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Prepared for the BIS by:
Angus Armstrong, a.armstrong@niesr.ac.uk
E Philip Davis, e_philip_davis@msn.com and p.davis@niesr.ac.uk
Iana Liadze, i.liadze@niesr.ac.uk
Cinzia Rienzo, c.rienzo@niesr.ac.uk

National Institute of Economic and Social Research,
2 Dean Trench Street, London SW1P 3HE

EVALUATING CHANGES IN BANK LENDING TO UK SMES OVER 2001-12 – ONGOING TIGHT CREDIT?

Econometric analyses using data from the UK Survey of SME Finances and the SME Finance Monitor

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Executive Summary

Background

The availability of bank finance to small and medium sized enterprises (SMEs) is important to allow SMEs to start up and finance investment for growth. There has been widespread comment regarding the continued difficulty SMEs perceive in obtaining external finance since the financial crisis of 2008. This followed a period in which credit was more widely available in the early to mid 2000s.

BIS commissioned this project to develop an understanding of the changes in lending to SMEs from 2001-12; to identify the extent to which bank lending has contracted since 2008, and to identify whether SMEs were disproportionately affected in their ability to access finance. An important focus of the research was also to identify SME characteristics associated with greater difficulties in accessing finance.

Methodology

The project used data from a series of SME surveys that provide detailed information on the characteristics of a sample of UK SMEs, their owners and experiences of obtaining finance[1]. Using econometric models, which included controls for SME characteristics and risk factors, indicators of changes in the supply of bank lending over the time period abstracting from borrower risk could be obtained.

Key findings

SMEs have faced a more challenging environment for accessing credit after the financial crisis of 2008 and subsequent recession.

Even controlling for risk factors, rejection rates for both overdrafts and term loans were significantly higher in the period from 2008-9 onwards, which is indicative of constraints to the supply of credit. The evidence suggests greater credit restrictions for term loans than overdrafts. Firm characteristics associated with greater likelihood of rejection included higher credit risk rating, previous financial delinquency and lower sales levels, whilst older more established businesses were less likely to be rejected.

Margins for both overdrafts and term loans were also significantly higher in the period from 2008-9 onwards, even controlling for risk, as cuts in the Bank of England base rate were not fully transferred on to SME borrowers. However there was no significant increase over time in the likelihood of an SME with given risk characteristics having to provide collateral. Whilst arrangement fees were high during 2008-9, they subsequently returned to levels that were not significantly different from the period before 2008.

The tightening in credit since 2008-9 has disproportionately affected low and average risk SMEs (based on Dun and Bradstreet credit scores). However there was no significant change over this period in the likelihood of rejection for SMEs rated as above (e.g. greater

[1] Surveys include: Finance for Small and Medium-sized Enterprises 2004, UK Survey of Small and Medium-sized Enterprises' Finances 2008, BIS SME Finance Survey 2009 and the SME Finance Monitor covering 2010-12.

than) average risk. This suggests banks viewed lending to the safer categories of SMEs as relatively more risky in the period after the financial crisis than they did before, although the pattern is also suggestive of a partial withdrawal from SME lending as an asset class. After 2009 there was also an increase in the proportion of SMEs rated as above average credit risk due to the effects of the recession on sales, profitability and asset prices.

Effects of ethnic origin of the owner on lending to SMEs were detected, with black entrepreneurs more likely to be refused credit. The newly-nationalised banks in 2008-9 were more willing to provide SME credit overall than were other institutions.

Time series modelling reveals that greater uncertainty in economic conditions appears to have had greater negative effect on lending to SMEs compared to the corporate sector as a whole. This suggests economic uncertainty as has prevailed since 2008-9 leads to a general shift away from higher risk SME lending towards lending to larger businesses.

Overall, we suggest that the research is indicative of a shortage of finance for SMEs, reflecting banks' attitudes to risk and their own pressures to delever combined with banks' market power in the SME sector. Although demand is also probably subdued, there is a high level of discouragement from application for lending as well as high rejection rates and margins on credit after controlling for risk. If the situation is not resolved, output, investment and employment will be lower than would otherwise be the case, with adverse effects on economic performance in the short and longer term.

Contents

1. Introduction

Access to finance for small and medium enterprises (SMEs) is key to the recovery and long term growth of the UK economy. The principal providers of external finance are the major UK banks. Accordingly, the financial crisis was bound to have an impact on SME finance through the failure and partial nationalisation of banks, higher bank funding costs and the subsequent recession.

More than five years since the start of the crisis an important issue for policy makers is whether the tightening of credit terms by banks has been sustained beyond that which can be justified by changes in the riskiness of borrowers. Are creditworthy firms even now finding finance significantly more difficult to obtain? And if so, what are the characteristics of SMEs that are subject to such constraints? If there is evidence of a supply constraint, this is of relevance to policy makers as the banking sector would be imposing a cost on the rest of the economy.

In this paper we present our assessment of these questions based on an analysis of the UK Survey of SME Finances (UKSMEF) for 2004, 2008 and 2009, and its successor the SME Finance Monitor (SMEFM) which is quarterly from 2011Q1 to 2012Q2. Our assessment follows two lines of enquiry: (1) the characteristics of SMEs likely to face supply of credit constraints; and (2) distinguishing cyclical and structural changes in lending conditions, mainly using indicators of uncertainty at a macroeconomic level.

We treat overdrafts (mainly used for working capital) as separate from term loans (more likely to be used for investment finance) throughout the analysis. Our main results are:

- Controlling for risk, the rejection rates for loans and overdrafts have risen further since 2008-9.
- Controlling for risk, there is a sustained high level of overdraft and loan margins since 2008-9.
- Particularly for term loans, the rejection rate has increased significantly since 2008-9 for low and average risk firms and not significantly for high risk firms.
- Collateral requirements and arrangement fees have not increased.
- Renewals finance appears to have been more strongly affected by credit rationing since 2011 than applications for new finance.
- Uncertainty proxies affect the volume of SME lending more than they do large firm lending, as does risk adjusted capital adequacy. However, causality cannot be discerned.

1.1 Credit rationing and intermediation for SMEs[2]

The supply of bank credit to SMEs has distinct characteristics compared to larger businesses. First, lending to SMEs is generally riskier as they are often young businesses, they often have less collateral available for security and they are less likely to have pricing power in their product markets. At a time when capital preservation is key, banks may be more reluctant to accept credit risk. Second, SMEs are often more opaque than larger firms because they have lower reporting requirements, have less need for formal reporting structures and are subject to less outside monitoring by equity investors. This creates some important information issues. Third, the collateral or assets used to secure loans are likely to be less liquid as they are more firm-specific and even location-specific and involve incomplete contracts. These difficulties mean that the cost of bankruptcy (such as specific and not easily marketable assets) and loss on asset disposal may be greater for smaller than larger firms.

The role of banks in the economy is best seen in the context of institutional mechanisms to overcome information difficulties. This implies a comparative advantage for banks over securities markets for financing certain types of information-intensive borrowers with less marketable collateral. This comparative advantage entails imperfect substitutability between bank and market finance for SMEs and implies that availability of finance from banks per se may affect real decisions for SMEs such as investment. Any degree of pricing or monoploy power over SMEs implies that problems in the banking system will have a greater impact on SME lending due to the lack of alternative sources of finance from non-bank sources.

Asymmetries of information are substantial for SMEs - the lender faces a problem of screening and monitoring borrowers. First, the lender needs to choose borrowers of high credit quality before the loan is granted, to minimise losses due to default, when it may not be possible to distinguish good and bad risks. This raises the problem of adverse selection. Second, the lender must monitor the borrower after the loan is granted, to ensure that the borrower is not acting contrary to the lender's interests. For example, the borrower might divert the funds to high-risk activities that reduce the probability that the loan will be repaid: the problem of moral hazard. As screening and monitoring are costly to the lender, the price of credit (including both the interest rate and non-price terms) will tend to be higher, i.e. there will be increased price rationing of credit, for SMEs where information and incentive problems are greater.

The profit maximising lender may even seek to impose quantitative restrictions on the amount of debt the borrower can obtain, so-called "equilibrium quantity rationing of credit", because higher interest rates may give a further stimulus to adverse selection and risk taking (Stiglitz and Weiss 1981).[3] The key is that the interest rate offered to borrowers

[2] A short summary of some relevant theories of intermediation is given in Appendix 1.

[3] The assumption above is that the bank can only control the price and quantity of credit. Bester (1985) suggested that banks can use collateral to distinguish high- and low-risk borrowers, because ‘safe’ borrowers will be more willing to offer higher collateral in return for a lower interest rate than will risky borrowers. Stiglitz and Weiss (1986), in response, argue—perhaps less convincingly—that increasing collateral requirements (or reducing the debt/equity ratio) may reduce bank profits. This is because wealthier individuals may be less averse to risk than poorer individuals and so those who can put up most capital would be willing to take the greatest risk with the lowest probability of repayment. Hence varying collateral may not eliminate equilibrium rationing. In practice, fear of loss of reputation would presumably prevent rich people acting in the manner suggested. A more serious objection to Bester is that many ‘safe’ borrowers notably SME owners may lack collateral. Collateral may be supplemented in terms of non price conditions by the size of the arrangement fee.

influences the riskiness of loans in two main ways. First, borrowers willing to pay high interest rates may, on average, be worse risks. They may be willing to borrow at high rates because the probability that they will repay is lower than average. This is again the problem of adverse selection. Second, as the interest rate increases, borrowers who were previously ‘good risks’ may undertake projects with lower probabilities of success but higher returns when successful—the problem of moral hazard, that the incentives of higher interest rates lead borrowers to undertake riskier actions.

Whereas price rationing is indicated by loan margins, quantity rationing is likely to be shown mainly by loan rejection rates. It is worth adding that there may be distinctions between supply of overdraft finance (mainly used for working capital) and term loan finance (mainly used for investment projects).

Higher costs of credit, quantitative credit rationing or lack of collateral will have adverse effects on overall economic performance, since SMEs' investment will tend to be limited to what is available from holdings of liquidity and flows of internal finance (Campello et al (2010) show evidence for the US). SMEs with strong balance sheets will invest more readily than those dependent on external finance. Fraser (2012b) for the UK shows that lack of working capital boosted the likelihood of SME failure and induced lower sales growth in 2008-9.

Overlaying the borrower characteristics set out above as reasons for credit rationing there may also be effects from risk aversion on the part of lending officers, which leads them to refuse identical loan requests when uncertainty is high. As suggested by Baum et al (2002), uncertainty may have a major effect on SME lending since uncertainty will increase perceptions of costly default risk. Accordingly, banks may withdraw from higher risk lending such as lending to SMEs as well as real estate lending when there is heightened uncertainty, and revert to a more conservative distribution between loans and securities. The authors found this pattern empirically in the US for household sector loans and real estate loans but not for aggregate corporate lending.

In this context, it has been widely suggested in the UK that there has been a regime shift from risk loving to risk aversion on the part of bank lending officers in respect of corporate lending generally owing to the “shock” of the financial crisis and that this pattern may not be reversed even when market and economic indicators of uncertainty decline. This pattern may of course be underpinned by other factors such as tighter ongoing and expected capital adequacy requirements on SME lending e.g Basel 3 as well as losses in capital during the crisis and recession and withdrawal of small and foreign banks from the market in the wake of the crisis.

Within SME loans, a priori considerations suggest that in periods of uncertainty banks may prefer overdrafts to loans since the degree of control is greater[4], the term is shorter and the terms may be used to protect existing exposures rather than to add new risks.

[4] Banks have the right to call in an overdraft very quickly.

1.2 Research methodology

1.2.1 Descriptive presentation

We begin with a series of charts which show the data to be used in the project. These utilise the various surveys of SME finance, namely the UKSMEF for 2004, 2008 and 2009, and its successor the SMEFM quarterly from 2011Q1 to 2012Q2. As recorded in Fraser (2012a), UKSMEF provides detailed information on the characteristics of SMEs, their owners and experiences of obtaining finance. The surveys are based on large, representative samples of UK businesses with less than 250 employees. The 2004, 2008 and 2009 surveys form a longitudinal panel survey. Of the 3,964 firms covered, 1,707 firms (43%) were observed in 2 or more surveys. In total there are 6,250 observations: 2,500 in the 2004 survey and 3,750 in the 2008 and 2009 surveys.[5]

UKSMEF was succeeded by the SMEFM financed by the major banks and undertaken by BDRC Continental. The survey is undertaken each quarter with about 5,000 interviews of different SMEs. Quotas were set by business size, sector and region, to a carefully constructed sample design which ensured that sufficient interviews were conducted with SMEs of all sizes to allow for robust analysis. The results have then been weighted to be representative of SMEs with up to 250 employees and a turnover of less than £25 million. The interview respondent was the person identified as the main financial decision maker at the business. For further details see BDRC (2012). Unfortunately the SMEFM omits some variables included in the UKSMEF while adding others. In particular, UKSMEF includes both renewals and new loans together while SMEFM allows them to be treated separately.

Using SMEFM data together with the UKSMEF where possible, we extend the sample in earlier work by Fraser (2012a) to include observations for 2010-12. Using these charts we are illustrate changes over time in the key dependent variables in work on SME finance, namely interest rate margins over base rate, rejection rates, collateral, applications and arrangement fees. We also show some key underlying factors over time, notably the proportion of firms applying for overdraft or loan finance and firms' credit ratings.

An important assumption is that we have included renewals and new facilities for loans and overdrafts together in the 2001-12 data since these cannot be separated in the UKSMEF, while also showing some separate charts with and without renewals for the 2010-12 period. In line with Fraser (2012a), the rejections rate is defined as the rate at which firms that actually applied for finance were refused credit either by being refused completely or not receiving as much credit as they requested (we omit from the denominator firms that did not apply for credit).

Looking ahead, the data are suggestive of a continued tightening in the supply of credit to SMEs since 2008-9, with particular higher rejection rates and continuing high margins apparent in 2010-12. We note however that charts can only be suggestive, do not show causality, and omit key variables which affect the temporal pattern, which are incorporated in econometric work.

[5] UKSMEF was conceived and developed by the Centre for Small and Medium-Sized Enterprises (CSME), Warwick Business School: the first survey was carried out by CSME in 2004 with funding from a large consortium of private and public sector organisations led by the Bank of England. A second survey was conducted by the University of Cambridge in 2007 and the third was again carried out by CSME in 2008 with funding from the ESRC and Barclays Bank. The UKSMEF 2009, was conducted by the Department for Business Innovation and Skills (BIS), IFF Research Ltd (an independent market research agency) and Warwick Business School.

1.2.2 Characteristics of SMEs likely to face supply of credit constraints

In our econometric work, we follow the methodology of Fraser (2012a) in terms of estimation of the determinants of rejection, margins, arrangement fees and collateral for both overdrafts and term loans for those firms seeking finance. This is done for the periods 2001-4, 2005-7, 2008-9, 2010-11 and 2011-12, where results are defined relative to 2001-4. Rejection and collateral are zero-one variables and are estimated by probit, interest rate margins are estimated using two stage least squares (number of employees or sales as a firm-size variable used as an instrument[6] for loan size) and arrangement fees (as a proportion of loan/overdraft size) are continuous positive variables with a substantial proportion of zeroes and are estimated by tobit. Whereas the data used in Fraser (2012a) is a panel, when combined with the later SMEFM survey this is a pooled sample.

In all of these regressions we control for firm risk using available variables from Fraser (ibid) in addition to other relevant controls such as for firm size. This is an important inclusion as this resolves an important source of endogeniety where credit risk is ignored in other studies of credit supply. Fraser included firm assets (relevant for collateral), number of finance providers and length of relationship (relevant for relationship lending), Dun and Bradstreet risk ratings (as a direct measure of lending risk), missed loan repayments and unauthorised overdrafts (associated with delinquency), return on assets and the debt-assets ratio (financial ratios used in credit scoring) and sales, age of business, legal status, VAT registration, owner's educational qualification, gender and ethnicity (business and owner characteristics used in credit scoring) as controls. However, some of these key variables used by Fraser (2012a) are not present in the latest datasets, such as assets, debt, VAT registration, ethnicity[7] and length of relationship with bank. Absence of debt and assets implies we cannot use the debt/assets and return on assets measures. These omitted variables account for some of the differences between our results and Fraser (2012a).

We then further identify the characteristics of SMEs which are more vulnerable to having credit applications rejected or on worse terms (margins, fees, collateral) by further estimation using cross section on the SME Finance Monitor dataset alone for 2010-12. Over 2010-12 we include additional controls such as profitability, speed of growth, performance pay and importers/exporters as possible underlying factors. The dataset also allows division between new lending and renewals.

The variable "discouragement from applying for finance" which is solely present in the 2010-12 surveys is assessed alongside similar factors using the definitions in BDRC (2012), the main one of which is where an SME did not (or will not) apply to borrow because it had been put off directly (via informal enquiries with the bank) or indirectly (expectation of such a rejection). There are three other definitions of discouragement based on the principle of borrowing[8], process of borrowing[9] and current economic condition[10].

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[6] An instrument in econometrics is a variable that does not itself belong in the explanatory equation and is correlated with the endogenous explanatory variables. Its use allows consistent estimation when the explanatory variables are correlated with the error term. In this case, since loan size is correlated with margins we need an instrument for loan size which is correlated with it, such as firm size, to ensure consistent estimation.

[7] Only available for the 2nd quarter of 2012.

[8] Includes SME's which answered: I did not want to lose control of business, prefer to seek alternative sources.

In this econometric section we undertake various additional tests, including assessing the differences between risk classes in unexplained changes in credit conditions; looking over the period up to 2009 at the differences between types of banks in lending behaviour; and assessing differences in lending to ethnic groups.

1.2.3 Uncertainty and changes in lending conditions

The next part of the analysis is to establish the extent to which whether changes in credit is likely to be affected by uncertainty. Uncertainty is used as a key non-cyclical variable (in terms of variation in expected credit losses) while other variables capture cyclical effects per se. This work involves both macro and micro datasets. We use the British Bankers Association lending to small business data series (turnover up to £1m) from 1990-2012, as shown in Bank of England (2012a). This is a sample of smaller firms than in the SME surveys described above. The derived measure of uncertainty is tested alongside standard determinants of bank lending as in Barrell et al (2009) and Davis and Liadze (2012) for the series SME lending, SME term lending, SME overdraft lending, unincorporated business lending,[11] and as a control, total lending to private non-financial corporations.

Turning to micro work, building on Section (2) we incorporate uncertainty into the analysis by estimating various regressors, such as conditional[12] volatility measures[13] derived from monthly data on changes in share prices (as in Davis 2011), GDP growth and inflation as also in Byrne and Davis (2005a). The use of volatility generated regressors does not suffer the endogeneity problems of other generated regressors. We test whether these uncertainty measures can help to explain differences in rejection rates, collateral, margins and fees in the different periods (bearing in mind such macro factors are common to all firms in the sample) in addition to the overall economic conditions as shown by firm characteristics. This allows a distinction between the level of activity and uncertainty associated with this activity and provide some insight into the nature of credit using as a basis the regressions for the 2001-12 period noted in Section (2) above.

Conceptually, it can be argued that the control variables in the model allow for the short term economic conditions and expectations in each period, although a possible exception is bank capital adequacy (levels of risk weighted capital adequacy and headroom over trigger ratios), which can influence spreads and lending conditions independently of firm factors or uncertainty per se (see Barrell et al (2009), Davis and Liadze (2012)).

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[9] Includes SME's which answered: I thought it would be too expensive, too much hassle, loan facilities come with too many terms and conditions, I thought we would be asked to provide too much security, did not want to go through application process, find bank forms and literature hard to understand.
[10] Includes SME's which answered: I thought it was not the right time to apply for borrowing.
[11] Source: Bank of England series code RPQB78D: Quarterly amounts outstanding UK resident banks and building societies sterling and all foreign currency loans to unincorporated businesses (in sterling millions) not seasonally adjusted. The series is largely lending to sole traders and hence is another proxy for SME lending.
[12] Conditional volatility of a series measures the uncertainty about future volatility taking into account what has already taken place (i.e. it is "conditional" on available information).
[13] The question of whether unconditional or conditional volatility is most appropriate as a measure of uncertainty is an important one. As argued in Byrne and Davis (2005a), the key is the distinction originally due to Knight between risk and uncertainty. Risk can be defined as the danger that a certain contingency will occur, a measure often related to future events susceptible to being reduced to objective probabilities, while uncertainty is a term applied to expectations of a future event to which probability analysis cannot be applied, such as a change in policy regime or a financial crisis.

1.2.4 Warranted further research

Before concluding this section, we note that a further desirable step in analysis of SME lending is to provide alternative instruments to test for the endogeniety of the findings in the study and provide comparable identification procedures. The purpose of this analysis is of course to identify demand and supply, although we recognise that all indentification strategies necessarily have their limitations. In this analysis we include an independent measure of credit risk which is omitted in soome other studies. Alternative strategies may underestimate the size of the constraints due to the 'weak instruments problem'.[14]

If the shorter data set in panel form is used, possible candidates could include instruments which are firm specific such as previous rejection rates in applying for credit (i.e. using previous values as an instrument for current values); one can also use bank-specific characteristics of the lender (as in Jimenez et al (2012), cross country or regional assessments of economic developments (as in Holton et al 2012), or bank concentration by region (Merciarca et al 2009). However, this would exclude the most recent data in the SMEFM data set.

Unfortunately the nature of the surveys and related data make these infeasible. In particular, the survey ceases to be a panel after 2009 and hence previous rejection rates cannot be traced. Also after 2009 the bank making the loan is no longer specified in the survey available to the authors, and the long series of Bank of England agents' scores are not available by region. Unlike recent work such as Hempell and Sorensen (2010) and Sovago (2011) we also do not have data from bank lending surveys to complement the firm survey data. A decomposition of lending rate changes between credit risk, funding costs and the residual that could have been helpful for identification has only been found feasible for household lending (Button et al 2010).

Finally, whereas the variable "discouragement" from applying for loans is potentially helpful in identification of supply and demand, it is only consistently available since 2010 and hence cannot be used for our principal data period 2001-12.

This is an important area of further research and development of the SME survey in that until the issue notion of a supply constraint is fully demonstrated, the validity of analysis in this area will remain in doubt. That said, we concur largely with Fraser (2012a) that the effects found for loan applications in the main results of our paper "seem to be genuine supply-side effects since the econometric models included extensive controls relating to the risk profile of the business/owner and their financial relationships" (ibid p66).

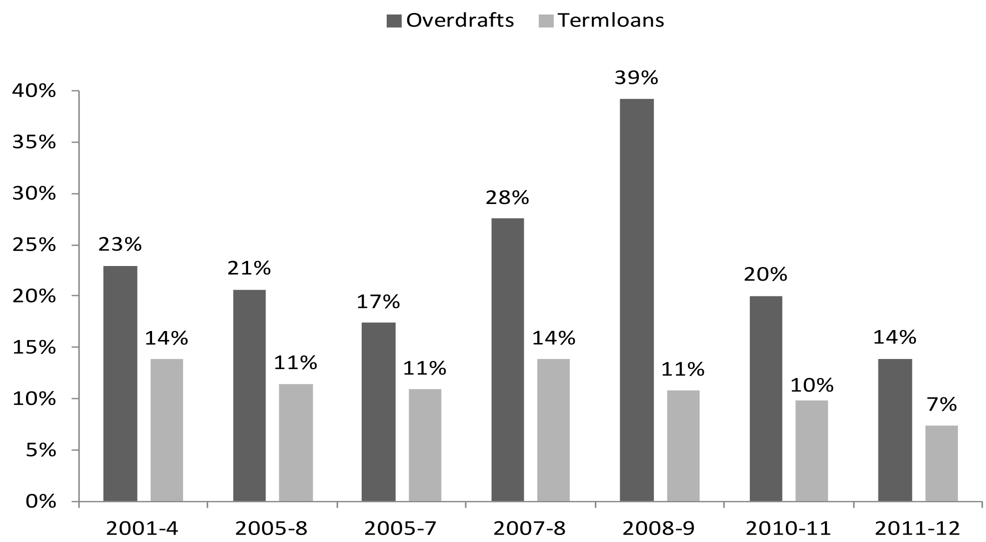
[14] Weak instruments arise when the instrument in a regression (as defined in footnote 6) is only weakly correlated with the included endogenous variables (Stock et al 2002).

2. Trends in the data

Charts are presented in two ways. The top charts cover 2001-12 combining the UKSMEF and the first and fifth wave of the SMEFM for 2010-11 and 2011-12 respectively. The lower charts cover the 2010-12 for all five waves of the SMEFM survey available at the time of the analysis. All charts include renewals as well as new lending, unless otherwise stated.

