

SMEs, Credit Constraints and Growth

A CROSS BORDER STUDY

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Foreword

InterTradelreland works closely to support the growth of small businesses across the island through the provision of cross-border development opportunities. Over 6000 businesses have availed of our direct grant supports and a further 20,000 have benefitted from our knowledge and advice.

The small business community across the island was adversely and disproportionately affected by the financial crisis of 2008 as the availability of finance contracted and domestic demand shrank. As the economy recovers, and moves from crisis to more normal conditions, this report shows that some structural issues remain in the market for finance. Despite an overall improvement in the financing environment that has eased credit constraints and financial distress for all types of firms, the report shows that we continue to observe small and younger firms across both jurisdictions experiencing greater difficulty accessing finance. The report concludes that “informational opacity” is a key cause of this structural defect and that supporting access to finance from this group of firms should be an ongoing policy objective.

InterTradelreland’s vision is of a sophisticated all-island financial ecosystem with ambitious growth-focused enterprises at the centre surrounded by a wide diversity of accessible funding options. Through our EquityNetwork programme we already assist companies across the island in their search for venture capital and business angel investment. However, this report confirms that there are clear structural deficiencies in the wider finance for growth market that are common across both jurisdictions.

We will therefore extend our financing for growth services with the launch of a new ‘Funding for Growth Advisory Service’. This service will have two objectives: to increase awareness among the wider SME community of the sources of finance available by providing high quality, accessible information through a series of regional workshops; and to improve the efficiency of individual choices by providing specialist expertise through a series of 1-to-1 clinics. With an improved knowledge flow in this area firms will then be better equipped to choose a funding option which fits best with their business objectives.

Executive Summary

Ensuring that firms have access to the financing options appropriate to them and that they are not constrained by funding limitations from undertaking positive investment projects is an important ingredient in supporting economic recovery and growth. This is particularly important for Small and Medium Enterprises (SMEs), given that they have generally been shown to have less diversified financial structures and tend to be more exposed to negative economic and financial shocks than are larger firms.

This report uses detailed survey data collected by InterTradeIreland to examine the financing structures and obstacles of firms across the island of Ireland. We focus specifically on how financing has developed between 2012 and 2014 as these economies have moved back into growth. The research presented here covers a broad spectrum of issues related to the funding of the SME sector, beginning by looking at the types of finance most commonly used, the demand for finance, examining the extent to which firms are subject to credit constraints, if these constraints affect their overall performance, and how widespread financial distress is amongst firms.

Finally, the report examines if the banking system North and South of the border impacts on these issues, looking in particular at the question of whether banks operate different strategies outside of their core domestic market.

KEY FINDINGS:

- Most firms use short-term sources of finance: the most common product used is an overdraft facility, which is used by approximately 40 per cent of firms. The percentage of firms using commercial loans was 22 per cent in 2012 but reduced to 17 per cent in 2014.
- Larger and more established firms are more likely to use all of the different finance types, with smaller and younger firms having access to a less diversified set of products.
- Application rates for credit fell between 2012 and 2014.
- The percentage of firms identified as credit constrained fell by half between 2012 and 2014.
- There is no statistically significant evidence of differences in the incidence of credit constraints across countries but Northern Irish firms are less likely to experience financial distress.
- Smaller and younger firms remain more likely to be credit constrained.
- With the decline in the levels of credit constraints, there is no evidence of this type of constraint having a negative effect on firm performance.
- The percentage of firms reporting no experience of financial distress increased from 40 per cent in 2012 to 63 per cent in 2014.
- Property debt overhang continues to be a problem for some firms.
- There is no evidence of different behaviour by banks operating cross-border.

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1. Introduction

This introduction reviews the characteristics of SME finance that result in these firms being of considerable policy interest. It highlights how financing structures tend to differ across the firm life-cycle, with more diversified product options becoming available as firms become larger and more established. The section then introduces the InterTradeIreland dataset that underpins the analysis in the remainder of the report and presents some descriptive statistics comparing the survey composition in Northern Ireland and Ireland.

Access to credit is an important component in facilitating growth because firms need financing for investment, working capital, new market entry and innovation. The policy significance of this topic is considerable. Providing an environment for firms to grow is central to a sustained, employment-intensive recovery. Indeed, international research on recoveries from banking crises notes the existence of post-crisis credit constraints as a considerable drag on growth.¹

This report looks at how firms use finance in Ireland and Northern Ireland. It covers a broad spectrum of issues related to the funding of the SME sector, beginning by looking at the types of finance most commonly used, the demand for finance, examining the extent to which firms are subject to credit constraints and if this is affecting their overall performance, and how widespread instances of financial distress are amongst firms. It also examines if the border impacts on these issues, looking in particular at the question of whether banks operate different strategies outside of their core domestic market.

CHARACTERISTICS OF SME FINANCE

SMEs make up a significant proportion of both firms and employment in most European countries. However, they tend to be characterised by a greater degree of output and profit volatility than larger enterprises. They are also more liable to failure; manufacturing firms with fewer than 20 employees have been found to be five

times more likely to fail in a given year than larger firms (OECD, 2006) and this is the case even in times of stable economic growth. In times of recession or crisis, SMEs are particularly vulnerable as their limited diversification and dependence on short-term credit give them much less of a buffer against demand falls than is available to larger firms (OECD, 2009).

SMEs have generally more limited internal resources and little or no direct access to capital markets; as a result they tend to rely mainly on banks for funding. Firm size matters considerably in determining sources of financing, with SMEs relying more on loans than large firms. Conversely, SMEs make much less use of bonds as a financing source (ECB, 2007). A particular concern for growth and productivity amongst SMEs is that a majority of OECD countries perceived a gap in the financing of innovative SMEs, which tend to operate in riskier sectors (OECD, 2006).

A lack of transparent information is a defining feature of small firms, with much detail kept private and no active trading of shares to signal quality to the market. As a result, the financial institutions that provide funding to smaller firms tend to be more active in their engagement with the firm, in terms of screening and monitoring as this helps them to overcome the asymmetries in information. This means that relationships between the lending institution and the firm are more important for small firms than for large firms with more transparent measures of information and reputation.

As firms become more established and information about them becomes more readily available, the types of financing they use change. This can be thought of as a “financial growth cycle” (Berger and Udell, 1998). The smallest and youngest firms, which face the greatest difficulties in convincing investors or lenders of their quality, tend to rely on initial financing from the business owner’s own resources, trade credit and, in certain cases, from angel finance.

As the firm grows and becomes more established, it

¹ See, for example, Abiad et al. (2011) and Davis and Stone (2004).

begins to gain access to more formal sources of finance. At this stage equity financing may become an option from venture capital funds but more commonly the funding comes from raising debt from banks and other types of financial intermediary. As firms get older and larger, accumulated retained earnings may also become an important source of funding as well as providing reassurance regarding the firm's performance for potential external funders. For the largest, more mature firms, participation in public equity and debt markets may eventually become an option.

According to this typology of financing sources, bank financing is not generally available to firms at the very early start-up stage, when the business idea is still being developed and there are limited tangible assets for use as collateral. Only once the business has been established as a trader and some level of tangible assets have been acquired is external debt likely to be available to the firm. This does not totally exclude start-up firms from obtaining external debt, but rather results in the loans obtained frequently being collateralised by the business owner's personal property, or being guaranteed by the owner, family members or associates.

Two reasons that financing constraints from both bank and non-bank sources are negatively correlated with firm size relates to the existence of fixed transaction costs and information asymmetries which are particularly likely to cause difficulty for smaller firms. Fixed transactions costs relate, for example, to the processing and monitoring costs of a loan, which (even if not entirely fixed) will be higher per euro borrowed for a small loan than for a large loan. The heterogeneous nature of SME loans mean that relationships are important and this involves an investment of time and personnel from the bank side, even for low-volume customers to overcome the differences in information about the firm and its prospects that the bank and firm have available to them (Levine, 2005).

Coleman and Robb (2011) find that the problems of information flows are particularly relevant for high-technology start-ups and that consequently these firms have to rely on greater proportions of owner-provided equity until they can build up a credit record that enables them to access external funding. They hypothesise that the reason that external funding is less available to these high-technology firms is due to their limited

tangible assets and high level of intangible intellectual property which cannot be pledged as collateral. They are, therefore, viewed as more risky, at least in the early stages.

Prior to the financial crisis, Mac an Bhaird and Lucey (2010) surveyed 299 Irish SMEs to investigate the determinants of their capital structure. They found that internal sources such as retained earnings are preferred to external sources, emphasising the role of firm profitability in funding further investment. The availability of collateral is an important factor in accessing debt financing and, when this is limited within the firm, the personal assets of the owner are commonly pledged. Correlation coefficients show a negative relationship between the use of owner's collateral and the age and size of the firm, while at the same time retained earnings become more important as the firm ages and grows. Long-term debt is also negatively related to firm age, presumably also being superseded by internal funds, although a positive relationship is observed between long-term debt and firm size.

The severity of the economic downturn and its impact on SMEs has been the subject of considerable recent research in Ireland. Comparing firms that had been rejected for credit with those that had been accepted, Lawless and McCann (2012) found no evidence of significant differences in firm performance characteristics. They also found that relative to other countries in Europe, Irish firms were much more likely to be rejected credit but no less likely to reduce credit demand. Holton and McCann (2012) also examined the SME credit market in Ireland, considering both supply and demand indicators. Once again, no major differences were found in credit demand in Ireland relative to the European average. However, they identified a high degree of borrower discouragement in Ireland, rejection rates higher than the European average and changes in terms and conditions that were the least favourable to firms were observed in Ireland.

Looking at firms across Europe, Holton, Lawless and McCann (2014) use firm-level data to examine how much of the impact of the financial crisis on firms could be explained by developments in the real economy relative to deteriorations in bank or borrower balance sheets. They find that larger and older firms face the lowest risk of having loans rejected, while firms with deteriorating

business performance are more likely to perceive reduced credit availability. They identify three country-level aspects of the crisis: a weak real economy, reduced credit supply by financial institutions and debt overhang on corporate balance sheets. They link each of these factors, as well as various firm characteristics, to the following indicators of current credit market conditions: loan rejection, perceived availability, loan demand, the cost of credit, and loan conditionality. In relation to the country factors, they find that the level of private sector indebtedness negatively affects all aspects of SME credit, as does a challenging financial environment. A weakening in the real economy was only associated with reductions in credit demand.

Using aggregate data on the cost and volume of outstanding finance, Holton and O'Brien (2011) find that bank lending was adversely affected for both large corporate and SMEs across all regions they studied (Ireland, the UK, US and the Eurozone). Larger non-financial corporations have been most able to substitute out of bank lending and into other market financing sources. Popov and Udell (2012) test the sensitivity of credit supply to bank balance sheet conditions and assess the impact on borrowers of bank funding distress. Using data from the European Bank for Reconstruction and Development's Business Environment and Enterprise Performance Survey (BEEPS) for Eastern Europe, they find that firms face much more difficulty accessing credit if their bank has funding challenges of its own. During the crisis, firms were more constrained if they were dealing with banks that experienced a decline in equity and tier 1 capital or suffered considerable losses. The effect on firms is also greater for riskier firms and firms with fewer tangible assets.

The high level of reliance on bank financing is noted across both Northern Ireland and Ireland by InterTradelreland (2013). It also finds, like other research, that although firms had demand for and were able to access short-term working capital finance, longer-term growth finance was difficult to source (Lawless et al., 2014a). Of most relevance to this report there is research which shows that credit constraints limit the investment and employment performance of SMEs (Gerlach-Kristen et al., 2013).

DATA SOURCE AND DESCRIPTIVE STATISTICS

We are able to undertake this wide-ranging analysis of the financing of firms across the island by using the detailed survey data collected by InterTradelreland through the quarterly Business Monitor. A comprehensive description of the survey for 2012 is contained in InterTradelreland (2013) and we add to this the recently completed 2014 survey responses to examine how financing options have developed over the intervening two year period as the island has moved into recovery.

Two thousand nine hundred and one firms were surveyed in both locations across both waves, with 1,506 firms surveyed in 2012 and 1,395 firms surveyed in 2014.

As we can see in the descriptive statistics presented in Table 1 (all Tables at the end of the report), the majority of firms surveyed appear to be older firms with over half of firms surveyed trading for more than twenty years. There also appears to be a higher rate of younger firms surveyed in Northern Ireland compared with Ireland with just over 10 per cent of firms trading for less than five years compared to 3 per cent from Ireland. The majority of firms surveyed were small firms with nearly 60 per cent of firms classified as micro and 28 per cent classified as small. One-third of firms are engaged in the hotels/restaurants/catering and retail sector, with almost 28 per cent of firms categorised as other services. With regards to firm ownership, over 35 per cent of firms are non-publicly listed limited liability companies, whereas 9 per cent are publicly listed. Over 27 per cent of firms are sole proprietorships, with 11 per cent classified as partnerships and 14 per cent family businesses.

Approximately 34 per cent of firms over both waves reported an increase in sales during the previous twelve months prior to the survey being conducted with almost 13 per cent reporting an increase in employment. The rates are higher for Ireland with approximately 38 per cent reporting an increase in sales and 16 per cent reporting an increase in employment compared to Northern Ireland where firms reported a 32 per cent and an 12 per cent increase in sales and employment respectively. The majority of firms, at 77 per cent, reported that employment had remained unchanged. With regards to exports, just over 38 per cent of firms reported that they engaged in some form of cross border or international

trade. 31 per cent of exports are accounted for by Irish firms whereas over 40 per cent are carried out by Northern Irish firms. With regards to investment, almost 35 per cent of firms reported that they saw an increase in investment during the previous twelve months prior to the survey being conducted over both waves.

The report is organised as follows:

- **Section 2** describes the types of finance used and examines how a range of firm characteristics affect the type of products used by different firms. The range of funding sources covers overdrafts, commercial loans, other loans, business credit cards, trade credit, grants, invoice discounting and leasing or hire purchase.
- **Section 3** looks at demand for credit, measured by application rates, and then examine the extent to which firms can be identified as being credit constrained.
- Following the estimates of credit constraints, **Section 4** examines how these constraints affect firm outcomes (sales growth, employment, exporting and investment).
- **Section 5** examines the extent of financial difficulties being experienced by firms and what factors contribute to this. An index is used combining a number of different indicators that pick up financial distress at the firm level: weak asset position, payment delays, bad relationship with bank, increased interest rate, increased bank fees and if the firm was identified as being credit constrained.
- **Section 6** examines this a little further by distinguishing across firms by the ownership of their main bank. This allows us to ask if there is evidence of different behaviour by the same bank when it operates both North and South of the border, which might be expected if banks orientate their lending more strongly to their local market when they are under deleveraging pressure.
- **Section 7** concludes with a discussion of the policy implications of the report's findings.

