their review of

European enterprise policy, suggest that for “small and micro-enterprises, in particular, basic business advice may be the single most cost-effective form of support”. However, the advice offered under the ambit of enterprise policy is typically not specific to bank finance and, where it touches on financing at all, it is explicitly concerned with “investment readiness” (e.g. Department for Business, Innovation & Skills 2011, 7).

Drawing upon data from the UK SME Finance Monitor (BDRC Continental, 2014), we investigate the link between borrowing-specific business advice and loan application success. Initially, we explore the extent to which diligence and risk associate with advice-seeking. In both cases, we observe that more diligent entrepreneurs and those leading riskier businesses are more likely to seek advice.

Thereafter, we speculate that the benefits of advice-seeking will be greatest among diligent and risky businesses. Our results do not support the former; but strongly support the later. The prospects of innovative, new and micro firms are enhanced following lending-specific advice. The results suggest that demand-side efforts aimed at alleviating risk may be fruitful. In other words, advice-taking for the purpose of external financing may mitigate the ‘liability of smallness and newness’ and liabilities associated with innovativeness.

Additional evidence of the positive impact of advice is important. A UK report (BMG Research, 2011), exploring barriers to the take up and use of business advice, noted that “[w]ith regards to the various categories of market failure, doubts about the benefits and value of assistance in relation to its cost appeared to be the most common form of market failure” (p. 71). This echoes Storey’s (Storey, 2003) earlier assertion that “[s]mall business owners do not realise the private benefits of obtaining expert advice from "outside" specialists”. That our results suggest a positive impact of advice on bank financing provides practical guidance to entrepreneurs.

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Essay 3- Discouraged Borrowers Aftermath of Financial Crisis: A UK Context Assessment

Abstract

The purpose of this paper is to investigate the trend of discouragement in the SME's lending market during the aftermath of the financial crisis of 2008. It detects the extent to which the responses of discouraged firms to improvements in the lending market are lagged.

The results are based on surveys of UK SME Finance Monitor (2011-2016). Probit regression models were used to assess the effect of time passed from the financial crisis on the probability of discouragement. The analysis, inter alia, shows that the rate of discouragement has reduced significantly since 2013. The results highlight the long-term effect of tightened credit supply on SMEs that are ready to invest, but hold back because of fear of rejection.

The research suggests addressing imperfect information among discouraged SMEs that are recuperating from the financial crisis. With the rise of information asymmetry, entrepreneurs show a higher level of fear of rejection by financial institutions. The longer the effects of the financial crisis exists among entrepreneurs, the longer they self-ration from credit market, which subsequently leads to reduced levels of investment, growth, and innovation among SMEs.

This research fills a gap in the literature of the effect of financial crisis on the latent demand for lending. It discusses the long-term effect of tightened credit supply among entrepreneurs even though the supply side has recuperated and recommenced pre-crisis activities.

3.1. Introduction

This research seeks to add to our understanding of the effect of credit squeeze after the 2008 financial crisis on small and medium sized enterprises (SMEs), particularly firms that are discouraged from borrowing. A number of studies have explored the effect of the financial crisis on SMEs, indicating that small firms faced particular problems in accessing external finance (Vermoesen et al., 2013; Lee et al., 2014; Kremp & Sevestre 2013; Cowling et al., 2012). Research also indicates that there is less demand for external finance as a result of the credit squeeze (i.e. Cowling et al., 2012; Vermoesen et al., 2013). These studies focus on customers who *applied* for external financing. In the current study; however, the concern is with *latent demand*. The aim is to shed light on the proportion of small firms that hesitate to declare their demands known as "Discouraged Borrowers". These firms are differentiated from other non-applicants by their desire for credit. They refuse to ask for credit, not because they rely on other sources of finance, or they do not need it, but because they fear their applications being turned down (Kon and Storey, 2003). Research shows that initial credit squeeze created a rapid increase in the rate of discouragement in the UK lending market (Cowling et al., 2016). This research tries to understand to what extent this effect lasted.

Current research regarding the profiles of discouraged borrowers are still scant and there is merit in understanding how shocks in the lending market could lead to increased fear of rejection among entrepreneurs. The importance of acknowledging discouraged borrowers is twofold: i) financiers may lose potential customers, and ii) a good but discouraged borrower relies on internal financing, which may limit investment and, subsequently, growth.

Access to finance is not the only determinant of a firm's survival or growth (Cressy, 1996), but it has been identified as a critical factor for growth (Beck et al., 2005; Beck and Demirguc-Kunt, 2006; Coleman, 2002). As a firm develops and accumulates internal finance, its reliance on internal financing for growth diminishes and the use of external financing increases (Rahaman, 2011). The longer a firm hesitates to declare its financial need, the longer it needs to rely on internal financing and the likelihood of abandoning investment projects is greater (Price et al., 2013). With credit tightening, the gap between the cost of external and internal funds increases (Bernanke and Gertler, 1995). This affects firms directly through increased financing expenses and indirectly through decreased asset values (Bernanke and Gertler, 1995). Smaller firms are less able to compensate with short term financing; therefore, they take cost-cutting measures, especially during a recession (Bernanke and Gertler, 1995). A proportion of non-applicants, however, face self-imposed credit rationing. These firms need capital, but they don't have the confidence to apply for credit.

With the rise in information asymmetry, more firms are discouraged from applying for external financing (Cowling et al., 2016). They do not perceive themselves as good borrowers in the lending market. It may be expected that discouragement would decrease as banks resume previous levels of credit supply. A key question is by what means do firms respond to the improved lending environment and thus display decreased discouragement? Understanding the lagged effect of credit improvement on discouragement creates a window of opportunity to address higher perceived riskiness and the undeclared demands of firms that are ready to invest again.

To test the research question, 18 waves of UK Surveys of SME Finance Monitor (2011-2016)[1] are drawn upon (BDRC Continental, 2016). The surveys collect information about finance related activities as well as discouragement. Probit models examine the relationship between the probability of discouragement among SMEs and the time passed from the 2008 financial crisis. The results of this study show that, *ceteris paribus*, decrease in discouragement lags improvements in lending market conditions. This suggests that SME owners' or managers' perceptions recover more slowly than the economy. Importantly, the improvement in discouragement lags traditional supply side indicators of the health of the small business credit market.

This paper starts off by discussing the situation of small firms during the financial crisis and its relation to the theory of discouraged borrower. It then goes on to provide a description of the lending market for small firms in the context of this research (the UK at the time of crisis) and is followed by the presentation of the data and methodology used to test the research question. Finally, the findings and implications are discussed.

3.2. Literature review

The Pecking order theory (Myers and Majluf, 1984) argues that firms, after exhausting internal resources, turn to external financing and prefer lower cost external finance: debt financing. Banks are the main source of debt finance for small firms (Berger and Udell, 2003). When a firm does not have access to finances offered by banks when needed, it may abandon its investment, rely on internal sources, or look for more expensive methods of financing. This may impose additional barrier to a firm's growth. Due to higher information opacity, smaller firms are prone to tighter access to

1 https://discover.ukdataservice.ac.uk/

capital (Stiglitz and Weiss, 1981). One of the consequence is being more susceptible to credit rationing: being denied credit, despite being indistinguishable from good borrowers and willing to pay the market price (Parker, 2002). Research on entrepreneurial finance shows that some types of small firms may face a higher rejection rate (Freel, 2007; Irwin and Scott, 2010), but that the majority receive what they apply for (Fraser, 2004; Vos et al., 2007). At the time of crisis, SMEs faced a more restricted credit market (BMG Research, 2014), but the majority of applicants still did not face absolute credit rationing (Lee et al., 2014).

Importantly, research shows that a larger proportion of firms are discouraged from applying for external finance than that of firms that applied and could not secure any form of finance (Freel et al., 2012; Levenson and Willard, 2000). In one UK based study, the number of discouraged firms is estimated at twice the level of firms that were rejected[2] (Freel et al., 2012). If discouragement is an effective self-rationing mechanism (Han et al., 2009), then mainly bad borrowers will be excluded from the market. However, if discouraged firms misjudge their creditworthiness, then entrepreneurs decide adversely (Kon and Storey, 2003). In fact, they self-impose credit constraints. Given that a large number of firms are discouraged from loan applications, "appropriately" or "inappropriately" (Freel et al., 2012, p. 415), there is merit in turning our attention to discouraged firms during the aftermath of the credit crisis.

Based on Kon and Storey's (2003) model, discouragement is a function of information asymmetry, cost of application, and the difference between price of funds at banks and

2 According to Cowling et al. (2016), in 2008 2.65% of population of SMEs are discouraged. This figure in 2005 is 8.1% in Freel et al (2012) with a different survey. The estimations of proportion of discouraged firms vary across different countries and methods of measurement (Chakravarty and Xiang, 2013; Cole and Sokolyk, 2016; Cowling et al., 2016; Ferrando and Mulier, 2015).

other credit institutions. Imperfect supply side information might result from banks not having enough information about firms to evaluate applications accurately. As banks accumulate data on their customers and build a benchmark for comparing new applications, entrepreneurs must increase their efforts in preparing applications. Consequently, both application costs and the fear of being rejected rise. Conversely, firms might not be confident of their prospects. When firms increase their information about their own prospects, good borrowers are more likely to apply and bad borrowers are more likely to exclude themselves from lending markets. Alternatively, a "two-sided screening error model" might exist where both these situations are combined.

The financial crisis and subsequent changes in the economy and in financial markets exacerbated imperfect information to both sides. One, the prospects of businesses diminished. And two, banks tightened credit to all customers, with small firms being disproportionately penalized (Bank of England, 2010; Kremp and Sevestre, 2013). With increased information asymmetry, one would expect to observe a higher rate of discouragement among SMEs. Conversely, one would expect to detect a lower probability of discouragement when the information opacity decreases. Following this one anticipates an inverted U curve in the rate of discouragement following the financial crisis. This study seeks to know more about the reaction of the entrepreneurs to the fluctuations of information asymmetry in lending market.

On the side of businesses, the financial crisis of 2008 was followed by increased payment delay, insolvency for businesses, reduced demand for loans ((OECD), 2009), and increased rates of loan write offs and default (Bank of England, 2009a, 2013). In the UK, Gross Domestic Product (GDP) at constant price dropped in 2008, started recovering in 2009 and reached the pre-recession level in 2012 (Office for National

Statistics, 2016). The percentage of firms that experienced growth in employment and turnover, dropped with the onset of the crisis (Cowling et al., 2015; IFF Research, 2012). In terms of growth in employment, after the initial fall, SMEs have been able to hire more employees since 2009; however, growth in sales did not recover as quickly (Cowling et al., 2015). Overall, with improvement in economic conditions, the economic climate has not been perceived as a major barrier to firms' growth since 2012 (BDRC Continental, 2015). In short, business prospects diminished with the financial crisis and started to recover slowly since 2012.

In terms of funds loaned, in the aftermath of the financial crisis banks reduced their lending: both good and bad borrowers were evaluated with new set of criteria. This could be seen as screening error for the customers who were not creditworthy in the aftermath of financial crisis. Therefore, the information asymmetry had risen. (Armstrong et al., 2013; Bank of England, 2009b; Cowling et al., 2012; Kremp and Sevestre, 2013). Supply, or what banks lent to SMEs showed a decline in application approval rate and a quick recovery; however, demand, or what entrepreneurs ask for, declined but did not recover as quickly as the supply side.