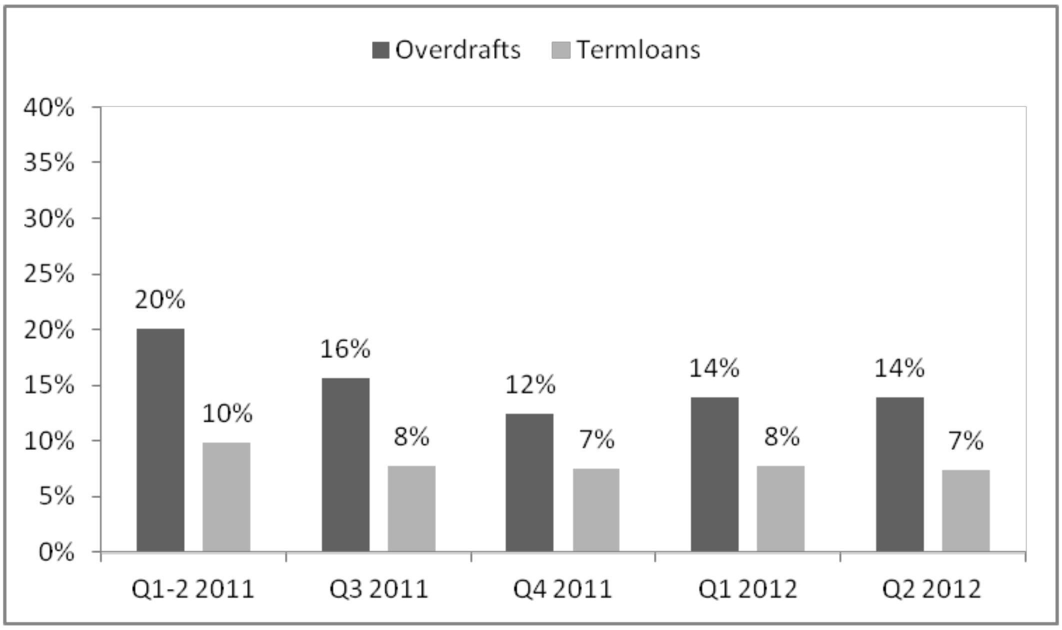
Chart 1: Bank debt applications by sub-periods

(a) 2001-12



Includes data on all SMEs. An SME is defined to have a demand for overdraft/loan: over 2001-2008, if applied for overdraft/loan; in 2009, if it used overdraft/term loan over the last 12 months; over 2010-2012, if it applied for new or renewed overdraft/loan.

(b) 2010-12 by waves

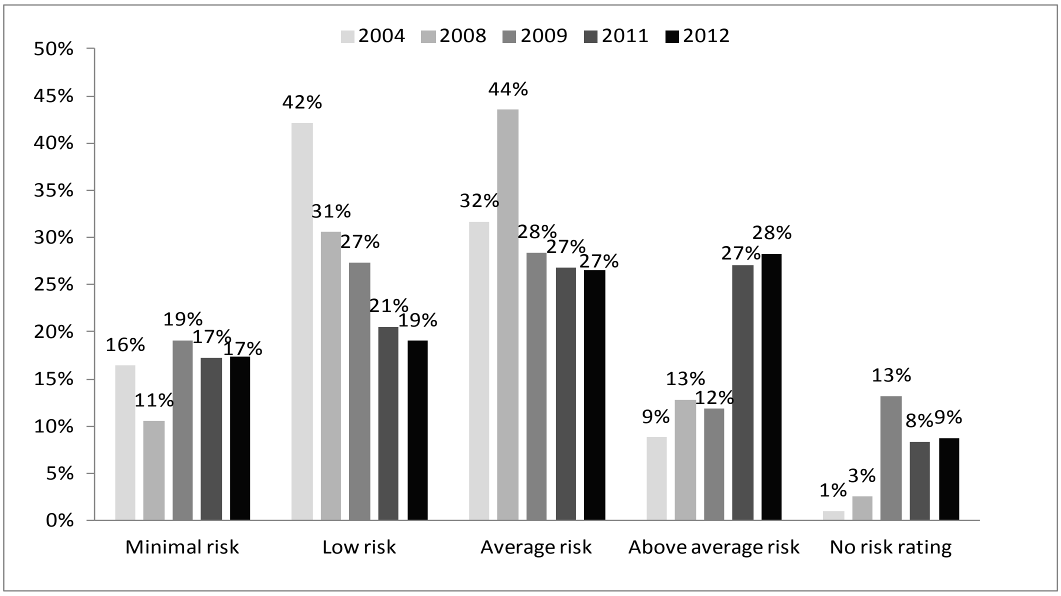


Includes data on all SMEs.

The proportion of firms applying for debt finance across the sample has declined since 2008-9 according to Chart 1(a), both for overdrafts and for term loans. Chart 1 (b) shows that in the 2010-12 period there has also been a consistent reduction in the proportion of firms seeking credit, although it has flattened out since the third wave. Note that application is not necessarily an accurate measure of demand since some firms may be deterred from application despite having positive financing needs (the difference being "discouragement" as defined in the SME Finance Monitor survey since 2010, see below). Furthermore the composition of firms applying for and receiving credit is changing over time, as analysed in the econometrics in Section 3.

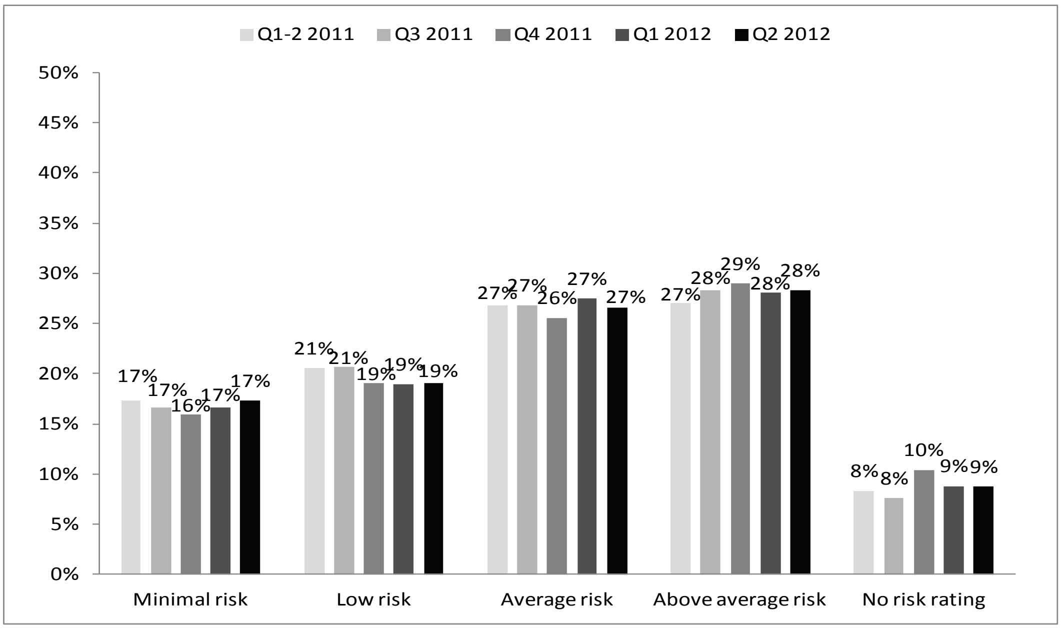
Chart 2: Credit ratings (Dun and Bradstreet/Experian)

(a) 2001-12



Includes data on all SMEs.

(b) 2010-12 by waves



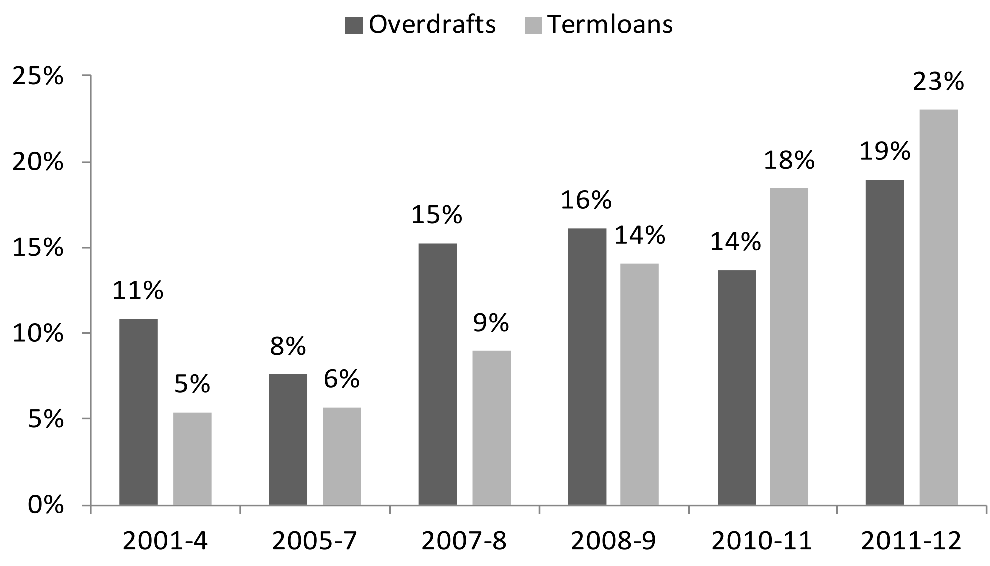
Includes data on all SMEs.

Credit ratings[15] within the sample have worsened in the period 2010-12 compared to the earlier periods, with a higher proportion of firms falling into the above average risk category (Chart 2a). Minimal, low and average risk classes have all fallen relative to the 2009 survey, with the fall in low risk being part of a trend throughout the 2000s. A somewhat higher percent of firms have been non-rated. A similar albeit slight upward trend in above average risk and reduction in low risk is apparent in the waves from 2010-12 (Chart 2(b)). Omitting credit risk from an analysis of bank credit would bias the results to suggest a greater supply problem.

In common with all the other charts, rejection rates in Chart 3 include renewals. The rejection rate is defined as the proportion of firms which applied for credit and were either refused outright or received less credit than they requested, as a proportion of firms applying (in line with Fraser 2012a). The data suggest a dramatic rise in the rejection rate as a proportion of applications in 2010-12, reaching the highest levels in the latest survey of any period since 2001. The shift is accentuated by its combination with a falling level of applications (Chart 1). An upward trend is apparent in the 2010-12 data, with rejection rates reaching their highest points for both overdrafts and loans in the most recent wave up to June 2012.

Chart 3: Bank debt rejection rates by sub-period

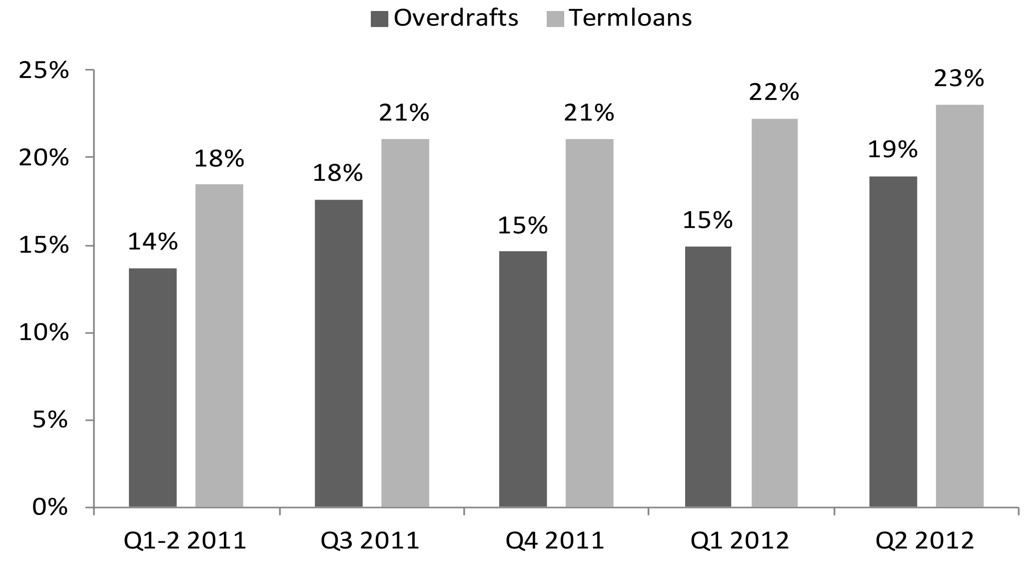
(a) 2001-12



Includes data on SMEs with bank debt.

[15] External risk ratings by ratings agencies such as Dun and Bradstreet and Experian use a variety of business information to predict the likelihood of business failure in the 12 months following the forecast. Such ratings are commonly used as background for decisions on lending. Other factors underlying lending may include macroeconomic forecasts, "soft" information about the firm such as quality of management, and the bank's desired portfolio of assets across different sectors.

(b) 2010-12 by waves

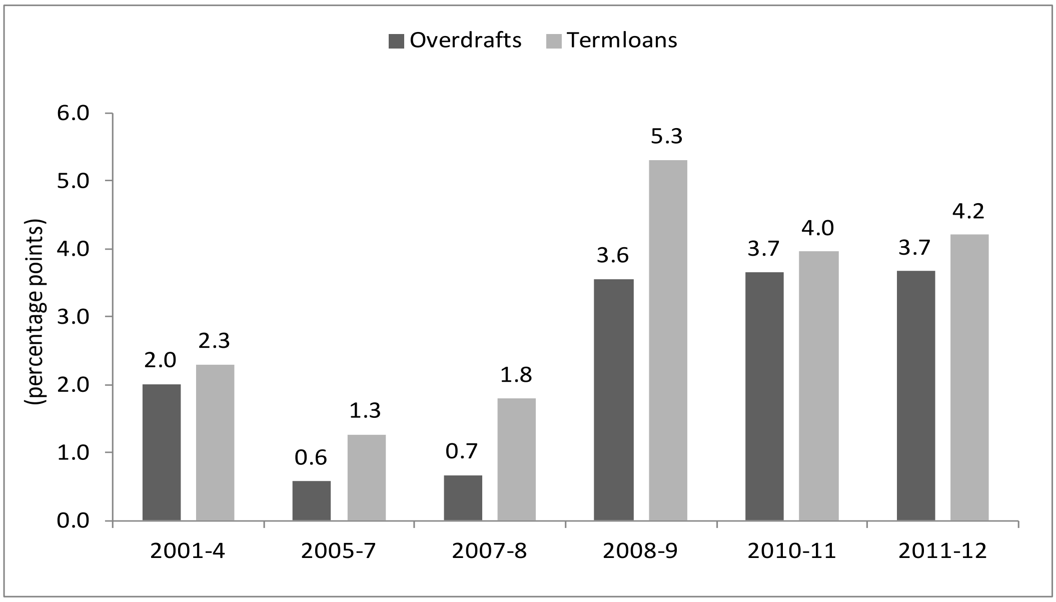


Includes data on SMEs with bank debt.

Loan and overdraft margins are calculated as a difference between interest rates charged on loans/overdrafts and Bank of England bank rate at the time of an interview. It is recognised that bank funding costs can be quite different from the bank rate e.g. the LIBOR spread has been much higher than in past decades. However, the higher funding costs are likely to reflect uncertainty and concern over the condition of banks and to this extent are reflected in the spread as a cost transferred to borrowers rather than absorbed by banks.[16]

Chart 4: Bank debt margins

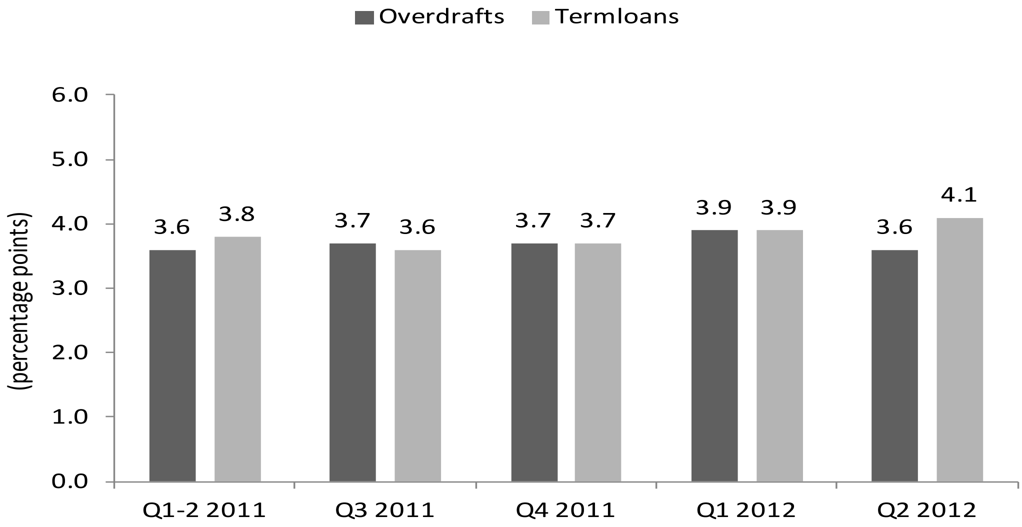
(a) 2001-12



Includes data on SMEs with bank debt; excludes SMEs with margins greater than 30pp.

[16] We note that banks' funding costs are also influenced by a number of other factors including maturity of their borrowing, retail/wholesale composition and deposit market competition.

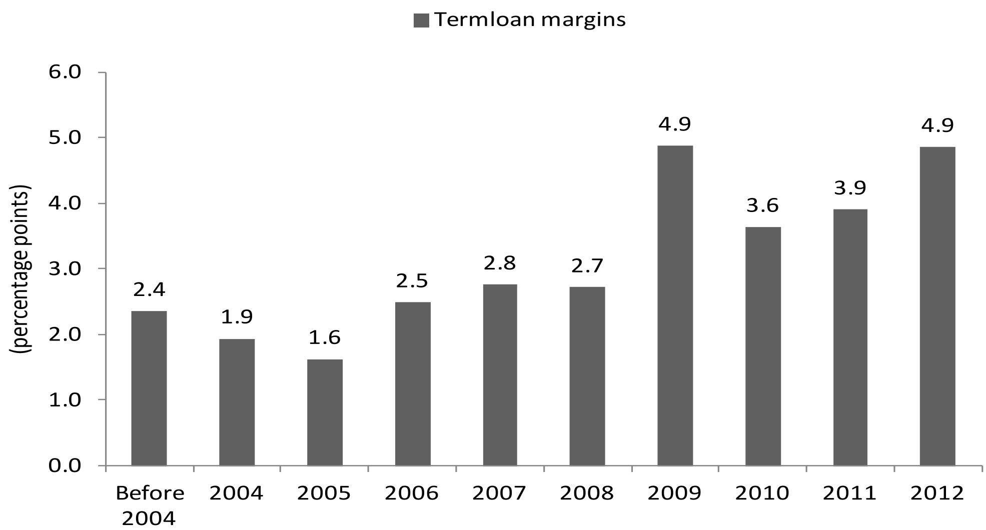
(b) 2010-12 by waves



Includes data on SMEs with margins information provided; excludes SMEs with margins greater than 30pp.

Debt margins for borrowing firms fell in 2010-11 from a peak in 2008-9 for term loans, before rising again to their second highest level in 2011-12. For overdrafts the cost of credit was marginally higher in 2010-12 than in 2008-9 (Chart 4a). Within the recent waves a rise is apparent in margins, peaking in the most recent wave for term loans and in the previous wave for overdrafts (Chart 4b). The margins for overdrafts tend to be lower than for loans, consistent with a lower level of control over the borrower for loans, but there is a degree of convergence in recent periods. The overall pattern in Chart 4 may again be affected by changes in the composition of borrowers over time.

Chart 5: Term loan margins by year of loan origination

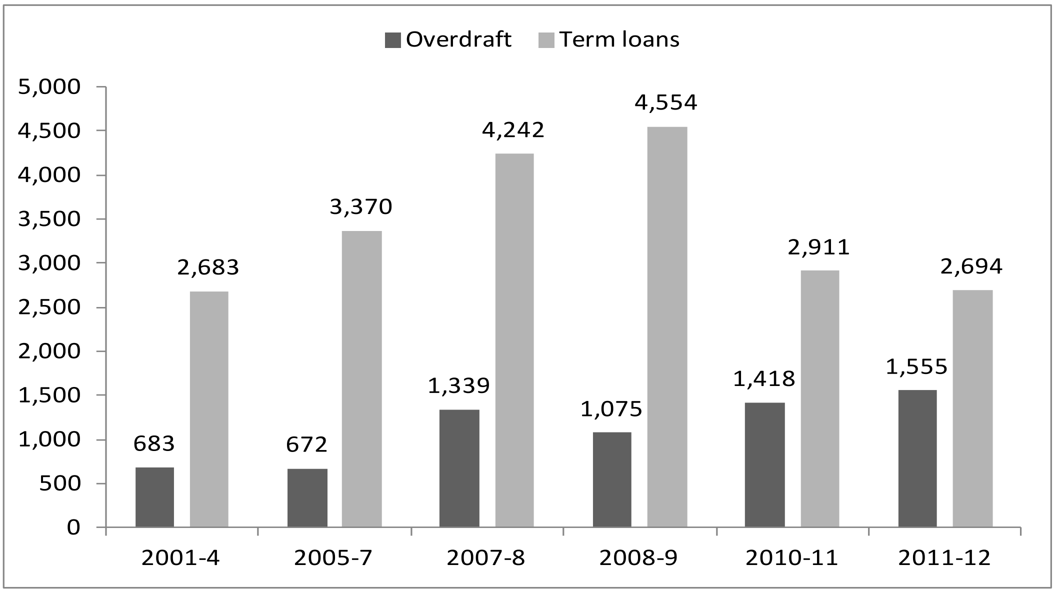


Includes data on SMEs with bank debt.

Chart 5 shows the term loan margins to have returned in 2012 to the peak previously observed in 2009 (these patterns cannot be derived for overdrafts). The cost of credit is shown to be extremely high, and we note from the macro data shown in Chart 15 that the importance of term loan finance in value terms is far greater than that of overdrafts.

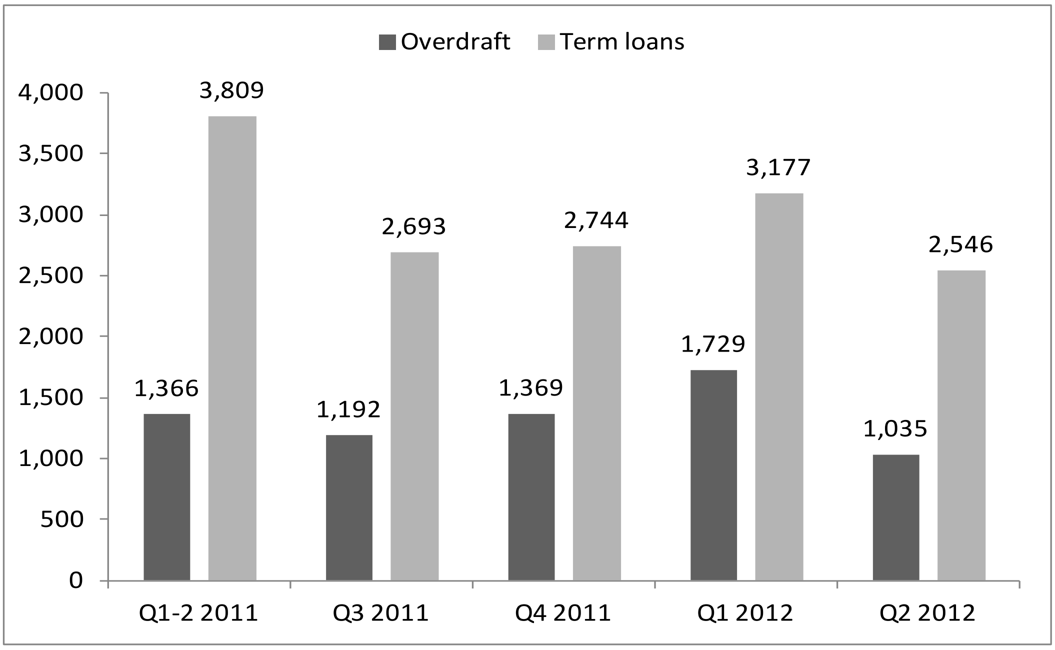
Chart 6: Arrangement fees

(a) 2001-12



Includes data on SMEs with bank debt. In pounds, 2009 prices. Includes arrangement fees for loans less than £150,000.