2. Finance Types Used

This section examines the types of finance used by firms on the island of Ireland. It begins by presenting some descriptive statistics on the percentage of firms that use each of the eight different finance products or sources explicitly asked about in the InterTradelreland Business Monitor survey. The section also looks at the basic patterns of how usage varies across firm characteristics such as age and size groups, and then looks in more detail at the determinants of using each of the different finance types, controlling for all available firm features.

TYPES OF FINANCE

As discussed in the previous section, SMEs, North and South, have traditionally been very dependent on bank finance (Lawless *et al.*, 2014a, InterTradelreland, 2013). This dependence heightens their financial vulnerability to shocks in the banking sector. Given the scale of the crisis in the financial sector, the inevitable consequence has been tightened credit availability to SMEs. Ensuring adequate access to bank financing is an important element of any SME recovery, and despite calls for funding diversification, bank credit will remain a key source for SMEs. Indeed, many of the policy initiatives introduced to date have targeted the transmission of financing through the banking sector.

Previous research has also shown that a particularly important source of non-bank credit which is used by firms is trade credit (Casey and O'Toole, 2014). Trade credit refers mainly to the purchase of goods on credit from suppliers but it can also refer to the purchase of goods on advances from customers. It should not be confused with trade finance which is the financing of international (cross-border) goods and services trade. A sizable proportion of small business assets are funded by trade credit. Trade credit can be a more expensive form of borrowing than bank credit but can have other benefits for firms in terms of flexibility and cash flow management. Early stage firms, who find it particularly difficult to obtain bank credit, may still be able to obtain credit from suppliers.

The informational asymmetries that may exist between the firm and the bank may prove to be an obstacle to small firm financing, can be less severe in a trade-credit relationship, where the supplier providing credit has experience of the firm's sector and production process. If the supplier provides an important input to the firm, they have a potentially strong threat position of withholding future supplies if not repaid on schedule. In the event of the firm defaulting, suppliers may have the option of repossessing and selling on the previously supplied goods, a course of action that financial institutions would not always have the industry-specific knowledge to undertake (Berger and Udell, 1998). In the literature, many studies emphasise the importance of trade credit for SMEs and, in particular, highlight its role as a substitute for formal bank financing. This is particularly pertinent in periods of financial crisis (Casey and O'Toole, 2014; Love *et al.*, 2007).

The InterTradelreland survey asks firms which of the following types of finance they are currently using at the time of the survey:

- Overdraft
- Commercial Loan
- Other loans
- Business credit card
- Trade credit
- Grants
- Invoice discounting
- Lease or hire purchase

Figure 1 shows the percentage of firms in the InterTradelreland survey that indicated they are currently using each of the different sources of finance listed. It should be noted that the question is phrased rather differently to equivalents in other surveys (such as the RedC/Department of Finance survey in Ireland or the SAFE survey across the Euro area) in that it asks about finance sources currently in place rather than finance

used over the previous six months. This likely explains the somewhat lower usage rates. For example, for trade credit, the usage rates are just under 15 per cent in 2012 and fall to 3 per cent in 2014, whereas in the SAFE survey the majority of firms have used trade credit. However, trade credit is generally a short-term financing source so a change in the length of reference period is likely to have a greater impact relative to longer-term sources such as overdrafts and commercial loans where the rates of usage reported here are more in line with those of the SAFE survey (Lawless et al, 2014a). The most common source of finance is an overdraft

facility, which is used by approximately 40 per cent of firms and changes only marginally between 2012 and 2014. The percentage of firms using commercial loans is around half of this, 22 per cent in 2012 and falling somewhat more significantly to 17 per cent in 2014. Business credit cards are a source of finance for close to a fifth of firms, followed by leasing and hire-purchase as the most commonly utilised sources of funding. Other loans, grants and invoice discounting are used by a small minority of firms. Figure 2 breaks down the usage rates for the different sources of finance by firm size groups. As has been found in much of the literature discussed

Figure 1
PERCENTAGE OF FIRMS USING EACH FINANCE TYPE

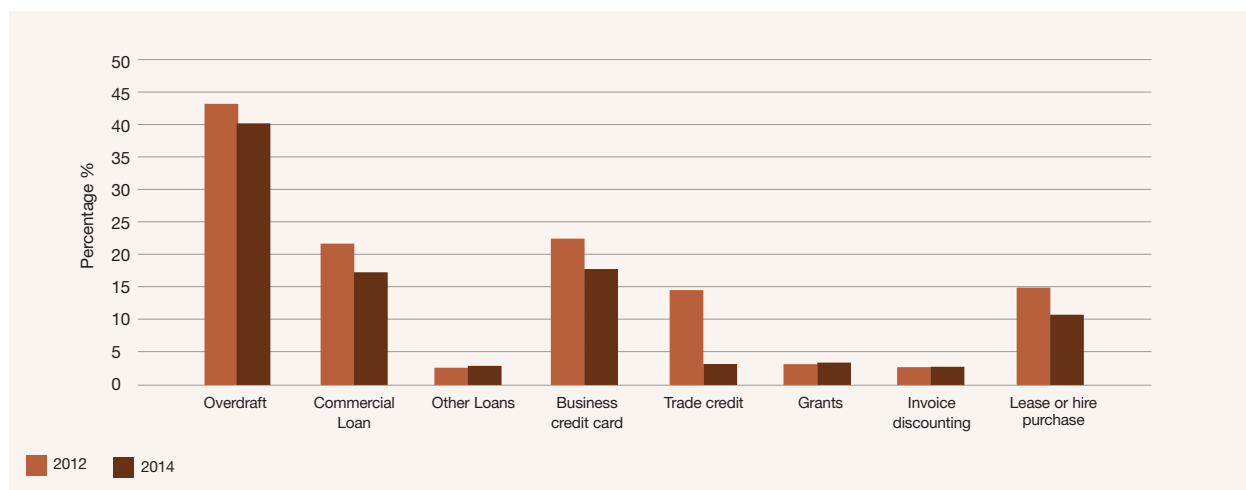
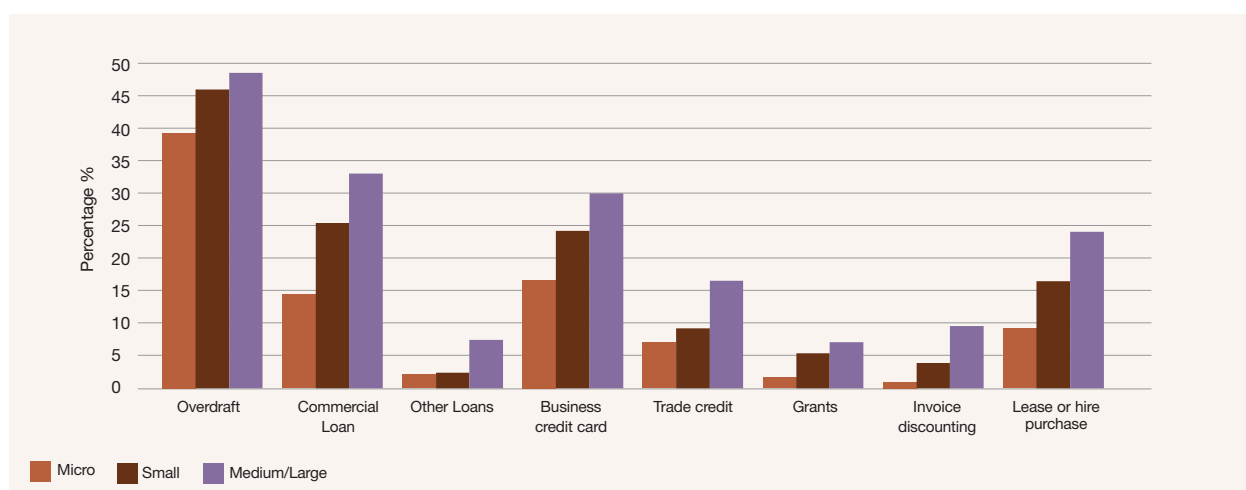


Figure 2
FINANCE USE BY FIRM SIZE (COMBINED SAMPLE)

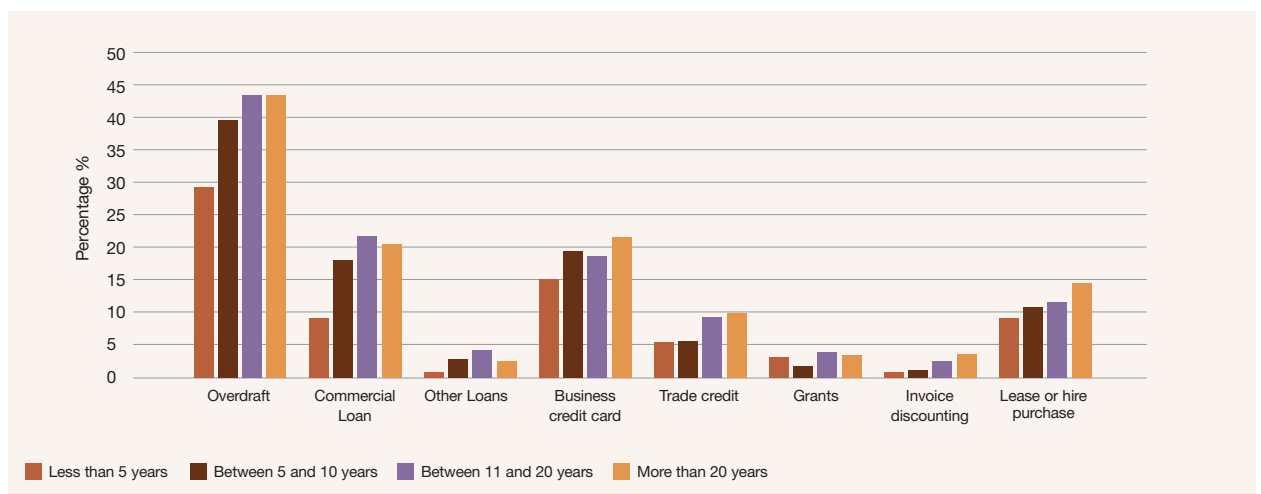


in Section 1, the options relating to financing tend to increase as firms become larger and more established, whereas smaller (and also younger) firms tend to be more likely to be impacted by credit constraints. This can be seen in the general pattern of increasing percentages of firms using each source of finance as the size category increases. Medium to larger firms are ten percentage points more likely to have an overdraft than micro firms for example (48 per cent relative to 38 per cent). Likewise the largest group is more than twice as likely as the smallest to have a commercial loan (33 per cent and 14 per cent respectively) or a business credit card (30 per cent and 17 per cent respectively). A similar pattern holds for the other funding sources. This indicates the greater range of diversification of financial options available to larger firms, raising concerns that small firms are likely to be particularly vulnerable to any shocks in the availability of finance.

The pattern across firm age groups is quite similar to that by firm size, with Figure 3 showing the increased usage of almost all finance sources as firms get older. This is in line with expectations from previous work as firms in the youngest group in particular need some time to develop a reputation and establish their business before there are attractive prospects for a lender to deal with.

Older firms are potentially seen as less risky, given that their business model has implicitly been tested by the fact of their survival and they are in a position to provide creditors with repayment records to demonstrate credit-worthiness in a way that is not available to newly established firms.

Figure 3
FINANCE USAGE BY FIRM AGE (COMBINED SAMPLE)



DETERMINANTS OF USAGE ACROSS FINANCE SOURCES

This section looks in more detail at the types of firm that make use of the different finance types. We exclude grants at this stage and focus on the market sources and how they are linked to firm characteristics. For each type of finance – overdraft, commercial loan, other loans, business credit card, trade credit, invoice discounting and leasing/hire-purchase – a probit regression is run where the dependent variable is set equal to one if the finance source is used and zero otherwise.

The set of firm characteristics that are used as explanatory factors are as follows: firm age and size groups, firm ownership category, sector in which the firm operates, country (NI or Ireland), if the firm is an exporter, location (urban or rural, in order to pick up access to financial institutions/infrastructure), management competency, difficulties/delays in collecting payments, indicators for if the firm makes a profit, if the firm took out property debt after 2005, indicators for concerns relating to competition, costs and availability of skilled workers and the strength of the firm's balance sheet. The full definitions for each of these variables are presented in Table 2.

The combined results for the survey waves are presented in 2012 and 2014 in Table 3 in order to maximise our sample size and then separate results for 2012 in Table 4 and for 2014 in Table 5 in order to observe any changes in the firm factors influencing the choice of financial instrument over time.

Looking first at the effects of firm age, we find that in the combined sample period, all of the categories of firms older than five years are significantly more likely to use overdrafts and commercial loans relative to the base category of the most recently established firms. This is not a smoothly increasing relationship however, with the highest coefficients for both finance types being for the firms aged between 11 and 20 years and is lower (but still significant) for those firms above 20 years. This may be a reflection of the greater internal resources available to the oldest firms reducing their usage of external forms of finance. For other loans, we also find that the intermediate age category of 11 to 20 years is the most likely to use this source. The other forms of finance are not found to vary across firm age categories in a

statistically significant way. It should be noted, however, that the two older groups of firms are less likely to use business credit cards. This pattern of results for age is also observed in the 2012 and 2014 separate results. In 2012, the negative relationship between firm age and use of credit card funding is significant for the oldest firms but this was no longer the case in 2014.

Firm size is consistently related to almost all of the financial products examined, with larger firms more likely to use all of the sources with the exception of overdrafts. Looking at the two years separately, the older firms were more likely to use overdrafts in 2012 but in 2014 there was a negative but insignificant relationship between size and overdraft use. This may reflect the more limited availability of other longer-term sources of finance in 2012, whereas as credit became more available from other sources in 2014, larger firms moved away from using overdrafts to fund their business.

The legal ownership structure of the firm has a relatively limited effect on the use of the different sources of finance. In the combined sample and in 2012, there is evidence of more formal structures such as limited liability companies making more use of overdrafts in particular but in the improved financial circumstances of 2014, there no longer appears to be any significant pattern across ownership once all of the other firm characteristics are controlled for.