On the supply side, Cowling et al. (2012) noted a drop in the percentage of approved applications, and a recovery after 12 months. This, however, was in the face of significant decline in demand. From 2009, small firms requiring bank finance were largely able to secure it (IFF Research, 2011). Armstrong et al. (2013) observe that the turndown rate did not recover until the end 2012; although, the marginal negative effect of time decreased compared to 2008-2009. As a result, SME owners and managers perceived external financing as less affordable (IFF Research, 2012; North et al., 2013; Price et al., 2013). Studies show that firms were more susceptible to

partial than absolute credit rationing (Kremp and Sevestre, 2013; Lee et al., 2014). However, SMEs acknowledged an improvement in the lending environment in 2011 (Bank of England, 2011a). In summary, UK-based studies show that starting from 2010, SMEs faced a more favourable situation than during 2008-2009.

The demand side tells a different story. The series of *Trend in Lending* reports (2009-2013) show that the growth rate in net lending for all firms has decreased since the financial crisis, but the drop is milder for SMEs. That is likely to be because SMEs did not have access to substitute sources such as capital markets (Bank of England, 2009b). Some firms were more resilient at the time of financial shock and continued to invest and take advantage of lower interest rates and a smaller number of competitors (Kitching et al., 2009; Price et al., 2013). In spite of these, the growth of net lending to SMEs is negative from the end of 2009 till 2013 (Bank of England, 2013) . The recovery of demand in SMEs was slower than in larger firms. While demand for all firms rose from 2010, SMEs still decreased their use of bank loans. Interestingly, smaller firms (firms with less than £1M annual sales) experienced a sharp negative growth rate without recovery from 2010-2012 (Bank of England, 2012). In short, the demand side did not recover as quickly as the supply side.

This unwillingness to invest is also reflected in the rise of the proportion of discouraged borrowers towards the end of the recessionary period, "…suggesting that initially entrepreneurs anticipated that the supply of loans would not diminish too much, and only when it became clear that banks were rationing credit persistently did entrepreneurs become disillusioned about applying for loans" (Cowling et al., 2016, p. 20). A comparison of the characteristics of discouraged borrowers and firms whose loan applications were declined shows that a significant proportion of discouraged

firms would likely have been approved, if they had applied (Cole and Sokolyk, 2016; Cowling et al., 2016). In 2010, UK banks resumed the previous lending criteria, the turndown rate recovered (Cowling et al., 2012), and the majority of firms were able to secure finance. As firms' confidence in the banking system and macroeconomic factors improved, they increased their demand for credit (Bank of England, 2009b). Following this, it is expected that discouraged firms should also perceive these positive signs and discouragement should decline as the economy improves.

The importance in understating the lagged effect of the credit squeeze on discouragement is in acknowledging the higher perceived riskiness of the businesses. With the recovery in the supply side, the sooner the firms reassess their perceptions of risk at banks and apply for bank loans, the faster they will have access to the growth funds.

3.3. Data and methodology

The data used in this study are a series of cross section surveys drawn from the UK Small and Medium Sized Enterprise Finance Monitor, 2011-2016 (BDRC Continental, 2016). The survey is conducted quarterly and collects information on SME financing. The unit of analysis is firm with less than 250 employees and/or £35 Million annual sale. The sample is initially provided by Dun & Bradstreet and Experian and is structured across all sizes, sectors, and regions. Data is provided on a 10-wave basis. Therefore, in order to have all the waves, the first and last available datasets were combined and the sampling weights were adjusted. The sample used in this study covers the first and second quarter of 2011 (combined) until the end of 2015. Each wave contains around five thousand observations, giving a sample size of ninety five thousand firms. Without applying sampling weights, the sample is biased

towards larger firms. Employing sampling weights, the final sample is representative of 4.5 million SMEs in the UK (BDRC Continental, 2014).

The respondents to the surveys are the persons in charge of the financing decisions of the firms (the owner or principal manager). Each survey collects information via telephone interviews on the usage, application, or alteration of loan and overdraft facilities. Moreover, the sample provides information on the size and age of the firms, sector, legal status, geographical location, as well as entrepreneur's age, financial certification, and gender. Data on innovation, exporting, credit risk, and using other financial facilities is available. The definition of all variables used in this study is presented in table 1.

The Probit model is used in this study to suit the binary dependent variables. As discouragement was only measured for firms that expressed a need for credit at the time of survey, the analysis is prone to selection bias. Firms that did not desire credit are not considered in the sub-sample. To attempt to control for this potential bias, a Heckman (1979) two-stage model was estimated by considering the probability of neediness for credit for all firms. In the first stage, the probability of neediness for credit is modeled through business size, age, legal status, industry, and growth intention. Growth intention is the discriminatory variable that is expected to explain desire for credit, but not discouragement. The Inverse Mill's ratio of this model is incorporated in the model of interest. However, it was not significant in any of the models. Therefore, the results of one stage Probit model is presented in table 2.

In addition to discouragement model, a rejection model is also included in the analysis. Previous research shows that after 2010 the lending criteria resumes for lending to smaller firms (Cowling et al., 2012) ; therefore, it is expected that time is

not associated with the rejection rate after this year. The rejection models control for this assumption.

3.3.1. Dependent variable

Discouraged borrowers, in this study, are small firms that desire capital but do not apply for loans *specifically* due to the fear of being declined. Some firms need capital but avoid applying for bank loans for other reasons such as securing the money from other sources, not preferring borrowing, not having the time or knowledge to complete applications, or not wanting to commit to the conditions of borrowing. These firms are not identified as discouraged borrowers. Among the non-users with a desire for credit, discouraged borrowers are those who didn't apply to the bank only because they "thought": they would be turned down, that it was not the right time to borrow, or that banks were not lending. The dependent variable takes the value '1' if the firm is a discouraged borrower and zero if they needed capital and they could secure funds. Overall, 7568 firms showed a desire for loans, among which 1657 were discouraged. After employing sample weights, only 7.1% of the population needed credit and, among these firms, one third applied for a loan and one third feared rejection (2.1% of population). Among firms who needed credit, the proportion of discouraged firms decreased since 2012. To understand to what extent these changes are significant and not due to changes in firms' and entrepreneurs' demographics, a multivariate analysis is presented.

3.3.2. Independent variable

A categorical variable captures the year in which the surveys were conducted. The reference year in each analysis is 2010, noting that the 2011 surveys enquire about the financing practices during 2010. Therefore, the study investigates the change in

discouragement from 2010 to 2014. There are similar surveys on SME financing in the UK for 2007, 2008, and 2009. However, the differences in the definition of discouragement and the range of years each survey covered did not allow for combining surveys and examining the trend of discouragement before and after the crisis. To this end, reliance is on the most recent research in the UK context by Cowling et al. (2016) that reported a sharp increase in the rate of discouragement at the end of financial crisis.

3.3.3. Control variables:

As discouragement is a function of imperfect information, to separate the effect of time passed from the credit squeeze, variables associated with information asymmetry between banks and small firms are included in the multivariate models. The first group of control variables belongs to the entrepreneur. In this study, holding a financial qualification and the entrepreneur's age are used as proxies for the entrepreneur's education and experience. Although education is not shown to have a relationship with difficulty in raising finance (Irwin and Scott, 2010), it affects the prospect of the firm (Westhead and Storey, 1995). Less experienced entrepreneurs are more likely to be discouraged in the lending market (Han et al., 2009). However, Cowling et al (2016) found that during a recessionary period, more experienced and educated entrepreneurs are more likely to be "realistic" and refrain from applying to banks. Female entrepreneurs demand less credit (Cowling et al., 2012). This could be explained through lower confidence in approval of their application and more inclination to avoid extra risk and control over business (Constantinidis et al., 2006; Watson et al., 2009).

The second group of control variables relates to structural risk: firms age and size. Both of these variables are recognized for their effects on credit rationing and discouragement. The larger and more established a firm is, the less likely it is to face difficulty in raising finance (Beck et al., 2005; Binks and Ennew, 1996; Cassar, 2004; Chakravarty and Xiang, 2013; Freel et al., 2012; Han et al., 2009; Vos et al., 2007). The probability of discouragement decreases as firms grow in size (Chakravarty and Xiang, 2013; Freel et al., 2012; Han et al., 2009). The higher level of discouragement in smaller and younger firms may also be attributed to the more limited relationship they have with their banks (Chakravarty and Xiang, 2013). Larger firms were less likely than SMEs to face application turndown during the crisis. Therefore, it is expected that they experience less fear of being declined. In addition, firm size and age may determine the performance, and consequently, the "serviceability" of the firms at the time of crisis (Cowling et al., 2015; Peric and Vitezic, 2016).

The dataset contains credit risk ratings for the firms. The sample providers input risk ratings. A categorical variable is used to classify low, medium, and high-risk firms. The findings of Han et al. (2009) show those riskier borrowers are more likely to be discouraged having controlled for key characteristics of the business and the entrepreneurs. This is also in line with the finding of Cowling et al. (2016) for the UK market during the recessionary period. Inclusion of credit risk in the model is an attempt to control for the effect of unobserved variables such as assets (Berger and Udell, 2006; Robb and Robinson, 2014).

Beside structural risk, some degree of higher information opacity is attributed to the firm's strategy. Exporting firms are better able to diversify their sources of financing through national and international channels and they have superior performance to

generate significant cash flow (Ponikvar et al., 2013). Thus, it is possible that exporting decreases discouragement through better serviceability and financing options. The effect of innovation on discouragement could be through large sunk cost in the face of an uncertain outcome. Higher information opacity of innovative firms are reflected in higher application turndown rates (Freel, 2007; Lee et al., 2014; North et al., 2013) and higher loan prices (Nitani and Riding, 2013). In addition, legal status might influence the entrepreneur's perception about the credibility of the business.

The next group of variables measures the information banks have about the performance of the entrepreneur. Two dummy variables are included in the model to specify whether the firms use credit card and overdraft facilities (Cole and Sokolyk, 2016). It is hoped that inclusion of these variables could partially control for the amount of information banks have about their customers. In addition, whether a firm banks with more than one financial institution is considered in the data. It is expected that the more resources that are available to entrepreneurs, the less likely it is that they will feel discouragement (Cole and Sokolyk, 2016). Firms were also asked how satisfied they are with their relationship with their banks. It is expected the more satisfied customers show less discouragement.

Performance of the firms in the year prior to the time of survey is also included. Firms that perform better in terms of revenue and profit, are more likely to consider themselves creditworthy and less likely to be discouraged (Xiang et al., 2015). A dummy variable is included to report whether the firm was profitable in the last year or not. In addition, a categorical variable measures the annual sale turnover of firms.

The industry in which the firm operates might influence business prospects. Before the crisis, growing firms could be found indiscriminately across all the industries.

However, the financial crisis affected firms heterogeneously (Cowling et al., 2015; Peric and Vitezic, 2016). For example, in the UK, the largest decline in sales and employment happened to manufacturing and construction firms, respectively (Cowling et al., 2015). In addition, some sectors such as manufacturing have more assets to be pledged as collateral; therefore, they may have different financing needs (Johnsen, 2005). A firm's region is also included to account for differences in shared information between banks and their customers (Rauterkus and Munchus, 2014).