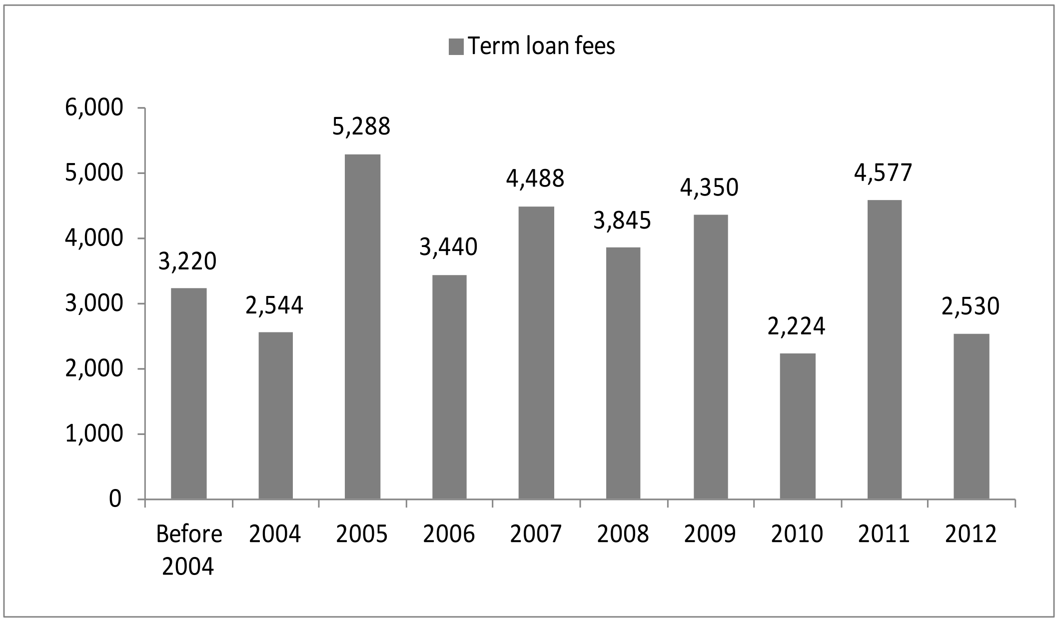
(b) 2010-12 by waves



Includes data on SMEs with arrangement fees. In pounds, 2009 prices. Includes arrangement fees for loans/overdrafts less than £150,000.

Arrangement fees in real terms fell from 2008-9 onwards for loans but have been steadier for overdrafts (Chart 6a). However, the apparent fall in term loan fees may have been offset by a rise in the frequency of payment and a rise in non standard fees and charges. In the five waves of the SME Finance Monitor (Chart 6b) arrangement fees for loans have been on an increasing trend between the second and the fourth waves, with a reduction observed in the last wave. Fees for term loans are consistently higher than for overdrafts, although this may reflect the size of transactions.

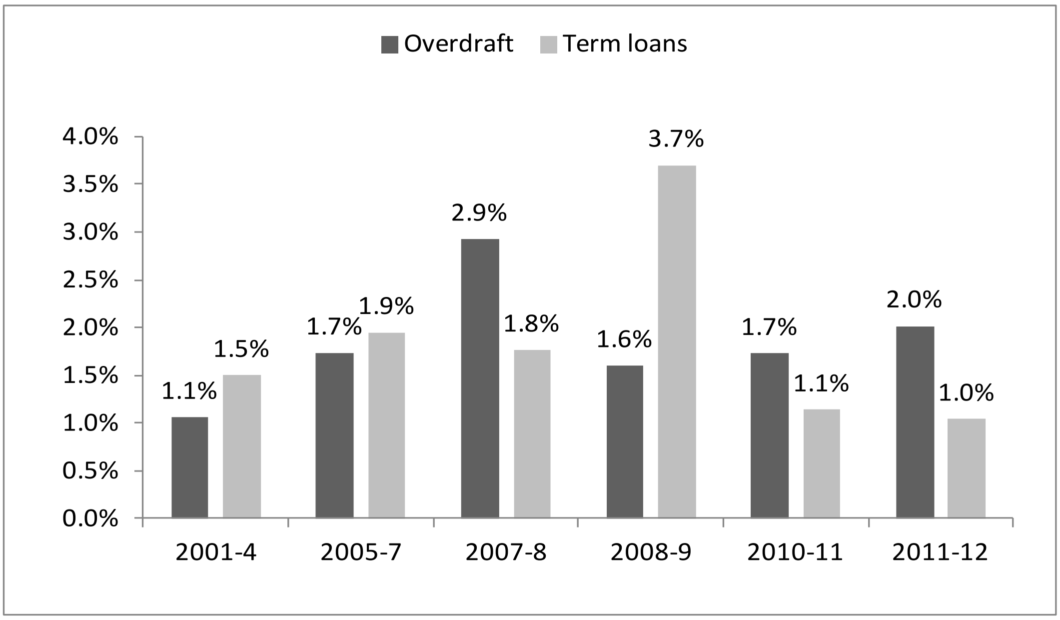
Chart 7: Term loan arrangement fees by year of loan origination



Includes data on SMEs with bank debt. In pounds, 2009 prices. Includes arrangement fees for loans less than £150,000.

Chart 7 shows that fees in 2011 were higher than at any time since 2005.

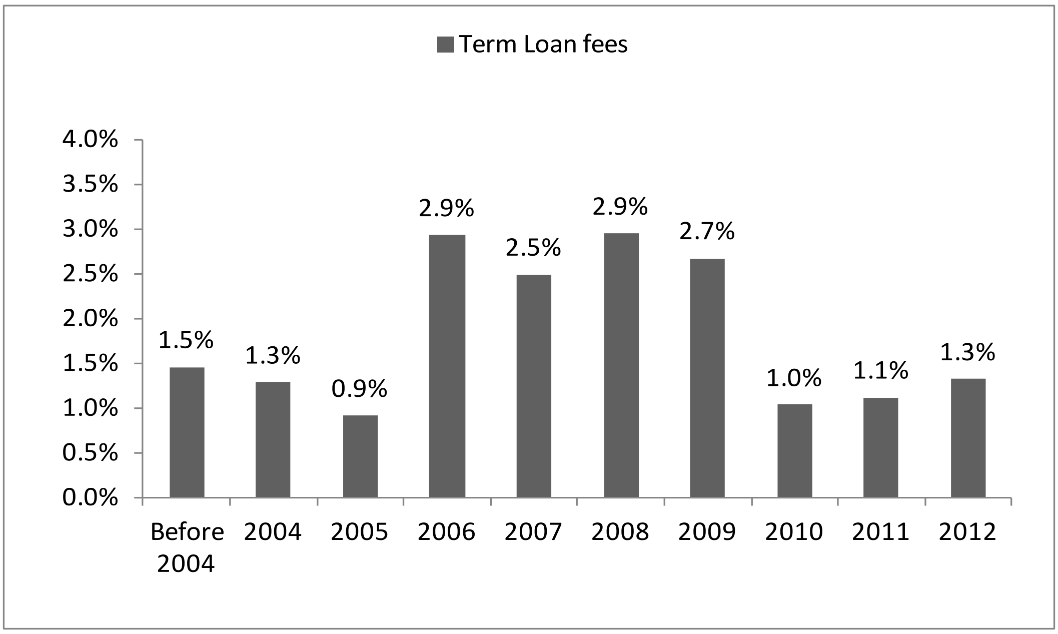
Chart 8: Arrangement fees as a percent of size



Includes data on SMEs with bank debt. Excludes outliers, i.e. ratios greater than 9 for loans and greater than 6 for overdrafts.

Overdraft fees peaked in 2007-8 but stood at a high level within the sample period also in 2011-12, while percentage fees for term loans have come down from highs in 2008-9 (Chart 8).

Chart 9: Term loan arrangement fees as a percent of size by year of loan origination

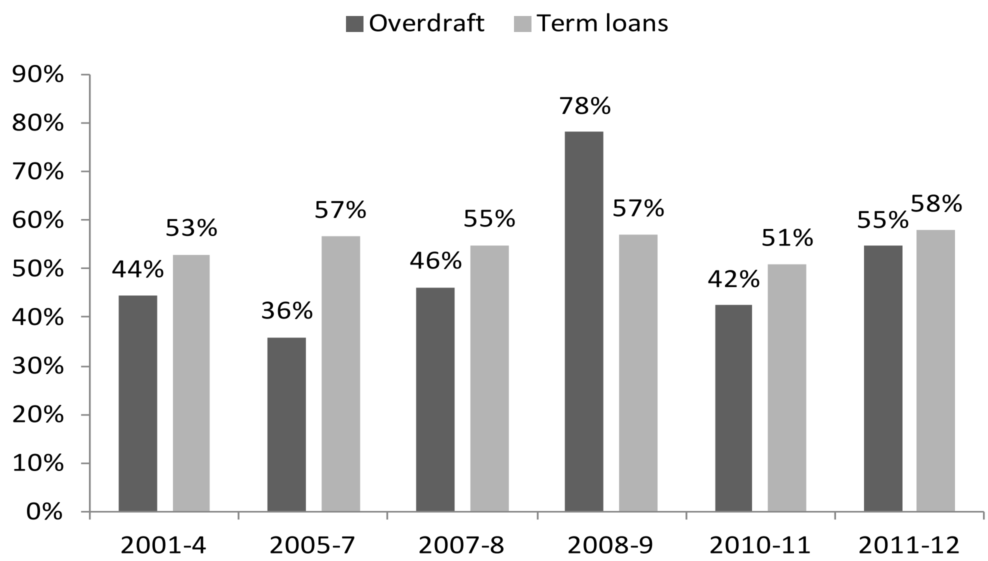


Includes data on SMEs with bank debt. Excludes outliers, i.e. ratios greater than 9 for loans.

Percentage fees for loans picked over 2006-2009 and have since returned to the levels seen prior to 2006 (Chart 9). Fees can provide an alternative to higher interest rates when margins are low, as they were in the period up to 2008 (Chart 4a).

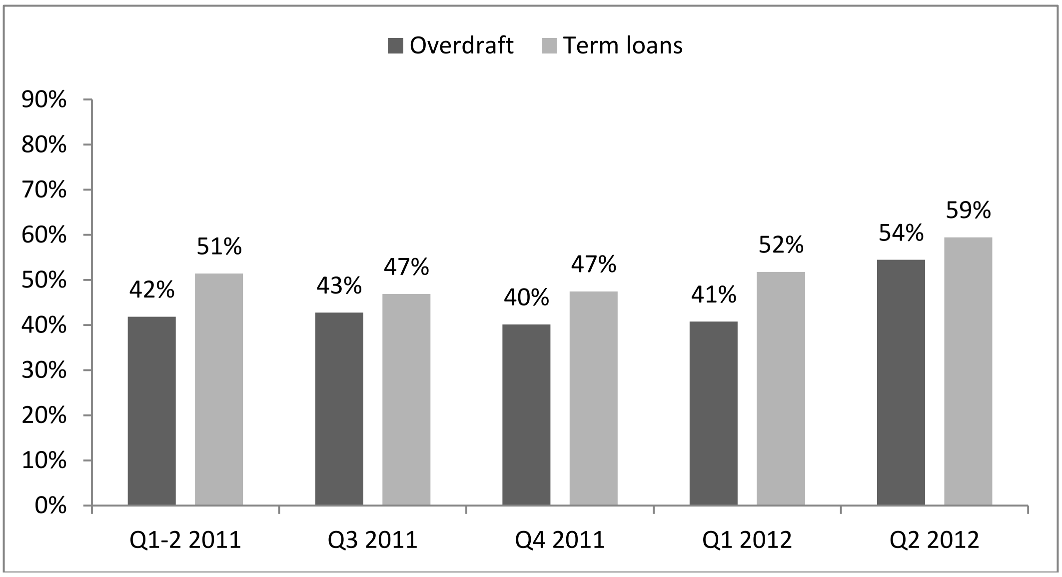
Chart 10: Bank debt involving collateral

(a) 2001-12



Includes data on SMEs with bank debt.

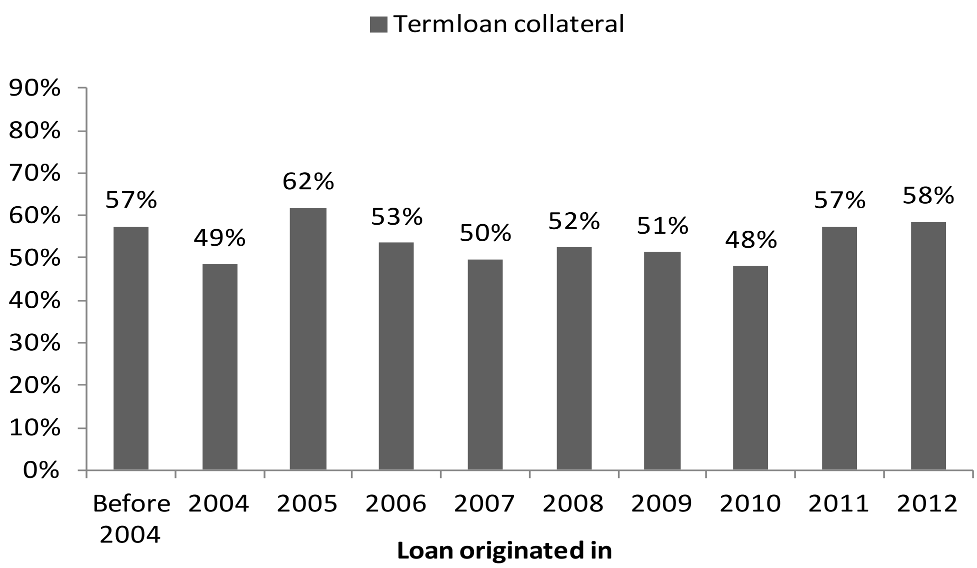
(b) 2010-12 by waves



Includes data on all SMEs with bank debt.

Collateral protects the lender against default so may be expected to rise when there is financial stress. That said, the percentage of loans having collateral requirements are shown in Chart 10a to be structurally around 55% for term loans, although a lower figure is shown for 2010-11, possibly reflecting the devaluation of collateral in the wake of the crisis. Overdraft collateral requirements are more cyclical with a sharp rise in 2011-12 to the highest level observed since 2008-9 and the second highest in the sample. The detailed figures for the waves (Chart 10b) shows a peak in the last wave in our sample up to June 2012 for both overdrafts and term loans, suggesting a recent tightening of collateral requirements.

Chart 11: Term loan involving collateral by year of loan origination

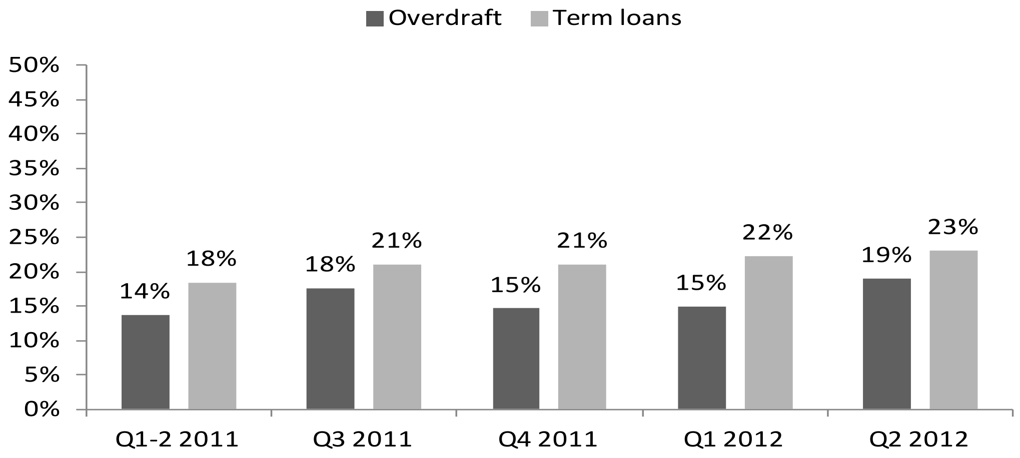


Includes data on SMEs with bank debt.

Collateral requirements for term loans in 2011 and 2012 are higher than at any time since 2005 (Chart 11).

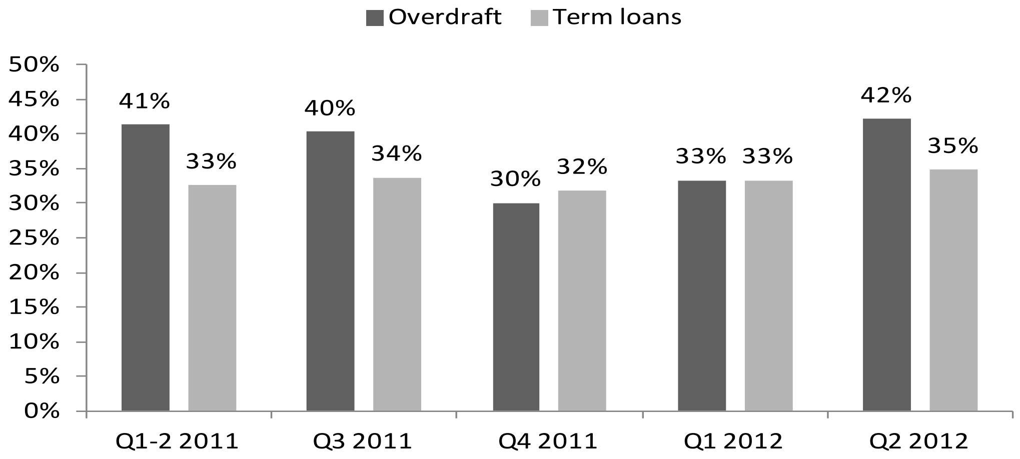
Chart 12: Bank debt rejection rates 2010-12 with and without renewals

Including renewals



Includes data on SMEs who applied for bank debt.

Excluding renewals



Renewals only

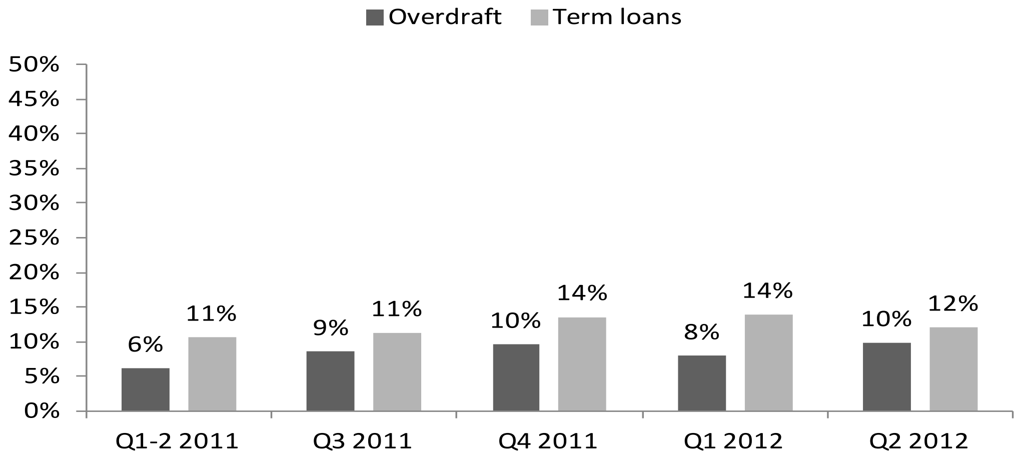
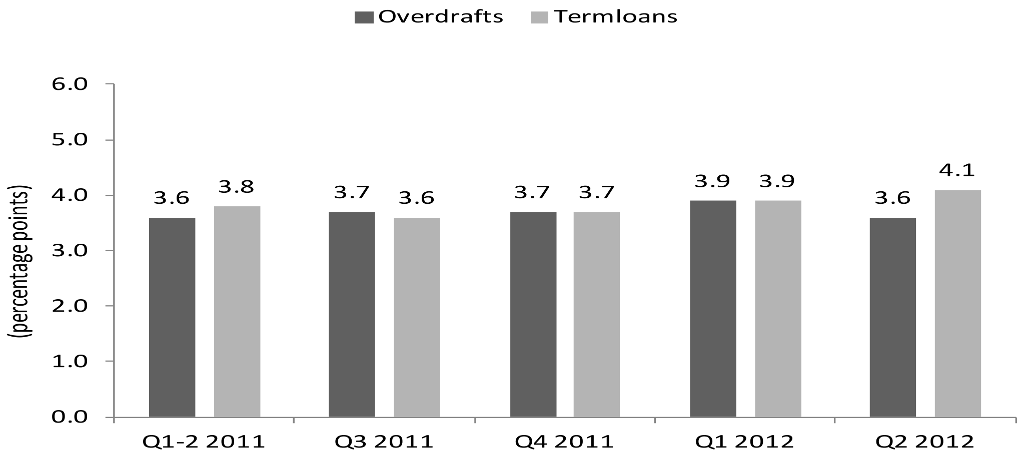


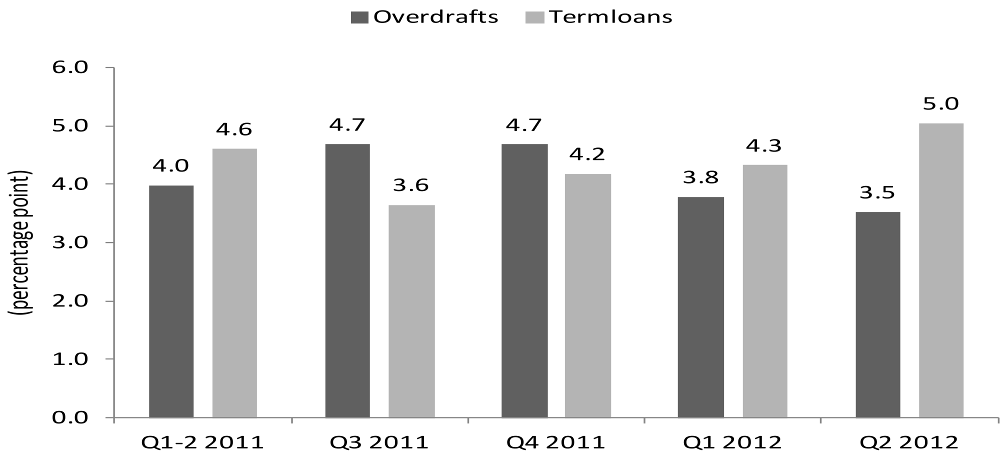
Chart 13: Bank debt margins for 2010-12 with and without renewals

Including renewals

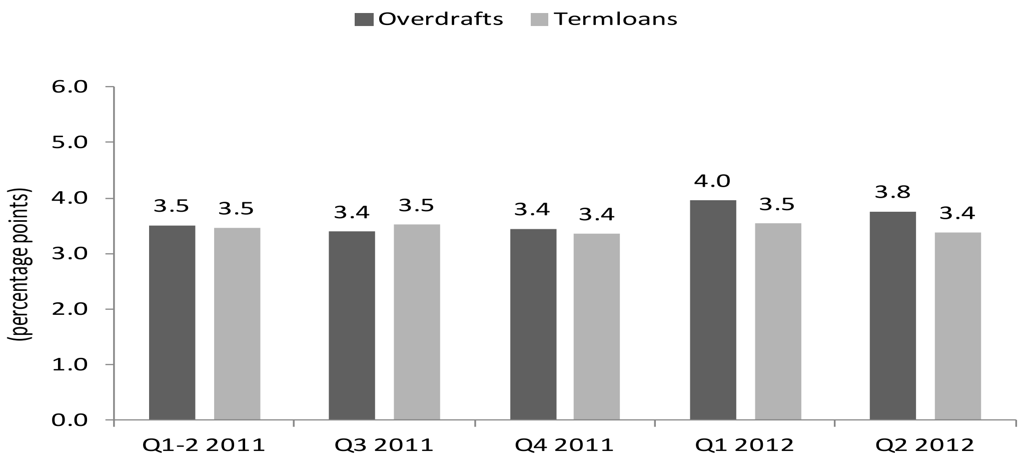


Includes data on SMEs with margins information provided; excludes SMEs with margins greater than 30pp.