Taking all other firm characteristics into account, the year indicator in Table 3 shows that the only source for which there is a statistically significant difference in usage in 2014 is in trade credit, showing that it was less frequently used in 2014. This is in keeping with the work of Casey and O'Toole (2014) who found that trade credit use increased when other forms of finance were less available, suggesting that it played a role as a substitute source of funding particularly in times of financial crisis or credit constraints.

The sector results use Construction as the reference category. The other sectors are almost all significantly less likely to use business credit cards and trade credit as sources of finance compared to the Construction sector in both years. This may indicate continuing funding obstacles in the Construction sector and we will later examine if these firms are more likely to be credit constrained than other sectors. The other notable

significant result is that the Hotels sector is less likely to use leasing or hire-purchase and that the Retail sector is most likely to use commercial loans. There are no significant differences across sectors in the use of other loans or invoice discounting.

Comparing across countries, the firms are equally likely to use overdrafts, commercial loans and invoice discounting in both areas. Firms in Northern Ireland are less likely than those in Ireland to use other sources. This is mainly the case in the responses collected in 2014, whereas in 2012 the range of finance sources were not statistically different across countries, apart from some higher usage of leasing and hire-purchase amongst Northern Irish firms. Within each country, there is almost no difference in finance usage between firms located in urban or rural counties. This is potentially due to the aggregated level at which this variable is created however as a broad urban/rural dichotomy may not be sensitive enough to capture ease of access to financial institutions or advice.

Exporting firms appear to have greater access to all finance sources compared to non-exporters and the significance of this characteristic is stronger in 2014 than in 2012. This could be interpreted as reflecting the better performance and hence lower risk profile of exporting firms. Similarly, the measure of managerial competence is positively related to the use of overdrafts, commercial loans and trade credit. Delays in customer payments may

create cash-flow difficulties for firms and this is found to be associated with increases in the usage of short-term finance such as overdrafts and business credit cards in particular.

The profitability or otherwise in the current quarter of the firm does not appear to be systematically related to the funding structure. The existence of property debt held by the firm is positively linked to the usage of a number of sources of finance, particularly commercial and other loans (which may be financing the property purchase directly) and also shorter-term sources such as credit cards and trade credit, which may be an indicator that the property purchase has restricted access to additional longer-term lending. We will examine the effect of property debt further in the following section on credit constraints and later on the probability of financial distress of the firm.

The other firm characteristics used as controls are indices of concerns about competition, costs and availability of skilled workers, as well as an indicator of balance sheet strength. Cost concerns are positively correlated with using more financial sources while a stronger asset position (and hence potentially greater availability of internal resources) reduces the use of overdrafts and commercial loans but does not impact on the other types of funding.

3. Loan Applications and Credit Constraints

This section begins by looking at the level of loan applications and how they have changed between 2012 and 2014. Having established this baseline level of demand for credit, the remainder of this section looks at the success of firms in accessing credit and the extent to which firms are discouraged from making loan applications. These two factors are combined to allow an assessment of how widespread credit constraints are amongst firms North and South across the two different time periods and an examination of the firm characteristics associated with credit constraints in order to establish if certain types of firms are more likely than others to be affected by credit constraints and to identify how this may have changed as economic conditions have improved.

APPLICATIONS FOR CREDIT

Looking at the applications for finance first, Figure 4 shows the overall application rates for firms in Ireland and Northern Ireland. Firms were asked: “In the past 12 months did you seek any loan finance, from any source (not just banks)?” As the survey in 2012 included some retrospective questions on finance taken out in 2010, we can compare across three time periods. Applications for all finance in both countries were at their lowest in 2010, when 6 per cent of firms in Ireland and 5 per cent of firms in Northern Ireland applied. Application rates increased fairly significantly in 2012, particularly for firms in Northern Ireland where they reached 8 per cent. This fell again in 2014, very slightly in Ireland but somewhat more noticeably in Northern Ireland, where 6 per cent of firms applied for some type of loan.

Figure 5 and Figure 6 look in more detail at the type of firm applying for loan finance, breaking the firms out by size and age categories respectively. The pattern of medium and large firms being the most likely to apply for loans and micro firms the least likely is one that holds across all three survey waves. Within groups, the changes over time vary. Micro firms saw a small increase

in application rates between 2010 and 2012 but this then reversed in 2014. Compared to the micro firms, the increase in applications in 2012 was much larger for small and medium/large firms but both of these groups also saw a reduction in 2014. By firm age categories, the most notable changes over time are the reduction in applications by the youngest firms and increase for the oldest, particularly in 2012.

Looking more closely at the determinants of applications for finance overall and also separately for 2012 and 2014, small and medium/large firms are more likely to have applied for credit, relative to micro firms, particularly in 2014 (see Table 6). Family-owned businesses were amongst the most likely to have applied for finance, while in terms of sectoral credit demand, hotels were the least likely to apply. Other sectors showed no significant difference relative to the reference category of Construction. Although the descriptive graphs showed somewhat lower application rates in 2014 by Northern Irish firms relative to those in Ireland (see Figure 4), once we control for composition of firm characteristics, we do not find that this difference is statistically significant.

Managerial competency is slightly positively associated with demand for finance and so too is outstanding property debt. This property debt relationship may reflect ongoing requirements to restructure existing debts, particularly as reporting a strong asset position is found to reduce the likelihood of applying for finance. Other pressures on the firms, such as concerns about the strength of the competitive environment, costs and skilled labour availability also make them more likely to seek external finance.

ESTIMATING CREDIT CONSTRAINTS

Credit constraints have been defined by the OECD (2006) as occurring when SMEs cannot obtain financing from banks, capital markets or other suppliers of finance even when they have the capability to use those funds

Figure 4

PERCENTAGE OF FIRMS APPLYING FOR LOAN FINANCE

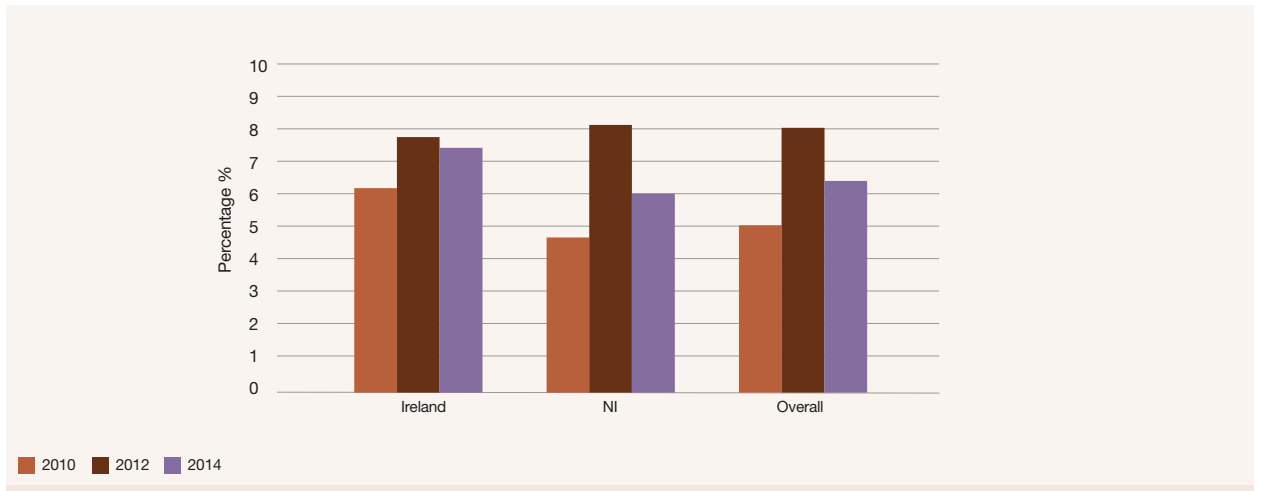


Figure 5

APPLICATION RATES BY FIRM SIZE

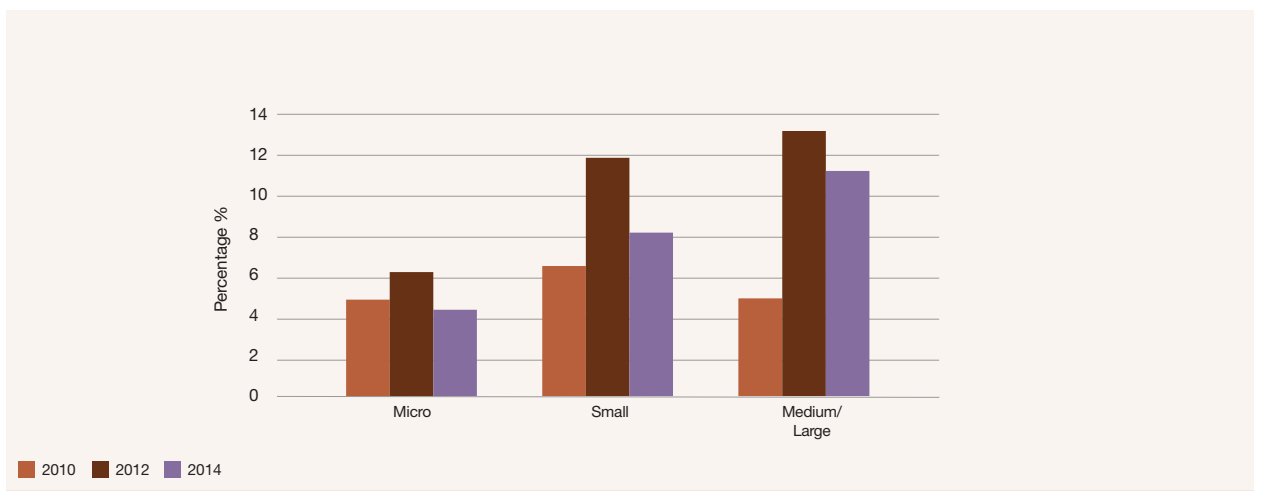
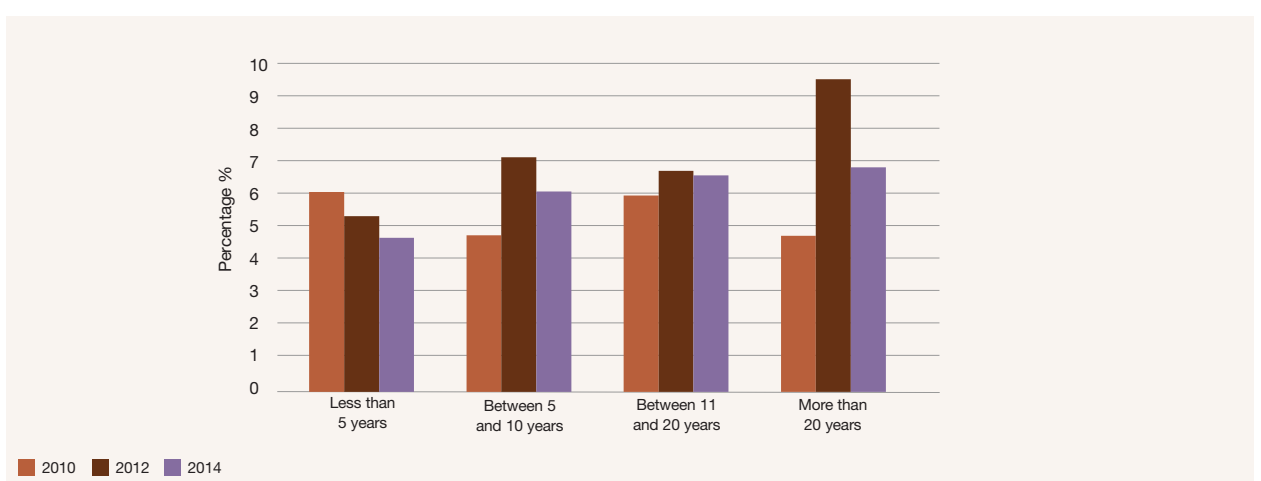


Figure 6

APPLICATION RATES BY FIRM AGE



productively. In a situation where economically viable projects may have to be restricted or even abandoned because of funding difficulties, this has the potential to have serious negative consequences for ongoing innovation and growth. It is this potential scenario that motivates the concern for identifying and measuring if SMEs are credit constrained and, if they are, if there is any way that these constraints can be alleviated.

The greater difficulty of smaller firms in accessing credit relative to larger firms revolve around differences in risk profile and information asymmetries between the firm and lending institution (OECD, 2006). It can be difficult for SMEs to convince banks of the quality of their business plans and, for newer firms in particular, it can take a considerable amount of effort to build a reputation that signals that they are low risk. From the bank's point of view, the costs involved in assessing and monitoring SMEs act as a disincentive to funding this market. Furthermore, SMEs often have less collateral that could protect creditors (ECB, 2007). Banks may, in some circumstances, prefer to ration credit rather than use interest rate changes to compensate for risk if there are concerns that this might result in adverse selection and hence a riskier loan portfolio (OECD, 2006).

Fundamental to the definition of being "credit constrained" is that the firm who requires credit must have either 1) a profitable investment opportunity that has a positive net present value at the current market cost of capital or 2) have a profitable ongoing operation which requires normal credit facilities. The credit supply constraint must therefore arise due to imperfections in capital markets which distort the proper allocation of credit and its transmission to firms as opposed to being determined by borrower-related factors.

The report follows Gerlach-Kristen, O'Connell and O'Toole (2013, 2014) in defining credit constrained firms as those that were denied finance or only received a partial amount of the sum applied for (either bank or equity finance) and those that were discouraged from applying either because they expected rejection or because the terms and conditions were expected to be too high.

Figure 7 shows the level of credit constraints and their evolution between 2012 and 2014. The improvement in general economic performance and easing of bank

funding pressures is reflected in the considerable reduction of firms reporting both bank credit constraints and discouragement from applying for credit. Overall, the percentage of firms experiencing constraints fell by slightly more than half with relatively little difference between the two countries. The composition of the total credit constraints, on the other hand, shows that firms in Ireland had higher bank constraints in 2014 compared to Northern Ireland but observations on discouraged borrowers were negligible.

INCIDENCE OF CONSTRAINTS BY FIRM CHARACTERISTICS

Previous research on credit constraints such as Ferrando and Greisshaber (2012) and Gerlach-Kristen, O'Connell and O'Toole (2013) have found a number of consistent patterns across firm types. Smaller and younger firms have in general been found to be more vulnerable to constraints and in this section we examine if this pattern also holds in the InterTradeIreland survey dataset and how this changed between 2012 and 2014. The relationships between credit constraints and a number of firm performance indicators such as sales and employment growth and investment propensity are also presented.