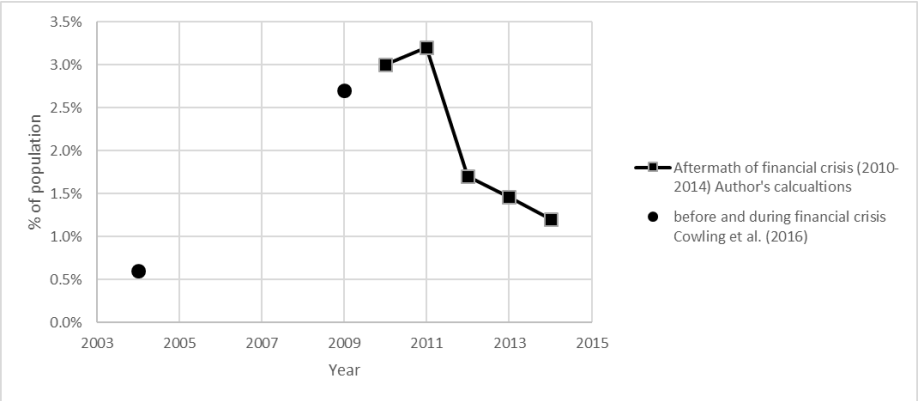
LIBOR[3] interest rate for GBP was initially considered a proxy for the costs of borrowing. Cost of borrowing is shown to be associated with discouragement (Ferrando and Mulier, 2015). All the indices tried in the analysis were highly correlated with time (Atanasova and Wilson, 2004). To account for the change in the price of the loan and avoid multicollinearity problem, the change in LIBOR interest rate is included in the model. The difference is measured by the change in the average rate from 12 months prior to survey to the end of the quarter in which the survey is conducted. Both overnight and 12-month rates are considered in the analysis and the results are not different. In this paper, the results of the change in overnight rate are reported[4].

3.4. Descriptive statistics

The proportion of discouraged borrowers during the crisis is presented in figure 1[5]. Combining with the finding of Cowling et al. (2016), the trend of discouragement in the UK market follows an inverted U curve. The highest rate of discouragement is

3 http://www.global-rates.com/interest-rates/libor/british-pound-sterling/british-pound-sterling.aspx
4 Ethnic minorities are also more prone to discouragement (Han et al., 2009). In the current data; however, the ethnicity is missing for 50% of the responses. Therefore, it is not included in the analysis
5 In the calculations of Cowling et al. (2016), discouraged borrowers are defined as firms that avoid applying for loans due to fear of rejection and high costs of application. As a robustness check, entrepreneurs who were discouraged from applying due to concerns over the high cost of application are also considered in the definition of discouraged borrowers. The result of the multivariate analysis with this new definition of discouragement was not different.

3.2% of population in 2011 (about 147 thousand firms). This figure drops in 2012 and reaches 1.2% in 2014.



[6]

Figure 3.1. Percentage of discouraged firms in the UK populations of SMEs

Table 1 presents the descriptive statistics for the total sample, firms that need, and those that did not need loans. For the firms that needed loans, the descriptive statistics for applicants and discouraged firms are presented. After incorporating sampling weights, 30% of the firms in the sample are in manufacturing and construction sectors (Production). Around 20% of the firms are start-ups with less than 2 years of activities. Firms with no paid employees comprise 74% of the sample. Only 0.5% of firms have more than 50 employees. These figures are close to population estimates (BDRC Continental, 2014).

[6] In the calculations of Cowling et al. (2016), discouraged borrowers are defined as firms that avoid applying for loans due to fear of rejection and high costs of application. As a robustness check, entrepreneurs who were discouraged from applying due to concerns over the high cost of application are also considered in the definition of discouraged borrowers. The result of the multivariate analysis with this new definition of discouragement was not different

Variable	Definition	All (1)	No need (2)	Need loan [b] (3)	(2 vs. 3)	Applicant (4)	Discouraged (5)	(4 vs. 5)
Number of observation		95,273	87,704	7568		3789	1657	
Population size		4,548K	4,226K	32K		115K	95K	
Weighted percentage (of population)		100%	92.90%	7.10%		2.55%	2.09%	
Size	Measured by number of employees, categorical variable							
0		0.740	0.747	0.660	***	0.572	0.724	***
1 to 9		0.221	0.215	0.298	***	0.361	0.253	***
10 to 49		0.031	0.031	0.036	***	0.055	0.020	***
50 to 250		0.005	0.006	0.005	*	0.010	0.002	***
Business age	Measured by years from establishment, categorical variable							
<2 years		0.200	0.195	0.263	***	0.234	0.310	***
2 to 9 years		0.369	0.368	0.386	***	0.340	0.410	***
>10 years		0.430	0.436	0.351	***	0.425	0.279	***
Sole Proprietorship	Legal status dummy (0,1)	0.653	0.657	0.605	***	0.525	0.692	***
female	Gender dummy (0,1)	0.219	0.220	0.196	***	0.185	0.204	***
owner's age	Entrepreneur's age, categorical variable							
less than 30		0.068	0.067	0.085	***	0.084	0.084	
30-50		0.501	0.498	0.540	***	0.531	0.563	***
50-65		0.358	0.360	0.328	***	0.335	0.322	***
>65		0.071	0.073	0.045	***	0.048	0.029	***
Industry	Sector dummy, categorical variable							
Agriculture		0.043	0.042	0.046	***	0.064	0.034	***

Variable	Definition	All (1)	No need (2)	Need loan [b] (3)	(2 vs. 3)	Applicant (4)	Discouraged (5)	(4 vs. 5)
Production		0.290	0.291	0.266	***	0.263	0.286	***
Retail		0.192	0.189	0.238	***	0.243	0.242	
Hotels and restaurant		0.034	0.032	0.051	***	0.062	0.048	***
Real Estate		0.262	0.265	0.226	***	0.204	0.218	***
Health and social work		0.177	0.178	0.170	***	0.161	0.169	***
Location	Location of the firm, categorical variable							
London		0.170	0.167	0.196	***	0.172	0.200	***
Southeast		0.160	0.160	0.152	***	0.141	0.163	***
Rest of the UK		0.670	0.671	0.651	***	0.686	0.636	***
Financial training	Entrepreneur with financial training dummy (0,1)	0.252	0.250	0.275	***	0.299	0.255	***
Export	Exporting firm dummy (0,1)	0.083	0.081	0.110	***	0.108	0.103	***
Innovation	Process and/or product innovator firm in the last three yrs (0,1)	0.381	0.372	0.506	***	0.531	0.473	***
Risk [a]	Credit risk rating, categorical variable (provided by sample providers)							
Low risk		0.194	0.198	0.140	***	0.207	0.089	***
Medium risk		0.308	0.311	0.276	***	0.282	0.253	***
High risk		0.496	0.489	0.582	***	0.510	0.656	***
Sale [a]	Last year sale turnover in GBP, categorical variable							
<50K		0.618	0.622	0.570	***	0.452	0.675	***
50-100K		0.170	0.170	0.166	***	0.180	0.151	***
100-500K		0.138	0.135	0.173	***	0.232	0.115	***

Variable	Definition	All (1)	No need (2)	Need loan [b] (3)	(2 vs. 3)	Applicant (4)	Discouraged (5)	(4 vs. 5)
500-1M		0.033	0.032	0.041	***	0.055	0.030	***
1-5M		0.033	0.032	0.041	***	0.067	0.024	***
>5M		0.006	0.006	0.006		0.012	0.002	***
profit [a]	Firm showing profit in the last year (0,1)	0.733	0.743	0.613	***	0.705	0.523	***
Relationship with main bank	Firm's level of satisfaction with relationship with the main bank, categorical variable							
Not-Satisfied		0.094	0.079	0.295	***	0.306	0.303	
Neither		0.090	0.087	0.129	***	0.099	0.156	***
Satisfied		0.815	0.833	0.574	***	0.594	0.539	***
Credit card	Firm using credit card (0,1)	0.168	0.160	0.267	***	0.326	0.236	***
Overdraft	Firm using overdraft (0,1)	0.192	0.180	0.344	***	0.416	0.306	***
more than one bank [a]	Firm banking with more than one bank (0,1)	0.015	0.012	0.045	***	0.064	0.040	***

*, **, *** significant at 0.1, 0.05, and 0.01
a Number of observations is different due to missing values.
b There is a third group of firms that desire credit that are included in this analysis. These firms refrain from applying for bank loan because of reasons other than fear of being rejected by banks.

Table 3.1. Definition of variables and descriptive statistics- Percentage (weighted analysis)

A comparison among different groups of firms that needed loan shows that discouraged firms are smaller and younger firms. With an increase in credit risk level, the proportion of discouraged firms increases. In terms of firm strategies, exporting and innovating firms show more desire for credit and less discouragement. Women appear to be less in need of loans, but they make up a higher proportion of discouraged firms. Lower annual sales associate with a higher likelihood of being discouraged. The use of credit cards, overdrafts, and working with more than one bank are associated with a smaller proportion of discouraged firms.

3.5. Main results and discussions

Table 2 shows the results of Probit regressions in one-stage models for: discouraged firms versus applicants; and rejected firms versus approved firms. In each panel, two models are presented. The first model includes the basic demographic variables and the second model includes risk related variables as well as variables concerned with the banking relationship and firm performance. The number of observations is lower for the second model due to missing values. The total number of observations for discouragement model is 7413 and 6056 in model 1 and 2, respectively, representing 319,000 and 238,000 firms.

Looking at the coefficients of the variable of interest (i.e. year) in the regression results, it is clear that discouragement decreases over time. The effect of time is significant for years 2013 and 2014. That is, the level of discouragement is significantly lower in 2013 than it was in 2010. Although not significant, the coefficient for 2011 is positive, suggesting that the "scarring effect" (Cowling et al., 2012, p. 796) of financial crisis on entrepreneurs was being intensified at that time. From 2012, the coefficient turns

negative, but the influence only becomes significant in 2013. In summary, accounting for the variations of control variables, the probability of discouragement follows an inverted U curve over time. Also, the decrease in discouragement lagged the signals of improvements in lending markets (in 2010).

There are some interesting findings among the other variables. Unexpectedly, business age in model 2 is not a significant variable in predicting the probability of discouragement. Further tests show that in the absence of risk rating, age is a significant variable for firms with more than 10 years of activity compared to start-ups. Although the calculation of credit risk provided by sample providers is not known, it seems it is related to business age. Similar findings are also presented in Han et al. (2009) where business age is not a significant variable in the presence of credit risk rating. As the firm grows in employment it becomes increasingly less likely to be discouraged. The effect of size is in line with the findings of previous studies (Chakravarty and Xiang, 2013; Freel et al., 2012; Han et al., 2009).

Risk rating does not appear to affect the likelihood of discouragement in the full model. Further tests show high risk firms are more likely to be discouraged than low risk firms; however, the inclusion of sales and profits mask the effect of risk rating. In the full model, profitable firms are less likely to be discouraged. In addition, the more sales a firm generates, the lower the probability of discouragement. This suggests that discouragement seems to act as an efficient tool dispersing high-risk businesses from banks. Nonetheless, this does not suggest that risk is a key determinant of discouragement. Evidence shows that businesses with low and medium risk profiles are also discouraged from applying.