Excluding renewals



Renewals only

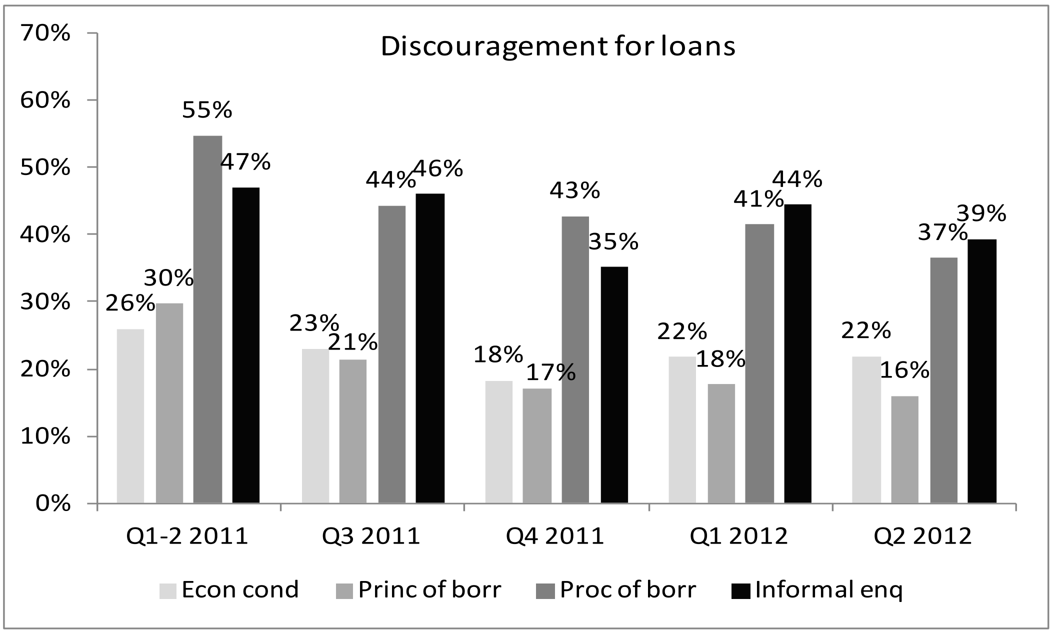


In Charts 12-13 we compare the key variables with and without renewals for the SME Finance Monitor over 2010-12. Chart 12 shows that as one would expect there is a higher rate of rejection if renewals are excluded. However, the figures excluding renewals are not consistent with earlier surveys which is why we consistently use data for including renewals, unless otherwise stated. That said, there is much more of an upward trend in the rejection rate including renewals than excluding them. So while credit may be consistently tight for new loans it appears to be increasingly tight for renewals as shown in the third part of the chart.

Chart 13 shows a similar pattern with a rise in margins being more pronounced with than without renewals, although it is also apparent for new lending for term loans. These patterns imply that renewals, that may be of loans previously made under easy conditions prior to 2007, are facing increasingly tougher conditions (although our regressions will be more conclusive since they control for borrower characteristics).

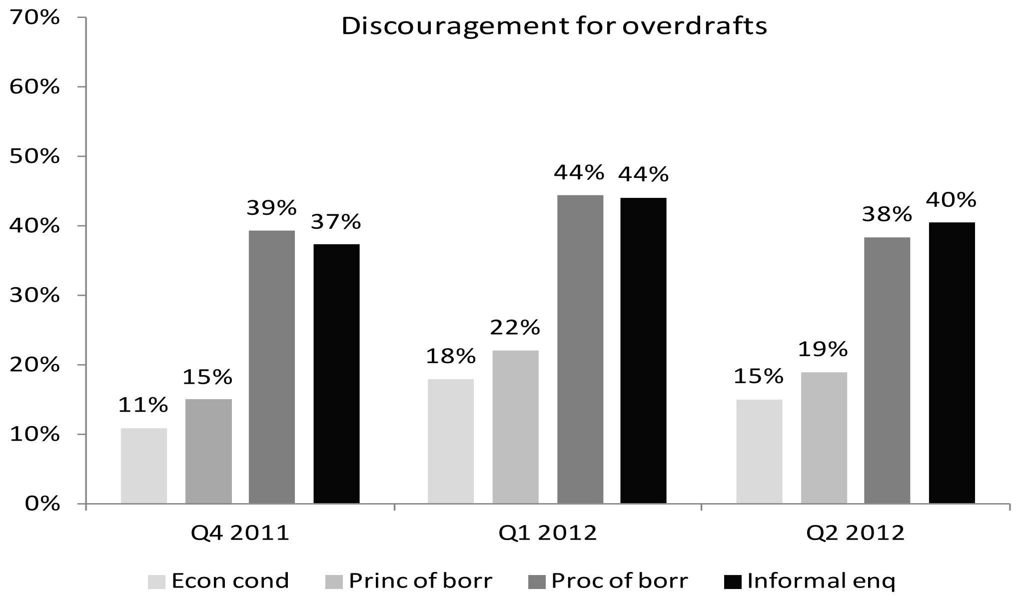
Chart 14 shows trends in the four definitions of discouragement including renewals in each case[17]. It can be seen that informal enquiries (the most informative measure of discouragement, which we focus on in our econometrics) and the procedure of borrowing are the most important ones. The denominator is the number of firms that chose to answer questions in this field. There seems to be a slight downtrend for loans while there is no clear trend for overdrafts (the first two surveys did not ask this question for overdrafts).

Chart 14: Discouragement rates for 2010-12



Includes data on SMEs with discouragement information provided.

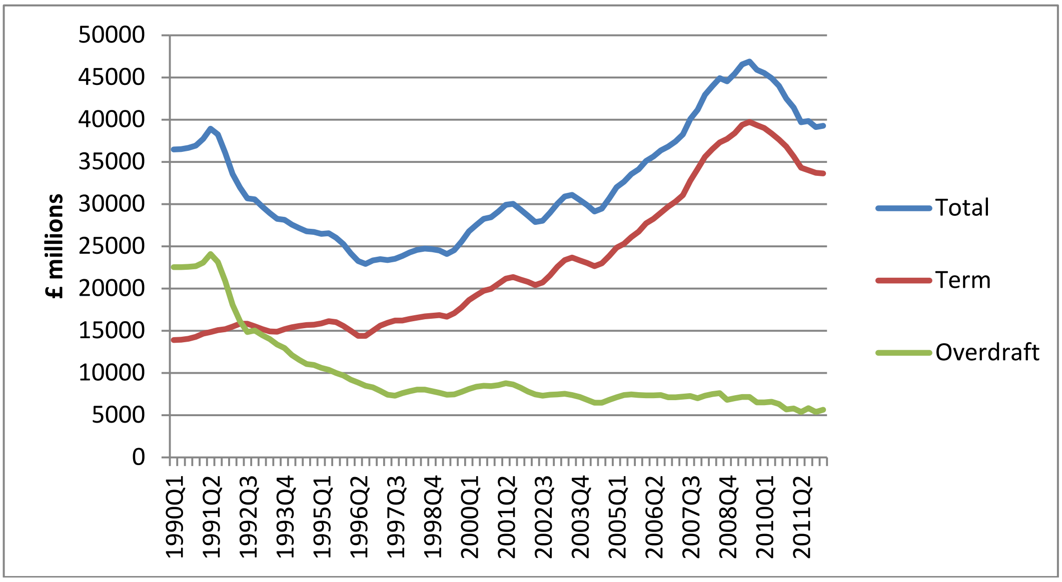
[17] The definitions (BDRC 2012) are as follows: (1) Principle of borrowing – those that did not apply because they feared they might lose control of their business, or preferred to seek alternative sources of funding. (2) Process of borrowing – those who did not want to apply because they thought it would be too expensive, too much hassle etc. (3) Informal enquiries discouragement – those that had been put off, either directly (they made informal enquiries of the bank and were put off) or indirectly (they thought they would be turned down by the bank so did not ask) and (4) Current economic climate – those that felt that it had not been the right time to borrow.



Includes data on SMEs with discouragement information provided.

The micro data referred to above is complemented by macro data from the BBA (adjusted since June 2006 by BIS to avoid series breaks in the data). Quarterly data before June 2006 are estimated by NIESR based on annual series. These data refer to SMEs with a turnover of up to £1 million.

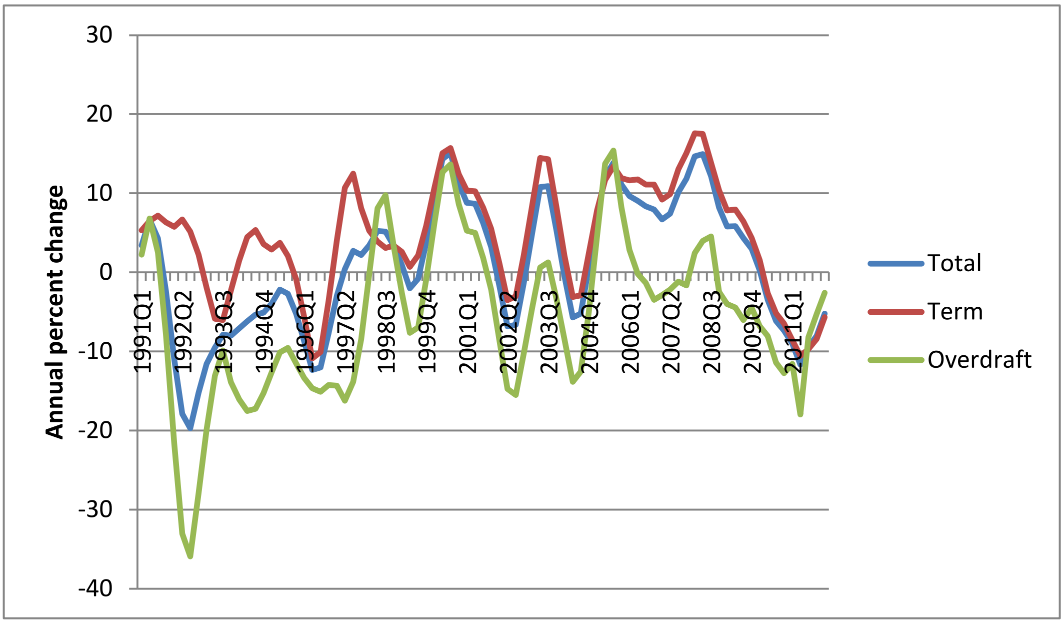
Chart 15: Aggregate stock of lending to SMEs (£ million)



Source: BBA with adjustment by BIS, SMEs are firms with turnover under £1 million

Chart 15 shows that there has indeed been a boom and bust in SME term lending in recent years albeit driven largely by construction and real estate activities, while overdraft volume has remained subdued. Looking back, we can see that overdraft lending has declined even in nominal terms consistently since 1991, while term lending rose to a peak in 2009. Note that there may be effects from the ceiling of £1 million on turnover, as the “real” size of a firm with such a turnover is obviously quite a lot smaller in 2012 than it was in 1990.

Chart 16: Aggregate stock of lending to SMEs (annual percentage change)



The pattern of net lending over time is shown in Chart 16, which shows annual percentage changes in the total. There have been numerous periods when the volume of SME lending has declined, including not only 2010-12 but also over 2002 and from 1991-1997. Falls in overdraft volumes have of course been much more persistent than for term lending, as Chart 15 has already shown. In the most recent period, the decline in overdrafts began in 2008Q4 while that for term loans only started in 2010Q2. Since 2011Q3 the decline in term lending has been more rapid than that for overdrafts.

3. Econometric results

3.1 Characteristics of SMEs likely to face supply of credit constraints

Turning to econometric analysis, our principal results are from the micro regressions following Fraser (2012a) which are shown in Tables 1-12. Rejection, collateral and discouragement are zero-one variables and are estimated by probit. Margins are estimated using instrumental variables with the endogenous variable loan size being instrumented for by size variables (sales or employment).[18] Arrangement fees (as a proportion of loan/overdraft size) are continuous positive variables with a substantial proportion of zeroes and are estimated with tobit model.

We undertook regressions over two samples, firstly the 2001-12 period using the data up to 2009 from UKSMEF and then waves 1 and 5 of the SMEFM (we do not include the whole data from SMEFM to maintain a balanced sample over time). This was estimated relative to 2001-4. The second sample is all the data from waves 1-5 of the SME Finance Monitor estimated relative to the first wave. To ensure unbiased results we employ robust or bootstrap standard errors (Wooldridge,2006).

3.1.1 Results for 2001-12

Our main results for the 2001-12 sample are with similar variables to Fraser (2012a) as detailed above. In practice some of his variables were omitted due to data problems in extending the sample to 2012, including assets, debt/assets, VAT registration, length of relationship with bank and ethnicity[19], and these omissions will help explain differences from his results. All regressions are for the sample including renewals, except for certain 2010-12 results where renewals could be excluded. We commence with regressions for rejection rates of firms applying for loans or overdrafts over the full data period:

Table 1: Rejection rates 2001-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt applications				
Applications in 2005-07	-0.410**	(0.000)	-0.267	(0.055)
Applications in 2007-08	0.124	(0.165)	0.272	(0.061)
Applications in 2008-09	0.162	(0.074)	0.582**	(0.001)
Applications in 2010-11	-0.00376	(0.960)	0.653**	(0.000)
Applications in 2011-12	0.238**	(0.003)	0.840**	(0.000)

[18] The endogeneity of loan size means that loan size and margins are determined simultaneously, since the size of loan has direct effect on margins. In regression analysis this leads to bias of the estimated effect. The use of instrumental variables allows for consistent estimate overcoming the endogeneity. However, for an instrumental variable to be valid it must be correlated with the endogenous variable and uncorrelated with both the dependent variable and the error term. In this specific case, sales or employment are correlated with size of loan but are not correlated with margins, meaning they do not have a direct effect on them.

[19] Ethnicity was only included in the last wave of the SMEFM survey, separate results are presented at the end of this section.

Sales				
Sales: £50,000-£99,999	-0.298**	(0.005)	-0.313	(0.053)
Sales: £100,000-£499,999	-0.274**	(0.003)	-0.147	(0.279)
£500,000-£999,999	-0.242*	(0.022)	-0.152	(0.325)
£1m-£4,999,999	-0.434**	(0.000)	-0.348*	(0.022)
£5m or more	-0.223	(0.064)	-0.568**	(0.001)
Risk rating				
Low	0.144	(0.157)	0.130	(0.356)
Average	0.312**	(0.002)	0.314*	(0.023)
Above average	0.629**	(0.000)	0.356*	(0.016)
Undetermined	0.617**	(0.000)	0.419*	(0.030)
Financial delinquency				
Loan default	0.746**	(0.000)	0.108	(0.589)
Unauthorized overdraft borrowing	0.687**	(0.000)	0.276**	(0.001)
Business Age				
2-6 years	-0.427**	(0.000)	-0.587**	(0.001)
7-15 years	-0.752**	(0.000)	-0.828**	(0.000)
More than 15 years	-0.889**	(0.000)	-1.000**	(0.000)
Other business characteristics				
Ltd Co	0.132	(0.087)	0.0534	(0.625)
Partnership	0.0565	(0.546)	-0.150	(0.287)
Limited Liability Partnership	0.148	(0.340)	-0.0615	(0.815)
Highest Qualification				
Undergraduate	0.00332	(0.963)	-0.0679	(0.527)
Postgraduate	0.0139	(0.881)	-0.186	(0.156)
Gender				
Female	-0.0640	(0.372)	-0.234*	(0.035)
Industry				
Agriculture, hunting and forestry/ fish	-0.0460	(0.742)	-0.117	(0.554)
Construction	0.0925	(0.394)	0.202	(0.179)
Wholesale / retail	0.0540	(0.623)	0.139	(0.364)
Hotels and restaurants	0.477**	(0.000)	0.173	(0.271)
Transport, storage and communication	0.151	(0.222)	0.0672	(0.679)
Real estate, renting and business activ	0.0881	(0.408)	0.107	(0.480)
Health and social work	-0.0240	(0.865)	-0.0545	(0.769)
Other community, social and personal ser.	-0.0498	(0.695)	0.0415	(0.810)
Region				
East Midlands	0.0113	(0.928)	0.0518	(0.760)
London	0.225*	(0.056)	-0.0141	(0.936)
North East	-0.129	(0.303)	-0.421*	(0.023)
Northern Ireland	-0.0401	(0.765)	-0.131	(0.450)
North West	-0.158	(0.211)	-0.313	(0.085)
Scotland	-0.0320	(0.794)	-0.266	(0.143)
South East	0.0524	(0.660)	-0.0541	(0.737)
South West	-0.0937	(0.431)	-0.153	(0.340)
Wales	0.0746	(0.538)	-0.0454	(0.782)
West Midlands	-0.00436	(0.971)	-0.151	(0.342)
Yorkshire & Humberside	-0.0998	(0.460)	-0.660**	(0.002)

Constant	-0.829**	(0.000)	-0.699*	(0.012)
Observations	4731		2501	

Notes: Dependent variable is the probability of rejection of an application for finance. Effects are measured relative to: bank debt applications in 2001-2004; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East. Other business characteristics and highest qualification are 0/1 dummies. Significance levels at 5% are indicated by * and 1% by **. Method: probit estimation with robust standard errors.

The results for overdrafts over 2001-12 in Table 1 show that controlling for business characteristics related to the firm's risk profile, there are significantly lower rejection rates for overdrafts in 2005-7 than in 2001-4, and much higher ones in 2008-09 (significant at the 10% level) and 2011-12. Other significant determinants of rejection for overdrafts are firm size (higher sales mean a lower rejection rate) and risk (average and above average risk - as well as no risk rating - imply more frequent rejection than low risk or minimal risk which is the default).

It is interesting that "no rating" is classed similar to high risk according to the data, showing the importance of asymmetric information in lending to the sector. Delinquency, i.e. loan default in the past as well as unauthorised overdraft borrowing, lead to significantly higher rejection rates, while older firms on which there is better information are less likely to be rejected. This may relate also to a longer relationship with the bank, although due to data problems the latter cannot be tested. We also have a significant effect for hotels and restaurants, which may be due to this sector being among the least profitable and having worse than average risk among other industries as reported in the SME Finance Monitor report for the first quarter of 2012 (BDRC 2012).

Results for term lending rejection in Table 1 are similar to overdrafts. There is again a strong positive effect on rejection for applications during 2008-09 and 2011-12, and also in 2010-11. The rejection rate for those applying in 2010-12 is higher than in 2008-9 and in the case of 2011-12 significantly higher. This is suggestive of tighter credit conditions, after controlling for firm risk, to which SMEs are vulnerable owing to the degree of market power banks enjoy in this sector. As regards control variables, risk, age and unauthorised overdraft borrowing again come to the fore. Firm size is again negatively related to rejection, but is significant only for firms with sales of over £5 million.

Differences in the time variables from Fraser (2012a), with generally larger effects in our results, are likely to be due to omission of some of his control variables, which are not available in the SMEFM dataset for 2010-12 (although we do add to his dataset by including regional variables). We ran the regression separately for the categories low, average and high risk to see whether the credit rationing effects suggested by Table 1 apply to all risk-groups or only certain ones. The results are shown in Table 1(a).

Control variables are not reported in Table 1(a), but they were included in the regression. There is a significant increase in rejection for overdrafts over 2001-4 in 2011-12 and 2008-9, controlling for other characteristics, for the average risk group only. There is a significant effect for loans in 2008-9 and 2011-12 for both the low and the average risk category and in 20010-11 only for the low risk category. This is a potentially important finding since it shows that it is not the highest risk category that has undergone a significant change in the probability of rejection. The pattern suggests that the high risk firms have had a broadly unchanged rate of rejection, for given firm characteristics, except for boosts to lending in the boom period – also apparent for overdrafts of low risk firms - and a negative effect for overdrafts in 2010-11. It is the lower risk firms that have borne the brunt of higher rejection rates in the period since the crisis, especially in the term loan market. These data are consistent with a partial withdrawal by banks from SME lending as an overall asset class, perhaps due to uncertainty, risk aversion or tightening of regulation.

Table 1(a): Rejection rates 2001-12 for categories of risk

	Low risk		Average risk		Above average risk	
	Overdraft	Loan	Overdraft	Loan	Overdraft	Loan
Applications in 2005-07	-0.642* (0.006)	-0.252 (0.361)	-0.260 (0.099)	-0.119 (0.571)	-0.621* (0.004)	-0.632 (0.064)
Applications in 2007-08	0.153 (0.348)	0.403 (0.079)	0.205 (0.151)	0.456* (0.043)	0.00611 (0.977)	-1.006 (0.063)
Applications in 2008-09	-0.197 (0.313)	0.805* (0.009)	0.531* (0.001)	0.564 (0.085)	-0.246 (0.261)	-0.894 (0.096)
Applications in 2010-11	0.0153 (0.920)	0.635* (0.005)	0.0955 (0.499)	1.058** (0.000)	-0.334* (0.032)	0.259 (0.230)
Applications in 2011-12	0.244 (0.161)	1.009** (0.000)	0.367* (0.014)	1.039** (0.000)	-0.0541 (0.738)	0.396 (0.079)

Note: Control variables shown in Table 1 are included in the regressions.p-values is parenthesis.

As a further experiment, we sought to test whether there is an overall increase in risk aversion by allowing for a higher rate of rejection for a given level of risk in the period since 2008 than 2001-7 (not illustrated). In fact the dummies for this were not significant, suggesting that banks may have focused on specific categories of SMEs or at specific times in their process of deleveraging and lowering levels of balance sheet risk, rather than simply tightening standards across the board since 2008.

Table 2: Margins 2001-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt applications				
Applications in 2005-07	-1.369**	(0.000)	-0.962**	(0.005)
Applications in 2007-08	-1.136**	(0.000)	-0.669	(0.141)
Applications in 2008-09	1.388**	(0.000)	3.246**	(0.000)
Applications in 2010-11	1.874**	(0.000)	2.221**	(0.000)
Applications in 2011-12	1.630**	(0.000)	2.307**	(0.000)
Sales				
Sales: £50,000-£99,999	-0.468	(0.278)	-1.825*	(0.025)
Sales: £100,000-£499,999	-0.327	(0.471)	-1.613*	(0.046)
£500,000-£999,999	-0.394	(0.450)	-2.008*	(0.038)
£1m-£4,999,999	-0.436	(0.521)	-2.278	(0.057)
£5m or more	-0.270	(0.763)	-2.662	(0.117)
Risk rating				
Low	0.142	(0.333)	0.535	(0.066)
Average	0.152	(0.366)	0.679	(0.051)
Above average	0.603**	(0.008)	0.840	(0.072)
Undetermined	0.0651	(0.867)	1.602*	(0.041)
Financial Delinquency				

Loan default	2.157	(0.100)	-1.044	(0.198)
Unauthorized overdraft borrowing	0.391*	(0.030)	-0.288	(0.272)
Business Age				
2-6 years	-0.714	(0.294)	-0.795	(0.565)
7-15 years	-0.668	(0.318)	-1.476	(0.253)
More than 15 years	-0.687	(0.306)	-1.148	(0.376)
Other business characteristics				
LtdCo	0.144	(0.483)	0.525	(0.235)
Partnership	0.0763	(0.738)	0.105	(0.771)
Limited libpart	0.0119	(0.968)	0.653	(0.341)
Highest Qualification				
Undergraduate	-0.0948	(0.546)	-0.0029	(0.993)
Postgraduate	0.0893	(0.613)	-0.131	(0.752)
Gender				
Female	-0.188	(0.373)	0.437	(0.217)
Industry				
Agriculture, hunting and forestry/ fish	-0.436	(0.098)	-0.960	(0.067)
Construction	-0.111	(0.620)	0.884	(0.052)
Wholesale / retail	-0.0152	(0.941)	0.0602	(0.882)
Hotels and restaurants	-0.0412	(0.884)	-0.318	(0.504)
Transport, storage and communication	-0.0542	(0.810)	0.0533	(0.903)
Real estate, renting and business activ	0.106	(0.608)	0.593	(0.141)
Health and social work	-0.493	(0.075)	0.0415	(0.943)
Other community, social and personal ser.	-0.0133	(0.961)	0.812	(0.182)
Region				
East Midlands	0.193	(0.432)	0.0717	(0.909)
London	0.418	(0.099)	0.353	(0.619)
North East	0.165	(0.487)	-0.927*	(0.020)
Northern Ireland	0.393	(0.139)	-0.555	(0.275)
North West	-0.0316	(0.897)	-0.315	(0.489)
Scotland	-0.0517	(0.822)	-0.0550	(0.906)
South East	0.387	(0.148)	-0.690	(0.150)
South West	0.130	(0.584)	0.131	(0.754)
Wales	0.460	(0.096)	0.450	(0.488)
West Midlands	0.0449	(0.858)	-0.804	(0.078)
Yorkshire & Humberside	0.115	(0.654)	0.107	(0.838)
Log loan	-0.329	(0.113)	0.0239	(0.965)
Collateral	0.0332	(0.843)	-0.748	(0.248)
Constant	6.142**	(0.001)	4.588	(0.385)
Observations	2150		649	

Notes: Dependent variable is the margin over base rate. Effects are measured relative to: bank debt applications in 2001-2004; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East. The endogenous variable loan size is instrumented by size of employment. Other business characteristics and highest qualification are 0/1 dummies. *,** indicate significance at 5% and 1% correspondingly. Estimated by twostage least squareswith robust standard errors[20]. Excludes SMEs with margins greater than 30pp.