Figure 8 confirms the patterns of the previous research, with a clear reduction in the incidence of credit constraints as firm size increases. The overall reduction in credit constraints shown in Figure 7 benefited all size groups, without changing the negative relationship between size and likelihood of encountering constraints. That said, the reduction in the incidence of constraints in percentage terms was largest for the firms classified as "small", where 6 per cent of firms had encountered constraints in 2012 and this fell to under 2 per cent in 2014. The medium and large group of firms saw their incidence of constraints reduced from 3 per cent to 1 per cent.

The pattern of credit constraints across firm age categories is less clear-cut, as shown in Figure 9. The youngest firms, those set up in the previous five years, have the highest incidence of constraints in 2012, with over 10 per cent of firms reporting credit difficulties. The constraint measure fell very sharply for this group of firms in 2014, to slightly over 2 per cent. Overall, the 2014 data show little variation by firm age group with all

Figure 7
PERCENTAGE OF FIRMS CREDIT CONSTRAINED

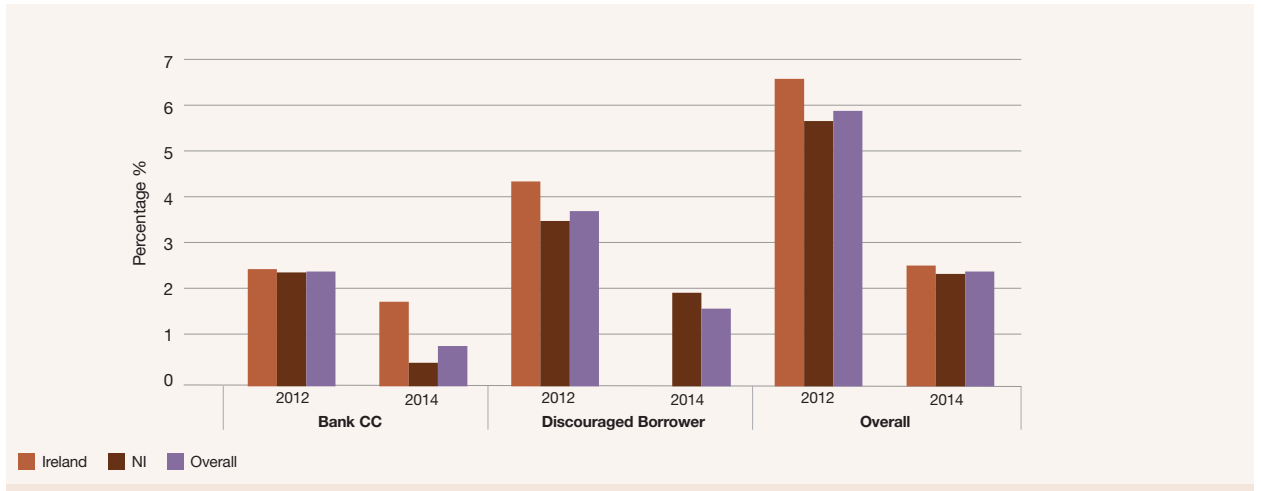


Figure 8
CONSTRAINTS BY FIRM SIZE

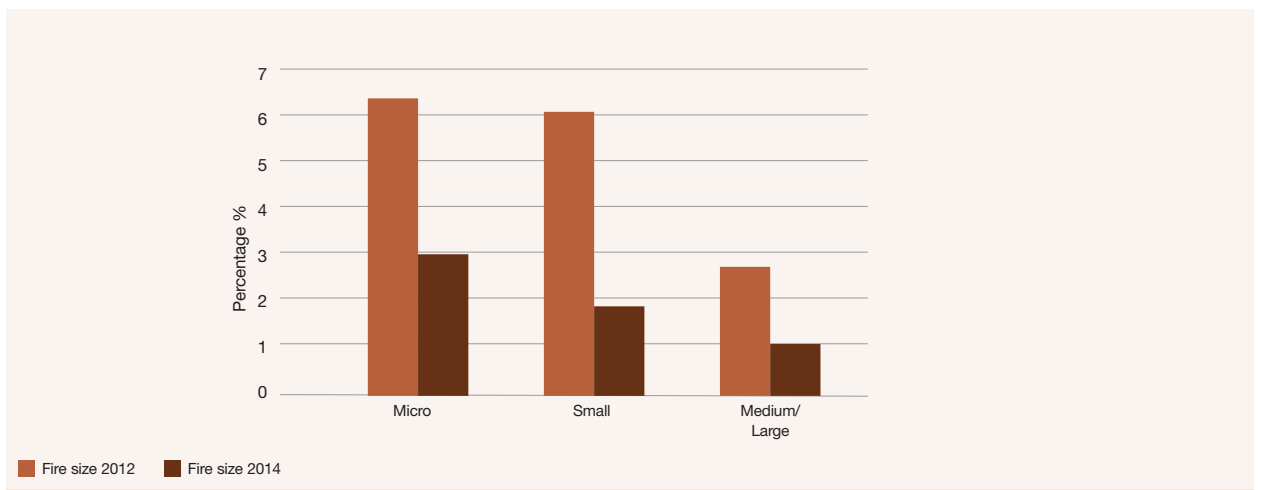


Figure 9
CONSTRAINTS BY FIRM AGE

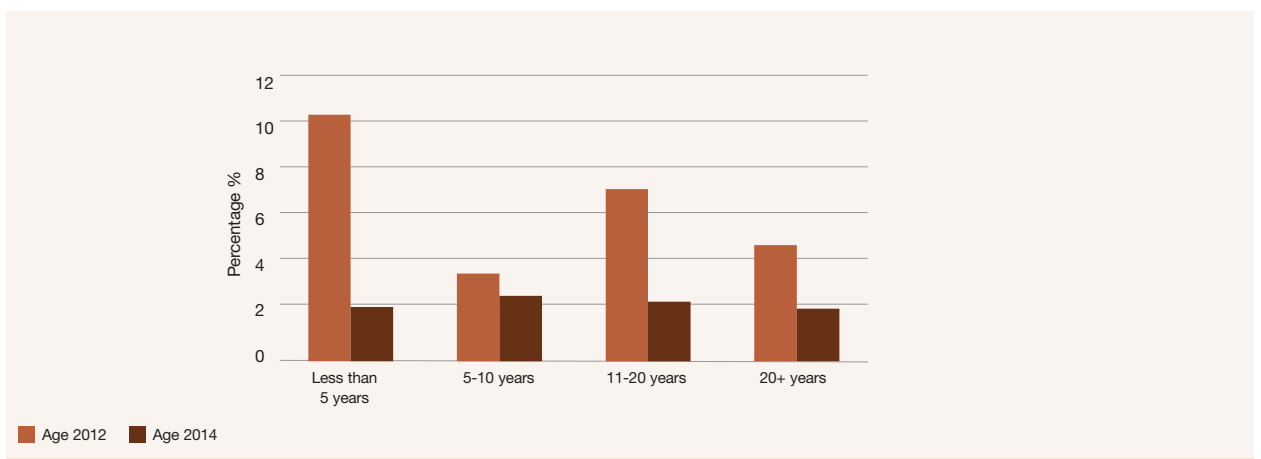
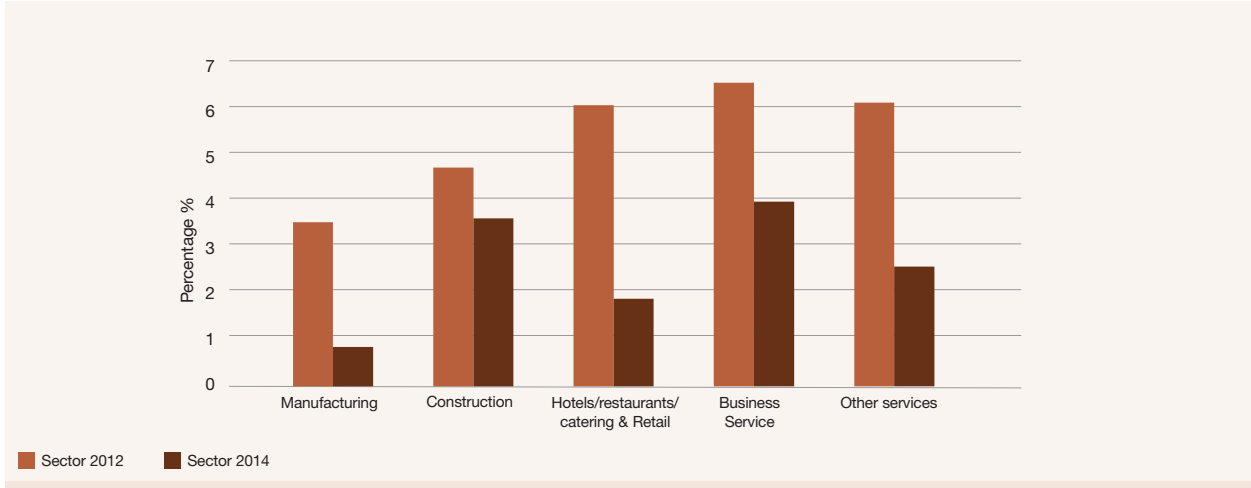


Figure 10
CONSTRAINTS ACROSS SECTORS



four categories having an incidence of constraints in the region of 2 per cent of firms.

The sectoral distribution of firms encountering credit constraints is shown in Figure 10. Both in 2012 and 2014, we see that services sectors, including business services and other services, are amongst the most likely to have experienced credit constraints. This is consistent with these firms having more limited fixed assets to pledge as collateral for loans which might make lenders somewhat more reluctant to take risks in financing their projects. Manufacturing firms would be more likely to be able to provide collateral for loans, which may be behind firms in this sector having the lowest incidence of credit

constraints in both periods and also having the largest reduction over time. Construction firms continued to have a relatively high incidence of constraints in 2014, with the smallest reduction since 2012 relative to firms in other sectors.

The relationships between credit constraints and indicators of firm performance are presented in the next four figures. Figure 11 shows a limited link between sales growth and credit constraints, although firms with increasing sales are somewhat less likely to have incurred constraints than those with unchanged or decreasing sales. Again, we see that firms in all groups saw a reduction in constraints between 2012 and 2014.

Figure 11
CONSTRAINTS AND SALES GROWTH

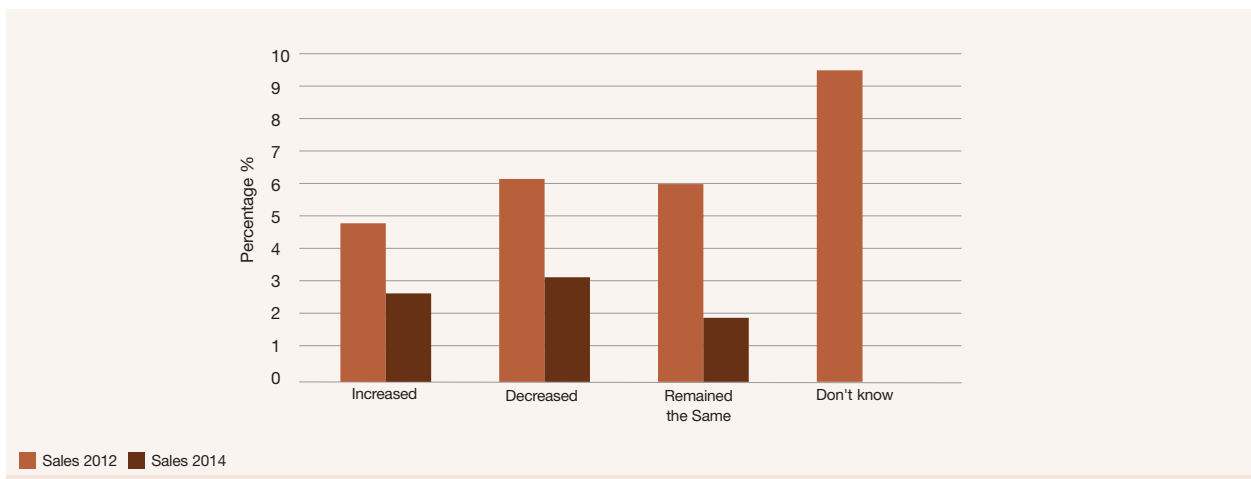


Figure 12

CONSTRAINTS AND EMPLOYMENT GROWTH

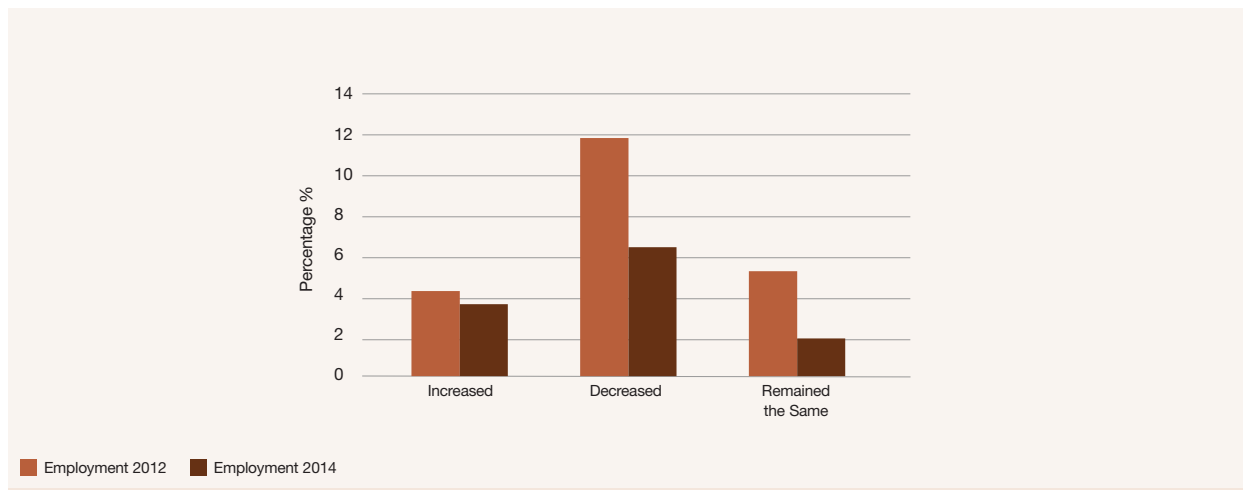
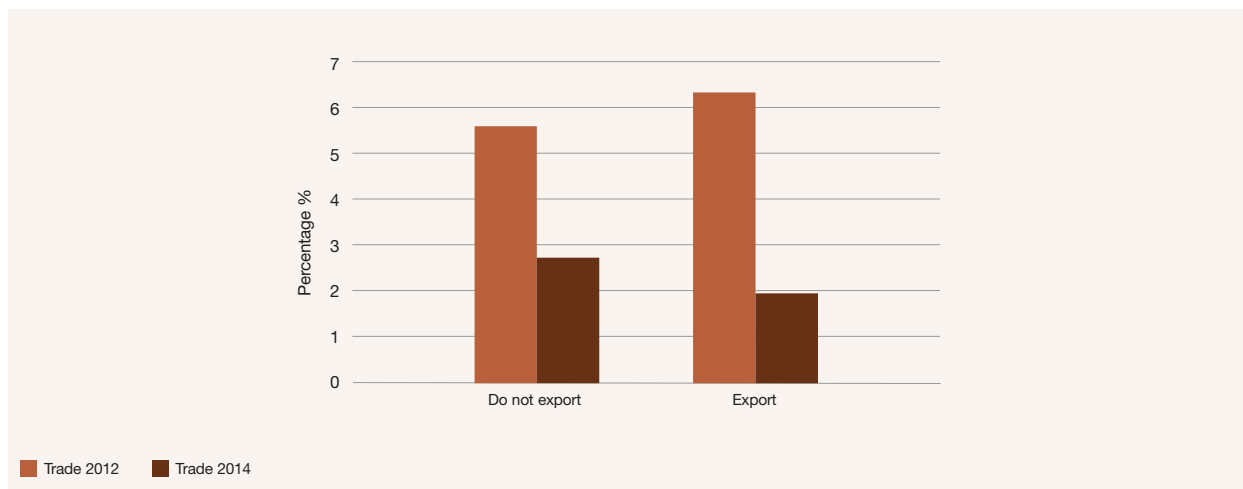


