Discouraged Borrowers Aftermath of Financial Crisis:

A UK Context Assessment

Abstract

Purpose

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.

Design/methodology/approach

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.

Findings

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.

Practical implications

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.

Originality/value

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.

Keywords: Discouraged borrower, Lending, Small and Medium Enterprises, Financial Crisis, Banks

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.

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 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 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-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.

3-1- 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.

3-2- 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 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 3.2% of population in 2011 (about 147 thousand firms). This figure drops in 2012 and reaches 1.2% in 2014.

--Insert figure 1 about here--

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).

--Insert table 1 about here--

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.

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.

--Insert table 2 about here--

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.

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.

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[6], aimed to encourage banks to lend more to small businesses. There are also other government schemes that aim to help SMEs with external finance[7]. 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 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.

1 https://discover.ukdataservice.ac.uk/
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).
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.
6 http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06047
7 http://www.publications.parliament.uk/pa/cm201415/cmselect/cmtreasy/204/20404.htm

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Table 1- Definition of variables and descriptive statistics- Percentage (weighted analysis)

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 0	**Measured by number of employees, categorical variable**	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 <2 years	**Measured by years from establishment, categorical variable**	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 less than 30	**Entrepreneur's age, categorical variable**	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 Agriculture	**Sector dummy, categorical variable**	0.043	0.042	0.046	***	0.064	0.034	***
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 London	**Location of the firm, categorical variable**	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	***

Variable	Definition	All (1)	No need (2)	Need loan[b] (3)	(2 vs. 3)	Applicant (4)	Discouraged (5)	(4 vs. 5)
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	***
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 2- The results of multivariate analysis- weighted analysis

	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

	Model 1			Model 2			Model 3			Model 4		
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

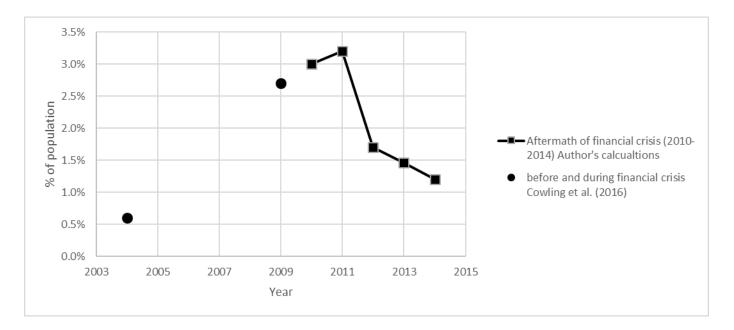a REF is the reference for categorical variables.

b dummy variable with yes=1

Figure 1- Percentage of discouraged firms in the UK populations of SMEs