Turning to margins (Table 2) in 2001-12, our estimates are generated by two stage least squares with robust standard errors. Employment is used to instrument loan size as discussed in footnotes 6 and 19 above. We have a time pattern which is similar for loans and overdrafts, with significantly lower margins than in 2001-4 prevailing in 2005-7 and 2007-8 controlling for firm characteristics, but much higher levels in 2008-9, 2010-11 and 2011-12. The time effects peak in 2010-11 for overdrafts and in 2008-9 for loans, but the second highest level for loans is in 2011-12. This suggests application for an overdraft is seen as a risk factor for firms of any size. There are some industry effects, with higher margins for sectors seen as risky e.g. construction (siginificant at just above 5% level).[21]

As for rejection, differences in the time variables from Fraser (2012a), with generally larger effects, are likely to be due to omission of some of his control variables, which are not available in the SMEFM dataset for 2010-12.

As regards the control variables, firm risk affects margins for both overdrafts and loans, with above average risk leading to higher margins. Unauthorised overdraft borrowing increases margins for subsequent overdrafts, as would be expected. Higher sales (i.e. larger firms) lead to lower margins for loans but not for overdrafts.

Controlling for firm characteristics, the incidence of collateral requirements for overdrafts (Table 3) is significantly higher in 2008-9 than in 2001-4 but lower in 2005-7 and also 2010-11. The incidence in 2011-12 was similar to 2001-4, suggesting that collateral is not being used in an exceptional manner to control credit demand. There are no significant time effects for term loans. Higher sales and legal status as a limited company lead to collateral being required more frequently as does higher risk. The former may relate to availability of collateral in larger and incorporated firms. The risk effect is of course more likely to be for direct protection of the lender, as is a positive effect of unauthorized overdraft borrowing on collateral requirements in overdrafts. There are a number of industry effects that in some cases differ between overdrafts and loans (bearing in mind that the baseline is manufacturing that may also have different collateral requirements for these two types of finance). Regional effects are also apparent.

Table 3: Collateral requirements 2001-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in 2005-07	-0.296**	(0.000)	0.0988	(0.285)
Applications in 2007-08	-0.0380	(0.595)	-0.0763	(0.483)
Applications in 2008-09	0.684**	(0.000)	0.104	(0.470)
Applications in 2010-11	-0.187**	(0.002)	-0.0734	(0.461)
Applications in 2011-12	0.0872	(0.212)	0.000526	(0.996)
Sales				
Sales: £50,000-£99,999	0.200	(0.058)	-0.132	(0.441)
Sales: £100,000-£499,999	0.564**	(0.000)	0.308*	(0.038)
£500,000-£999,999	0.703**	(0.000)	0.467**	(0.004)
£1m-£4,999,999	0.801**	(0.000)	0.367*	(0.021)
£5m or more	0.751**	(0.000)	0.463**	(0.006)
Risk rating				

[21] Davis (1991) shows that property and construction already stood out as risky for a large bank's dataset from 1970-1990.

Low	0.155*	(0.023)	0.00451	(0.964)
Average	0.251**	(0.000)	-0.0587	(0.581)
Above average	0.305**	(0.000)	-0.124	(0.317)
Undetermined	0.150	(0.286)	-0.0864	(0.661)
Financial delinquency				
Loan default	-0.0703	(0.793)	0.746**	(0.008)
Unauthorized overdraft borrowing	0.161*	(0.016)	-0.0462	(0.529)
Business Age				
2-6 years	-0.129	(0.417)	0.164	(0.444)
7-15 years	-0.0779	(0.609)	0.187	(0.371)
More than 15 years	0.159	(0.293)	0.316	(0.129)
Other business characteristics				
Ltd Co	0.539**	(0.000)	0.341**	(0.001)
Partnership	0.0900	(0.250)	0.0458	(0.683)
Limited Liability Partnership	0.450**	(0.000)	-0.0704	(0.735)
Highest Qualification				
Undergraduate	0.0198	(0.742)	-0.0164	(0.855)
Postgraduate	-0.102	(0.178)	-0.0550	(0.595)
Gender				
Female	-0.0709	(0.248)	0.0166	(0.861)
Industry				
Agriculture, hunting and forestry/ fish	0.537**	(0.000)	0.455**	(0.007)
Construction	0.0608	(0.483)	0.0464	(0.738)
Wholesale / retail	0.0521	(0.550)	0.189	(0.137)
Hotels and restaurants	-0.291**	(0.007)	0.386**	(0.008)
Transport, storage and communication	-0.0953	(0.334)	0.146	(0.327)
Real estate, renting and business activ	-0.123	(0.149)	-0.0184	(0.888)
Health and social work	-0.257*	(0.027)	0.461**	(0.003)
Other community, social and personal ser.	-0.136	(0.163)	0.249	(0.087)
Region				
East Midlands	0.0183	(0.861)	0.0372	(0.806)
London	-0.0142	(0.893)	0.0502	(0.748)
North East	-0.0526	(0.603)	0.000152	(0.999)
Northern Ireland	0.232*	(0.028)	0.133	(0.399)
North West	-0.0922	(0.368)	0.176	(0.216)
Scotland	0.0737	(0.461)	0.242	(0.106)
South East	-0.0163	(0.869)	0.257	(0.085)
South West	0.0774	(0.419)	0.334*	(0.015)
Wales	0.00301	(0.976)	0.356*	(0.016)
West Midlands	0.153	(0.115)	-0.0791	(0.585)
Yorkshire & Humberside	0.143	(0.183)	0.242	(0.103)
Constant	-1.266**	(0.000)	-0.975**	(0.001)
Observations	3943		1731	

Notes: Dependent variable is probability that firm will be required to provide collateral to obtain finance. Effects are measured relative to: bank debt applications in 2001-2004; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East. Other business characteristics and highest qualification are 0/1 dummies. *,** indicate significance at 5% and 1% correspondingly. Estimated by probit with bootstrap standard errors.

Table 4: Arrangement fees as a share of size of overdraft/loan for 2001-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in 2005-07	0.00202	(0.576)	0.00651	(0.341)
Applications in 2007-08	0.0103**	(0.000)	0.00709	(0.471)
Applications in 2008-09	0.00802*	(0.013)	0.0262	(0.122)
Applications in 2010-11	0.0109**	(0.000)	-0.00428	(0.420)
Applications in 2011-12	0.0146**	(0.000)	-0.00246	(0.694)
Sales				
Sales: £50,000-£99,999	0.00744	(0.260)	0.0110	(0.429)
Sales: £100,000-£499,999	0.00517	(0.498)	0.0220	(0.096)
£500,000-£999,999	0.00807	(0.362)	0.00597	(0.655)
£1m-£4,999,999	0.00894	(0.417)	0.00412	(0.805)
£5m or more	0.0192	(0.286)	-0.00275	(0.880)
Risk rating				
Low	0.00403	(0.180)	0.0155*	(0.035)
Average	0.00503*	(0.024)	0.0188**	(0.009)
Above average	0.00866**	(0.002)	0.0170*	(0.026)
Undetermined	0.00600	(0.533)	0.0338	(0.364)
Financial delinquency				
Loan default	0.0143	(0.250)	0.0101	(0.647)
Unauthorized overdraft borrowing	-0.00118	(0.562)	0.0205*	(0.010)
Business Age				
2-6 years	-0.00410	(0.670)	0.0206	(0.520)
7-15 years	-0.00139	(0.888)	0.00328	(0.909)
More than 15 years	0.00137	(0.895)	0.00369	(0.899)
Other business characteristics				
Ltd Co	0.00596*	(0.024)	0.00362	(0.700)
Partnership	0.00374	(0.181)	0.000330	(0.978)
Limited Liability Partnership	0.0249	(0.183)	0.00723	(0.614)
Highest Qualification				
Undergraduate	-0.00270	(0.171)	-0.0133*	(0.015)
Postgraduate	-0.00174	(0.684)	-0.0163*	(0.010)
Gender				
Female	0.00199	(0.492)	-0.00576	(0.420)
Industry				
Agriculture, hunting and forestry/ fish	0.00124	(0.735)	0.0384	(0.103)
Construction	-0.000499	(0.865)	-0.00871	(0.129)
Wholesale / retail	0.000497	(0.839)	0.000437	(0.931)
Hotels and restaurants	-0.00122	(0.714)	0.00361	(0.670)
Transport, storage and communication	0.00960	(0.174)	-0.00283	(0.553)
Real estate, renting and business activ	0.00114	(0.634)	0.00159	(0.812)
Health and social work	0.000656	(0.873)	0.00498	(0.742)
Other community, social and personal ser.	-0.00116	(0.720)	0.000956	(0.895)
Region				
East Midlands	-0.000630	(0.821)	-0.00311	(0.657)
London	-0.00344	(0.203)	0.0159	(0.293)

North East	-0.00144	(0.690)	0.00587	(0.634)
Northern Ireland	0.00331	(0.668)	0.000801	(0.956)
North West	0.00172	(0.678)	-0.0105	(0.103)
Scotland	0.000763	(0.792)	-0.0119	(0.090)
South East	0.00409	(0.131)	0.0190	(0.249)
South West	0.000979	(0.716)	-0.00356	(0.568)
Wales	0.0000733	(0.977)	-0.00102	(0.876)
West Midlands	-0.000889	(0.739)	-0.00711	(0.242)
Yorkshire & Humberside	-0.00408	(0.135)	-0.00741	(0.307)
Log loan	-0.00675*	(0.018)	0.00184	(0.583)
Collateral	0.00904**	(0.000)	0.00776	(0.069)
Constant	0.0496**	(0.001)	-0.0570	(0.274)
Observations	2866		1235	

Notes: Dependent variable is the arrangement fee as a proportion of the size of the facility. Effects are measured relative to: bank debt applications in 2001-2004; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East. Other business characteristics and highest qualification are 0/1 dummies. *,** indicate significance at 5% and 1% correspondingly. Estimated by tobit with robust standard errors. Excludes ratios greater than 9 for loans and greater than 6 for overdrafts.

Arrangement fees for overdrafts are higher in 2007-12 than in 2001-4, controlling for firm characteristics (Table 4). They are also higher for firms with higher risk. Loan size is negatively related to proportionate fees (implying “economies of scale” in provision) while incidence of collateral increases it (perhaps reflecting costs of valuation and documentation). For term loans the fee rate shows no significant unexplained change and rates are higher for firms with unauthorised overdraft borrowing and higher than minimal risk.

3.1.2 Results for 2010-12

We now turn to the results for 2010-12 only, taking all of the observations from the SMEFM only. The time effects are measured relative to the first survey in Q2 2011. The SMEFM permits inclusion of other relevant variables not included in the UKSMEF, namely lower speed of growth[22], export orientation and whether there is performance pay[23].

Table 5: Rejection rates for 2010-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in Q3 2011	0.132	(0.127)	0.109	(0.343)
Applications in Q4 2011	0.133	(0.151)	0.189	(0.093)
Applications in Q1 2012	0.0188	(0.839)	0.0988	(0.392)
Applications in Q2 2012	0.222*	(0.012)	0.172	(0.139)
Sales				
£50,000-£99,999	-0.205	(0.092)	-0.165	(0.316)
£100,000-£499,999	-0.286*	(0.009)	-0.107	(0.453)
£500,000-£999,999	-0.290*	(0.020)	-0.324*	(0.047)
£1m-£4,999,999	-0.448**	(0.000)	-0.367*	(0.017)
£5m or more	-0.483*	(0.001)	-0.682**	(0.000)
Risk rating				
Low	0.223*	(0.043)	0.160	(0.266)
Average	0.175	(0.111)	0.353*	(0.010)
Above average	0.494**	(0.000)	0.517**	(0.000)
Undetermined	0.468*	(0.001)	0.384*	(0.034)
Financial Delinquency				
Loan default	0.611**	(0.000)	0.0985	(0.577)
Unauthorised overdraft borrowing	0.422**	(0.000)	0.0966	(0.359)
Business Age				
2-6 years	0.470**	(0.000)	0.473**	(0.000)
7-15 years	0.0751	(0.279)	0.133	(0.138)
More than 15 years				
Other business Characteristics				
LtdCo	-0.0227	(0.794)	-0.163	(0.145)
Partnership	-0.230	(0.055)	-0.131	(0.369)
Limited libpart	-0.571*	(0.007)	-0.589*	(0.029)
Highest Qualification				
Undergraduate	-0.136	(0.139)	-0.0454	(0.682)
Postgraduate	0.0874	(0.399)	-0.126	(0.339)
Gender				
Female	0.0589	(0.459)	-0.174	(0.108)
Industry				
Agriculture, hunting and forestry/ fish	0.0760	(0.618)	-0.262	(0.188)
Construction	0.229	(0.064)	0.373*	(0.016)
Wholesale / retail	0.0461	(0.729)	0.00232	(0.989)

[22] The variable captures firms which grew at less than 30% a year in the past 3 years.
[23] Performance pay can be seen as reflecting a go-ahead business albeit one which may be vulnerable to risk taking.

Hotels and restaurants	0.391*	(0.008)	0.202	(0.223)
Transport, storage and communication	0.201	(0.149)	0.157	(0.352)
Real estate, renting and business activ	0.169	(0.180)	0.0205	(0.893)
Health and social work	0.0903	(0.574)	0.117	(0.506)
Other community, social and personal ser.	0.0894	(0.531)	0.273	(0.105)
Region				
East Midlands	0.217	(0.183)	0.262	(0.223)
London	0.135	(0.332)	-0.122	(0.507)
North East	0.0450	(0.742)	-0.0794	(0.664)
Northern Ireland	0.0584	(0.676)	-0.0067	(0.971)
North West	0.0664	(0.647)	-0.185	(0.342)
Scotland	0.0102	(0.942)	-0.0751	(0.680)
South East	-0.233	(0.166)	0.147	(0.448)
South West	0.0512	(0.699)	-0.0332	(0.850)
Wales	0.169	(0.209)	0.0767	(0.666)
West Midlands	0.213	(0.099)	0.0965	(0.575)
Yorkshire & Humberside	0.111	(0.493)	-0.201	(0.341)
Lower speed of growth	-0.130	(0.103)	-0.0837	(0.392)
Export	0.115	(0.182)	0.0825	(0.470)
Performance pay	0.0543	(0.437)	0.0327	(0.708)
Constant	-1.474**	(0.000)	-1.051**	(0.000)
Observations	3279		1682	

Notes: Dependent variable is the probability of rejection of an application for finance. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated by probit with robust standard errors.

Concerning rejection rates (Table 5) there is a significantly higher rate in wave 5 (Q2 2012) for overdrafts than in wave 1 (Q2 2011), controlling for firm characteristics. Other results are broadly consistent with those for 2001-12 shown in Table 1. For example, rejection is less for larger SMEs with higher sales, and is highest for firms with above average risk as well as without credit ratings (who may be new and without a track record). There is a higher rejection rate for firms with age 2-6 years than for those less than 2 years old, which contrasts with the results in Table 1. It may be that the younger firms are not applying for credit owing to discouragement, also firm formation in the two years to 2011-12 was probably low and firms 2-6 years old include those which grew in the boom years of easy credit from 2005-7 (Tables 1-2). As regards industry effects, we find a high rejection rate for construction relative to the baseline which is manufacturing. The additional variables (lower speed of growth, export orientation and performance pay) are not significant.

An alternative regression with a dummy variable indicating whether a firm applying for overdraft or loan is applying for a new or a renewal, do not change the main estimates and coefficients for renewal are negative and significant for both overdraft and loan.

Margins (Table 6) have only one significant (at 10%) time effect, for the fourth wave when overdrafts were significantly more expensive, allowing for other firm characteristics. These are similar to Table 2 for 2001-12 with a positive effect of firm risk and negative effect of firm size on margins. Unauthorised overdraft borrowing again boosts overdraft margins. Unlike the longer period, loan size has a significant negative effect on overdraft margins, while collateral reduces margins for term loans (at 10% significance level). There are some significant effects of the additional variables in the SMEFM, with low growth reducing margins on term loans, perhaps because the rapidly growing firms are also likely to be small and high-risk.

Table 6: Margins for 2010-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in Q3 2011	0.0587	(0.783)	-0.0418	(0.924)
Applications in Q4 2011	0.235	(0.330)	-0.234	(0.570)
Applications in Q1 2012	0.545	(0.067)	0.108	(0.818)
Applications in Q2 2012	0.0098	(0.974)	0.616	(0.283)
Sales				
£50,000-£99,999	-1.463	(0.074)	-1.133	(0.390)
£100,000-£499,999	-1.216	(0.127)	-1.351	(0.238)
£500,000-£999,999	-1.602*	(0.048)	-3.070	(0.051)
£1m-£4,999,999	-1.479	(0.123)	-4.184*	(0.018)
£5m or more	-1.423	(0.236)	-5.933*	(0.016)
Risk rating				
Low	-0.242	(0.282)	0.871*	(0.024)
Average	0.374	(0.120)	0.731	(0.147)
Above average	0.760*	(0.027)	1.052*	(0.045)
Undetermined	-0.281	(0.558)	0.868	(0.339)
Financial Delinquency				
Loan default	0.476	(0.722)	-1.844	(0.070)
Unauthorised overdraft borrowing	0.764**	(0.010)	0.649	(0.291)
Business Age				
2-6 years	-0.257	(0.598)	0.0261	(0.975)
7-15 years	-0.0400	(0.851)	0.108	(0.755)
More than 15 years				
Other business Characteristics				
LtdCo	-0.436	(0.226)	-0.120	(0.869)
Partnership	-0.408	(0.271)	-1.129	(0.096)
Limited libpart	-0.524	(0.204)	-0.735	(0.354)
Highest Qualification				
Undergraduate	0.523	(0.085)	-0.0463	(0.919)
Postgraduate	0.176	(0.458)	-0.0689	(0.875)
Gender				
Female	-0.306	(0.282)	-0.503	(0.218)
Industry				
Agriculture, hunting and forestry/ fish	-1.048**	(0.005)	-1.475*	(0.026)
Construction	0.353	(0.391)	1.395	(0.060)
Wholesale / retail	0.233	(0.517)	0.895	(0.129)
Hotels and restaurants	-0.102	(0.838)	-0.731	(0.316)
Transport, storage and communication	-0.416	(0.366)	0.468	(0.517)
Real estate, renting and business activ	0.0194	(0.964)	-0.268	(0.610)
Health and social work	-0.913	(0.067)	-0.444	(0.629)
Other community, social and personal	-0.0492	(0.919)	0.321	(0.633)

ser.				
Region				
East Midlands	0.343	(0.400)	0.421	(0.543)
London	0.289	(0.466)	1.406	(0.116)
North East	0.114	(0.711)	0.261	(0.624)
Northern Ireland	0.0130	(0.969)	0.100	(0.856)
North West	0.297	(0.531)	1.014	(0.215)
Scotland	0.279	(0.449)	0.522	(0.270)
South East	0.255	(0.599)	-0.123	(0.840)
South West	0.324	(0.371)	0.510	(0.431)
Wales	0.323	(0.303)	1.435	(0.096)
West Midlands	0.186	(0.634)	0.192	(0.751)
Yorkshire & Humberside	-0.0911	(0.789)	0.176	(0.767)
Log of loan	-0.664*	(0.021)	0.623	(0.294)
Lower speed of growth	-0.202	(0.462)	-0.877*	(0.020)
Export	0.303	(0.095)	0.315	(0.385)
Performpay	0.0507	(0.768)	0.187	(0.584)
Collateral	0.381*	(0.029)	-1.367	(0.065)
Constant	12.21**	(0.000)	0.508	(0.932)
Observations	956		393	

Notes: Dependent variable is the margin over base rate. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; Lower speed of growth: over 30% a year for the past three years. The endogenous variable loan size is instrumented by employment size. Other business characteristics, export, performance pay, collateral and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated by two stage least squares with robust standard errors. Excludes SMEs with margins greater than 30pp.

Table 7: Collateral requirements for 2010-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in Q3 2011	0.0208	(0.764)	-0.0758	(0.535)
Applications in Q4 2011	-0.0518	(0.489)	-0.0600	(0.619)
Applications in Q1 2012	-0.0263	(0.714)	0.0421	(0.741)
Applications in Q2 2012	0.287**	(0.000)	0.105	(0.405)
Sales				
£50,000-£99,999	0.272*	(0.031)	-0.0202	(0.924)
£100,000-£499,999	0.472**	(0.000)	0.271	(0.134)
£500,000-£999,999	0.723**	(0.000)	0.520*	(0.010)
£1m-£4,999,999	0.757**	(0.000)	0.506*	(0.007)
£5m or more	0.836**	(0.000)	0.691**	(0.001)
Risk rating				
Low	0.0491	(0.513)	0.0167	(0.894)
Average	0.228*	(0.003)	-0.0242	(0.850)
Above average	0.196*	(0.020)	-0.0441	(0.754)
Undetermined	0.184	(0.132)	0.174	(0.369)
Financial Delinquency				
Loan default	0.0584	(0.742)	0.261	(0.296)

Unauthorised overdraft borrowing	0.177*	(0.014)	0.235	(0.060)
Business Age				
2-6 years	-0.244*	(0.006)	-0.116	(0.451)
7-15 years	-0.114*	(0.042)	-0.0437	(0.648)
More than 15 years				
Other business Characteristics				
LtdCo	0.505**	(0.000)	0.640**	(0.000)
Partnership	0.119	(0.228)	0.201	(0.219)
Limited libpart	0.310*	(0.022)	0.621*	(0.009)
Highest Qualification				
Undergraduate	0.116	(0.097)	0.353*	(0.004)
Postgraduate	-0.127	(0.122)	-0.0779	(0.572)
Gender				
Female	0.0193	(0.778)	0.0278	(0.809)
Industry				
Agriculture, hunting and forestry/ fish	0.583**	(0.000)	0.560*	(0.003)
Construction	0.157	(0.110)	0.293	(0.094)
Wholesale / retail	0.0893	(0.378)	0.137	(0.417)
Hotels and restaurants	-0.104	(0.394)	0.579*	(0.002)
Transport, storage and communication	0.125	(0.268)	0.437*	(0.021)
Real estate, renting and business activ	0.0178	(0.855)	0.376*	(0.018)
Health and social work	-0.173	(0.179)	0.255	(0.186)
Other community, social and personal ser.	-0.116	(0.294)	0.376*	(0.043)
Region				
East Midlands	-0.118	(0.372)	-0.199	(0.416)
London	-0.203	(0.067)	-0.159	(0.391)
North East	-0.0800	(0.459)	-0.0819	(0.654)
Northern Ireland	-0.0990	(0.359)	0.0139	(0.941)
North West	0.0298	(0.799)	0.170	(0.400)
Scotland	-0.252*	(0.025)	-0.0790	(0.665)
South East	-0.101	(0.415)	0.0423	(0.849)
South West	-0.0607	(0.550)	-0.0755	(0.679)
Wales	-0.167	(0.123)	-0.0602	(0.750)
West Midlands	-0.119	(0.249)	-0.341	(0.059)
Yorkshire & Humberside	-0.0160	(0.900)	0.355	(0.091)
Lower speed of growth	0.118	(0.094)	0.292*	(0.008)
Export	0.103	(0.133)	-0.139	(0.257)
Performpay	0.195**	(0.000)	0.0829	(0.388)
Constant	-1.397**	(0.000)	-1.405**	(0.000)
Observations	3095		1058	

Notes: Dependent variable is probability that firm will be required to provide collateral to obtain finance. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age “more than 15 years” omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

In terms of collateral (Table 7), there is a significant demand effect for Wave 5, suggesting a tightening of conditions given firm risk. As in Table 3, higher sales imply a greater likelihood that collateral will be demanded, probably reflecting that collateral is greater for larger firms, and also collateral probabilities are higher for limited companies and limited liability partnerships. Higher risk firms and those having unauthorised overdrafts need more commonly to raise collateral for overdrafts while this is not the case for loans. Younger firms have a greater likelihood of requiring collateral which was not the case for the sample in Table 3. There are also some effects from educational level, industries and regions. We find that firms that are not high growth are more likely to have collateral requirements as are those with performance pay schemes. If these patterns are sustained, these requirements could limit the growth of these categories of firm in the future if availability of such collateral is limited.