Figure 13

CONSTRAINTS AND EXPORT STATUS



The relationship between employment growth and credit constraints is shown in Figure 12, with the pattern being noticeably more marked than was the case for sales growth. Of the firms with increasing employment in 2012, 4 per cent reported being credit constrained compared to 12 per cent of firms with decreasing employment. By 2014, 4 per cent of employment growth firms were credit constrained and, although those with falling employment had seen a reduction in constraints, the level for firms with decreasing employment remained considerably higher at 6 per cent.

The higher incidence of constraints for firms with decreasing employment may reflect negative effects of

constraints on firm performance, if positive net present value projects cannot be financed, but it may also be an indicator of poor firm performance that has affected the credit allocation decision. In the econometric analysis in Section 5, this potential endogeneity of the credit constraints and performance will be taken into account as we try to disentangle the direct effects of constraints on employment and other measures of firm performance. The link between being an exporter and reporting credit constraints reverses between 2012 and 2014, as shown in Figure 13. In 2012, exporting firms are the more likely to be credit constrained (6 per cent of firms compared to 6 per cent of non-exporters). However, this reduces rapidly to 2 per cent in 2014, resulting in exporters now

being less credit constrained than non-exporters who saw a slower reduction in the incidence of constraints to 3 per cent in 2014.

Figure 14 shows credit constraints and investment growth across firms. Positive investment growth is associated with lower incidence of credit constraints in both years. The relationships graphed in this section between constraints and performance indicators are correlations that are not controlling for any other features of the firm. The remainder of this section presents econometric analysis of the type of firm that encounters credit constraints when all available factors are analysed jointly and the next section will then examine the effects of credit constraints on firm performance, taking into account other firm characteristics and controlling for possible endogeneity.

DETERMINANTS OF CONSTRAINTS

Having presented some descriptive evidence of the relationships between credit constraints and firm characteristics, the report now looks at the determinants of constraints in a more formal manner. As the dependent variable on constraints is binary (=1 if the firm is constrained and =0 if not), a simple probit model is used to estimate the factors impacting constraints. The probability model is presented as follows:

$$PrConstraint_{ijt} = \Phi(\beta X_{ijt} + \lambda Z_{ijt})$$

where Φ is the standard normal cumulative distribution function, X_i captures general firm characteristics and Z_i contains additional controls for firm quality and risk. The selection of these factors draws on existing research which suggests common indicators such as firm size, age and profitability (Ferrando & Greisshaber, 2012; Beck, Demirguc-Kunt, Laeven and Maksimovic 2006; Beck, Demirguc-Kunt, Laeven and Levine 2008; Beck, Demirguc-Kunt and Maksimovic 2008; Holton, Lawless and McCann 2014; Casey and O'Toole, 2013).

The effects of debt overhang on firm performance and credit access is well established in the literature (Bernanke and Gertler, 1989; Moyen, 2007; Hennessy, 2004; Hennessy, Levy, and Whited, 2006) and is particularly interesting in the context on the island, due to the considerable property related debts that SMEs built up in the boom period (2002-2007). Higher levels

of outstanding debt can pose a direct challenge to firms in terms of the direct interest cost and an indirect challenge in terms of accessing fresh capital. This effect is captured by including a variable to pick up if the firm had outstanding property debt at the beginning of the six month period covered by the survey.

The determinants of credit constraints are presented in Table 7, which presents results for the combined sample of all firms and also separately for the survey waves carried out in 2012 and 2014. For each time period the effects of the basic firm characteristics are presented and a number of proxies are added subsequently for borrower quality that might affect the risk profile of the firm when applying for credit.

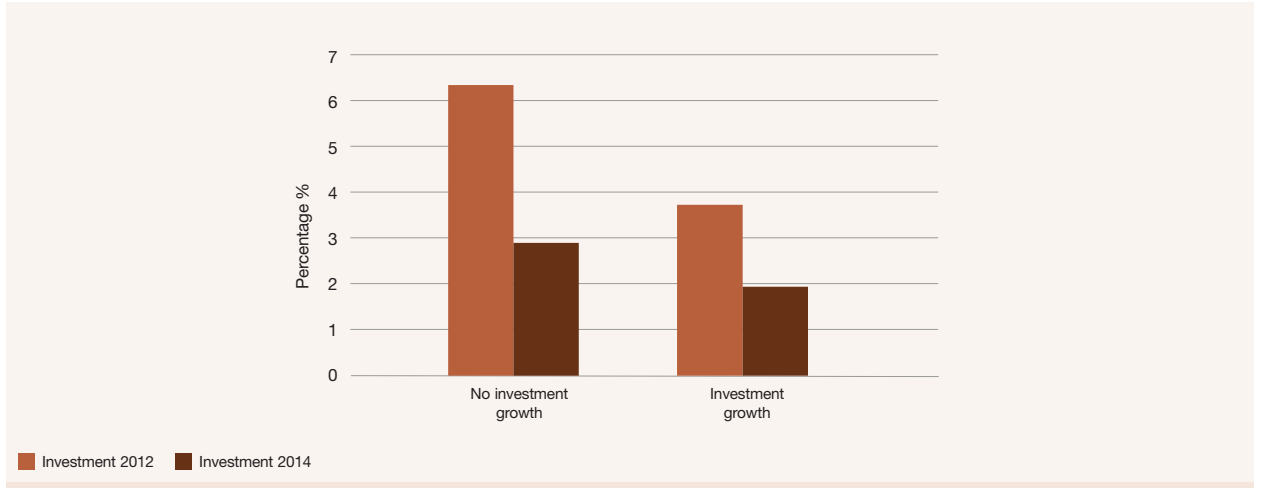
Looking first at the set of results for the total combined dataset, the indicator for the observations coming from the 2014 survey is negative and significant, suggesting that credit constraints fell between 2012 and 2014. This is consistent with the descriptive statistics discussed earlier in this section and shows that this effect holds after controlling for other firm characteristics and therefore was not an artefact of any change in survey composition between the two time periods.

Previous research had typically found that firm age and size tend to be associated with the likelihood of being affected by credit constraints and a similar pattern can be seen in the results presented here for the overall sample and for the 2012 results. In both of these, older firms are less likely to encounter credit constraints and so too are larger firms. These effects are insignificant in the 2014 sample however, probably as a result of much lower incidence of credit constraints in general.

When comparing the incidence of credit constraints across countries, no significant difference is observed. This would suggest that the risk assessments and lending decisions were being made on a similar basis on both sides of the border. The firm performance or quality indicators show that managerial competence and profitability reduce the likelihood of being affected by credit constraints, as does having a stronger balance sheet. More competitive environments and difficulties with labour market skill shortages on the other hand are associated with firms being more likely to have constraints. Outstanding property debts are also a potential factor in reducing firm access to new credit.

Figure 14

CONSTRAINTS AND INVESTMENT



4. Effects of Credit Constraints

Following the previous section's estimates of the extent and patterns associated with credit constraints, this section tests how such constraints are affecting the real activity of firms, including sales growth, exporting status, firm employment and investment activity. There are a number of channels through which access to finance can affect the real performance and activities of firms, for example by preventing investment in a potentially profitable asset (see Campello et al., 2010, for discussion). Existing research suggests that access to finance can impact the employment decisions of firms directly through access to working capital finance that impacts firms' labour input choices and also through the firm's choice of capital inputs and their optimal capital labour ratio (Nickell & Nicolitsas, 1999; Spaliara, 2009).

Inability to borrow in the current environment also has the potential to have longer-term repercussions for firm survival and growth if they are unable to invest in strategies for innovating and exporting. Such repercussions may be expected to vary by sector, firm size and market focus. The report formally models these differences across a range of sub-samples, broadly following the methodology used by Gerlach-Kristen, O'Connell and O'Toole (2014) who investigated the relationship between credit constraints and firm employment changes and investment propensity using survey data for Ireland.

The methodology of Gerlach-Kristen, O'Connell and O'Toole (2014) takes into account the econometric issues that arise when using cross-sectional survey data. These come about mainly because constraints and other firm decisions (employment, trade and investment) are being made simultaneously by the firm, making it difficult to identify direct causation between variables. Additionally, a simple estimation strategy runs the risk that the findings are driven by omitted variables not included in the cross sectional regressions.

The statistical technique used in this report addresses

the simultaneity and omitted variables problems by using instrumental variables. This involves using additional variables that are correlated with the potentially endogenous variable (in this case the credit constraints) but that should not be correlated with the error term in the analysis. In particular we present a two-stage least-squares (2SLS) model containing a range of indicators from the data to control for borrower quality, risk and performance. As instruments for credit constraints, we use the main bank in which the account is held, lagged constraints from the retrospective questions relating to 2010, and if the potential borrowers that are discouraged due to reasons not relating to their business environment (e.g. media reports/peer experience). This method allows the effect of credit constraints on firm outcomes (controlling for other firm characteristics) to be identified, separating it from the potential effects of reverse causation and omitted variables.

Four measures of firm performance are used: sales growth, trade status, employment change and investment growth. The effects of credit constraints on these firm outcome variables, controlling for other firm factors, are presented in Table 8 (total sample), Table 9 (2012 results) and Table 10 (2014 results). The striking aspect of these tables is the lack of statistical significance in the effects of credit constraints on any of the measures of firm performance. This is potentially a result of the relatively small numbers of firms that are affected by credit constraints which would make precise identification of any effect difficult. However, given that we have already seen that the general position of firms has been improving in the InterTradeIreland surveys, particularly in the 2014 wave, this could also be interpreted as further evidence that firms are leaving behind the effects of the financial crisis.

Looking at the effects of other firm characteristics on performance, older firms are found to be less likely to experience growth in sales and investment. This is consistent with life-cycle theories of firm growth, whereby

firms initially either grow rapidly (or exit) and eventually reach a stable size. Other evidence on this from firm-level data on employment in Ireland showed that younger firms (and start-ups in particular) contribute disproportionately to job creation (Lawless, 2014). Performance in small and medium to large firms is more likely to be positive for all measures relative to micro firms.

In 2012, investment growth was more likely in all other sectors apart from retail compared to the construction sector firms. The size of this effect was largest for high-technology firms. This appears to be partly a reflection of the poor performance of construction at this point in time as the effect had largely disappeared by the 2014 survey wave when little difference across sectors could be observed in investment growth. High-technology firms and those in other manufacturing sectors are consistently the better performers across the different indicators, most particularly in terms of their likelihood to be exporters.

Controlling for all other characteristics, firms in Northern Ireland are more likely to be exporters than those in Ireland. On the other hand, in 2014 and in the overall sample, they are found to be less likely to have reported growth in sales, employment or investment. This is in contrast to the results for 2012, when no significant difference was found for these three indicators depending on firm location. It is likely that this is due to the general improvement in economic conditions in Ireland over the course of 2014. In terms of investment in particular, research by Lydon and Scally (2014) on long-term trends in investment in Ireland showed that business investment

in machinery and equipment over the crisis period was well below its long-run average. From the end of 2012, they identified a moderate pick-up in investment consistent with firms beginning to restock following the recession, particularly in equipment where depreciation plays a greater role and this investment return to longer-term trends may be behind the results we see in the reported survey data.

Managerial competency is moderately positively related to performance as measured by sales growth and export status, although no statistically significant relationship is found with the other two indicators. Unsurprisingly, positive profits are strongly correlated with all other measures of firm performance. Outstanding property debt does not appear to have a negative effect on the measures examined here, although we will see in the next section that it is a strong predictor of financial distress for weaker performing firms, suggesting that debt overhang remains a concern albeit for a subset of firms.

One other interesting result is that competitive pressure did not exert any significant effect on firm performance in 2012, but by 2014 was negatively associated with employment and investment growth and export status. It is not entirely clear why this would be the case as economic opportunities improve, but it may be that the effects of competition are regarded as more relevant by the firm as it tries to keep up with an expanding market relative to the survival focus they may have had during the economic downturn.

5. Financial Distress

Credit constraints, as discussed in the previous sections, are one measure of financial difficulties being faced by a firm. This section looks at a broader set of indicators of possible financial distress, initially combining a number of factors into a financial distress index and then examining the individual components separately to establish if the same firm characteristics are associated with multiple distress indicators.

FINANCIAL DISTRESS INDEX

The report examines how firms are affected by financial difficulties by calculating an index of financial distress, which is the simple sum of the binary indicators for each of the factors listed below. Firms are ranked by financial distress based on a financial distress index ranging from 0 to 5, 0 being the lowest (none of the indicators apply) and 5 being the highest (no firm reported all six indicators). The financial distress index is based on the following list of input variables:

- Assets (Rated as weak)
- Trade Credit (Increased days in which customers paid)
- Bad bank relationship
- Interest Rate Increased

- Fees Increased (Overdraft or Loan)
- Credit Constrained

Figure 15 shows the percentage of firms reporting each level of the financial distress index. The improvement in economic conditions is clearly evident in the overall numbers with the percentage of firms reporting that none of the distress measures applied to them increasing from 40 per cent in 2012 to 63 per cent in 2014. The percentage reporting one distress indicator fell from 37 per cent to 28 per cent of firms, leaving 9 per cent of firms with two or more distress indicators in 2014 compared to 22 per cent two years earlier.