	Discouragement =1 (vs. Applicant=0)						Rejection=1(vs. Approved=0)					
	Model 1			Model 2			Model 1			Model 2		
	Coef		S.E	Ceof		S.E	Coef		S.E	Ceof		S.E
Year; Ref [a] 2010												
2011	0.091		0.17	0.169		0.193	0.057		0.21	-0.02		0.25
2012	-0.02		0.23	0.0052		0.273	0.252		0.27	0.08		0.33
2013	-0.34	*	0.17	-0.381	*	0.199	-0.04		0.19	0.003		0.22
2014	-0.4	**	0.17	-0.441	**	0.189	-0.1		0.18	-0.12		0.21
Size, Ref [a]: zero employees												
1 to 9	-0.23	**	0.09	-0.047		0.115	-0.13		0.11	-0.12		0.14
10 to 49	-0.57	***	0.12	-0.206		0.164	-0.57	***	0.14	-0.56	***	0.19
More than 50	-1.1	***	0.16	-0.589	**	0.249	-1.01	***	0.18	-0.89	***	0.26
Business age, Ref [a]: start-ups												
2 to 9 years	-0.04		0.12	0.1514		0.14	-0.09		0.14	-0.05		0.17
more than 10 years	-0.48	***	0.13	-0.134		0.157	-0.4	***	0.15	-0.25		0.19
Sole proprietorship [b]	0.368	***	0.11	0.1987		0.129	0.089		0.12	-0.01		0.15
Owner's age, ref [a]: less than 30												
30 to 50 years	0.227		0.18	0.3368	*	0.201	-0.08		0.21	-0.19		0.25
50 to 65 years	0.371	**	0.19	0.5	**	0.215	-0.26		0.22	-0.24		0.26
more than 65 years	0.237		0.27	0.408		0.3	-0.41		0.29	-0.6	*	0.36
Female owner [b]	0.061		0.12	0.0159		0.139	-0.17		0.14	-0.07		0.16
Financial qualification [b]	-0.04		0.1	-0.048		0.114	-0.06		0.11	-0.03		0.13
Exporter [b]	0.134		0.16	-0.009		0.177	0.142		0.18	-0.01		0.17
Innovator [b]	-0.1		0.09	0.0286		0.106	0.143		0.1	0.167		0.12
Sector, Ref [a]: agriculture												
Production	0.421	***	0.15	0.44	**	0.184	0.54	***	0.16	0.458	**	0.21
Retail	0.329	**	0.16	0.4154	**	0.192	0.495	***	0.18	0.417	*	0.22
Hotels and restaurant	0.35	**	0.17	0.3163		0.198	0.581	***	0.18	0.451	*	0.23
Real Estate	0.49	***	0.17	0.5117	***	0.194	0.398	**	0.18	0.433	*	0.22
Health and social work	0.382	**	0.19	0.3278		0.226	0.436	**	0.22	0.551	**	0.28

Location, Ref [a]: rest of the UK											
London	0.199		0.13	0.1439		0.144	0.234	0.15	-0.1		0.16
Southeast	0.224	*	0.13	0.1977		0.153	0.013	0.15	0.041		0.18
Change in LIBOR rate	0.026		0.04	0.0343		0.043	0.02	0.04	-0.01		0.05
Business Risk, Ref [a]: Low risk											
Medium risk				0.0299		0.15			0.084		0.18
High risk				0.1876		0.143			0.263		0.17
Relationship with main bank, Ref [a]: Neutral											
Satisfied				-0.293		0.166			-0.85	***	0.19
Not satisfied				-0.306		0.178			0.114		0.19
Use of credit card [b]				-0.152		0.112			0.082		0.12
Use of overdraft [b]				-0.115		0.108			-0.32	**	0.12
More than one bank [b]				-0.354		0.235			0.302		0.29
Profitable [b]				-0.376	***	0.11			-0.35	***	0.13
Sale, Ref [a]: less than 50 K											
50K to 100 K				-0.286	*	0.157			-0.11		0.19
100 K to 500 K				-0.544	***	0.14			-0.06		0.17
500K to 1M				-0.401	**	0.195			0.115		0.2
1M to 5M				-0.591	***	0.211			0.123		0.23
More than 5M				-0.78	**	0.355			0.091		0.32
Intercept	-0.68	***	0.26	-0.32		0.353	-0.52	0.32	0.23		0.4
N	7413			6056			3124		2549		
Population size	319K			238K			97K		73K		
P>F	0			0			0		0		
*, **, *** significant at 0.1, 0.05, and 0.01											
a REF is the reference for categorical variables.											
b dummy variable with yes=1											

Table 3.2. The results of multivariate analysis- weighted analysis

As a robustness check, a rejection model is evaluated to test whether the fear of being rejected is objective. In this phase, absolute credit rationing from a bank loan is considered as the dependent variable. A dummy variable is set to 1 if an application is totally turned down and zero if the applicant could secure some loan from a bank. Using the same control variables, a Probit model shows that the probability of application turndown does not change over time (consistent in both models). The fear of rejection seems to be more connected with decreased loanable funds to SMEs, increased application turndown in 2008-2009, and the associated downturn in business prospects. In addition, larger and older firms are less likely to face rejection (in model 1). Firms with higher risk rating are more likely to face rejection than low risk firms. Firms that are satisfied with their relationship with their banks face lower probability of rejection, although the satisfaction might be the result of the approved application.

3.6. Conclusion

The contribution of this paper is the investigation of the changes in the level of discouragement during the aftermath of the recession and after UK banks resumed pre-recession loan approval practices. The results show that lower probability of discouragement among SMEs lags the improvement in SMEs' access to bank funds. The results highlight the longer-term effect of tightened credit supply on SMEs that are ready to invest, but hold back because of fear of rejection.

The analysis shows that when the information asymmetry has risen between two parties, the amelioration does not happen quickly. This is of importance, because entrepreneurs

hold back from applying for bank loans despite the fact that banks started to evaluate the application with pre-crisis criteria shortly after the credit squeeze. In fact, the probability of application turndown was not associated with time (within the years under investigation). However, the probability of discouragement still rose after improvement in the lending market and recovered slowly afterwards. The existence of a mismatch in perception between banks and entrepreneurs seems to hold back firms from seeking external finance (British Business Bank, 2016).

In a recessionary period, SMEs' perception of lack of support, as mentioned by Hutton and Nightingale (2011), leads "to significant numbers of discouraged borrowers" and, subsequently, a "… lack of investment leads to reduced levels of innovation in the economy, and thus a self-reinforcing cycle of less innovation, less investment and less dynamism…"(Hutton and Nightingale, 2011a, p. 8). Discouragement in the EU region is estimated to lower investment growth, employment growth and total asset growth in the following years since recession (Ferrando and Mulier, 2015). In the UK, recent empirical work shows a significant amount of underinvestment from SME's during the recessionary period (Cowling et al., 2016). To alleviate this effect and induce more investment among SMEs, addressing the concerns of discouraged borrowers may be an important starting point. They are ready for investment.

The merits of acknowledging the lagged response of entrepreneurs to health indicators of financing market is in planning policy measures to deal with the lack of demands. The presence of 'good' borrowers among discouraged firms signals the imperfect flow of information in the market. If 'good' borrowers do not recover their confidence in the

banking system, with the increase in supply, the chance of bank's adverse selection and over-investment is likely to increase, raising application costs for all.

Discouragement, especially for the firms that are discouraged "inappropriately", is a function of information asymmetry between SMEs and banking market. There are several programs addressing the supply-side of lending and equity markets ((BIS), 2013) that set out to help SMEs address potential funding gaps. For example, to stimulate supply after the recession, a commitment between UK major banks and the UK government, known as Project Merlin[7], aimed to encourage banks to lend more to small businesses. There are also other government schemes that aim to help SMEs with external finance[8]. BMG Research (2013) argues that only a small number of SMEs are aware of government financial support schemes, such as the National Loan Guarantee Scheme. Entrepreneurs' awareness of new methods of finance such as venture capital funds, business angels, crowd funding, and mezzanine finance is increasing, but the usage of these methods is still low (British Business Bank, 2016). Moreover, the amount of time that the majority of entrepreneurs spend on the decision and application for external finance, often limited to their main banks, is minimal (BMG Research, 2013). Many entrepreneurs think the credit granting decision is totally computer-based (Fraser, 2014). Whilst, the majority of applications made to banks are being funded, SME owners are still avoiding banks due to the psychic pressure of possible rejection (BMG Research, 2013). Fraser (2014) notes that entrepreneurs are heavily influenced by their adverse experiences with banks, but that they are poorly informed about alternative opportunities. An initiative that tries to address the pressure and stigma of rejection might be the setup of an "Appeals Process" by British

7 http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06047
8 http://www.publications.parliament.uk/pa/cm201415/cmselect/cmtreasy/204/20404.htm

Banker's Association in April 2011. In this forum, SMEs that are not satisfied by the lending process have the opportunity to voice their concerns. However, no study has yet discussed the merits of such programs. It seems much of the information asymmetry between borrowers (including discouraged ones) and banks is related to entrepreneurs being less informed about the current state of the banking system and their own prospects. On the other hand, lack of communications between SMEs and banks, centralized banking systems and procedures make it difficult for banks to adapt to their SME needs (Silver and Vegholm, 2009).

To alleviate this problem, government can play an intermediary role through subsidized services and business supports already in place. The psychic pressure of search for finance and application costs is harder to address than the objective costs (Xiang et al., 2015). While there are initiatives addressing SME "investment-readiness" (Mason, 2009), more attention towards debt financing is merited (Freel et al., 2012; Rostamkalaei and Freel, 2016). Disseminating information related to improvements in credit supply, the lending process and criteria, and "*ex-post* counselling" (Xiang et al., 2015, p. 16) through advisory services may mitigate the entrepreneur's fear of rejection at banks. This may also help entrepreneurs to assess their riskiness more objectively and increase their efforts to address these risks through better quality applications. In light of this, banks serve as a good channel for transferring such information through relational lending.

Relational lending appears to ameliorate the problem of imperfect information. Discouragement works as an efficient tool when the length of relationship between banks and SMEs increases (Han et al., 2009): low risk customers are less discouraged and high risk customers become more "pessimistic" about their applications. In the time of crisis,

relational banking and a strong bond between banks and SMEs became more important for smaller firms (Cole and Sokolyk, 2016; Cowling et al., 2016; Durkin et al., 2013). The dataset on hand was not competent to control for the length of firms' relationship with their main bank. Nonetheless, it is hoped to capture some of the effect of shared information by the inclusion of business age, risk rating, level of customers' satisfaction with main bank and use of other financial tools. With a more comprehensive dataset or qualitative studies, one might scrutinize how the exchange of information between banks and customers may, more quickly, restore pre-crisis confidence.

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Statement of Authorship

Statement of authorship: Borrower Discouragement: the Role of Informal Turndowns

Riding, Allan [Riding@telfer.uottawa.ca]
Sent: Sunday, July 23, 2017 8:47 PM
To: Rostamkalaei, Anoosheh
Cc: Nitani, Miwako [Nitani@telfer.uottawa.ca]

To whom it may concern

At the request of Anoosheh Rostamkalaei we are writing to confirm the respective contributions of the authors to the above publication. We break this down by section of the paper as follows:

Idea for the research:
100% Rostamkalaei.

Introduction:
50% Rostamkalaei; 30% Riding; 20% Nitani

Literature Review:
80% Rostamkalaei; 10% Riding; 10% Nitani

Conceptual foundation:
50% Rostamkalaei; 25% Nitani; 25% Riding

Data and Methods:
90% Rostamkalaei; 10% Nitani; 10% Riding

Empirical analyses:
100% Rostamkalaei

Discussion & conclusions:
80% Rostamkalaei; 10% Nitani; 10% Riding

Of course, it is always difficult to gauge such contributions; however, we estimate that Rostamkalaei carried the work on this paper with Nitani and Riding providing advice, assistance with the conceptual logic and editing. We estimate that Rostamkalaei provided approximately 70-80 of the contribution to this paper. The paper was recently presented a the 2nd Entrepreneurial Finance Conference in Ghent Belgium and was positively reviewed by Dr. Lars Hornuf who also contributed some suggestions for further improvement of the work; his suggestions have also been incorporated.

Allan Riding
Miwako Nitani

ESSAY 4- BORROWER DISCOURAGEMENT: THE ROLE OF INFORMAL TURNDOWNS

Abstract

This research seeks to add to our understanding of discouraged borrowers by examining the roots of discouragement. Specifically, the work examines the role of informal turndowns: the practice in which a commercial lender verbally informs a potential SME owned that if a formal loan application were to be advanced, it would likely be denied. First described in 1991 (Wynant, L. & Hatch, J., 1991. *Banks and small business borrowers: A 1990 Research Study*, London, Ontario: Western Business School, University of Western Ontario), this aspect of lending has received scant attention in the research literature. Whereas the presence of discouraged borrowers evidence a market imperfection, informal turndowns represent an efficient mechanism in SME debt markets and provide an explanation for a share of borrower discouragement. This research finds that entrepreneurs who are in more need of external finance and more established firms are more likely to suspend formal loan applications through informal talks with their banks rather than being discouraged by their own judgment.