Table 8: Arrangement fees for 2010-12

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in Q3 2011	0.00108	(0.706)	0.000404	(0.877)
Applications in Q4 2011	-0.00225	(0.253)	0.00223	(0.444)
Applications in Q1 2012	0.000881	(0.680)	0.00200	(0.465)
Applications in Q2 2012	0.000964	(0.649)	-0.00120	(0.644)
Sales				
£50,000-£99,999	-0.00604	(0.147)	0.00180	(0.770)
£100,000-£499,999	-0.00362	(0.384)	0.00335	(0.436)
£500,000-£999,999	0.000372	(0.945)	0.0103*	(0.043)
£1m-£4,999,999	0.00152	(0.754)	0.00576	(0.217)
£5m or more	0.00916	(0.158)	0.00733	(0.225)
Risk rating				
Low	0.000653	(0.833)	0.000312	(0.909)
Average	-0.00283	(0.367)	-0.00210	(0.512)
Above Average	-0.00198	(0.595)	0.00111	(0.733)
Undetermined	-0.00353	(0.454)	0.00621	(0.268)
Financial Delinquency				
Loan default	0.000793	(0.902)	-0.00215	(0.588)
Unauthorised overdraft borrowing	-0.00283	(0.147)	0.00490	(0.135)
Business Age				
2-6 years	0.00113	(0.806)	0.00579	(0.108)
7-15 years	-0.00250	(0.145)	-0.000817	(0.695)
More than 15 years				
Other business Characteristics				
LtdCo	-0.00392	(0.246)	0.00127	(0.713)
Partnership	-0.00348	(0.381)	0.00255	(0.522)
Limited libpart	-0.00117	(0.809)	0.0000460	(0.991)
Highest Qualification				
Undergraduate	-0.00157	(0.471)	-0.00300	(0.154)
Postgraduate	-0.00261	(0.321)	0.00125	(0.658)
Gender				
Female	0.00224	(0.449)	-0.00161	(0.520)
Industry				

Agriculture, hunting and forestry/ fish	-0.00360	(0.256)	0.000721	(0.868)
Construction	-0.00241	(0.320)	0.000814	(0.824)
Wholesale / retail	-0.00110	(0.671)	0.00510	(0.131)
Hotels and restaurants	0.00284	(0.530)	0.00347	(0.372)
Transport, storage and communication	-0.00272	(0.352)	-0.00202	(0.641)
Real estate, renting and business activ	-0.00205	(0.450)	0.00408	(0.283)
Health and social work	-0.00326	(0.303)	0.00233	(0.551)
Other community, social and personal ser.	0.00356	(0.425)	-0.00222	(0.546)
Region				
East Midlands	0.00130	(0.873)	0.000964	(0.848)
London	-0.00213	(0.436)	0.00413	(0.415)
North East	-0.00198	(0.535)	0.00484	(0.225)
Northern Ireland	0.000727	(0.866)	0.00338	(0.400)
North West	-0.00313	(0.362)	0.00123	(0.734)
Scotland	-0.00480	(0.134)	-0.000327	(0.933)
South East	-0.00337	(0.338)	0.00386	(0.552)
South West	-0.00224	(0.380)	-0.000398	(0.922)
Wales	0.000375	(0.910)	0.000983	(0.832)
West Midlands	-0.00328	(0.263)	-0.00240	(0.552)
Yorkshire & Humberside	-0.00557	(0.199)	-0.000462	(0.915)
Lower speed of growth	0.00257	(0.225)	-0.00392	(0.137)
Export	-0.000169	(0.937)	0.000768	(0.724)
Performpay	0.000775	(0.713)	0.00211	(0.355)
Log loan	-0.00613**	(0.000)	-0.00316**	(0.000)
Collateral	0.00713**	(0.001)	0.00827**	(0.000)
Constant	0.0811**	(0.000)	0.0321*	(0.005)
Observations	1664		489	

Notes: Dependent variable is the arrangement fee as a proportion of the size of the facility. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay, collateral and highest qualification are 0/1 dummies. Business age “more than 15 years” omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as tobit with robust standard errors. Excludes ratios greater than 9 for loans and greater than 6 for overdrafts.

For term loans (Table 8), businesses with sales size between £500,000 and £999,999 paid higher arrangement fees than businesses with sales of less than £49,999, which may reflect a trade-off between fees and margins. SMEs with collateral requirements for both term loans and overdrafts paid higher arrangement fees, which could be due to costs of valuation and/or because these borrowers are higher risk. As in Table 4, large loans bear lesser fees as a proportion of the loan size.

Table 9: Discouragement for 2010-12 – informal enquiries

	Overdraft	(p-value)	Loan	(p-value)
Bank debt Applications				
Applications in Q3 2011			-0.116	(0.329)
Applications in Q4 2011	-0.0299	(0.799)	-0.390*	(0.002)
Applications in Q1 2012	0.101	(0.382)	-0.123	(0.288)

Applications in Q2 2012			-0.196	(0.084)
Sales				
£50,000-£99,999	0.0574	(0.734)	-0.267	(0.054)
£100,000-£499,999	0.179	(0.260)	-0.0208	(0.870)
£500,000-£999,999	0.280	(0.186)	-0.119	(0.454)
£1m-£4,999,999	0.115	(0.544)	-0.0378	(0.799)
£5m or more	0.273	(0.227)	-0.0195	(0.920)
Risk rating				
Low	0.330	(0.096)	0.489*	(0.004)
Average	0.222	(0.245)	0.460*	(0.005)
Above Average	0.442*	(0.022)	0.577**	(0.001)
Undetermined	0.576*	(0.008)	0.429*	(0.025)
Financial Delinquency				
Loan default	0.679*	(0.019)	0.226	(0.182)
Unauthorised overdraft borrowing	0.238	(0.118)	0.383**	(0.000)
Business Age				
2-6 years	0.154	(0.273)	0.148	(0.184)
7-15 years	0.0297	(0.811)	0.0415	(0.652)
More than 15 years				
Other business Characteristics				
LtdCo	0.109	(0.430)	-0.0128	(0.907)
Partnership	0.0995	(0.652)	-0.377*	(0.027)
Limited libpart	0.0517	(0.891)	-0.335	(0.193)
Highest Qualification				
Undergraduate	-0.186	(0.190)	-0.0383	(0.732)
Postgraduate	-0.205	(0.220)	0.0663	(0.604)
Gender				
Female	-0.00529	(0.968)	-0.216*	(0.045)
Industry				
Agriculture, hunting and forestry/ fish	-0.0578	(0.827)	0.0803	(0.687)
Construction	0.0101	(0.962)	0.0167	(0.911)
Wholesale / retail	0.183	(0.414)	-0.00801	(0.961)
Hotels and restaurants	0.374	(0.115)	-0.00368	(0.983)
Transport, storage and communication	0.289	(0.221)	-0.00387	(0.983)
Real estate, renting and business activ	0.194	(0.366)	0.184	(0.225)
Health and social work	-0.0259	(0.923)	-0.298	(0.101)
Other community, social and personal ser.	-0.0804	(0.744)	-0.0555	(0.757)
Region				
East Midlands	-0.565*	(0.039)	0.0727	(0.736)
London	-0.494*	(0.028)	0.00900	(0.961)
North East	-0.481*	(0.036)	-0.196	(0.303)
Northern Ireland	-0.377	(0.077)	-0.133	(0.480)
North West	-0.281	(0.238)	-0.0242	(0.903)
Scotland	-0.186	(0.429)	0.145	(0.457)
South East	-0.361	(0.167)	-0.0663	(0.756)
South West	0.146	(0.505)	0.104	(0.596)
Wales	-0.415*	(0.044)	-0.00118	(0.994)
West Midlands	-0.308	(0.136)	0.152	(0.392)

Yorkshire & Humberside	0.158	(0.524)	0.526*	(0.009)
Lower speed of growth	0.00389	(0.976)	0.187*	(0.049)
Export	0.198	(0.197)	-0.107	(0.332)
Perform pay	0.0959	(0.419)	0.252*	(0.004)
Constant	-0.817*	(0.023)	-0.791*	(0.007)
Observations	774		1243	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because it had been put off directly (via informal enquiries with the bank) or indirectly (expectation of such a rejection). Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Regressions for the main discouragement variable is shown in Table 9, where the SME did not (or will not) apply to borrow because it had been put off directly (via informal enquiries with the bank) or indirectly (expectation of such a rejection). There are lower probabilities of discouragement for term loans in the later periods than in Q2 2011 (albeit at 10% significance level in Q2 2012), controlling for other firm characteristics. Indicators of discouragement include high risk and delinquency in the past, while female gender reduces the probability of discouragement of this type. It is notable that according to the equation, slower firm growth as well as performance pay are significant factors in discouraging application for term loans. For slower growth this may reflect the lesser extent of need for borrowing while performance pay may have links to banks' perceptions of risk.

Further results for alternative measures of discouragement are shown in Appendix 3. Discouragement by principle of borrowing (Table A.3.1.) is most common for partnerships (at 10% significance level) and for those with some university education, while again women are less likely to be discouraged. For difficulties with the borrowing procedure (Table A.3.2) overdraft borrowing is discouraged by higher risk and for partnerships, while for loans it is lower speed of growth and performance pay. Finally, there are few significant indicators for issues with the economic situation (Table A.3.3). Looking at all four indicators together the time effects suggest lower discouragement for term loans in some of the later waves than in Wave 1, while there are no significant differences in the three waves for which data for overdrafts are available except for Table A.3.3 which implies that the probability of discouragement due to the economic situation is greater in Q2 2012 than in Q4 2011.

3.1.3 Results for 2010-12 with and without renewals

In Tables 10 and 11 we provide a comparison of the loan application variables for regressions with and without renewals for 2010-12 (the regressions without renewals are shown in detail in Appendix 4).

Table 10: 2010-12 results with and without renewals – main dependent variables

(a) With renewals

Rejection rates					Margins				
	Overdraft	(p-value)	Loan	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011	0.132	(0.127)	0.109	(0.343)	Q 3 2011	0.0587	(0.783)	-0.0418	(0.924)
Q4 2011	0.133	(0.151)	0.189	(0.093)	Q4 2011	0.235	(0.330)	-0.234	(0.570)
Q1 2012	0.0188	(0.839)	0.0988	(0.392)	Q1 2012	0.545	(0.067)	0.108	(0.818)
Q2 2012	0.222*	(0.012)	0.172	(0.139)	Q2 2012	0.0098	(0.974)	0.616	(0.283)
Collateral requirements					Informal enquiries discouragement				
	Overdraft	(p-value)	Loans	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011	0.0208	(0.764)	-0.0758	(0.535)	Q 3 2011			-0.116	(0.329)
Q4 2011	-0.0518	(0.489)	-0.0600	(0.619)	Q4 2011	-0.0299	(0.799)	-0.390*	(0.002)
Q1 2012	-0.0263	(0.714)	0.0421	(0.741)	Q1 2012	0.101	(0.382)	-0.123	(0.288)
Q2 2012	0.287**	(0.000)	0.105	(0.405)	Q2 2012			-0.196	(0.084)

(b) Without renewals

Rejection rates					Margins				
	Overdraft	(p-value)	Loan	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011	-0.00518	(0.973)	0.118	(0.503)	Q3 2011	0.998	(0.056)	-1.292	(0.466)
Q4 2011	-0.263	(0.130)	0.106	(0.560)	Q4 2011	0.828	(0.122)	-0.476	(0.732)
Q1 2012	-0.179	(0.274)	-0.025	(0.890)	Q1 2012	0.283	(0.603)	-0.660	(0.761)
Q2 2012	0.0569	(0.730)	0.206	(0.246)	Q2 2012	-0.488	(0.394)	1.509	(0.441)
Collateral requirements					Informal enquiries discouragement				
	Overdraft	(p-value)	Loans	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011	0.447*	(0.003)	-0.248	(0.247)	Q3 2011			-0.211	(0.105)
Q4 2011	0.130	(0.432)	-0.342	(0.112)	Q4 2011	-0.0358	(0.767)	-0.549**	(0.000)
Q1 2012	0.0918	(0.554)	-0.005	(0.982)	Q1 2012	0.0594	(0.619)	-0.236	(0.063)
Q2 2012	0.556**	(0.000)	0.002	(0.992)	Q2 2012			-0.347*	(0.005)

Table 10(a) offers evidence for tight conditions for overdrafts in the Q1 2012 (higher margins, significant at 10% level) and Q2 2012 (greater incidence of rejection and collateral), which is less apparent for the results without renewals. This is again suggestive of a tightening for renewals per se (apart from collateral requirements in Q2 2012). Meanwhile in Table 11 the coefficients are similar for discouragement with both data sets.

Table 11: 2010-12 results with and without renewals – Discouragement

(a) With renewals

	Principle of borrowing					Process of borrowing			
	Overdraft	(p-value)	Loan	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011			-0.313*	(0.015)	Q3 2011			-0.292*	(0.013)
Q4 2011	-0.115	(0.407)	-0.354*	(0.009)	Q4 2011	-0.0273	(0.815)	-0.297*	(0.016)
Q1 2012	0.116	(0.369)	-0.361*	(0.004)	Q1 2012	0.105	(0.360)	-0.382**	(0.001)
Q2 2012			-0.538**	(0.000)	Q2 2012			-0.499**	(0.000)
	Economic situation					Informal enquiries			
	Overdraft	(p-value)	Loan	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011			-0.147	(0.265)	Q3 2011			-0.116	(0.329)
Q4 2011	-0.380*	(0.012)	-0.222	(0.109)	Q4 2011	-0.0299	(0.799)	-0.390*	(0.002)
Q1 2012	0.134	(0.315)	0.0217	(0.860)	Q1 2012	0.101	(0.382)	-0.123	(0.288)
Q2 2012			0.0162	(0.895)	Q2 2012			-0.196	(0.084)

(b) Without renewals

	Principle of borrowing					Process of borrowing			
	Overdraft	(p-value)	Loan	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011			-0.350*	(0.014)	Q3 2011			-0.300*	(0.020)
Q4 2011	-0.0815	(0.569)	-0.356*	(0.018)	Q4 2011	0.0266	(0.824)	-0.292*	(0.032)
Q1 2012	0.158	(0.236)	-0.392*	(0.004)	Q1 2012	0.145	(0.219)	-0.374*	(0.003)
Q2 2012			-0.594**	(0.000)	Q2 2012			-0.491**	(0.000)
	Economic situation					Informal enquiries			
	Overdraft	(p-value)	Loan	(p-value)		Overdraft	(p-value)	Loan	(p-value)
Quarters					**Quarters**				
Q3 2011			-0.186	(0.205)	Q3 2011			-0.211	(0.105)
Q4 2011	-0.391*	(0.013)	-0.276	(0.074)	Q4 2011	-0.0358	(0.767)	-0.549**	(0.000)
Q1 2012	0.153	(0.267)	0.00282	(0.984)	Q1 2012	0.0594	(0.619)	-0.236	(0.063)
Q2 2012			0.0693	(0.610)	Q2 2012			-0.347*	(0.005)

3.1.4 Results for ethnicity and bank characteristics

Ethnicity is a variable which featured in Fraser (2012a) and it is clearly of interest to assess whether credit restrictions apply unevenly across ethnic groups. Research for the US (Asiedu et al 2012) showed forms of discrimination for Black and Hispanic-owned SMEs in 1998 and 2003. We could not use ethnicity as a control variable in the regressions above because it is omitted from all the waves of the SMEFM except the last one in Q2 2012. Hence, we would simply have omitted crucial time periods if this variable had been included. Nevertheless we can undertake some tests of discrimination by running regressions solely on Q2 2012 and also on the 2001-9 plus Q2 2012 data periods.[24] The results (measured relative to white British applicants) are shown in Table 12 below.

Table 12: Effects of ethnicity on lending characteristics

(a) Q2 2012 data only

	Rejection rates				Margins			
	Overdraft	(p-value)	Loan	(p-value)	Overdraft	(p-value)	Loan	(p-value)
White non British	-0.0291	(0.922)	0.162	(0.633)	0.745	(0.595)	-0.751	(0.343)
Mixed	0.639	(0.284)			2.698*	(0.028)	-1.608	(0.245)
Asian	0.692	(0.133)	0.642	(0.250)	-2.932*	(0.028)	13.94**	(0.000)
Black	1.620*	(0.026)	-0.757	(0.396)	3.545	(0.125)	-3.330	(0.052)
Chinese&Other							-21.75**	(0.000)
Observations	569		285		138		56	
	Collateral requirements				Discouragement			
	Overdraft	(p-value)	Loan	(p-value)	Overdraft	(p-value)	Loan	(p-value)
White non British	0.137	(0.622)	-0.506	(0.185)	0.475	(0.180)	0.115	(0.731)
Mixed			-0.726	(0.251)	-0.225	(0.773)	-0.298	(0.720)
Asian	1.211*	(0.022)			-0.00688	(0.987)	0.741	(0.077)
Black							-0.835	(0.279)
Chinese&Other								
Observations	529		176		258		270	

(b) 2001-9 and Q2 2012 data

	Rejection rates				Margins			
	Overdraft	(p-value)	Loan	(p-value)	Overdraft	(p-value)	Loan	(p-value)
White non British	0.0651	(0.620)	-0.142	(0.445)	-0.339	(0.092)	-0.264	(0.623)
Mixed	0.299	(0.271)	0.438	(0.313)	-0.642	(0.134)	-1.706	(0.331)
Asian	0.101	(0.524)	0.0549	(0.812)	-0.176	(0.631)	1.527	(0.291)
Black	0.655*	(0.020)	-0.381	(0.401)	2.832	(0.231)	0.538	(0.730)
Chinese&Other	-0.0296	(0.934)	-0.00454	(0.993)	1.181	(0.315)	-0.0792	(0.940)
Observations	3739		2022		1766		502	

	Collateral requirements			
	Overdraft	(p-value)	Loan	(p-value)
White non British	0.113	(0.291)	-0.0628	(0.672)
Mixed	-0.282	(0.302)	-1.417*	(0.010)
Asian	0.113	(0.459)	0.236	(0.256)
Black	-0.221	(0.617)	0.602	(0.238)
Chinese&Other	-0.915*	(0.003)	0.171	(0.665)
Observations	3123		1468	

[24] Estimated by OLS with robust standard errors.

We consider the results for Q2 2012 to be less reliable given the small number of observations; hence we focus on results that are also borne out in the longer series including 2001-9 data. The consistent result is that black people are more likely than British white people to be rejected for overdraft facilities. A similar finding, at a high level of significance, was found in Fraser (2012a). The wider sample also shows significantly lower collateral requirements for Chinese people for overdrafts and for mixed ethnic background for loans.

As a further experiment we undertook the main regressions for 2001-9 only with an extra variable for bank types (these data are not available for 2010-12). The categories distinguished are the major banks, the small banks, and the major banks that were nationalised in 2008 (the last being only distinct in the 2008-9 period). Since we only use the UKSMEF data, which is in panel form, we employ panel probit estimation with robust standard errors and random effects.

Table 13 suggests that the newly-nationalised major banks rejected proportionately fewer applications and charged lower margins in 2008-9, compared to the major banks that were not nationalised. The result, which holds despite the fact that the nationalised banks were under greater pressure to delever, suggests that differences in governance are dominant in determining willingness to lend. Meanwhile small banks had a higher rejection rate than major banks and also tended to request less collateral.

Table 13: Lending characteristics by bank category (2001-9 only)

	Rejection				Margins			
	Overdraft	(p-value)	Loan	(p-value)	Overdraft	(p-value)	Loan	(p-value)
Small	0.374*	(0.003)	0.0777	(0.717)	-0.236	(0.251)	-0.346	(0.430)
Major nat'sed	-0.262	(0.169)	-1.072*	(0.016)	-0.498	(0.227)	-2.238*	(0.026)
	Collateral				Arrangement Fees			
	Overdraft	(p-value)	Loan	(p-value)	Overdraft	(p-value)	Loan	(p-value)
Small	-0.296*	(0.016)	-0.182	(0.305)	-0.00292	(0.534)	0.0112	(0.273)
Major nat'sed	0.0477	(0.852)	0.0337	(0.925)	0.00326	(0.619)	-0.0038	(0.858)

Using the bank lending data we can also assess to what extent there is a change in market structure over the period up to 2008-9, with for example a withdrawal by small banks. In fact, as shown in Table 14 there is no evidence of this in terms of simple shares of lending. The large banks have a consistent share of around 85% while the small banks have a share of 15% and this is sustained also in 2008-9. More recent data are not available. Hence at least for 2008-9 we cannot suggest that a shift in market structure might be a factor underlying the rise in margins and rejection rates.

Table 14: Lending shares by bank category

		2001-4	2005-7	2007-8	2008-9
Large	Number	891	455	271	45
	Share	0.86	0.83	0.87	0.34
Small	Number	143	90	42	20
	Share	0.14	0.17	0.13	0.15
Large	Number	0	0	0	66
Natsed	Share	0	0	0	0.50

Before concluding this section, we highlight the fact that we explored the robustness of the results by performing several specification tests.

The SMEs provide weights to ensure that the samples are representative of all SMEs in the UK. To account for that, we re-estimated the main econometric results and find that using the weights does not substantially change the results. Therefore, we decided not to weight the econometric analysis.

For the main estimation for margins using 2001-2012 data, we adopted as an instrumental variable for the endogenous variable loan size the size of employment. In the first stage of the two stage least squares procedure (not reported but available upon request), loan size appears to be highly and positively correlated with the size of employment. This shows its suitability as an instrument for loan size for both overdraft and loan.

Finally, we tested the heteroskedasticity in the model errors and find that the null hypothesis of homogeneity of errors was to be rejected, implying the presence of heterogeneity and the need for robust standard error procedure which is used in most of our regressions to avoid bias. We used bootstrap procedure.

3.2 Uncertainty and changes in lending conditions

The second part of the analysis is to establish whether changes in credit are likely to be affected by uncertainty. Uncertainty is used as a key non-cyclical variable (in terms of variation in expected credit losses) likely to affect both supply and demand for credit, while other variables capture cyclical effects per se. This work involves both macro and micro datasets. As noted, Baum et al (2002) show that uncertainty leads banks to withdraw from higher risk business in the US, because uncertainty will increase perceptions of default risk. Accordingly, banks may withdraw from higher risk lending such as lending to SMEs as well as real estate lending when there is heightened uncertainty, and revert to a more conservative distribution between loans and securities. We test whether a similar pattern is apparent in the UK for aggregate SME lending.

Macro estimation work looks at the volume of lending at a macro level based on the data in Charts 15-16 as well as the aggregate PNFC lending data and the national accounts data for unincorporated business lending.[25] We estimate lending as an error correction equation depending on corporate profits and the cost of lending (long real rate augmented by the corporate-government spread), as in Barrell et al (2009) and Davis and Liadze (2012). To this we add the uncertainty proxy conditional variance of share price changes based on a GARCH (1,1) equation for quarterly changes in share prices as used in Byrne and Davis (2005).[26]

Technically, a sensible macroeconomic regression in error correction form requires trended variables to be entered as differences or ratios (a trended variable is said to have a “unit root” or be I(1), a non-trended variable is “stationary” or I(0)). As shown in the unit root tests[27], all variables are I(1) other than the conditional variance (entered as a level)

[25] As noted above, this comprises largely sole traders and is hence another proxy for SME lending.
[26] GARCH results are available from the authors on request.

and unincorporated business loans (I(2) over a short sample) and the conditional variance which is stationary (I(0)). We accordingly enter the real lending variables as differences, the variance as a level and also for economic reasons we include the long rate as a level (interest rates cannot be trended in the long run).

Table 15: Aggregate corporate lending with conditional variance of share price changes

Dependent variable: Log difference of lending to:	All firms (PNFCs)	SME total	SME term loans	SME overdraft	Unincorporate Business
Constant	0.0765** (3.9)	-0.038* (-2.2)	-0.016 (-0.5)	-0.065* (-2.2)	-0.0309 (1.6)
Log real loans(-1)- log real profitability (-1)	-0.029* (-2.5)	-0.059** (-5.2)	-0.032* (-1.6)	-0.029** (-3.6)	-0.058** (3.6)
Long term real lending rate (-1)	-0.0046** (-2.8)	0.0022 (0.9)	0.00005 (0.02)	0.0016 (0.4)	-0.0014 (0.9)
Log difference of real loans (-4)	0.408** (4.6)	0.124 (1.3)	0.055 (0.5)	0.1552 (1.4)	0.596** (6.4)
Conditional variance of share prices (-4)	-1.11 (-1.1)	-2.279* (-2.4)	-2.124* (-2.1)	-3.239 (-1.9)	-2.208** (3.3)
R-bar2	0.289	0.333	0.081	0.173	0.6
SE	0.022	0.022	0.023	0.039	0.015
Period	1991Q2-2012Q2	1991Q2-2012Q2	1991Q2-2012Q2	1991Q2-2012Q2	1999Q1-2012Q2

Note: t-stat in parenthesis;*,** indicate 5% and 1% significance levels correspondingly; estimated by OLS.
Data sources: BBA, BIS, Bank of England

Interpreting these results, we see that in this specification the negative uncertainty effect on lending is greater and more significant for SME lending and for unincorporated businesses than for aggregate corporate lending. This is suggestive of a greater sensitivity of small firm lending to underlying uncertainty than is that of larger firms; when perceptions of uncertainty increase, the banks cut back on SME lending. One explanation for this pattern may be that there is a greater degree of monopoly power for SME lending on the part of banks, while large firms have the option of accessing the bond market (Davis 2001) which limits price and quantity rationing of credit by banks to large firms. A complementary explanation may be that periods of uncertainty have a greater impact on the default risk of SMEs – and the quality of information - than large firms. And of course we may also be

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Unit Root tests	Level	Difference
Log real corporate loans	-1.01	-9.4**
Log real SME loans	-2.6	-3.5**
Log real SME overdrafts	-2.6	-3.9**
Log real SME term loans	-0.8	-4.6**
Log real unincorporated business loans	-1.9	-2.1
Log real corporate profits	-0.9	-19.9**
Real long yield to corporate	-1.6	-13.3**
Conditional variance of share price differences	-4.1**	-13.5**

Note: t-stat; *,** indicate 5% and 1% significance levels correspondingly capturing demand side effects whereby demand for loans declines during periods of uncertainty since future profitability of investment projects is less certain. Meanwhile, there is in each case a significant long run relation between corporate profits and lending stocks, and for PNCFs the long term real interest rate is significant also.