In both time periods, firms in Northern Ireland were slightly less likely to report that any of the distress indicators in the index applied to them (42 per cent in 2012 compared to 35 per cent in Ireland and 66 per cent compared to 59 per cent respectively in 2014). The reduction in the percentage of firms encountering any of the distress indicators was similar across the two countries.

Somewhat surprisingly, given that exporting firms are usually found in the economic literature to have stronger performance than non-exporters, there is very little

Figure 15
FINANCIAL DISTRESS INDEX

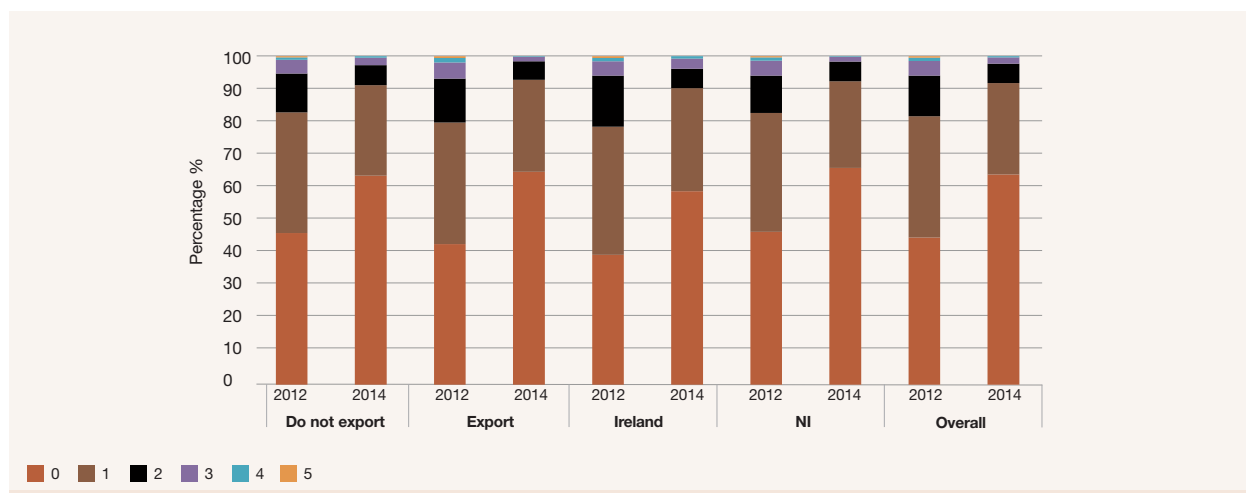


Figure 16

FINANCIAL DISTRESS BY FIRM AGE AND SIZE

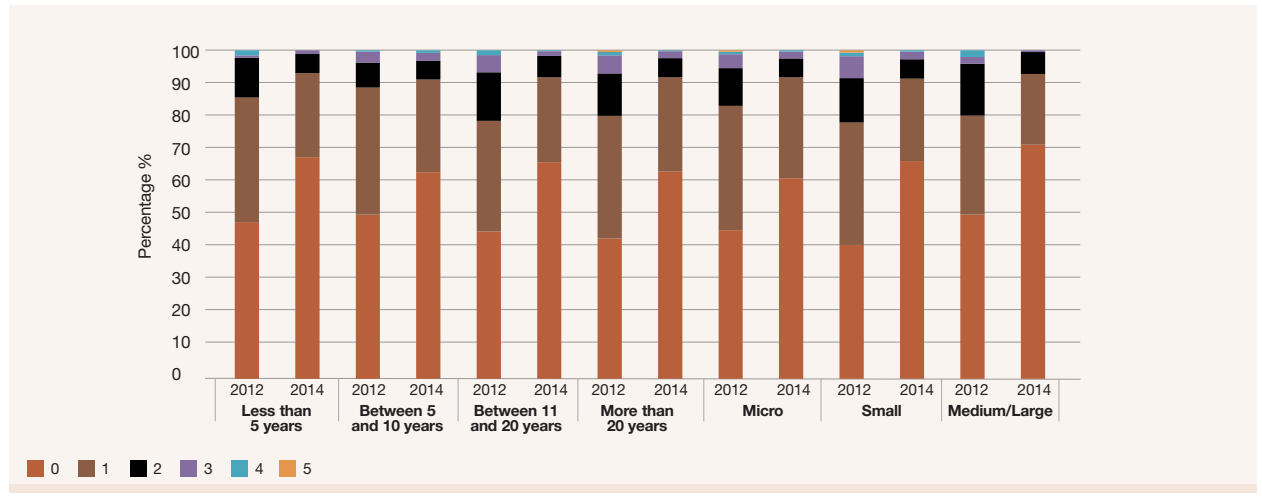
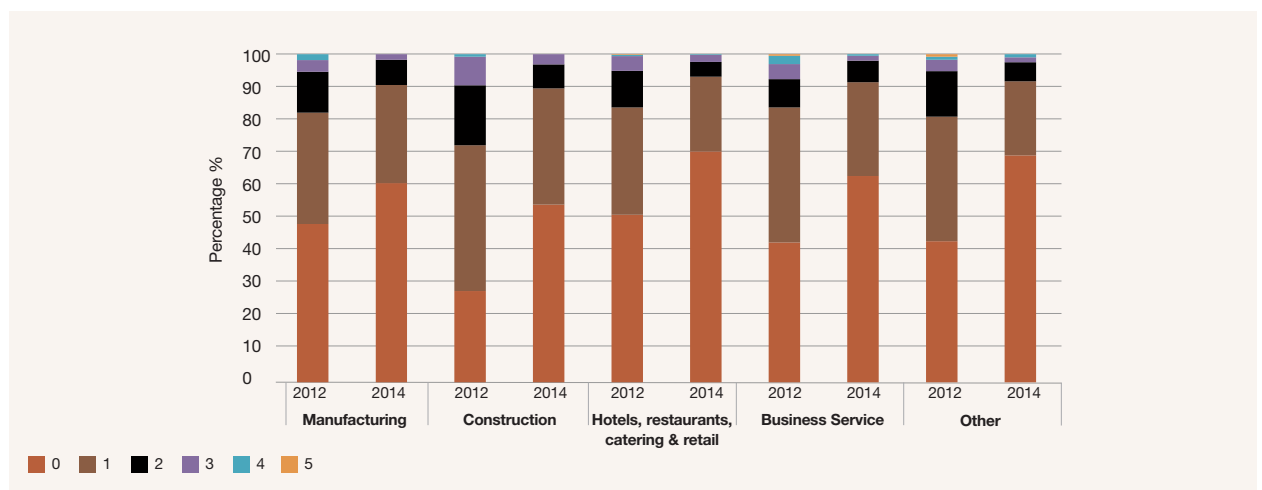


Figure 17

FINANCIAL DISTRESS AND SECTORS



difference between the two groups of firms when looking at their reported numbers of financial distress indicators. The econometric analysis later in this section explores if this continues to hold when other firm characteristics are also controlled for.

Figure 16 decomposes the financial distress index by firm age and size categories. Across all groups, there is an increase in the percentage of firms reporting no financial distress measures between 2012 and 2014, while the incidence of four or more indicators goes towards zero in 2014. Unlike credit constraints, there is little apparent pattern evident in the number of distress indicators by firm age group. Across firm size categories, the medium and large firm group are the most likely to report that they have none of the list of financial difficulties. The pattern

across size groups becomes noticeable in 2014, whereas the 2012 measures are relatively similar across groups. Looking at the breakdown of the financial distress index across sectors, Figure 17 shows that Construction sector firms were in particular difficulty in 2012 with just 24 per cent reporting that they had none of the distress indicators (the average overall for 2012 was 40 per cent). Manufacturing and the Hotels and Retail group were the most likely to have reported zero on the financial distress index in 2012 and this remained the case in 2014, although there were increases in the percentage of firms reporting no financial distress problems across all sectors. The Construction sector saw one of the largest moves in the percentage reporting no distress indicators, 54 per cent in 2014, although this remained the sector most likely to have financial distress problems on this index.

DETERMINANTS OF FINANCIAL DISTRESS

As the financial distress index is made up of a six-point scale with increasing incidence of experiencing some element of financial difficulty, the most appropriate econometric specification is to use an ordered probit. The explanatory variables are the range of firm characteristics used in the previous analysis and the results are presented in Table 11.

There is no evidence of a relationship between firm age and an increasing degree of financial distress. Looking at firm size, relative to the base category of micro firms, no difference in the likelihood of experiencing financial distress for small firms is observed, but we do find that medium or larger firms are less likely to have a high result on the distress scale. This effect for medium and large firms is statistically significant in 2014 and for the combined sample, with the same effect not significant for the 2012 data.

The coefficients for sectors are interpreted as being relative to the incidence of financial distress in the reference category of construction and are all negative and most are statistically significant. This provides further evidence of the construction sector continuing to have difficulty in recovering from the financial crisis which impacted on it particularly severely. Related to this, is a strong correlation between having purchased property after 2005 and higher counts on the distress index. This indicates that property debt overhang continues to have an influence on firms. On a more positive note, the size of the coefficient for the property debt effect fell by around 40 per cent between 2012 and 2014 so this issue would appear to be in the process of resolution.

In contrast to the results on firm performance in the previous section, we find that Northern Irish firms are less likely to have higher levels of financial distress. This is particularly the case in 2014 when the difference between North and South is statistically significant. Combined with the finding that Northern Irish firms were less likely to have employment and investment growth, this would seem to indicate greater variation in performance of firms in Ireland as some recover from the financial crisis but a subset continue to experience negative consequences of the financial crisis and economic downturn.

As might be expected, firms with positive profits are less likely to have a higher measure on the financial distress index although we do not find any evidence that managerial competency is a factor in this once all of the other firm characteristics have been controlled for. Self-reported concerns relating to competitive pressures and costs contribute to higher measures of distress, showing that financial pressures are intertwined with broader strains on firm performance.

The overall probability of encountering higher levels of financial distress is significantly lower in 2014 than it was in 2012, as indicated by the negative coefficient on the year variable for 2014 in the combined sample (shown in the final column). This again provides evidence of the general improvement in firm financial conditions as the broader economic environment picks up.

The results discussed so far have been on the index made up of a count of all of the financial difficulty indicators that a firm reports being affected by. We now look at the individual components of the index to examine if different types of firm are more vulnerable to certain types of financial difficulty than to others. Table 12 presents the results for these components for the total data, with Table 13 separately reporting results for 2012 and Table 14 contains the results for the 2014 sample. The tables report results for five of the components as the determinants of credit constraints were already discussed in Section 3.

The first indicator of financial frailty is a firm reporting a weak balance sheet. Micro firms are the most likely to experience this problem, with small and medium firms having statistically significant negative coefficients in both time periods. The exposure of the construction sector to the economic downturn is evident, with almost all other sectors being less likely to have a weak balance sheet in 2012. However, this is no longer the case in 2014 when no significant differences across sectors can be identified once other characteristics are taken into account. Given the general improvement in economic conditions, it seems reasonable to interpret this as resulting from a recovery in the asset positions of the construction firms rather than a deterioration of those in other sectors. Profitable firms and those with better management competency are less likely to have problems with their

asset positions. Outstanding property debt, on the other hand, is positively correlated with experiencing this particular measure of financial pressure.

Problems with payments are another potential indicator of financial problems for a firm. The analysis does not show that these vary significantly across size or age categories. The coefficients reported for most sectors are negative, suggesting that the base category of the construction sector is also the most likely to have firms encountering payment delays. Unlike the findings for asset strength, where 2014 showed an improvement in construction performance to bring it in line with the other sectors, the result for payment difficulties holds in both years. Northern Irish firms are somewhat less likely to

report incidences of this type of financial problem, as are more profitable firms.

Bad bank relationships are associated with firms that do not make profits and those with lower measures of management competence. Family owned businesses are less likely than other firm ownership structures to report poor relationships. No difference is found between firms in Northern Ireland and Ireland; the role of banks operating across the border is investigated in the next section. Increases in interest rates and in bank fees are not found to be significantly affected by firm age, size or sector. They are however strongly related to the existence of outstanding property debt and to firms reporting broader concerns about costs of doing business.

6. Bank Ownership Effects

This section explores if there is any impact of bank ownership on credit constraints, in particular asking if there is evidence of different behaviour by the same bank when it operates both North and South of the border. By estimating the share of constrained firms by bank ownership the report can then test whether credit rationing is different for the same bank across both jurisdictions. Given the considerable presence of Southern banks in financing firms on a cross-border basis, this research will provide an important insight into bank behaviour across borders and regulatory regimes. Secondly is there evidence of credit rationing differing depending on how much the specific bank has been affected by the crisis? This will provide insight as to whether banks experience in the crisis has caused lending decisions to detach from borrower characteristics.

Previous research has provided some evidence that banks operating internationally are more likely to shrink lending in foreign markets compared to the domestic banks in those markets. Popov and Udell (2012) examine a large dataset of banks and firms in fourteen Central and Eastern European countries and find that foreign banks were more likely to shrink their portfolio in response to pressures on the banks' balance sheets from the financial crisis. They also found that the negative effects of the banks' retrenchment were passed on most strongly to firms that are informationally opaque and those with fewer tangible assets, strengthening the results we have seen are regularly found in the credit constraints literature. Cull and Martinez-Peria (2012) found similar results in their analysis of foreign bank activity in Latin America and Eastern Europe following the financial crisis.

De Haas and Van Horen (2013) looked at how internationally active banks adjusted their lending across markets in response to the financial crisis and found that banks reduced their lending less in geographically closer markets, those where they had more experience and where they had a subsidiary network. Extrapolating these results to the banks operating across the border

here would imply a much smaller effect than might be expected from the Popov-Udell analysis, which did not include these factors on the strength and length of the bank relationship with its foreign market.

The firms participating in the survey were asked about which bank they had their main business account with. These were then coded into five groups to examine if different types of firms varied in their impact on firm outcomes in a systematic way that could be interpreted as being due to differences in bank behaviour. The focus is on whether the ownership of the bank has an impact on how it operates when it has customers in multiple countries and not on any other characteristic of the bank. The bank groups are: Irish-owned banks operating in Ireland, Irish banks operating in NI, NI/UK banks in NI, NI/UK banks in Ireland and the reference group is other banks operating in either market.