4.1. Introduction

The research described here relates to the emerging literature regarding demand-side constraints on access to financial capital among small- and medium-sized enterprises' (SMEs). This work seeks to add to our understanding of discouraged borrowers (Kon and Storey, 2003). Specifically, this work examines the roots of discouragement by focussing on borrowers who are discouraged from making a loan application for a good reason: their prospective lenders have informally advised them that a loan application, if forthcoming, would be rejected—an *informal turndown.*

The context for this work lies in Kon and Storey's (2003: 47) definition of discouraged borrowers as: *"... good borrower[s], requiring finance, that choose not to apply because it feels its application will be rejected."* This definition, however, has not been operationalized consistently in previous research. In particular, quality of borrower is not always observable. Research often resorts to defining as discouraged borrowers all firms that need funding but whose owners state explicitly that they did not apply for a loan out of a fear of being turned down. Conceptually, the presence of a high frequency (Cole and Sokolyk, 2016; Freel et al., 2012; Shane, 2009) of market participants whose firms both need financing but who choose not to apply and who are good borrowers constitutes a *"market imperfection [that] lies at the heart of the concept of discouraged borrowers"* (Han Fraser and Storey, 2009: 416). On the face of it, it seems surprising that a market imperfection such as discouragement could be so widespread, especially insofar that discouragement bears economic consequences if misplaced fear of rejection compromises either the viability, or the job-creating growth, of SMEs.

In this work, it is argued that some owners who report being discouraged are not all good borrowers: that their decision not to apply for a loan may be a result of being well-informed through owners' relationships with their commercial bankers. In not applying for a loan, those potential loan applicants whose loans would not have been approved appear to have made an appropriate, and an efficient, decision. The concept of informal turndowns is neither new nor hypothetical. Based on a sample of interviews with bank customers, Wynant and Hatch (1991: 116) documented the prevalence of both informal loan requests and informal turndowns:

"… a large number of financing requests are declined or discouraged after a meeting with the client . . . [and it] is only in those instances where the proposed financing involves a reasonable chance of being approved that a formal application results."

Even though Wynant and Hatch (1991) report a high frequency of informal turndowns among small firms, the topic of informal turndowns seems to have been disregarded in the research literature. Accordingly, this work argues that, for some segment of the discouraged borrower population, fear of rejection may be justified by information gleaned, explicitly or implicitly, from SME owners' relationships with their lenders. While such relationships may be nuanced, the extreme situation could arise in which the prospective lenders explicitly advise the SME owners that, were they to apply for a loan, the application would likely be rejected. Less explicit might include situations in which the lender outlines unacceptable terms of lending in the event a loan were to be advanced. One could likewise imagine more subtle signals of discouragement in the context of a lender-borrower relationship. In such situations, fear of rejection would be a rational fear and would not constitute an imperfection.

This is an efficient process from both the lender and the borrower perspective. It saves loan account managers' time when a formal request is not well-considered, obviously too risky, or when considerable—and costly—due diligence is required. From the borrowers' perspective, the informal discussion saves them non-negligible costs in time and funds associated with preparing a fruitless formal loan application. Potential borrowers are also spared further consequences of rejection such as the prospect of negative impacts on credit ratings. Evidence of informal turndowns is therefore consistent with efficient operation of the credit markets; yet, as noted, the prevalence of unjustifiably discouraged non-applicants questions the efficiency of the lending market. Accordingly, this research seeks to add to our understanding of the discouraged borrower phenomenon by considering the role of informal turndowns in the context of commercial lending and borrowing in the SME market.

This is important research because it is widely understood that SMEs contribute disproportionately to economic prosperity—especially through the growth of young ventures (Audretsch, 2012; Nightingale and Coad, 2014; Storey, 1994). However, enterprise growth requires financial capital to sustain the necessary incremental investments in real assets, working capital and human resources (Beck and Demirguc-Kunt, 2006), to which access has been considered to be limited. Availability of financial resources gives small firms the opportunity to explore new possibilities so as to further increase opportunities (Wiklund and Shepherd, 2003). Vos et al. (2007) also note that growing firms seek external financing more than their non-growing counterparts. However, Lee (2014) reports that owners of growth firms perceive relatively more

constraints on access to external finance. With public policy increasingly focused on high growth firms (Shane, 2009) financing is central to this growth.

This study draws upon data from the series of United Kingdom Surveys of Small- and Medium-Sized Enterprise Finance Monitor (2011–201; BDRC Continental 2015). These surveys, initiated in 2011 and continuing, is conducted on a quarterly basis. This study benefits from questions that focus on non-borrowers and investigates the reasons why firms refrain from applying for bank loans even though they need financial capital.

4.2.Previous Research: Discouraged Borrowers and Informal Turndowns

4.2.1. The context for discouraged borrowers

Research about SME financing preferences generally agrees that SME owners first prefer to draw capital from internal sources, including personal savings, before considering external sources of capital (Berger and Udell, 2006; Cosh, Cumming and Hughes, 2009; Robb and Wolken, 2002; Thornhill, Gellatly & Riding, 2004). Enterprise growth, however, typically entails the need to find external investment capital to finance plant, equipment, technology, working and human capital, etc. Among external sources, research has established that SME owners turn to banks as commercial lenders of choice (Cosh et al., 2009). However, the Nobel-prize-winning work of Stiglitz and Weiss (1981), and that of their many successors, have led to a considerable literature on so-called "capital market gaps": the presence of supply-side financing constraints in the SME lending market (see Cressy (2002) and Parker (2002) for digests of this literature).

Even though the majority of loan applications are successfully financed (Cole and Sokolyk, 2016; Freel et al., 2012), it seems clear from previous research that accessing financial capital is fraught with obstacles for most SMEs—and for new ventures in particular (Berger and Frame, 2007; Cosh et al., 2009; Eddleston et al., 2016; Petersen and Rajan, 1994). To business owners, the process of seeking external capital involves some degree of uncertainty as to the outcome as well as with regard to financial and other less tangible costs and benefits that are associated with success and failure of their applications (Kon and Storey, 2003). In the judgement of some business owners, the perceived cost-benefit balance reaches a point such that tendering a formal application seems unreasonable. What remains unclear is the process by which business owners arrive at this understanding. This research posits that some business owners who need financing but who elect not to apply may do so because they in fact do have knowledge, ingrained in their relationships with lenders.

4.2.2. Profiles of discouraged borrowers

Within this literature, research has sought to understand better the profile of discouraged borrowers (for exmaple, Cavalluzzo et al., 2002; Chakravarty and Xiang, 2013; Cole and Sokolyk, 2016; Ferrando and Mulier, 2015; Freel et al., 2012; Han et al., 2009; Levenson and Willard, 2000). While there is convergence on many aspects, there remain several areas of disagreement within this literature.

The research literature generally confirms that discouraged borrowers are indeed engaged in relatively riskier projects when compared with loan applicants (Cavalluzzo et al., 2002; Cole and Sokolyk, 2016; Cowling et al., 2016; Ferrando and Mulier, 2015; Han et al., 2009). That is, firms with higher risk scores are more likely to feel discouraged from

applying for credit, a finding that implies that discouragement may be an efficient sorting tool (Han et al., 2009). However, the presence of low risk businesses among discouraged borrowers also reveals that this mechanism may not be thoroughly efficient.

Firm age and size also feature consistently as key factors in the likelihood of discouragement, such that owners of older and larger firms are relatively less likely to be discouraged (Chandler, 2010; Cole and Sokolyk, 2016; Freel et al., 2012; Han et al., 2009; Robb and Wolken, 2002). However, these factors are also collinear with each other as well as with other measures—such as risk, gender of ownership and race (Neville et al., in press.; Rosa et al., 1996).

The literature, however, disagrees on other points. Most, but not all, research finds that discouragement is more likely among firms with established banking relationships. Chandler (2010) reports that compared to denied-loan applicants, discouraged borrowers have stronger relationships with their respective credit suppliers. Likewise, Han et al. (2009) report a correlation between the length of a relationship with a bank, the riskiness of the borrower, and the probability of discouragement. They report that, within the group of firms with longstanding relationships, discouragement is less likely among good borrowers (that is, relatively low risk) but more likely among high-risk borrowers. This finding, that discouraged borrowers tend to have established lender relationships, is consistent with the premise that decisions not to apply for a loan may be well-informed.[1] Arguably, prospective borrowers and lenders are more comfortable with broaching and discussing the idea of a loan application within the context of a good quality banking

[1] However, Freel et al. (2012) report that firms with banking relationships that extend beyond financial transactions are relatively less likely to report discouragement.

relationship than in the absence of such a relationship. Moreover, in relationships in which the banker also acts as an advisor, either party could raise the matter of seeking additional financing.

4.2.3. Prevalence of discouragement

The prevalence of discouragement also remains unclear. Han et al. (2009), Cole & Sokolyk (2016), and Freel et al. (2012) report high frequencies of discouragement among SME owners (good owners or otherwise) that declare a need for finance but who do not apply. This high incidence is not consistent with research by Chandler (2010) nor that of Chakravarty and Xiang's (2013) 10-country comparison of the prevalence of discouraged borrowers[2].

In the case of Cole and Sokolyk's (2016) work, they drew on data from the U.S. Surveys of Small Business Financing.[3] According to the Federal Reserve Board, more than one-half of respondents to these surveys who opted not to apply for a loan (even though they needed financing—"discouraged borrowers") cited their awareness of their firms' weak credit history, poor balance sheet or personal experience. In the U.K., data from the Small- and Medium-Sized Enterprise Finance Monitor (2011–2015) reveals that among business owners who needed financing but who did not submit an application for a loan, 47 percent cited lack of time or knowledge, didn't like the "hassle," or identified

[2] Ferrando and Mulier's (2015), Chakravarty and Xiang's (2013) inter-country comparisons of the prevalence of discouraged borrowers reveals a range of discouragement frequencies, from as little as 3 per cent of firms needing financing to as much as 45 per cent. Chandler identified 1 to 2 per cent of Canadian firms as discouraged borrowers.

[3] See, for example, Federal Reserve Board, 1998 Survey of Small Business Finances Sample Frequency Distribution and Descriptive Statistics (2001: https://www.federalreserve.gov/pubs/oss/oss3/ssbf98/ssbf98home.html & http://fmwww.bc.edu/EC-P/data/ssbf/pfreqs98.pdf.

unacceptable expected terms and conditions as reasons for not applying. Table 1 presents a breakdown of reasons why entrepreneurs chose not to apply for credit according to the U.K. Small- and Medium-Sized Enterprise Finance Monitor (2011–2015). Among these, 14 per cent reported having been turned down informally.

Reasons	%	Unweighted counts	Estimated population
Informally turned down	14%	548	29,852
Discouraged borrowers (Fear rejection)	39%	1,189	83,160
Did not like the hassle, didn't have time or knowledge	9%	297	18,338
Didn't like the expected conditions	20%	636	41,580
Other reasons	18%	628	39,298
Total	100%	3,298*	212,228
*189 firms did not provide any reason for discouragement.			

Table 4.1. Reasons for not applying for loans as stated by non-applicants

Chakravarty and Xiang (2013) also report that firms needing credit may eschew a loan application for several reasons other than fear of rejection. They note that potential borrowers may perceive the loan application process as too onerous or they may be unwilling to pay the cost of the debt. As well, owners may not like being in debt or they may perceive that collateral requirements are too demanding. Perhaps this is why Cowling et al. (2016) and Chandler (2010) define discouraged borrowers as firms that fear rejection but also seek to avoid high application costs. Beyond these studies, as noted, the mechanism(s) through which borrowers come to learn about their respective quality remains unspecified.