We tried alternative uncertainty proxies namely conditional volatility of inflation and growth in the macro regressions (again derived from GARCH (1,1) estimation) and the results are reported in Table 15a.

The table is read across for the effect of each alternative type of uncertainty for each type of lending, with the overall specification being as in Table 15. It can be seen that economic growth uncertainty has a similar effect to share price volatility, with a significant impact on the types and total of SME lending as well as on unincorporated business lending, and again no effect on lending to all firms. On the other hand, there is a weaker effect of inflation conditional volatility, with an impact largely on unincorporated business lending.

Table 15a: Alternative uncertainty effects in macroeconomic equations

Type of aggregate lending	Share price conditional volatility	Inflation conditional volatility	Growth conditional volatility	Banking sector RA capital adequacy
All firms	-1.111 (0.239)	-0.029 (0.022)	-0.003 (0.37)	-0.004 (0.113)
SME overdraft	-3.239* (0.05)	0.021 (0.336)	-0.015** (0.001)	-0.012** (0.003)
SMEs	-2.28* (0.015)	-0.012 (0.34)	-0.007** (0.006)	-0.007** (0.002)
SME term loans	-2.124* (0.037)	-0.025 (0.054)	-0.008* (0.031)	-0.007** (0.01)
Unincorporated business	-2.265** (0.002)	-0.051** (0.000)	-0.007** (0.006)	-0.007** (0.002)

Note: Other variables, not shown, are as in Table 15; p-values in parenthesis.

Table 15a also reports results for the effect of the risk adjusted capital adequacy of the banking system. Whereas for an individual bank it may be anticipated that lower capital adequacy would lead to less lending (i.e. a positive relationship) it is also the case that tighter regulation as evidenced by higher capital adequacy can entail higher spreads (Barrell et al 2009) and tighter credit conditions owing to a higher capital charge on lending. The latter effect seems to be predominant in the sample overall, with a negative impact of capital adequacy on lending. This is evidence of a further structural effect on lending, although further research would be needed to fully verify it.

Using our micro dataset we can incorporate uncertainty as an independent variable in the various regressions, albeit only as a constant in each time period (2001-4, 2005-7, 2007-8, 2008-9, 2010-11 and 2011-12). We omit the application variables as they are collinear with uncertainty. In effect, the application variables show the unexplained variation in lending conditions beyond that shown by the characteristics – which we are seeking to explain alternatively here by variations in uncertainty. The results should be seen as tentative pending use of a dataset with a more detailed distribution of observations over time.

Table 16: Measures of uncertainty in micro equations (substituted for application variables)

	Rejection rates		Collateral		Margins		Arrangement fees	
Volatility measures	Overdraft	Loan	Overdraft	Loan	Overdraft	Loan	Overdraft	Loan
Conditional variance of GDP growth	0.0819** (0.003)	0.181** (0.000)	0.148** (0.000)	-0.007 (0.874)	0.195** (0.003)	0.599** (0.000)	0.0028** (0.000)	0.006* (0.026)
Conditional variance of share prices	0.307** (0.009)	17.19 (0.390)	104.7** (0.000)	0.374 (0.985)	184.1** (0.000)	106.8 (0.150)	0.0046 (0.988)	2.353 (0.060)
Conditional variance of inflation	0.908** (0.000)	2.432** (0.000)	0.818** (0.000)	-0.168 (0.523)	6.962** (0.000)	8.266** (0.000)	0.0185** (0.000)	0.009 (0.622)
Memo: Capital adequacy	0.0838** (0.001)	0.277** (0.000)	0.0500* (0.015)	-0.0343 (0.315)	0.978** (0.000)	1.023** (0.000)	0.0017** (0.006)	-0.0012 (0.638)

Note: regressions include standard control variables as in Tables 1-4. p-values in parenthesis.

These results should be seen as very tentative since we are in effect seeking to explain shifts in lending conditions using one observation per period over 6 data periods.[28] That said, they provide evidence of correlation between uncertainty and changes in rejection, margins, collateral and fees that are not explained by firm level risk variables. This is especially the case for overdrafts; effects are less strong for term loans, with no uncertainty effect for collateral requirements, for example. The conditional variance of GDP growth is the most frequently significant uncertainty proxy, followed by inflation and share prices. As was the case for macroeconomic data, the capital adequacy ratio of the banking system has a positive effect on indicators of credit tightening, affecting all the variables significantly except collateral and fees for term loans.

[28] Holton et al (2012) are able to provide more detailed and precise analyses of macro effects within a survey sample since they use the cross country dataset generated for the 11 Eurozone countries.

4. Conclusions

Our assessment suggests that there is clear evidence of ongoing tight credit supply conditions in 2010-12, well after the height of the economic crisis in 2008/09. Margins in particular are historically high, even controlling for firm risk, including for overdrafts in 2008-9. Rejection rates allowing for risk have increased even compared to 2008-9, suggesting quantity as well as price rationing of credit especially for term loan finance. Banks have simply chosen to reject many applications, which economic theory suggests may relate to poorer information – although it may also link to risk aversion as well as regulatory and market pressures to shrink their balance sheets.

The rejection rate has increased particularly for low and average risk firms and not significantly for high risk firms. Banks may have viewed lending to the safer categories of SMEs as relatively more risky in the period after the financial crisis than they did before, although the pattern is also suggestive of a partial withdrawal from SME lending as an asset class. The evidence suggests greater restriction in term loans than overdrafts. This maybe because overdraft facilities are to protect existing bank exposures. Arrangement fees for overdrafts on the other hand were significantly higher in earlier periods than in 2011-12.

Looking at the detailed results for 2010-12, for a number of key variables, the 2010-12 pattern in some degree upward trending or U shaped, suggesting adverse situation in the last survey in our sample, namely June 2012. The rejection rate for overdrafts and the collateral demands both peak in that period for example, and the margin for overdrafts in March 2012. These trends are apparent both in charts and in regression results. There is evidence in 2010-12 suggestive of a particular tightening for renewals finance, with for example significant results for rejection and margins in 2012 being present with renewals but not for new loans only.

Ethnic origins cannot be tested over the whole dataset but results are consistently suggestive of ongoing higher rejection rates for black SME owners. Results for bank types, which can only be undertaken over 2001-9 with the current dataset, show that the partially nationalised major banks rejected proportionately fewer applications and charged lower margins in 2008-9, compared to other major banks. Meanwhile small banks had a higher rejection rate than major banks and also tended to request less collateral.

Uncertainty as measured by the conditional volatility of share prices and growth apparently has a greater influence on SME lending than on all-firm lending to the corporate sector as a whole. This may signal a shift away from higher risk lending such as to SMEs as long as uncertainty persists. There is some tentative evidence of an uncertainty effect on firm-by-firm data. The uncertainty variable may be capturing inter alia the structural shift to risk aversion that took place for bank lending officers during the financial crisis.

Overall, we suggest that the research is indicative of a shortage of finance for SMEs, reflecting banks' attitudes to risk and their own pressures to delever combined with banks' market power in the SME sector. Although demand is also probably subdued, there is a high level of discouragement from application for lending as well as high rejection rates and margins on credit after controlling for risk. If the situation is not resolved, output, investment and employment will be lower than would otherwise be the case, with adverse effects on economic performance in the short and longer term.

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Appendix

Appendix 1: Theories of intermediation

The traditional theory of intermediation relies on the presence of economies of scale, which benefit specialized intermediaries (Gurley and Shaw 1960). Economies of scale arise from indivisibilities and non-convexities in transaction technologies which restrict diversification and risk-sharing under direct financing via securities markets-investments. On the liabilities side, they can be seen as providing a form of liquidity insurance to risk-averse depositors against liquidity risk (i.e. their need for cash in the future), if it is assumed these individuals are ‘small’ and risks cancel over the population. There are also economies of scale in the provision of payments services. On the assets side, banks can lend more easily than SMEs and individuals, owing to their ability to manage investments at lower cost. (As a corollary, any reductions in fixed costs of direct financing will increase markets’ comparative advantage.) Economies of scale omit the key influences on lending arising from information problems which are endemic to SMEs, to which we now turn.

As regards screening and monitoring per se, banks may have informational advantages over securities markets arising from ongoing credit relationships, from knowledge of the borrower's deposit history (Fama 1985), and use of transaction services (Lewis 1991). The intangible nature of this information makes it difficult to transmit to markets or other lenders, hence credit relationships are typically costly to transfer. A consequence of non transferability, which buttresses banks' positions, is that such investments are typically held on the banks' own books, and a single bank may often be the only creditor of a firm. As noted by Diamond (1984) this will avoid free rider problems typical of securities markets, which discourage monitoring, owing to the public good features of information about a borrower. Even abstracting from such problems, it also reduces the costly duplication of information collection that should otherwise be reflected in loan pricing. But it may also involve monopolistic exploitation of the dominant position.

An extension of the monitoring paradigm (Diamond 1991) suggests that for those borrowers, such as large, established companies, with a reputation for repaying debt, it is a capital asset (as it facilitates borrowing at low cost) which would depreciate in the case of non repayment. This offers some protection to the lender against moral hazard, as well as reducing the need for screening. This may make bank monitoring unnecessary, enabling the firm to access securities markets. But it will not apply to most SMEs. In contrast, younger companies have no reputation to lose, entailing a need for bank monitoring. High net worth, by enabling collateral to be pledged, may similarly protect lenders against moral hazard and adverse selection, as poor investment otherwise entails a risk that assets will be lost (Hoshi et al 1993). On the other hand, low net worth is typical of SMEs and means the borrower little collateral to pledge, either to reduce difficulties of screening, or to offset the risks in the transaction. Banks will have an advantage in such cases, given the increased importance of monitoring.

Control theories of intermediation highlight the key feature of debt contracts which help reduce moral hazard, namely that the borrower controls corporate assets except in the case of default, when such control passes to the lender (Hart and Moore 1989, Aghion and Bolton 1992). Such control prevents the borrower, for example, from threatening to repudiate the debt in order to reduce the interest rate (Hellwig 1977). The amount of external finance available under `control' will depend on creditors' managerial abilities, which may be greater for banks than markets. Second, it varies with costs of co-ordinating creditors and of bankruptcy more generally, which may be less for banks than for bondholders if there are free rider problems to the involvement of the latter in corporate restructuring (Bolton 1990). Third, it varies with other forms of control that lenders can exert over borrowers. For example, control may be extended to the borrower's behaviour in non default circumstances by aspects of the debt contract, such as covenants, collateral, and short maturity, which again banks may be well placed to oversee and are typically imposed on SMEs. A final issue for all lenders is the realisability of assets (how specific they are to their current use) – a particular issue with SMEs. Focus on control in banking is often dubbed "transactions banking", where borrowers and lenders maximise returns from each individual transaction rather than from a continuing relationship, and which is considered to be relevant for UK banks.

Commitment or "relationship banking" is an alternative means to minimise the risks in the debt contract, which can be developed when incumbent lenders and borrowers share information not available to other potential lenders (Mayer 1988, Hellwig 1991). This sharing of information enables lenders to undertake to provide finance to the borrower even during times of financial difficulty, in return for which the borrower undertakes to remain with the lender (and to pay a premium) during normal times. Whereas bond market investors may be unable to develop such information and financing links, 'relationship' banks in countries such as Germany may be well placed to do so. But it is not typical of SME lending in the UK.

Appendix 2: Alternative measures of discouragement

Table A.3.1: Discouragement for 2010-12 – principle of borrowing

	Overdraft	(p-value)	Loan	(p-value)
Bank Debt Applications				
Applications in Q3 2011			-0.313*	(0.015)
Applications in Q4 2011	-0.115	(0.407)	-0.354*	(0.009)
Applications in Q1 2012	0.116	(0.369)	-0.361*	(0.004)
Applications in Q2 2012			-0.538**	(0.000)
Sales				
£50,000-£99,999	-0.390*	(0.039)	-0.342*	(0.033)
£100,000-£499,999	-0.379*	(0.041)	-0.194	(0.178)
£500,000-£999,999	-0.347	(0.139)	0.0587	(0.735)
£1m-£4,999,999	-0.377	(0.078)	-0.0499	(0.764)
£5m or more	-0.579*	(0.024)	-0.0839	(0.703)
Risk rating				
Low	0.0563	(0.810)	-0.0825	(0.650)
Average	-0.0543	(0.808)	0.142	(0.402)
Above average	0.362	(0.110)	0.106	(0.543)
Undetermined	0.394	(0.112)	0.190	(0.353)
Financial Delinquency				
Loan default	0.196	(0.527)	0.0257	(0.888)
Unauthorized overdraft borrowing	-0.0517	(0.766)	-0.0460	(0.686)
Business Age				
2-6 years	-0.160	(0.310)	-0.0807	(0.512)
7-15 years	-0.0994	(0.469)	-0.174	(0.088)
More than 15 years				
Other business Characteristics				
LtdCo	0.111	(0.496)	-0.0719	(0.567)
Partnership	0.442	(0.073)	-0.162	(0.401)
Limited libpart	-0.0471	(0.904)	0.0169	(0.952)
Highest Qualification				
Undergraduate	0.352*	(0.020)	-0.0190	(0.879)
Postgraduate	0.164	(0.378)	0.0986	(0.481)
Gender				
Female	-0.285	(0.080)	-0.265*	(0.037)
Industry				
Agriculture, hunting and forestry/ fish	0.00790	(0.979)	0.0208	(0.922)
Construction	0.171	(0.467)	-0.0930	(0.567)
Wholesale / retail	0.172	(0.514)	-0.120	(0.501)
Hotels and restaurants	-0.299	(0.301)	-0.233	(0.228)
Transport, storage and communication	-0.0738	(0.788)	-0.0537	(0.775)
Real estate, renting and business activ	0.164	(0.498)	-0.241	(0.149)
Health and social work	0.115	(0.710)	-0.189	(0.361)
Other community, social and personal ser.	0.424	(0.109)	-0.309	(0.133)
Region				
East Midlands	-0.366	(0.231)	-0.0681	(0.783)

London	-0.621*	(0.019)	0.0675	(0.743)
North East	-0.149	(0.570)	0.104	(0.623)
Northern Ireland	-0.524*	(0.036)	0.114	(0.586)
North West	-0.131	(0.612)	0.115	(0.603)
Scotland	0.0720	(0.782)	0.203	(0.350)
South East	-0.692*	(0.042)	0.0749	(0.757)
South West	-0.253	(0.311)	0.127	(0.562)
Wales	-0.0629	(0.776)	0.288	(0.124)
West Midlands	-0.390	(0.091)	0.0991	(0.616)
Yorkshire & Humberside	0.0415	(0.879)	-0.230	(0.327)
Lower speed of growth	0.0739	(0.613)	0.257*	(0.019)
Export	0.253	(0.144)	-0.00219	(0.986)
Performance pay	0.430**	(0.001)	0.127	(0.196)
Constant	-0.912*	(0.025)	-0.557	(0.083)
Observations	774		1243	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because the owner did not want to lose control of business, prefer to seek alternative sources. Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.3.2: Discouragement for 2010-12 – procedure of borrowing

	Overdraft	(p-value)	Loan	(p-value)
Bank debt applications				
Applications in Q3 2011			-0.292*	(0.013)
Applications in Q4 2011	-0.0273	(0.815)	-0.297*	(0.016)
Applications in Q1 2012	0.105	(0.360)	-0.382**	(0.001)
Applications in Q2 2012			-0.499**	(0.000)
Sales				
£50,000-£99,999	0.0775	(0.637)	-0.192	(0.159)
£100,000-£499,999	-0.245	(0.125)	0.118	(0.349)
£500,000-£999,999	-0.285	(0.169)	-0.0809	(0.600)
£1m-£4,999,999	-0.0309	(0.865)	-0.151	(0.300)
£5m or more	-0.207	(0.350)	-0.259	(0.178)
Risk rating				
Low	0.194	(0.313)	-0.0869	(0.576)
Average	0.411*	(0.025)	0.0974	(0.510)
Above average	0.415*	(0.025)	0.102	(0.501)
Undetermined	0.0768	(0.718)	0.0565	(0.751)
Financial Delinquency				
Loan default	-0.150	(0.602)	0.130	(0.430)
Unauthorized overdraft borrowing	0.191	(0.206)	0.00695	(0.943)
Business Age				
2-6 years	0.0709	(0.608)	-0.0611	(0.578)
7-15 years	0.177	(0.144)	-0.0304	(0.737)

More than 15 years				
Other business Characteristics				
LtdCo	0.112	(0.411)	-0.125	(0.249)
Partnership	0.573*	(0.010)	0.0842	(0.610)
Limited libpart	0.330	(0.335)	-0.286	(0.250)
Highest Qualification				
Undergraduate	0.191	(0.161)	0.0329	(0.764)
Postgraduate	0.237	(0.141)	0.235	(0.058)
Gender				
Female	0.110	(0.391)	-0.0968	(0.365)
Industry				
Agriculture, hunting and forestry/ fish	0.307	(0.232)	0.187	(0.338)
Construction	0.281	(0.182)	0.120	(0.417)
Wholesale / retail	0.231	(0.296)	0.135	(0.398)
Hotels and restaurants	-0.0153	(0.948)	0.0680	(0.689)
Transport, storage and communication	0.0762	(0.755)	-0.0913	(0.600)
Real estate, renting and business activ	0.139	(0.517)	0.0180	(0.904)
Health and social work	-0.0465	(0.865)	0.124	(0.493)
Other community, social and personal ser.	0.190	(0.431)	-0.274	(0.126)
Region				
East Midlands	-0.461	(0.083)	-0.220	(0.309)
London	-0.229	(0.300)	0.111	(0.538)
North East	-0.363	(0.112)	-0.0186	(0.920)
Northern Ireland	-0.412	(0.057)	0.157	(0.390)
North West	-0.216	(0.357)	0.232	(0.231)
Scotland	-0.223	(0.356)	0.116	(0.541)
South East	-0.464	(0.079)	-0.0885	(0.673)
South West	-0.316	(0.153)	-0.0885	(0.639)
Wales	-0.0291	(0.889)	0.207	(0.207)
West Midlands	-0.0980	(0.644)	-0.0930	(0.591)
Yorkshire & Humberside	-0.191	(0.448)	-0.156	(0.426)
Lower speed of growth	0.243	(0.053)	0.222*	(0.017)
Export	-0.256	(0.102)	0.0956	(0.374)
Performance pay	0.117	(0.309)	0.196*	(0.025)
Constant	-0.793*	(0.024)	-0.0497	(0.858)
Observations	774		1243	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because the owner thought it would be too expensive, too much hassle, loan facilities come with too many terms and conditions, I thought we would be asked to provide too much security, did not want to go through application process, find bank forms and literature hard to understand. Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age “more than 15 years” omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.3.3: Discouragement for 2010-12 – economic situation

	Overdraft	(p-value)	Loan	(p-value)
Bank debt applications				
Applications in Q3 2011			-0.147	(0.265)
Applications in Q4 2011	-0.380*	(0.012)	-0.222	(0.109)
Applications in Q1 2012	0.134	(0.315)	0.0217	(0.860)
Applications in Q2 2012			0.0162	(0.895)
Sales				
£50,000-£99,999	0.183	(0.349)	0.190	(0.197)
£100,000-£499,999	-0.262	(0.186)	0.0965	(0.504)
£500,000-£999,999	-0.335	(0.199)	-0.00872	(0.960)
£1m-£4,999,999	-0.158	(0.503)	-0.0626	(0.705)
£5m or more	-0.323	(0.245)	0.0282	(0.895)
Risk rating				
Low	-0.0465	(0.837)	0.0328	(0.850)
Average	-0.285	(0.199)	0.0690	(0.676)
Above average	-0.279	(0.199)	0.123	(0.467)
Undetermined	-0.324	(0.209)	-0.133	(0.508)
Financial Delinquency				
Loan default	-0.399	(0.290)	-0.202	(0.288)
Unauthorized overdraft borrowing	-0.135	(0.501)	-0.140	(0.204)
Business Age				
2-6 years	0.0666	(0.670)	-0.0760	(0.532)
7-15 years	-0.0880	(0.551)	-0.00352	(0.972)
More than 15 years				
Other business Characteristics				
LtdCo	-0.0626	(0.714)	-0.0418	(0.727)
Partnership	0.390	(0.137)	0.0261	(0.886)
Limited libpart	-0.0174	(0.968)	-0.00442	(0.987)
Highest Qualification				
Undergraduate	0.0367	(0.827)	-0.0566	(0.644)
Postgraduate	0.127	(0.530)	-0.0838	(0.541)
Gender				
Female	0.0787	(0.638)	0.0162	(0.890)
Industry				
Agriculture, hunting and forestry/ fish	0.388	(0.237)	-0.252	(0.253)
Construction	0.478	(0.078)	-0.0385	(0.813)
Wholesale / retail	0.220	(0.464)	-0.192	(0.283)
Hotels and restaurants	0.482	(0.102)	-0.326	(0.088)
Transport, storage and communication	0.0777	(0.821)	0.105	(0.573)
Real estate, renting and business activ	0.0111	(0.969)	-0.148	(0.365)
Health and social work	-0.243	(0.531)	0.0382	(0.845)
Other community, social and personal ser.	0.174	(0.565)	-0.154	(0.426)
Region				
East Midlands	-0.372	(0.263)	-0.501*	(0.046)
London	-0.544	(0.051)	-0.327	(0.092)
North East	-0.402	(0.168)	-0.155	(0.428)

Northern Ireland	0.0685	(0.782)	-0.0769	(0.691)
North West	-0.0817	(0.772)	-0.241	(0.261)
Scotland	-0.347	(0.236)	-0.317	(0.132)
South East	-0.114	(0.736)	-0.577*	(0.017)
South West	-0.155	(0.561)	-0.126	(0.540)
Wales	-0.226	(0.394)	-0.143	(0.422)
West Midlands	-0.463	(0.077)	-0.155	(0.403)
Yorkshire & Humberside	0.224	(0.431)	0.0660	(0.747)
Lower speed of growth	0.133	(0.397)	0.164	(0.113)
Export	-0.213	(0.288)	0.105	(0.374)
Performance pay	0.329*	(0.021)	0.0813	(0.407)
Constant	-0.932*	(0.036)	-0.618*	(0.039)
Observations	774		1243	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because the owner thought this is not the right time to apply for borrowing. Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0 -4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age “more than 15 years” omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Appendix 3: Pooled regressions for 2010-12 without renewals