The effect of bank ownership on credit constraints is shown in Table 15, which also controls for all of the firm-level characteristics that were analysed earlier in Table 7. The main result is that Irish-owned banks appear to be more highly correlated with experiencing credit constraints for their Irish customers in 2014, although there was no evidence of this effect in 2012. Firms located in Ireland banking with NI/UK banks were somewhat less likely to experience credit constraints in 2012 but the number of observations did not allow for identification of any effect in 2014. The suggestion of the literature that banks might restrict lending outside of their domestic market when they are under deleveraging pressure does not therefore appear to hold in the dataset examined here.

We then add the bank ownership variable to the specifications testing the effects of constraints on firm performance (Table 16 shows the total sample, Table 17 the results for 2012 and Table 18 the results for 2014). The results here are almost all statistically insignificant, indicating that bank relationships are not affecting the performance indicators examined. It also suggests that

there is little difference in the behaviour of banks but rather that they operate in a reasonably uniform manner on both sides of the border.

The final set of specifications examines if banks behave differently in the context of financial distress. Table 19 presents the results for the financial distress index discussed in the previous section, again controlling for all firm characteristics. We find almost no difference across the bank groups, with the exception of a reduction in the distress measure being correlated with Irish customers of

NI/UK banks, but this is only the case for the 2012 data and the effect has disappeared by 2014. The separate components of the financial distress index are examined in Table 20 (combined sample), Table 21 (2012 data) and Table 22 (2014 data). There is little consistent evidence of any relationship between bank ownership and the components of the distress index in these results, again providing evidence that the operating framework of the banks treat both jurisdictions in a similar manner once the composition of the firms are taken account of.

7. Conclusions and Policy Implications

Given the substantial contribution made to the economy by SMEs, monitoring and evaluating any obstacles they may face in doing business is an important step in designing appropriate policy initiatives to remove these hurdles. This report examines the extent to which SMEs in Northern Ireland and in Ireland are constrained by one particular potential obstacle to effective operation and growth – access to adequate financing. The types of financial products used are explored and a measure of credit constraints presented and its level and impact on real performance evaluated. The extent of financial difficulties faced by firms is then examined and whether there is any role played by the nationality of bank ownership in the provision of credit or likelihood of encountering financial distress. This section briefly summarises the main results of the analysis and draws some policy conclusions from them.

In line with previous research, the report finds that firms both North and South primarily use banks as a source of finance, with other finance sources relatively rarely accessed. In addition, most firms are using quite short-term sources of finance, with the most common product used being an overdraft facility (40 per cent of firms). The percentage of firms using longer-term products such as commercial loans was 22 per cent in 2012 but reduced to 17 per cent in 2014. Business credit cards are also widely used. This pattern points to a wide array of finance options for the shorter-term working capital needs of the firms but potentially more limited availability of longer-term financing than would be more appropriate for investment purposes.

Larger and more established firms are more likely to use all of the different finance types. This leaves smaller and younger firms with access to a less diversified set of products, which may potentially restrict their ability to invest and expand. Broadening the product mix accessed by all types of firm would also reduce exposure to any supply reductions of an individual source of funding. Looking broadly at all types of credit, the analysis shows that application rates fell between 2012

and 2014. It is not clear why this would be the case, given the general recovery in the economic conditions and reductions in credit constraints and financial distress indicators that the report also observes. Further investigation of the types of credit applied for and its purpose would be valuable in understanding this finding and establishing if it is part of a broader pattern of changes in credit demand.

The most striking development shown by the survey carried out in 2014 was the extent of the decline in the percentage of firms identified as credit constrained relative to the survey results from 2012. Overall, the incidence of credit constrained firms fell from around 6 per cent to 3 per cent in the two year interval between surveys. No significant evidence was found of differences in the incidence of credit constraints across countries, indicating that the improvement in credit access was a widespread phenomenon and that credit markets appear to be operating in a similar manner in both countries.

Although the decline in credit constraints was extensive, there remains cause for concern in that smaller and younger firms are consistently more likely to be credit constrained. However, with the decline in the levels of credit constraints, there is no evidence of this type of constraint having a negative effect on general firm performance.

Credit constraints focus on the availability of new credit to firms and this now appears to be reducing as an obstacle relative to its central position during the financial crisis. This report also broadens the focus to examine if firms are facing any of a range of indicators of financial difficulties. Combining these into an index of financial distress shows that there has been a considerable improvement in this area, with the percentage of firms reporting no experience of financial distress increasing from 40 per cent in 2012 to 63 per cent in 2014. Northern Irish firms were somewhat less likely to experience financial distress, although across most of the analysis presented, there was little difference in

firm outcomes across the two jurisdictions. Outstanding property debt overhang continues to be a source of some difficulty with firms that took out property debt in the post-2005 time period being significantly more likely to encounter higher degrees of financial distress.

The report also examined the issue of whether firms were being affected by differential behaviour by banks that were operating across the border. Existing literature on bank behaviour has found several instances where banks under deleveraging pressure have limited lending in their international operations and maintained domestic operations to a greater extent. However, there is no evidence of this type of different behaviour by banks operating cross-border from the firms in the two survey waves examined here.

There are a number of policy issues raised by the results in this report. Despite the overall improvement in the financing environment between 2012 and 2014 that has eased credit constraints and financial distress for all types of firm; the report continues to observe a higher probability of difficulties in accessing finance

faced by smaller and younger firms. This is a common occurrence across many countries and should be seen as a structural difficulty resulting from the informational opacity and lack of collateral of these firms rather than having been a temporary feature of the financial crisis. Supporting access to finance for this group of firms should therefore be an ongoing policy objective.

Related more to the legacy of the financial crisis is the finding that property debt overhang continues to cause difficulties for some firms. Although this is being worked out in many instances, continued restructuring of debts will probably be necessary to ensure that otherwise viable firms are not prevented from taking part in the recovery because of earlier property decisions.

In a number of instances, the measure of managerial competency has a significant correlation with positive firm outcomes. Supporting management training, and financial literacy in particular, could play a central role in supporting growth of the SME sector.

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Table 1
DESCRIPTIVE STATISTICS

		IRELAND	NI	TOTAL
Age	Less than 5 years	2.54%	10.01%	8.05%
	5 to 10 years	12.54%	18.56%	16.98%
	11 to 20 years	30.00%	20.46%	22.96%
	20+ years	54.93%	50.98%	52.01%
Firm Size	Micro	57.02%	60.90%	59.89%
	Small	30.07%	27.27%	28.00%
	Medium	12.91%	11.83%	12.11%
Sector	Manufacturing	14.81%	12.06%	12.78%
	Construction	10.86%	12.06%	11.75%
	Hotels/restaurants/catering & retail	31.17%	33.78%	33.10%
	Business service	13.54%	15.02%	14.63%
	Other services	29.62%	27.08%	27.74%
Ownership	Sole proprietorship	22.25%	29.96%	27.94%
	Partnership	5.63%	13.41%	11.37%
	Family business	17.32%	13.46%	14.47%
	Limited liability company, not publicly	43.66%	32.27%	35.25%
	Limited company, publicly listed	10.28%	9.00%	9.34%
	Other	0.85%	1.90%	1.62%
Sales	Increased	38.45%	32.47%	34.03%
	Decreased	26.48%	26.56%	26.54%
	Remained the same	33.66%	39.22%	37.76%
	Don't know	1.41%	1.75%	1.66%
Employment	Increased	16.20%	11.86%	12.99%
	Decreased	11.69%	8.75%	9.52%
	Remained the same	71.69%	78.74%	76.89%
	Don't know	0.42%	0.65%	0.59%
Trade	Do not export	68.87%	59.13%	61.68%
	Export	31.13%	40.87%	38.32%
Investment	No investment growth	63.80%	67.23%	66.33%
	Investment growth	36.20%	32.77%	33.67%

Table 2

VARIABLE DEFINITIONS

NAME	SCALE	DESCRIPTION
Credit Constraints	0 (No credit constraints)	Firm is not credit constrained
	1 (Credit constraints)	Firm is categorised as bank constrained or as discouraged borrower
Sales growth	0 (Sales decreased/ unchanged)	Over the past quarter sales have decreased or remained the same
	1 (Sales increased)	Over the past quarter sales have increased
Trade	0 (Do not export)	Firm does not export
	1 (Export)	Firm exports cross border, to the UK, or abroad
Employment	0 (Employment decreased/ unchanged)	Over the past quarter firm employment has decreased or remained the same
	1 (Employment increased)	Over the past quarter firm employment has increased
Investment	0 (Investment decreased/ unchanged)	Over the past quarter firm investment has decreased or remained the same
	1 (Investment increased)	Over the past quarter firm investment has increased
Financial distress	An index of financial distress ranging from 0 to 6 based on individual indicators of financial distress such as...	a) bad assets b) Customer missed repayments c) bad bank relationship d) interest rate increased e) fees increased f) Credit constraints
Bad assets	0 (Strong/ok)	Firm categorised the business balance sheet as ok, quite strong or very strong
	1 (Weak)	Firm categorised the business balance sheet as quite weak or very weak
Customer missed repayments	0 (Decreased/Unchanged)	In the past 12 months the average number of days within which customers have paid decreased or remained the same
	1 (Increased)	In the past 12 months the average number of days within which customers have paid has increased
Bad bank relationship	0 (Good or neither good nor poor)	Firm rates bank relationship as very good, quite good, or neither good nor poor
	1 (Poor)	Firm rates bank relationship as quite poor or very poor
Interest rate increased	0 (Decreased/Unchanged)	The interest rate the firm was charged for credit either decreased or remained unchanged
	1 (Increased)	The interest rate the firm was charged for credit increased
Fees increased	0 (Decreased/Unchanged)	The fees the firm was charged for their overdraft facilities or loan arrangements either decreased or remained unchanged
	1 (Increased)	The fees the firm was charged for their overdraft facilities or loan arrangements increased
Age	Less than 5 years (Base)	Firm less than 5 years old
	5-10 years	Firm between 5 and 10 years old
	11-20 years	Firm between 11 and 20 years old
	Over 20 years	Firm over 20 years old
Size	Micro (base category)	Self-employed or if firm employs between 1 and 10 employees (2012) or between 1 and 9 employees (2014)
	Small	Firm employs between 11 and 49 employees (2012) or between 10 and 49 employees (2014)
	Medium/Large	Firm employs over 50 employees
Wave	1 (Base category)	Survey conducted in 2012
	2	Survey conducted in 2014

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Table 2 (continued)

VARIABLE DEFINITIONS

NAME	SCALE	DESCRIPTION
Ownership	Limited liability company, not publicly	Firm is limited liability company
	Family business	Firm is a family business
	Sole proprietorship (Base category)	Firm is owned by a sole proprietorship
	Foreign owned	Firm is foreign owned
	Other	Other
Sector	Hi-tech	Firms classified as Manufacturing - Electronics and software / Manufacturing - Chemicals and pharmacy / Service - Finance, banking, insurance / Service - Computer related activity
	Construction	Firms classified as construction
	Other manufacturing	Firms classified as Manufacturing - Food and drink / Manufacturing - Textiles and clothing / Manufacturing - Other manufacturing
	Hotels	Firms classified as Service - Hotels, restaurants and catering
	Retail	Firms classified as Service - Retail
	Business services	Firms classified as Service - Business services
	Other	Firms classified as Agriculture / Service - Transport and communications / Service - Wholesale, distribution and logistics / Other services
Country	Ireland (Base category)	Firm surveyed located in Ireland
	NI	Firm surveyed located in Northern Ireland
Urban	Urban	Urban if firm located in Dublin, Cork, Galway, Limerick, Antrim, Down or Derry
	Rural (Base category)	Rural if firm is not located in above counties
Managerial competency	An index of managerial competency ranging from 0 to 9 based on how a company rated their capabilities based on their ability to...	a) Develop a business plan b) Estimate cash flow requirements for the coming months c) Maintain regular management accounts
Profit	Non profitable/Don't know (Base category)	In the past 12 months the firm did not manage to remain profitable or did not know
	Profit	In the past 12 months the firm has managed to remain profitable
Property debt	No (Base category)	At no time since 2005 has the company purchased property financed by bank debt
	Yes	Since 2005 the company has purchased property financed by bank debt
Competition	An index of competition ranging from 0 to 8 based on how a company rated current issues for their business based on...	a) New competitors in their market or b) Discounting by competitors
Costs	An index of costs ranging from 0 to 8 based on how a company rated current issues for their business based on...	a) Rising energy costs or b) Rising costs of other overheads (apart from costs)
Skills	An index of skills ranging from 0 to 8 based on how a company rated current issues for their business based on...	a) A lack of appropriate skills in their workforce b) Difficulties recruiting appropriate skills for their business
Assets	Weak/ok (Base category)	Firm categorised the business balance sheet as ok, quite weak or very weak
	Strong	Firm categorised the business balance sheet as quite strong or very strong