Potentially relevant in this context is Wynant and Hatch's (1991) report of a surprisingly high (to them) frequency of what they call informal turndowns; communications within the lender-borrower dyad whereby a bank representative informally advises a potential loan applicant that rejection would be likely if a loan application were to be advanced. To the extent that informal turndowns were reported to be common, there may be very good

reasons that some prospective borrowers who need financing become non-applicants: they may have been told informally not to apply! Moreover, applying—and being turned down—is costly in time and resources and potentially more so if the applicant's credit rating is negatively affected in the process. The informal turndown phenomenon, however, does not yet appear to be the subject of research and the need for further research on this topic seems implicit. To this end, the following conceptual discussion may be useful.

4.3. A Conceptual Framework of Informal Turndowns

The conceptual framework for this research rests in the process by which commercial lenders adjudicate loan applications from SMEs. Given the importance and context of lending relationships (Petersen and Rajan, 1994), the adjudication process may be conceptualized as comprising two steps. The first is an informal stage edified partially from the lender-borrower relationship. The second stage is a more formal process characterised by a written application from the borrower and, for applications that pass initial muster, costly due diligence conducted by the lender. In the years since Petersen and Rajan (1994), the lending markets have changed somewhat in that requests for very small loans are typically adjudicated by credit scoring, yet the process may nonetheless be conceptualized as this two-step procedure.

4.3.1. Formal loan applications

When entertaining a formal loan request, lenders potentially face two decisions. The first decision is to determine if it is worthwhile to undertake the due diligence necessary to

alleviate information asymmetry. The second is the decision related to approving the formal loan application (or not) and deciding on the terms of lending. Besanko and Thakor (1987) are among those who have modelled this process analytically. They conclude that factors in the adjudication decision includes, among others, risk of the borrower, perceived availability and resale value of collateral, the degree of lender conservatism and the level of information asymmetry.

4.3.2. Informal loan discussions

In the context of a lender relationship, however, an initial step is likely to be based on a discussion between a potential borrower and its bank account manager. Before incurring the costs associated with a formal application and due diligence, it seems reasonable to expect that some business owners would seek an informal talk with their lenders (and vice versa) about the possible outcome of a potential loan application. The prospective lender would be able to review readily available information in order to inform a *prima facie* case for recommending (or not) proceeding to a formal application. With SME owners seeking to finance growth and survival of their firms, suppliers of finance are under pressure to maximize profits—in part by minimizing loan losses. It therefore makes sense that informal discussions would be employed to reduce information asymmetry on both sides of the transaction. In this initial step, two sources of information may be pertinent:

Lender relationship. If the potential applicant has an established relationship with the financial institution the quality of the information gleaned from the relationship may inform lenders' advice about the likelihood of loan approval. This information may include impressions of qualitative and quantitative data (age of firm; sector; size of business; management experience; availability of collateral, etc.). By virtue of a banking

relationship, lenders also are typically able to access, quickly and inexpensively, credit scoring data obtained from third party suppliers. Borrowers, meanwhile, would develop a yet better understanding of potential terms of lending and the implications of borrowing.

The scale of the loan. Small lending balances (especially new and small ventures) can be too small to make economic sense for lenders. Income from interest payments and fees may be insufficient to warrant the relatively fixed costs of the due diligence implicit in the second stage. Accordingly, regardless of risk of the SME, small loan requests may be either discouraged by prospective lenders, relegated to loan guarantee programs (if available) or treated as personal—rather than business—loans.

This process suggests several potential factors behind the informal turndown outcome[4]. First, and given the relatively fixed nature of the costs of due diligence, the expected return on the loan must be sufficient to more than cover the lender's estimate of the fixed component of the cost of due diligence and cost of funds. Small loans, typically sought by small firms, are less likely to cover these costs, leading to immediate, arguably informal, turndowns. Hence, the scale of the loan is arguably a factor. For this reason, among non-applicants, it is expected that the owners of smaller firms postpone their applications because they anticipate having their applications rejected. The owner of larger firms, conversely, are more likely to expect a successful loan application, contact their banks and relinquish their applications after an informal talk. Accordingly, the first hypothesis is as follows:

[4] Ideally, this research sought to study the profiles of firms that had an informal talk with their banks and investigate the determinants of informal turndowns. However, the structure of the data does not allow such analysis. The following arguments pertain to understand the roots of postponing formal loan applications, with focus on the comparison between those who are deterred from lending by informal talks with their banks and those who fear to be rejected based on their own judgement.

H_1: Among non-applicants who need credit, the likelihood of an informal turndown is proportional to firm size: that is, larger firms are more likely to report informal turndowns.

Second, within any given size stratum, age of firm is arguably a key factor in the likelihood of an informal turndown. Young firms often fail relatively soon after founding. [5] Potential contributory factors may include "the liability of newness" (Stinchcombe and March, 1965), inexperienced entrepreneurs, unproven factor and product markets. It is speculated that the owners of the new firms are more likely to realize the high degree of information opacity of their firms and decide not to apply for loans. Conversely, information about older firms is more widely available, therefore business owners anticipate successful applications and proceed with an informal discussion. Accordingly, the second hypothesis is:

H_2: Among non-applicants who need credit, the likelihood of an informal turndown is proportional to firm age: that is, older firms are more likely to report informal turndowns.

Third, informal turndowns perforce take place in the context of a banking relationship. Firms without banking relationships would arguably either proceed directly to the formal application stage, or be discouraged based on their own judgment. Moreover, business owners who initiate with their respective bankers a discussion about a possible loan application are potentially risking their reputations. Therefore, it is argued that it is

[5] According to ISED (2013), 20 per cent of SMEs did not survive their first year in business and approximately 28 per cent had failed within the first two years of operation. http://www.ic.gc.ca/eic/site/061.nsf/eng/02808.html, accessed June 3, 2017.

relatively easier for firms with good quality banking relationships to make an unofficial inquiry about their prospects before making an official request; hence:

H_3: Among discouraged firms who need credit, owners of firms that report informal turndowns are relatively more likely to have good quality relational banking.

Finally, high perceived levels of information asymmetry would dictate higher costs of due diligence, a factor that would also lead to immediate, informal, turndowns of more informationally opaque enterprises. Growth orientation has been identified as a factor in information opacity by Binks and Ennew (1996) and is often operationalized through expanding market reach through foreign trade (exporting; Riding et al., 2012) or through innovation (Coleman and Robb, 2011). Firms are expected to need and apply for credit when they seek growth (Thornhill et al., 2004) or when they undertake innovation (Lee, 2014). Growth firms may be in relatively more need of credit to support the incremental real investments associated with growth and it is expected that they would search for and use a variety of finance sources. Hence, despite the riskiness of growth-oriented businesses, it is expected that owners of such businesses initiate an informal application, rather than being discouraged due to fear of rejection. Accordingly,

H4: Among non-applicants who need credit, owners of firms that report informal turndowns are relatively more likely to be growth oriented; exporters and innovative firms.

4.4.**Data and methodology**

4.4.1. Data

The paper examines the profile of two groups of firms who needed capital but did not formally apply for the credit: borrowers discouraged due to fear of rejection and prospective borrowers who reported informal turndowns. The distinction between these two groups is that the former group avoids applying for bank loans due to subjective fears of rejection whereas the latter eschews an official application as a result of an informal talk with their banks.

The investigation comprises a secondary analysis of data from the 16 iterations of the United Kingdom-based Small- and Medium-Sized Enterprise Finance (2011–2015) survey.[6] The data is available based on 10 iterations; therefore, two datasets were combined in order to include all 16 available iterations. The sample is stratified; therefore, all analyses employ sampling weights that correct for size, location, industry, and the share of start-ups. The respondents are the owners or the primary managers of private firms, all within the United Kingdom, with less than 250 employees and/or less than £25 million in sales revenues.

4.4.2. Methodology

The methodological approach used in this work consisted of estimating multinomial probit regression models as specified presently.

[6] https://discover.ukdataservice.ac.uk/catalogue/?sn=6888&type=Data%20catalogue

4.4.3. Dependent variable

The primary multivariate analysis constituted estimation of multinomial probit regression models applied to five categories of respondents who needed external financing but who did not render a formal application for financing. The categorical dependent variable reflects the reasons that respondents cited as their rational for not applying, as follows: =1 if the applicant reported an informal turndown (IT); =2 if the applicant feared rejection (in this research defined as discouraged borrowers); = 3 if the applicant did not want the hassle; =4 if the applicant did not like the expected conditions: and =5 if the applicant mentioned other reasons.[7]

Modelling non-applicants without considering the probability of needing capital could result in selection bias. Accordingly, Heckman's (1979) two-stage (probit) model was estimated to address potential selection bias such that the dependent variable was a binomial variable corresponding to whether (=1) or not (=0) the firm needed external credit. Independent variables were measures of firm size, age, legal status, industry, and growth intention (as an exclusion criteria). The second stage would have involved incorporating the inverse Mills ratio (IMR) in the analyses of interest. However, estimates of the IMRs were not significant in any of the models; therefore, only the results of single stage analyses are reported. In addition, because of the absence of data on owners who sought their banks' opinion about the prospect of a formal application, control for self-selection is impossible. With these limitations in mind, it is noted that extending our results beyond categories of discouragement defined above might be heroic.

[7] The results presented in this paper, for brevity, is limited to comparison of informal turndowns and discouraged borrowers. The full result of multinomial probit model is available upon request.

4.4.4. Independent variables

To model attributes of businesses facing informal turndown in relation to those of discouraged borrowers, the analysis employs three categories of independent variables: the structural risk of the business (that is, firm size and age), variables that represent the quality of relationship between entrepreneurs and lenders, and the firm's need for capital.

Structural properties. Firm size and age are included as factors that arguably relate to the probability of informal turndowns. These are variables that previous research has linked with borrower discouragement, either as proxies for the level of information asymmetry or for the level of the fixed portion of due diligence cost (Cole and Sokolyk, 2016; Freel et al., 2012; Han et al., 2009). Firm size and age were measured by categorical variables according to the number of employees and years since establishment.

Quality of banking relationship. To capture the effect of relational lending, entrepreneurs' self-reported level of satisfaction with the main bank was used as an independent variable. Previous research often employs either length of lender-borrower relationship or the absence/presence of a relationship. It seems reasonable to expect that, prior to making a formal application, owners with satisfactory bank relationships would be relatively more comfortable seeking counsel from their banks than owners with poor relationships. To this end, a categorical variable is included in the model that measures the business owner's level of satisfaction with their banking relationship.

The analysis controls for the presence of other financing sources used by the businesses. Xiang et al. (2015) show that success in obtaining other sources of finance is correlated with the likelihood of discouragement; likewise Cole and Sokolyk (2016) find similar

results related to the use of credit cards. Using additional credit facilities reduces information opacity, as banks already possess data on firm performance. To this end, the analyses employed here incorporated two dummy variables that measure whether (= 1) or not (= 0) the firm uses, respectively, overdrafts or credit cards[8].

Financing needs. It is anticipated that growing firms are more likely to make formal or informal contacts with their banks compared to firms in less need for financing. To reflect this, the model includes three elements of the firm's growth strategy by including three dummy variables according to whether (= 1) or not (= 0) the firm is, respectively, an exporter, or a product or process innovator[9,10].

4.4.5. Control variables

Control variables to account for attributes of the business and entrepreneur that might affect the likelihood of informal turndown included. Legal status of the businesses (single ownership, partnership and limited liability company), found by Freel et al. (2012) to be linked with the likelihood of discouragement. In addition, owner's gender, his or her financial qualification, having a formal business plan and having regular financial statement are included as control variables.