Table A.4.1 Rejection rates for 2010-12 without renewals

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011	-0.00518	(0.973)	0.118	(0.503)
Q4 2011	-0.263	(0.130)	0.106	(0.560)
Q1 2012	-0.179	(0.274)	-0.0248	(0.890)
Q2 2012	0.0569	(0.730)	0.206	(0.246)
Sales				
£50,000-£99,999	-0.353	(0.069)	0.0221	(0.922)
£100,000-£499,999	-0.279	(0.136)	0.0614	(0.770)
£500,000-£999,999	-0.348	(0.129)	-0.0824	(0.748)
£1m-£4,999,999	-0.475*	(0.029)	-0.111	(0.636)
£5m or more	-0.434	(0.120)	-0.784*	(0.006)
Risk rating				
Low	0.338	(0.096)	0.524*	(0.023)
Average	0.255	(0.194)	0.463*	(0.037)
Above Average	0.711**	(0.000)	0.720*	(0.002)
Undetermined	0.437	(0.079)	0.646*	(0.023)
Financial Delinquency				
Loan default	0.718*	(0.007)	0.411	(0.104)
Unauthorised overdraft borrowing	0.389*	(0.004)	0.146	(0.414)
Business Age				
2-6 years	0.245	(0.111)	0.484*	(0.005)
7-15 years	-0.147	(0.258)	-0.0289	(0.834)
More than 15 years				
Other business Characteristics				
LtdCo	-0.242	(0.123)	-0.327	(0.052)
Partnership	-0.746**	(0.000)	-0.225	(0.345)
Limited libpart	-1.244*	(0.001)	-0.487	(0.257)
Highest Qualification				
Undergraduate	-0.224	(0.213)	0.0576	(0.736)
Postgraduate	0.0817	(0.674)	0.0436	(0.841)
Gender				
Female	0.0193	(0.893)	-0.218	(0.163)
Industry				
Agriculture, hunting and forestry/ fish	-0.0426	(0.879)	-0.167	(0.576)
Construction	-0.00219	(0.992)	0.563*	(0.013)
Wholesale / retail	-0.138	(0.576)	0.110	(0.687)
Hotels and restaurants	-0.0277	(0.913)	0.390	(0.118)
Transport, storage and communication	0.322	(0.173)	0.138	(0.561)
Real estate, renting and business activ	0.289	(0.208)	0.222	(0.302)
Health and social work	0.0273	(0.923)	-0.0890	(0.717)
Other community, social and personal ser.	0.0312	(0.899)	0.134	(0.576)
Region				
East Midlands	0.124	(0.683)	0.364	(0.269)
London	0.0665	(0.802)	-0.165	(0.577)
North East	-0.121	(0.655)	-0.237	(0.422)

Northern Ireland	-0.249	(0.360)	0.152	(0.602)
North West	-0.246	(0.381)	-0.216	(0.474)
Scotland	-0.0520	(0.844)	-0.350	(0.216)
South East	-0.517	(0.070)	0.167	(0.567)
South West	0.0906	(0.720)	-0.195	(0.494)
Wales	-0.200	(0.423)	0.161	(0.558)
West Midlands	-0.0348	(0.887)	0.0338	(0.901)
Yorkshire & Humberside	0.125	(0.691)	0.380	(0.258)
Lower speed of growth	-0.0110	(0.933)	0.0156	(0.911)
Export	0.210	(0.186)	0.0765	(0.654)
Performpay	-0.199	(0.130)	0.00948	(0.943)
Constant	-0.317	(0.428)	-1.093*	(0.010)
Observations	732		645	

Notes: Dependent variable is the probability of rejection of an application for finance. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.4.2 Margins for 2010-12 without renewals

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011	0.998	(0.056)	-1.292	(0.466)
Q4 2011	0.828	(0.122)	-0.476	(0.732)
Q1 2012	0.283	(0.603)	-0.660	(0.761)
Q2 2012	-0.488	(0.394)	1.509	(0.441)
Sales				
£50,000-£99,999	0.282	(0.857)	-3.088	(0.370)
£100,000-£499,999	-1.272	(0.247)	-4.093	(0.202)
£500,000-£999,999	-0.698	(0.521)	-11.57	(0.087)
£1m-£4,999,999	-1.578	(0.232)	-9.746	(0.076)
£5m or more	-1.288	(0.447)	-15.33	(0.134)
Risk rating				
Low	-1.902**	(0.003)	2.125	(0.267)
Average	-0.203	(0.732)	3.578	(0.282)
Above average	-0.594	(0.328)	4.145	(0.240)
Undetermined	-2.162*	(0.028)	-1.000	(0.692)
Financial Delinquency				
Loan default	2.365**	(0.004)	-4.757	(0.182)
Unauthorised overdraft borrowing	0.870	(0.091)	4.380	(0.053)
Business Age				
2-6 years	-0.178	(0.833)	0.421	(0.858)
7-15 years	-0.363	(0.522)	1.690	(0.407)
More than 15 years				
Other business Characteristics				
LtdCo	-0.904	(0.135)	-1.962	(0.509)
Partnership	-0.944	(0.261)	-3.939	(0.197)
Limited libpart	-0.0625	(0.946)	-3.270	(0.371)

Highest Qualification				
Undergraduate	0.948	(0.052)	-1.999	(0.498)
Postgraduate	0.415	(0.358)	-0.155	(0.923)
Gender				
Female	-0.521	(0.411)	-0.568	(0.609)
Industry				
Agriculture, hunting and forestry/ fish	-1.607	(0.098)	-0.928	(0.619)
Construction	0.962	(0.225)	0.962	(0.634)
Wholesale / retail	1.239*	(0.044)	1.904	(0.463)
Hotels and restaurants	0.626	(0.249)	-1.211	(0.692)
Transport, storage and communication	-0.171	(0.779)	0.625	(0.821)
Real estate, renting and business activ	0.438	(0.538)	0.696	(0.692)
Health and social work	-1.393	(0.147)	-3.154	(0.414)
Other community, social and personal ser.	0.0934	(0.879)	0.328	(0.871)
Region				
East Midlands	2.481	(0.050)	-0.524	(0.871)
London	1.047	(0.355)	1.298	(0.576)
North East	1.138	(0.067)	-0.711	(0.739)
Northern Ireland	0.212	(0.761)	0.552	(0.762)
North West	-0.226	(0.822)	-1.078	(0.696)
Scotland	0.285	(0.647)	-1.738	(0.493)
South East	-0.0416	(0.959)	-1.550	(0.469)
South West	0.913	(0.129)	-0.0461	(0.982)
Wales	-0.126	(0.842)	1.776	(0.318)
West Midlands	1.667*	(0.041)	2.862	(0.177)
Yorkshire & Humberside	-0.585	(0.399)	-0.934	(0.808)
Lower speed of growth	-1.194	(0.073)	-1.197	(0.489)
Export	0.402	(0.332)	0.829	(0.551)
Performpay	-0.141	(0.722)	-0.437	(0.682)
Collateral	0.694	(0.097)	-3.042	(0.233)
Log of loan	-0.529	(0.238)	2.954	(0.314)
Constant	11.61*	(0.016)	-18.97	(0.454)
Observations	201		135	

Notes: Dependent variable is the margin over base rate. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. The endogenous variable loan size is instrumented by employment size. Other business characteristics, export, performance pay, collateral and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as TSLS with robust standard errors. Excludes SMEs with margins greater than 30pp.

Table A.4.3 Collateral for 2010-12 without renewals

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011	0.447*	(0.003)	-0.248	(0.247)
Q4 2011	0.130	(0.432)	-0.342	(0.112)
Q1 2012	0.0918	(0.554)	-0.00547	(0.982)
Q2 2012	0.556**	(0.000)	0.00234	(0.992)
Sales				

£50,000-£99,999	0.237	(0.313)	-0.0221	(0.947)
£100,000-£499,999	0.428	(0.050)	0.261	(0.396)
£500,000-£999,999	0.738*	(0.003)	0.454	(0.210)
£1m-£4,999,999	0.918**	(0.000)	0.512	(0.119)
£5m or more	1.085**	(0.000)	0.684*	(0.045)
Risk rating				
Low	0.115	(0.492)	0.288	(0.182)
Average	0.377*	(0.022)	-0.0870	(0.695)
Above average	0.395*	(0.028)	-0.0564	(0.818)
Undetermined	0.286	(0.236)	0.156	(0.650)
Financial Delinquency				
Loan default	-0.173	(0.566)	-0.414	(0.344)
Unauthorised overdraft borrowing	0.317*	(0.027)	0.419	(0.065)
Business Age				
2-6 years	-0.104	(0.534)	-0.235	(0.366)
7-15 years	-0.141	(0.235)	-0.101	(0.548)
More than 15 years				
Other business Characteristics				
LtdCo	0.661**	(0.000)	0.676*	(0.003)
Partnership	0.380	(0.074)	0.132	(0.663)
Limited libpart	0.336	(0.234)	0.739	(0.068)
Highest Qualification				
Undergraduate	0.0750	(0.608)	0.504*	(0.014)
Postgraduate	-0.173	(0.312)	-0.357	(0.181)
Gender				
Female	0.222	(0.125)	0.154	(0.415)
Industry				
Agriculture, hunting and forestry/ fish	0.825*	(0.003)	0.209	(0.499)
Construction	0.288	(0.165)	0.272	(0.337)
Wholesale / retail	0.00004	(1.000)	-0.541	(0.106)
Hotels and restaurants	-0.0739	(0.761)	0.333	(0.281)
Transport, storage and communication	-0.126	(0.586)	-0.0561	(0.855)
Real estate, renting and business activ	0.260	(0.215)	0.129	(0.614)
Health and social work	0.0344	(0.901)	-0.213	(0.500)
Other community, social and personal ser.	-0.110	(0.623)	0.0936	(0.763)
Region				
East Midlands	-0.501	(0.076)	-0.130	(0.770)
London	-0.764*	(0.002)	-0.647*	(0.045)
North East	-0.361	(0.140)	-0.0785	(0.809)
Northern Ireland	-0.523*	(0.031)	-0.407	(0.243)
North West	-0.496	(0.056)	0.0975	(0.776)
Scotland	-0.498*	(0.045)	-0.273	(0.351)
South East	-1.002**	(0.000)	-0.372	(0.344)
South West	-0.594*	(0.012)	-0.368	(0.270)
Wales	-0.600*	(0.011)	-0.112	(0.716)
West Midlands	-0.480*	(0.029)	-0.0831	(0.789)
Yorkshire & Humberside	-0.478	(0.073)	-0.0125	(0.975)
Lower speed of growth	0.298*	(0.025)	0.337	(0.059)
Export	0.179	(0.245)	-0.258	(0.225)
Performpay	-0.0279	(0.816)	0.148	(0.389)

Constant	-1.801**	(0.000)	-1.019*	(0.043)
Observations	784		391	

Notes: Dependent variable is probability that firm will be required to provide collateral to obtain finance. Effects are measured relative to: quarters Q1-Q2 2011; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.4.4 Discouragement for 2010-12 without renewals – informal enquiries

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011			-0.211	(0.105)
Q4 2011	-0.0358	(0.767)	-0.549**	(0.000)
Q1 2012	0.0594	(0.619)	-0.236	(0.063)
Q2 2012			-0.347*	(0.005)
Sales				
£50,000-£99,999	0.0740	(0.669)	-0.297*	(0.040)
£100,000-£499,999	0.204	(0.209)	0.0081	(0.952)
£500,000-£999,999	0.266	(0.222)	-0.168	(0.335)
£1m-£4,999,999	0.140	(0.472)	-0.0638	(0.689)
£5m or more	0.164	(0.487)	-0.0488	(0.822)
Risk rating				
Low	0.353	(0.089)	0.459*	(0.012)
Average	0.220	(0.270)	0.390*	(0.025)
Above average	0.442*	(0.028)	0.588*	(0.001)
Undetermined	0.572*	(0.011)	0.500*	(0.014)
Financial Delinquency				
Loan default	0.685*	(0.019)	0.280	(0.125)
Unauthorized overdraft borrowing	0.272	(0.078)	0.345*	(0.002)
Business Age				
2-6 years	0.194	(0.178)	0.121	(0.317)
7-15 years	0.0480	(0.710)	0.0309	(0.760)
More than 15 years				
Other business Characteristics				
LtdCo	0.0675	(0.632)	0.0253	(0.829)
Partnership	0.0963	(0.671)	-0.353	(0.064)
Limited libpart	0.0535	(0.887)	-0.393	(0.157)
Highest Qualification				
Undergraduate	-0.242	(0.099)	0.0182	(0.883)
Postgraduate	-0.228	(0.197)	0.0705	(0.608)
Gender				
Female	-0.0197	(0.883)	-0.279*	(0.021)
Industry				
Agriculture, hunting and forestry/ fish	-0.0592	(0.826)	0.124	(0.578)
Construction	-0.0387	(0.860)	0.00131	(0.994)
Wholesale / retail	0.179	(0.444)	0.00845	(0.964)

Hotels and restaurants	0.315	(0.205)	0.00941	(0.960)
Transport, storage and communication	0.301	(0.215)	0.0305	(0.877)
Real estate, renting and business activ	0.181	(0.417)	0.115	(0.500)
Health and social work	-0.135	(0.633)	-0.311	(0.127)
Other community, social and personal ser.	-0.0262	(0.918)	0.0188	(0.924)
Region				
East Midlands	-0.569*	(0.041)	0.157	(0.504)
London	-0.511*	(0.029)	0.167	(0.415)
North East	-0.541*	(0.024)	-0.0916	(0.667)
Northern Ireland	-0.399	(0.065)	-0.0351	(0.867)
North West	-0.351	(0.148)	0.125	(0.580)
Scotland	-0.192	(0.430)	0.196	(0.375)
South East	-0.357	(0.176)	0.0533	(0.821)
South West	0.0532	(0.814)	0.238	(0.274)
Wales	-0.414*	(0.049)	0.0974	(0.609)
West Midlands	-0.334	(0.114)	0.256	(0.195)
Yorkshire & Humberside	0.162	(0.525)	0.587*	(0.009)
Lower speed of growth	0.0156	(0.905)	0.186	(0.072)
Export	0.264	(0.096)	-0.0724	(0.565)
Performance pay	0.0782	(0.526)	0.187	(0.058)
Constant	-0.785*	(0.032)	-0.760*	(0.017)
Observations	738		1050	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because it had been put off directly (via informal enquiries with the bank) or indirectly (expectation of such a rejection). Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.4.5 Discouragement for 2010-12 without renewals – principle of borrowing

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011			-0.350*	(0.014)
Q4 2011	-0.0815	(0.569)	-0.356*	(0.018)
Q1 2012	0.158	(0.236)	-0.392*	(0.004)
Q2 2012			-0.594**	(0.000)
Sales				
£50,000-£99,999	-0.337	(0.077)	-0.300	(0.068)
£100,000-£499,999	-0.327	(0.081)	-0.183	(0.228)
£500,000-£999,999	-0.380	(0.122)	-0.0514	(0.788)
£1m-£4,999,999	-0.260	(0.232)	-0.121	(0.502)
£5m or more	-0.524*	(0.048)	-0.104	(0.672)
Risk rating				
Low	0.136	(0.579)	0.0331	(0.870)
Average	0.0075	(0.974)	0.229	(0.219)
Above average	0.458	(0.053)	0.194	(0.307)

Undetermined	0.506*	(0.048)	0.210	(0.344)
Financial Delinquency				
Loan default	0.164	(0.597)	0.0764	(0.698)
Unauthorized overdraft borrowing	-0.0504	(0.776)	-0.0207	(0.870)
Business Age				
2-6 years	-0.157	(0.326)	-0.111	(0.404)
7-15 years	-0.112	(0.429)	-0.222*	(0.049)
More than 15 years				
Other business Characteristics				
LtdCo	0.0589	(0.721)	-0.0650	(0.625)
Partnership	0.473	(0.056)	-0.223	(0.309)
Limited libpart	-0.0982	(0.798)	0.147	(0.612)
Highest Qualification				
Undergraduate	0.416*	(0.007)	0.00807	(0.953)
Postgraduate	0.189	(0.331)	0.0943	(0.534)
Gender				
Female	-0.255	(0.120)	-0.344*	(0.016)
Industry				
Agriculture, hunting and forestry/ fish	-0.0861	(0.775)	-0.0957	(0.682)
Construction	0.0555	(0.818)	-0.263	(0.142)
Wholesale / retail	0.0654	(0.810)	-0.333	(0.097)
Hotels and restaurants	-0.381	(0.204)	-0.359	(0.084)
Transport, storage and communication	-0.140	(0.613)	-0.162	(0.425)
Real estate, renting and business activ	0.0684	(0.783)	-0.275	(0.129)
Health and social work	0.0440	(0.890)	-0.247	(0.277)
Other community, social and personal ser.	0.320	(0.239)	-0.367	(0.101)
Region				
East Midlands	-0.360	(0.244)	-0.0008	(0.998)
London	-0.635*	(0.023)	0.178	(0.438)
North East	-0.112	(0.678)	0.226	(0.338)
Northern Ireland	-0.531*	(0.037)	0.135	(0.561)
North West	-0.142	(0.590)	0.180	(0.472)
Scotland	0.0466	(0.862)	0.289	(0.229)
South East	-0.704*	(0.040)	0.229	(0.384)
South West	-0.277	(0.288)	0.271	(0.260)
Wales	-0.0622	(0.784)	0.321	(0.127)
West Midlands	-0.361	(0.127)	0.238	(0.273)
Yorkshire & Humberside	0.00484	(0.986)	-0.346	(0.194)
Lower speed of growth	0.0688	(0.642)	0.232	(0.050)
Export	0.167	(0.351)	-0.0692	(0.618)
Performance pay	0.449**	(0.001)	0.141	(0.198)
Constant	-0.933*	(0.025)	-0.512	(0.150)
Observations	738		1050	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because the owner did not want to lose control of business, prefer to seek alternative sources. Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity*,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.4.6 Discouragement for 2010-12 without renewals – procedure of borrowing

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011			-0.300*	(0.020)
Q4 2011	0.0266	(0.824)	-0.292*	(0.032)
Q1 2012	0.145	(0.219)	-0.374*	(0.003)
Q2 2012			-0.491**	(0.000)
Sales				
£50,000-£99,999	0.104	(0.539)	-0.176	(0.214)
£100,000-£499,999	-0.225	(0.165)	0.107	(0.426)
£500,000-£999,999	-0.293	(0.169)	-0.188	(0.267)
£1m-£4,999,999	-0.0304	(0.870)	-0.192	(0.221)
£5m or more	-0.159	(0.485)	-0.250	(0.236)
Risk rating				
Low	0.237	(0.231)	-0.0300	(0.860)
Average	0.454*	(0.017)	0.0626	(0.694)
Above average	0.443*	(0.020)	0.172	(0.293)
Undetermined	0.114	(0.601)	0.0904	(0.634)
Financial Delinquency				
Loan default	-0.146	(0.612)	0.133	(0.451)
Unauthorized overdraft borrowing	0.141	(0.359)	-0.0492	(0.650)
Business Age				
2-6 years	0.0459	(0.744)	-0.169	(0.154)
7-15 years	0.144	(0.250)	-0.0943	(0.342)
More than 15 years				
Other business Characteristics				
LtdCo	0.0848	(0.542)	-0.123	(0.289)
Partnership	0.571*	(0.013)	0.0954	(0.611)
Limited libpart	0.304	(0.374)	-0.279	(0.298)
Highest Qualification				
Undergraduate	0.187	(0.182)	0.0235	(0.848)
Postgraduate	0.223	(0.189)	0.231	(0.085)
Gender				
Female	0.149	(0.256)	-0.0778	(0.507)
Industry				
Agriculture, hunting and forestry/ fish	0.335	(0.204)	0.117	(0.588)
Construction	0.313	(0.156)	0.0949	(0.565)
Wholesale / retail	0.263	(0.256)	0.126	(0.485)
Hotels and restaurants	-0.0321	(0.897)	0.108	(0.562)
Transport, storage and communication	0.0642	(0.798)	-0.100	(0.599)
Real estate, renting and business activ	0.132	(0.553)	0.0029	(0.986)
Health and social work	0.0654	(0.817)	0.134	(0.504)
Other community, social and personal ser.	0.214	(0.393)	-0.244	(0.218)
Region				

East Midlands	-0.409	(0.131)	-0.322	(0.170)
London	-0.250	(0.274)	0.101	(0.616)
North East	-0.346	(0.142)	-0.138	(0.505)
Northern Ireland	-0.417	(0.060)	0.117	(0.567)
North West	-0.153	(0.522)	0.317	(0.149)
Scotland	-0.161	(0.519)	0.234	(0.276)
South East	-0.453	(0.090)	-0.0467	(0.840)
South West	-0.323	(0.160)	0.0522	(0.802)
Wales	0.0164	(0.939)	0.206	(0.262)
West Midlands	-0.0748	(0.732)	-0.162	(0.403)
Yorkshire & Humberside	-0.194	(0.451)	-0.112	(0.606)
Lower speed of growth	0.254*	(0.046)	0.179	(0.077)
Export	-0.258	(0.113)	-0.0319	(0.795)
Performance pay	0.105	(0.375)	0.201*	(0.037)
Constant	-0.871*	(0.015)	0.0466	(0.878)
Observations	738		1050	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because the owner thought it would be too expensive, too much hassle, loan facilities come with too many terms and conditions, I thought we would be asked to provide too much security, did not want to go through application process, find bank forms and literature hard to understand. Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0-4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age "more than 15 years" omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.

Table A.4.7 Discouragement for 2010-12 without renewals – economic situation

	Overdraft	(p-value)	Loan	(p-value)
Quarters				
Q3 2011			-0.186	(0.205)
Q4 2011	-0.391*	(0.013)	-0.276	(0.074)
Q1 2012	0.153	(0.267)	0.00282	(0.984)
Q2 2012			0.0693	(0.610)
Sales				
£50,000-£99,999	0.0472	(0.813)	0.215	(0.156)
£100,000-£499,999	-0.282	(0.165)	0.107	(0.482)
£500,000-£999,999	-0.344	(0.200)	-0.110	(0.568)
£1m-£4,999,999	-0.136	(0.572)	-0.0913	(0.608)
£5m or more	-0.361	(0.208)	-0.0318	(0.894)
Risk rating				
Low	-0.0600	(0.797)	0.0414	(0.828)
Average	-0.345	(0.137)	0.0706	(0.691)
Above average	-0.290	(0.196)	0.118	(0.518)
Undetermined	-0.370	(0.153)	-0.126	(0.555)
Financial Delinquency				
Loan default	-0.340	(0.374)	-0.194	(0.336)
Unauthorized overdraft borrowing	-0.0708	(0.727)	-0.143	(0.239)
Business Age				

2-6 years	0.0904	(0.572)	-0.0816	(0.534)
7-15 years	-0.119	(0.441)	-0.0197	(0.859)
More than 15 years				
Other business Characteristics				
LtdCo	-0.0284	(0.870)	-0.0492	(0.699)
Partnership	0.392	(0.145)	0.0219	(0.916)
Limited libpart	-0.0335	(0.939)	0.0754	(0.791)
Highest Qualification				
Undergraduate	0.0922	(0.593)	0.0359	(0.789)
Postgraduate	0.175	(0.408)	-0.0472	(0.748)
Gender				
Female	0.0258	(0.881)	0.0267	(0.835)
Industry				
Agriculture, hunting and forestry/ fish	0.405	(0.226)	-0.249	(0.301)
Construction	0.441	(0.115)	-0.203	(0.264)
Wholesale / retail	0.212	(0.495)	-0.242	(0.227)
Hotels and restaurants	0.493	(0.110)	-0.393	(0.057)
Transport, storage and communication	0.0645	(0.854)	0.0552	(0.789)
Real estate, renting and business activ	-0.0393	(0.893)	-0.219	(0.231)
Health and social work	-0.416	(0.333)	-0.158	(0.470)
Other community, social and personal ser.	0.00412	(0.990)	-0.240	(0.268)
Region				
East Midlands	-0.496	(0.173)	-0.368	(0.169)
London	-0.480	(0.096)	-0.223	(0.308)
North East	-0.340	(0.267)	-0.0970	(0.663)
Northern Ireland	0.100	(0.696)	-0.0842	(0.700)
North West	-0.0533	(0.855)	-0.177	(0.472)
Scotland	-0.410	(0.173)	-0.142	(0.546)
South East	-0.0925	(0.788)	-0.389	(0.135)
South West	-0.216	(0.446)	-0.0399	(0.862)
Wales	-0.178	(0.515)	-0.0309	(0.878)
West Midlands	-0.407	(0.133)	-0.107	(0.607)
Yorkshire & Humberside	0.213	(0.477)	0.0848	(0.716)
Lower speed of growth	0.167	(0.293)	0.180	(0.108)
Export	-0.213	(0.299)	-0.0262	(0.850)
Performance pay	0.381*	(0.010)	0.144	(0.181)
Constant	-0.944*	(0.038)	-0.619	(0.059)
Observations	738		1050	

Notes: Dependent variable is probability of the firm being discouraged from applying for finance because the owner thought this is not the right time to apply for borrowing. Effects are measured relative to: quarters Q1-Q2 2011 for loans and Q2 2012 for overdrafts; sales: £49,999 or less; risk rating: minimal; loan default: 0 -4 number of times unable to make repayments; unauthorised overdraft borrowing: 0-2 number of times has exceeded its overdraft limits; business age: less than 2 years; industry: manufacturing; region: East; lower speed of growth: over 30% a year for the past three years. Other business characteristics, export, performance pay and highest qualification are 0/1 dummies. Business age “more than 15 years” omitted because of collinearity. *,** indicate significance at 5% and 1% correspondingly. Estimated as probit with robust standard errors.