A categorical variable based on Dun & Bradstreet credit scores was employed to measure the *risk* of the firm as riskier borrowers are understood to be more likely to report

[8] The usage of other sources of finance is captured by the survey. However, the low percentage of firms using financing sources other than overdrafts and credit cards does not allow inclusion in the analysis.

[9] Firms are innovators if, in the three years prior to conducting the survey, they introduced a new product to the market or a new business process in their practices.

[10] Growth intention variable was also included to test whether growth objectives affect the likelihood of informal turndown. The results did not differ.

discouragement (Cole and Sokolyk, 2016; Cowling et al., 2016; Han et al., 2009; Ferrando and Mulier, 2015).

4.5. Empirical findings

4.5.1. Background

Survey respondents who needed financing but who did not apply for financing (non-applicants: N = 3,478) were asked to choose one from among several reasons for their unwillingness to make an application. Table 1 provided a breakdown of the responses, showing that 39 per cent of non-applicants eschewed an application because they feared rejection. It is this group of non-applicants that potentially qualify as discouraged borrowers according to Kon and Storey's (2003) definition, although bad and good borrowers are not distinguished in our definition. In addition, 14 per cent of non-applicants who desired credit but who had not applied for a loan reported having experienced an informal turndown. Extrapolating this result to the underlying population leads to an estimate of approximately 30,000 business owners who likely faced an informal turndown between 2010 and 2014.

4.5.2. Univariate comparisons

Table 2 shows the weighted descriptive statistics of all 80,265 firms in the sample, and subsamples corresponding to (N = 3,487) non-applicants who desire credit, (N = 1,189) discouraged borrowers (DBs), and (N = 548) informal turndowns (ITs). These data on all firms, after accounting for sample weights, is consistent with those for population estimates (BDRC Continental, 2014).

	(1)	(2)	(3)	(4)	(5)
Variable	Full Sample	Non-applicants needing credit	Discouraged borrowers	Informal turndowns	Significance (3) vs. (4)
Sample size[a]	80,265	3,487	1,189	548	
Size					
Zero employees	0.729	0.694	0.725	0.609	***
1–9 employees	0.228	0.274	0.251	0.349	***
10–49 employees	0.036	0.029	0.023	0.037	**
> 50 employees	0.007	0.003	0.002	0.005	
Firm Age					
Less than 2 years	0.202	0.271	0.283	0.173	***
2–5 years	0.227	0.282	0.309	0.289	
6–9 years	0.148	0.133	0.134	0.135	
10–15 years	0.148	0.115	0.103	0.170	***
> 15 years	0.275	0.199	0.171	0.233	***
Legal Status					
Single owner	0.638	0.633	0.691	0.534	***
Partnership	0.047	0.045	0.052	0.045	
Limited liability	0.314	0.322	0.257	0.421	***
Entrepreneur					
Female [b]	0.216	0.182	0.176	0.125	**
Financial qualification [b]	0.253	0.253	0.265	0.286	
Formal business plan [b]	0.323	0.409	0.379	0.531	***
Regular financial report[b]	0.420	0.451	0.451	0.526	***
Strategy					
Exporter [b]	0.082	0.113	0.070	0.169	***
Product innovator [b]	0.163	0.239	0.218	0.296	***
Process innovators [b]	0.342	0.453	0.409	0.554	***
Satisfaction with Bank					
Neutral	0.090	0.145	0.137	0.170	*
Satisfied	0.812	0.571	0.539	0.425	***
Not satisfied	0.098	0.284	0.324	0.405	***
External Finance					
Overdraft [b]	0.197	0.312	0.285	0.379	***
Credit card [b]	0.173	0.237	0.234	0.304	***
Business Risk					
Low	0.185	0.101	0.085	0.092	
Average	0.313	0.275	0.250	0.269	
High	0.501	0.624	0.665	0.639	

*, **, *** Significant at 0.1, 0.05, and .01 level.

[a] sample size varies for business risk due to missing observations.

[b] dummy variable equals to 1 for yes, 0 otherwise.

The information on other categories of non-applicants, the Industry classification and location is supressed from the table, it is available on request.

Table 4.2. Descriptive Statistics

Table 2 shows that discouraged borrowers (those who needed financing but did not apply for fear of being turned down) and firms that experienced informal turndowns differ in

several salient respects. Compared to discouraged borrowers (DBs), firms that had received informal turndowns (ITs):

Differed significantly in terms of size and age, with ITs, on average, being older and larger than DBs. Start-ups, firms with less than two years from establishment, are more likely to be discouraged than to have been informally turned down; older firms are more likely to face informal turndowns. Firms with no employees reported a higher incidence of discouragement while firms with employees are more likely to face informal turndown.[11] Single-owner firms are more likely to ration themselves by not applying for a loan; however, limited liability firms are more likely to contact their banks and face informal rejection.

ITs were more likely to be exporters and innovators. That is, based on univariate comparisons, firms that undertake these growth strategies may be more likely to contact their banks searching for additional credit rather than to self-ration themselves.

However, ITs are significantly more likely than DBs to rely on alternative sources of financing such as overdrafts and credit cards. On the one hand, use of overdrafts and (expensive) credit cards might be viewed negatively by prospective lenders, possibly resulting in informal turndowns. Conversely, having received a (verbal) turndown, these firms may be obliged to rely on alternative sources of capital. Moreover, that the proportion of ITs is higher among firms that use credit cards and an overdraft may

[11] As a *caveat*, it is important to note that firms that informally contacted their banks and applied for a loan as a result of their discussion are not captured in the data.

suggest that it is easier for these owners to contact informally their banks when there is some information about their credit history.

Female entrepreneurs are more likely to fear rejection and are less likely to contact their banks.

Entrepreneurs with a business plan and regular financial statements are relatively more confident and more likely to inquire to their banks about their prospects.

The distribution of business risk profiles does not seem to differ between DBs and ITs, based on univariate comparisons.

Finally, while most firms are satisfied with their relationship with their banks, univariate comparisons between DBs and ITs shows that the proportion of satisfied firms is higher among DBs and the proportion of unsatisfied firms is, perhaps understandably, higher among ITs.

4.5.3. Multivariate analyses

Applicants and non-applicants

The first step in the analysis was to estimate multivariate models that compare the characteristics of actual applicants with those of firms that needed credit but did not make an official request for any of the reasons reason stated in Table 1. The correction for sample selection bias was not statistically significant. The results are shown in the leftmost panel of Table 3.

	Applicants (=1) vs Non-applicants (=0)			Declined application (=1) (vs. approved=0)		
	Coefficient Estimate		Standard Error	Coefficient Estimate		Standard Error
Size (ref [a]: zero employees)						
1-9 employees	0.162	**	0.075	-0.011		0.136
10-49 employees	0.321	***	0.097	-0.258		0.178
More than 50 employees	0.722	***	0.119	-0.604	***	0.218
Business Age (ref: less than a year)						
2-5 years	-0.201	**	0.100	-0.046		0.171
6-9 years	-0.009		0.114	0.058		0.195
10-15 years	0.072		0.120	-0.014		0.218
more than 15 years	0.077		0.112	-0.407	**	0.193
Legal Status (ref: limited liability)						
Single owner	-0.138		0.087	0.171		0.139
partnership	0.007		0.104	0.070		0.174
Entrepreneur						
Business mainly ran by female [b]	0.096		0.093	-0.095		0.161
Financial Qualification [b]	0.047		0.078	0.056		0.134
Formal business plan [b]	0.137	*	0.071	0.084		0.127
Regular financial statement [b]	-0.003		0.073	0.117		0.130
Strategy						
Exporter [b]	-0.165		0.113	-0.164		0.175
Process innovator [b]	0.021		0.074	0.065		0.127
Product innovators [b]	-0.100		0.087	0.020		0.148
Satisfaction with bank (ref: Neutral)						
Satisfied	0.157		0.109	-0.785	***	0.183
Not satisfied	0.180		0.117	0.149		0.188
Use of external finance						
Overdraft [b]	0.133	*	0.071	-0.252	**	0.124
Credit card [b]	0.210	***	0.074	0.022		0.128
Risk (ref: low risk)						
average risk	-0.206	**	0.094	0.156		0.174
High risk	-0.239	***	0.092	0.360	**	0.167
Control variables						
Manufacturing	-0.265	*	0.158	0.089		0.264
Constructions	-0.178		0.123	0.561	**	0.222
Wholesale, retail, Hotel, etc.	-0.172		0.116	0.372	*	0.216
Real Estate and business activities	-0.351	***	0.124	0.386	*	0.229
Health, social work etc.	-0.299	**	0.145	0.509	*	0.289
London	-0.071		0.098	-0.027		0.161
South east UK	-0.114		0.094	0.009		0.191
Constant	-0.138		0.187	-0.564	*	0.334

	Applicants (=1) vs Non-applicants (=0)		Declined application (=1) (vs. approved=0)	
	Coefficient Estimate	Standard Error	Coefficient Estimate	Standard Error
Prob>F	*0.000*		*0.000*	
Number of observations	5,911		2,580	
Estimated population	276,993		88,664	

*,**,*** Significant at 0.1,0.05, and .01 level
a Ref is the reference class for categorical variable. The reference variable for sector and location is, respectively, agriculture and the rest of the UK.
b is a dummy variable equals to 1 for yes

Table 4.3. One-stage probit regression models of applications and rejections

The findings reported in Table 3 indicate that size of firm is a major factor in determining the likelihood of making an application, with larger firms being significantly more likely to make formal loan applications than smaller firms. Moreover, start-ups and firms with high risk ratings are significantly less likely to make formal applications. Firms with formal business plans are more likely to apply for loans (however, such plans are often required as part of loan application packages). Using either overdrafts or credit cards increased the likelihood of making an official application for bank loans when credit was needed. This could be the effect of previous experience and success in securing external finance. Finally, the level of satisfaction with the lender relationship is not significantly related to the probability of applying for a loan.

Approval vs. rejection

The right-most panel of Table 3 shows the results of estimation of a binary probit model of the outcome of loan application. In this model, large firms (more than 50 employees) and older firms (more than 15 years) are relatively less likely to face rejection than smaller firms and start-ups. Higher-risk firms are more likely to face rejection than firms with low risk rating. Combined with the loan application model, it seems high risk firms are less likely to make loan applications but they face higher rates of (formal) rejection,

compared to low risk firms. Not surprisingly, the level of satisfaction and probability of rejection are significantly negatively correlated, with rejected firms reporting lower levels of satisfaction. Firms that use overdrafts at their banks are less likely to face rejection, possibly reflecting lenders' prior experience with the applicant.

Discouraged borrowers and informal turndowns

Table 4 presents the results of estimates of multinomial probit regression models of the relative likelihood of informal turndown relative to discouraged borrowers (Base category). Four models are presented in this table. Model 1 includes control variables, firms size and age; the second panel shows the results of the estimation when the model is augmented with the measure of the quality of banking relationship; the third model is augmented with strategy measures, and the final panel shows the additional impact of credit risk rating. Credit risk rating is missing for 15 percent of observations in the dataset, mainly for smaller and younger firms. This variable is augmented in the last model.

	Model 1			Model 2			Model 3			Model 4		
	Coefficient Estimate		Standard Error	Coefficient Estimate		Standard Error	Coefficient Estimate		Standard Error	Coefficient Estimate		Standard Error
Size (ref [a]: zero employees)												
1-9 employees	-0.052		0.149	-0.051		0.149	-0.050		0.150	0.000		0.165
10-49 employees	-0.171		0.200	-0.162		0.199	-0.192		0.201	-0.101		0.219
More than 50 employees	-0.052		0.264	-0.002		0.264	-0.032		0.265	0.094		0.285
Business Age (ref: < two year)												
2-5 years	0.289	*	0.173	0.293	*	0.175	0.271		0.175	0.171		0.192
6-9 years	0.321		0.202	0.320		0.204	0.294		0.207	0.288		0.223
10-15 years	0.658	***	0.239	0.640	***	0.239	0.641	***	0.240	0.512	*	0.283
more than 15 years	0.632	***	0.208	0.600	***	0.212	0.609	***	0.213	0.561	**	0.243
Legal Status (ref: limited liability)												
Single owner	-0.255		0.175	-0.235		0.175	-0.217		0.173	-0.263		0.192
Partnership	-0.388		0.264	-0.386		0.263	-0.390		0.261	-0.512	*	0.294
Entrepreneur												
Business mainly ran by female[b]	-0.324	*	0.186	-0.328	*	0.186	-0.329	*	0.186	-0.254		0.206
Financial Qualification [b]	-0.088		0.149	-0.111		0.146	-0.115		0.146	-0.082		0.163
Formal business plan [b]	0.297	**	0.137	0.289	**	0.137	0.256	*	0.139	0.270	*	0.148
Regular financial statement [b]	0.103		0.143	0.114		0.142	0.083		0.142	0.061		0.159
Satisfaction with main bank (ref: Neutral)												
Satisfied				-0.310	*	0.176	-0.314	*	0.175	-0.243		0.195
Not satisfied				-0.069		0.189	-0.058		0.189	-0.075		0.211
Use of external finance source												
Overdraft				0.131		0.148	0.124		0.147	0.195		0.156
Credit card				-0.067		0.147	-0.097		0.147	-0.072		0.160
Strategy												
Exporter [b]							0.174		0.210	0.395	*	0.220
Process innovator [b]							0.235		0.148	0.319	*	0.164

Product innovators [b]							-0.081		0.175	-0.128		0.190
Risk (ref: low risk)												
Average risk										0.263		0.232
High risk										0.340		0.226
Control Variables												
Manufacturing	0.549		0.344	0.553		0.345	0.511		0.345	0.550		0.384
Constructions	-0.194		0.281	-0.173		0.280	-0.160		0.279	-0.119		0.308
Wholesale, retail, Hotel, Transports and storage	0.181		0.271	0.172		0.269	0.173		0.268	0.178		0.298
Real Estate and business activities	0.050		0.284	0.047		0.283	0.061		0.281	0.071		0.313
Health, social work and other community services	-0.099		0.324	-0.087		0.321	-0.082		0.320	-0.063		0.360
London	-0.423	**	0.189	-0.397	**	0.187	-0.407	**	0.188	-0.455	**	0.201
South east UK	-0.251		0.206	-0.247		0.209	-0.246		0.207	-0.374		0.228
Constant	-0.888		0.338	-0.748		0.365	-0.822		0.366	-1.192		0.435
Number of observation	3298			3298			3298			2885		
Estimated population	213230			213230			213230			173568		
Prob>F	0.0001			0			0			0		

*,**,*** Significant at 0.1,0.05, and .01 level

a ref is the reference class for categorical variable. The reference variable for sector and location is, respectively, agriculture and the rest of the UK.

b is a dummy variable equals to 1 for yes

The base model includes only control variables (prob>F = 0.024). In the first step, firm size is added to the model. None of the categories of size was statistically significant (prob> F= 0.006). For brevity, these two models as well as comparison of other reasons of being non-applicants comparing to fear of rejection are not reported. Full results are available upon request.

Table 4.4. One-stage multinomial probit regressions modelling informal turndown with reference to discouraged borrowers

Looking at the left-most panel, firm size does not seem to differentiate informal turndowns from discouraged borrowers. Although firm size is inversely associated with the probability of eschewing a loan application when the firm needs credit, it is not a discriminator between firms who experienced informal turndowns and discouraged borrowers due to fear of rejection. The first hypothesis, therefore, is not supported.

Older firms are significantly more likely than younger firms to report informal turndowns, rather than discouragement. That is, older firms seem better able to seek their banks' opinion informally before postponing the official loan application. This finding partially confirms the second hypothesis. It also speaks to the debate about the link between relational lending and the probability of discouragement. Given that older firms have longer relationships with their banks, the positive association of business age on the probability of informal turndown, compared to discouragement, shows that younger firms are more likely to self-ration themselves. Among firms that elect not to apply, older firms are more likely to contact their banks and enquire about the possibility of a successful application rather than rely on their own perception.

Looking at the Model 2, the result shows that the entrepreneur's reported level of satisfaction with relational banking is a statistically significant discriminator between informal turndowns and discouraged borrowers, however, unlike what it was speculated. The entrepreneurs who report satisfactory relationship with their banks are more likely to report discouragement due to fear of rejection. This can be explained that firms that have good relationship with their banks are aware of the availability of the credit; therefore, they act upon their own judgement and do not initiate an informal process. It is expected

that use of overdraft and credit card variables partially reflect the amount of information banks have about their customers. These variables are significant in determining the probability of making an application and getting approval but they do not discriminate significantly between discouraged borrowers and informal turndowns. The statistically significant relationship between the quality of banking relationship and the probability of receiving informal turndown disappears once the credit risk rating is included in the model (model 4). It is worth noting that credit risk is missing mainly for smaller and younger firms. Therefore, the inclusion of risk rating may change the results in favour of more established firms.

Turning to model 3, exports and innovative activities do not seem to significantly be related to the probability of receiving informal turndown. Once the credit risk rating is included in the model 4, exporters and process innovators are more likely to experience informal turndowns. These results partially confirm the fourth hypothesis that owners who need credit most, for example to finance export activities or improve one aspect of their business practices, are less likely to be discouraged as a result of their own judgement. Surprisingly, product innovation is not significantly different, perhaps because entrepreneurs understand that banks do not fund high risk projects.

Looking at the model 4, it seems that credit risk rating does not discriminate between informal turndown and discouraged borrowers. Given that these findings are in the context of firms that avoid applying to banks, it may be that credit risk is not completely efficient at deterring bad borrowers and attracting good ones, although higher risk firms are more likely to avoid formal applications (Table 3).

Businesses owned by female entrepreneurs are significantly less likely to experience ITs. This implies that women tend to rely on their own opinions and not to verify their views with their banks. However, the effect of gender diminishes when business risk is taken into account (Model 4), which also addresses a disagreement within the literature on discouraged borrowers. Some previous research shows that female entrepreneurs are more likely to avoid applying for loans due to fear of being declined (Cavalluzzo et al., 2002; Chakravarty and Xiang, 2013; Ferrando and Mulier, 2015), while others claim no gender difference. This suggests a complex relationship among discouragement, risk profile of female-owned firms, and age/size of the firms.

Finally, firms with formal business plans, in all models, are significantly more likely to face informal turndowns. It may be that having a business plan gives confidence to the entrepreneur to ask his or her bank's opinion. Alternatively, a business plan may comprise an informal substitute for a formal loan application, leading to an informal turndown.

4.5.4. Robustness

To test the reliability of these findings, several additional tests were undertaken. First, the correlations among variables were reviewed, finding that no two variables were closely correlated with each other. In addition, multicollinearity problems do not seem to be a substantive issue within the multivariate modelling as all variance inflation factors (VIFs) are less than 10.

4.6. Conclusions and implication

Drawing upon the UK Small- and Medium-Sized Enterprise Finance Monitor Survey (2011–2015), this research investigates the profile of SME owners who are discouraged from borrowing by their banks as a consequence of an informal loan turndown. Although entrepreneurial finance has recently paid attention to the latent demand of loan markets, the reasons behind discouragement generally remain unclear. However, it appears that informal loan turndowns represent a portion of this phenomenon.

This research compared the characteristics of firms that reported informal turndown (ITs) with those firms that reported discouragement due to a subjective fear of rejection (DBs). While ITs rely on their banks' opinions to avoid costs of application and the potential consequences of rejected applications, DBs decisions are based on their own judgements. This work hypothesizes that (among non-applicants who need external finance) older and larger firms, firms that have better relationship with their banks, and firms that are in more need of credit are in better position to enquire with their banks about the potential outcome of an application and would be, therefore, relatively more likely to experience an informal turndown. Three hypotheses were partially, but not fully, confirmed. A *caveat* to this work is that it remains unclear what percentage of official applications are the result of informal approvals.

Hypothesized to be a factor in the likelihood of informal turndowns, firm size was not significantly correlated with the likelihood of informal turndown. Conceptually the scale of a loan seemed to be a reasonable precursor of the likelihood of informal turndown, as this was not supported by empirical analysis perhaps points to the key role played by the lending relationship.

An interesting finding of this research is the effect of business age in discriminating among the reasons for postponing formal loan applications. Business age, possibly a proxy for the amount of information available to banks, shows mixed effects on discouragement in the literature. While some researchers do not find a significant effect of age on probability of discouragement (Chandler, 2010; Freel et al., 2012), others report negative effects (Chakravarty and Xiang, 2013; Cole and Sokolyk, 2016; Cowling et al., 2016; Ferrando and Mulier, 2015). Surprisingly, Han et al. (2009) find that older firms are more likely to be discouraged. In this work, the effect of business age is explained through its link with the businesses' relationships with banks. Specifically, most UK firms are satisfied with their banks and they do not change their banks often. The older a firm gets, the more likely it is to have a working and established relationship with its bank. This work reports that owners of older firms seek confidential opinion from their banks more often, being more frequently informally turned down. Younger firms, on the other hand, are more likely to fear rejection, or, perhaps, they don't yet have a specified account manager (Chandler, 2010). Given that young firms are also among successful loan applicants, addressing discouragement among young firms might be more fruitful than a more general approach.

In addition, the work includes measures of the quality of banking relationship. The literature has partially confirmed that having better relationship with banks reduces the propensity of discouragement (Chakravarty and Yilmazer, 2009; Freel et al., 2012). Han et al. (2009) reported that longer relationships with banks increase the probability of discouragement for bad borrowers and decrease the likelihood for good borrower. Therefore, they conclude that discouragement is an efficient sorting tool. Nonetheless, the

previous research is equivocal as some research shows no significant or negative effects of relational lending on discouragement (Chakravarty and Xiang, 2013; Chandler, 2010; Cole and Sokolyk, 2016; Cowling et al., 2016). Using a set of variables that control for the quality of the relationship between SME owners, this research finds among non-applicants who need credit, having a satisfactory relationship with banks could increase the probability of discouragement due to fear of rejection. Business owners who are happy with their banks potentially are aware of their own creditworthiness and the availability of the loan, therefore, they could anticipate rejection if a formal or informal applications were to be advanced.

In terms of the need for capital, exporter firms and process innovators were linked with higher probabilities of informal turndowns. Growing firms are more likely to seek external finance but face higher probabilities of rejection (Riding et al. 2012; Freel 2007; Lee 2014). For these firms, financing needs are so acute that they do not settle on their own judgement on the outcome of finance applications.

The main limitation of the research is that the data do not reveal which applicants, having spoken with their respective loan account managers, applied for a bank loan. Nor do we know the outcomes of those applications. Therefore, our analysis is only able to compare the various types of discouraged borrowers. Nonetheless, this work has established the presence of an additional category of SME owners who otherwise might have seemed to be discouraged borrowers, but who actually eschew loan applications for just cause. This is a finding that at the very least, reduces the scale and scope of what might otherwise be considered a market imperfection associated with the presence of discouraged borrowers. These findings provide initial insights about informal turndowns—a phenomenon about

which little is known—thereby helping to develop a yet better understanding of discouraged borrowers and the dynamics of the SME-commercial lender relationship. Further research is required to explore the outcomes of informal discussions between potential borrowers and their banks and advance a theoretical framework for examining the efficiency of such informal discussions. Furthermore, the mediatory role of longer/ better banking relationship in ameliorating lending market efficiency through informal turndowns yet to be studied further.

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