Table 3

FINANCIAL PRODUCTS USED - COMBINED DATA

	OVERDRAFT	COMMERCIAL LOAN	OTHER LOANS	BUSINESS CREDIT CARD	TRADE CREDIT	INVOICE DISCOUNTING	LEASE HIRE
5-10 years	0.088** (0.039)	0.082*** (0.030)	0.016 (0.014)	0.017 (0.034)	-0.002 (0.024)	-0.006 (0.014)	0.001 (0.027)
11-20 years	0.114*** (0.038)	0.103*** (0.029)	0.025* (0.014)	-0.008 (0.033)	0.023 (0.023)	0.006 (0.014)	0.012 (0.026)
Over 20 years	0.081** (0.036)	0.053** (0.026)	0.003 (0.012)	-0.012 (0.031)	-0.006 (0.021)	0.008 (0.014)	0.004 (0.025)
Small	0.039 (0.024)	0.099*** (0.019)	-0.005 (0.006)	0.047** (0.019)	0.032** (0.014)	0.024*** (0.008)	0.050*** (0.016)
Medium	0.032 (0.032)	0.125*** (0.028)	0.035** (0.016)	0.074*** (0.028)	0.080*** (0.022)	0.067*** (0.017)	0.085*** (0.024)
Ltd liability	0.068** (0.027)	0.012 (0.021)	0.008 (0.008)	0.101*** (0.022)	0.012 (0.013)	0.004 (0.010)	0.067*** (0.017)
Family owned	0.103*** (0.032)	0.043* (0.025)	0.014 (0.010)	0.083*** (0.026)	0.104*** (0.021)	0.011 (0.012)	0.086*** (0.023)
Foreign	-0.127* (0.068)	-0.041 (0.051)	. .	0.019 (0.057)	0.050 (0.039)	-0.010 (0.018)	0.054 (0.053)
Other	0.025 (0.029)	0.011 (0.023)	0.021** (0.010)	-0.005 (0.021)	0.000 (0.015)	-0.004 (0.010)	0.003 (0.017)
Year = 2014	0.003 (0.022)	-0.029* (0.017)	-0.002 (0.007)	-0.022 (0.017)	-0.105*** (0.011)	0.002 (0.007)	-0.007 (0.014)
High-tech	-0.037 (0.041)	0.015 (0.031)	-0.007 (0.012)	-0.048 (0.036)	-0.109*** (0.025)	0.012 (0.013)	-0.018 (0.030)
Other manufacturing	-0.017 (0.040)	0.035 (0.030)	0.012 (0.014)	-0.081** (0.034)	-0.079*** (0.025)	0.010 (0.012)	-0.043 (0.027)
Hotels	-0.108*** (0.036)	0.010 (0.027)	0.011 (0.013)	-0.167*** (0.029)	-0.132*** (0.021)	-0.006 (0.009)	-0.115*** (0.022)
Retail	0.022 (0.037)	0.093*** (0.030)	-0.005 (0.012)	-0.059* (0.033)	-0.065*** (0.024)	0.013 (0.011)	-0.052** (0.026)
Business services	-0.018 (0.038)	0.020 (0.029)	-0.004 (0.012)	-0.118*** (0.031)	-0.076*** (0.025)	0.011 (0.012)	0.002 (0.028)
Other	-0.003 (0.035)	0.025 (0.026)	-0.007 (0.011)	-0.067** (0.030)	-0.065*** (0.023)	0.018* (0.011)	0.018 (0.025)
NI	-0.012 (0.022)	-0.019 (0.017)	-0.020** (0.008)	-0.038** (0.018)	-0.036*** (0.013)	-0.009 (0.007)	0.076*** (0.013)
Exporter	0.066*** (0.021)	0.038** (0.016)	-0.000 (0.007)	0.073*** (0.017)	0.027** (0.012)	0.012* (0.006)	0.035** (0.014)
Urban	-0.000 (0.021)	0.004 (0.016)	-0.000 (0.006)	-0.001 (0.016)	-0.000 (0.011)	0.009 (0.006)	-0.008 (0.014)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 3 (continued)

FINANCIAL PRODUCTS USED - COMBINED DATA

	OVERDRAFT	COMMERCIAL LOAN	OTHER LOANS	BUSINESS CREDIT CARD	TRADE CREDIT	INVOICE DISCOUNTING	LEASE HIRE
Management competency	0.014*** (0.005)	0.013*** (0.004)	-0.000 (0.002)	-0.003 (0.004)	-0.006** (0.003)	0.001 (0.002)	0.002 (0.003)
Customer payments	0.046** (0.023)	0.024 (0.018)	0.012 (0.009)	0.031* (0.018)	-0.011 (0.011)	0.005 (0.007)	0.025* (0.015)
Profit	-0.016 (0.022)	-0.011 (0.017)	0.002 (0.007)	0.015 (0.017)	-0.004 (0.012)	-0.016** (0.008)	0.010 (0.015)
Property debt	0.202*** (0.034)	0.326*** (0.034)	0.068*** (0.019)	0.130*** (0.031)	0.064*** (0.022)	0.020 (0.012)	0.083*** (0.025)
Competition	0.004 (0.004)	0.003 (0.003)	-0.000 (0.001)	0.010*** (0.003)	0.007*** (0.002)	-0.001 (0.001)	0.002 (0.003)
Costs	0.017*** (0.004)	0.010*** (0.003)	0.001 (0.001)	0.000 (0.003)	0.006*** (0.002)	0.002 (0.001)	0.010*** (0.003)
Skills	-0.001 (0.005)	-0.002 (0.004)	0.002 (0.001)	-0.005 (0.004)	-0.001 (0.002)	0.001 (0.001)	0.002 (0.003)
Assets	-0.074*** (0.021)	-0.058*** (0.016)	-0.002 (0.007)	-0.009 (0.017)	0.019 (0.012)	-0.001 (0.006)	0.001 (0.014)
Observations	2698	2698	2654	2698	2698	2698	2698

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 4

FINANCIAL PRODUCTS AND FIRM CHARACTERISTICS, 2012

	OVERDRAFT	COMMERCIAL LOAN	OTHER LOANS	BUSINESS CREDIT CARD	TRADE CREDIT	INVOICE DISCOUNTING	LEASE HIRE
5-10 years	0.045 (0.052)	0.120*** (0.039)	0.005 (0.018)	-0.039 (0.050)	-0.059 (0.041)	-0.007 (0.022)	0.011 (0.038)
11-20 years	0.127** (0.051)	0.161*** (0.038)	0.008 (0.016)	-0.069 (0.048)	0.017 (0.041)	0.016 (0.024)	0.049 (0.037)
Over 20 years	0.055 (0.047)	0.105*** (0.033)	-0.000 (0.014)	-0.099** (0.045)	-0.025 (0.038)	0.005 (0.021)	0.010 (0.033)
Small	0.092** (0.038)	0.117*** (0.032)	-0.020** (0.008)	0.109*** (0.033)	0.076*** (0.027)	0.057*** (0.020)	0.031 (0.026)
Medium	0.112** (0.049)	0.135*** (0.044)	0.048* (0.026)	0.216*** (0.047)	0.156*** (0.041)	0.136*** (0.043)	0.165*** (0.042)
Ltd liability	0.015 (0.037)	0.013 (0.030)	-0.001 (0.011)	0.057* (0.031)	0.022 (0.026)	-0.000 (0.016)	0.042* (0.025)
Family owned	0.102** (0.046)	0.049 (0.039)	0.002 (0.015)	0.143*** (0.040)	0.130*** (0.037)	0.021 (0.019)	0.145*** (0.037)
Foreign	-0.154** (0.072)	-0.049 (0.056)	. .	0.018 (0.065)	0.086 (0.062)	-0.016 (0.022)	0.029 (0.052)
Other	0.046 (0.048)	0.029 (0.040)	0.014 (0.017)	0.048 (0.039)	-0.025 (0.030)	. .	-0.002 (0.030)
High-tech	-0.118* (0.069)	0.004 (0.055)	-0.005 (0.020)	-0.040 (0.063)	-0.166*** (0.056)	. .	0.009 (0.054)
Other manufacturing	0.034 (0.064)	0.070 (0.051)	0.013 (0.021)	-0.023 (0.056)	-0.141*** (0.050)	. .	-0.011 (0.045)
Hotels	-0.119** (0.054)	0.002 (0.042)	0.008 (0.019)	-0.153*** (0.045)	-0.219*** (0.042)	. .	-0.112*** (0.035)
Retail	0.039 (0.053)	0.095** (0.044)	0.003 (0.017)	-0.002 (0.048)	-0.144*** (0.045)	. .	-0.040 (0.038)
Business services	0.023 (0.057)	0.045 (0.045)	0.001 (0.016)	-0.109** (0.047)	-0.159*** (0.047)	. .	0.042 (0.044)
Other	0.008 (0.050)	0.033 (0.039)	-0.008 (0.013)	-0.049 (0.044)	-0.123*** (0.043)	. .	0.050 (0.037)
NI	0.014 (0.033)	-0.014 (0.026)	0.009 (0.009)	-0.040 (0.029)	-0.001 (0.023)	0.003 (0.012)	0.065*** (0.020)
Exporter	0.038 (0.029)	0.003 (0.023)	0.006 (0.009)	0.054** (0.024)	0.033 (0.021)	0.006 (0.010)	0.012 (0.020)
Urban	0.002 (0.029)	0.003 (0.023)	0.005 (0.008)	0.012 (0.024)	0.010 (0.020)	0.021** (0.010)	0.022 (0.020)
Management competency	0.013* (0.008)	0.020*** (0.006)	0.003 (0.003)	-0.016*** (0.006)	-0.009* (0.005)	-0.001 (0.003)	0.008* (0.005)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 4 (continued)

FINANCIAL PRODUCTS AND FIRM CHARACTERISTICS, 2012

	OVERDRAFT	COMMERCIAL LOAN	OTHER LOANS	BUSINESS CREDIT CARD	TRADE CREDIT	INVOICE DISCOUNTING	LEASE HIRE
Customer payments	0.072** (0.030)	0.008 (0.024)	0.000 (0.010)	0.066** (0.026)	-0.018 (0.020)	-0.013 (0.010)	0.048** (0.021)
Profit	-0.089*** (0.034)	-0.026 (0.028)	-0.005 (0.011)	0.015 (0.027)	-0.009 (0.023)	-0.013 (0.015)	-0.019 (0.025)
Property debt	0.235*** (0.046)	0.305*** (0.045)	0.075*** (0.026)	0.154*** (0.042)	0.077** (0.034)	0.018 (0.018)	0.059* (0.032)
Competition	0.007 (0.005)	0.003 (0.004)	0.001 (0.002)	0.003 (0.004)	0.008** (0.004)	-0.003 (0.002)	0.000 (0.004)
Costs	0.014** (0.006)	0.007 (0.005)	0.001 (0.002)	0.009* (0.005)	0.015*** (0.004)	0.010*** (0.003)	0.012*** (0.004)
Skills	-0.007 (0.007)	-0.000 (0.005)	0.001 (0.002)	-0.005 (0.006)	-0.004 (0.004)	-0.003 (0.002)	-0.002 (0.004)
Assets	-0.045 (0.030)	-0.053** (0.024)	-0.007 (0.009)	0.021 (0.025)	0.031 (0.022)	0.004 (0.011)	-0.008 (0.020)
Observations	1314	1314	1270	1314	1314	1058	1314

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 5

FINANCIAL PRODUCTS AND FIRM CHARACTERISTICS, 2014

	OVERDRAFT	COMMERCIAL LOAN	OTHER LOANS	BUSINESS CREDIT CARD	TRADE CREDIT	INVOICE DISCOUNTING	LEASE HIRE
5-10 years	0.135**	0.034	.	0.082*	.	-0.011	0.000
	(0.059)	(0.046)	.	(0.046)	.	(0.021)	(0.038)
11-20 years	0.117**	0.051	.	0.054	.	-0.002	-0.010
	(0.057)	(0.046)	.	(0.045)	.	(0.020)	(0.037)
Over 20 years	0.105*	-0.005	.	0.059	.	0.008	0.008
	(0.054)	(0.042)	.	(0.042)	.	(0.021)	(0.036)
Small	-0.006	0.085***	-0.001	0.003	-0.009	0.011	0.065***
	(0.031)	(0.023)	(0.010)	(0.023)	(0.010)	(0.009)	(0.020)
Medium	-0.029	0.118***	0.026	-0.040	0.005	0.037**	0.031
	(0.042)	(0.035)	(0.020)	(0.031)	(0.018)	(0.018)	(0.026)
Ltd liability	0.129***	0.005	0.021**	0.147***	0.006	0.004	0.098***
	(0.039)	(0.030)	(0.011)	(0.031)	(0.010)	(0.013)	(0.025)
Family owned	0.109**	0.044	0.023*	0.039	0.067***	0.015	0.034
	(0.045)	(0.035)	(0.014)	(0.032)	(0.020)	(0.018)	(0.027)
Other	0.038	0.001	0.032***	-0.006	0.013	0.006	0.008
	(0.037)	(0.029)	(0.011)	(0.025)	(0.010)	(0.013)	(0.020)
High-tech	-0.007	0.014	-0.006	-0.071*	-0.049***	-0.007	-0.038
	(0.051)	(0.037)	(0.015)	(0.042)	(0.018)	(0.015)	(0.033)
Other manufacturing	-0.032	0.009	0.011	-0.097**	-0.027	-0.008	-0.049
	(0.052)	(0.037)	(0.017)	(0.042)	(0.021)	(0.016)	(0.033)
Hotels	-0.081*	0.013	0.021	-0.162***	-0.056***	-0.026**	-0.099***
	(0.048)	(0.035)	(0.019)	(0.038)	(0.017)	(0.013)	(0.028)
Retail	0.018	0.088**	-0.011	-0.106**	0.009	-0.011	-0.031
	(0.055)	(0.043)	(0.016)	(0.043)	(0.025)	(0.016)	(0.036)
Business services	-0.034	-0.000	-0.011	-0.110***	-0.008	-0.001	-0.020
	(0.051)	(0.037)	(0.015)	(0.040)	(0.023)	(0.016)	(0.034)
Other	-0.005	0.020	0.002	-0.088**	-0.020	0.029	-0.009
	(0.049)	(0.037)	(0.016)	(0.041)	(0.020)	(0.021)	(0.033)
NI	-0.046	-0.026	-0.039***	-0.067***	-0.062***	-0.020**	0.074***
	(0.031)	(0.023)	(0.012)	(0.025)	(0.014)	(0.010)	(0.016)
Exporter	0.080***	0.070***	-0.002	0.084***	0.020*	0.018*	0.047**
	(0.029)	(0.023)	(0.011)	(0.023)	(0.012)	(0.009)	(0.019)
Urban	-0.000	0.008	-0.008	-0.017	-0.012	0.000	-0.031*
	(0.030)	(0.021)	(0.009)	(0.022)	(0.011)	(0.009)	(0.019)
Management competency	0.013*	0.008	-0.003	0.008	-0.002	0.005**	-0.002
	(0.007)	(0.006)	(0.002)	(0.006)	(0.003)	(0.002)	(0.004)
Customer payments	0.016	0.050*	0.028*	-0.015	-0.015*	0.025*	0.005
	(0.036)	(0.028)	(0.014)	(0.025)	(0.009)	(0.013)	(0.021)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 5 (continued)

FINANCIAL PRODUCTS AND FIRM CHARACTERISTICS, 2014

	OVERDRAFT	COMMERCIAL LOAN	OTHER LOANS	BUSINESS CREDIT CARD	TRADE CREDIT	INVOICE DISCOUNTING	LEASE HIRE
Profit	0.038 (0.030)	0.004 (0.022)	0.005 (0.010)	0.009 (0.022)	-0.001 (0.009)	-0.021** (0.011)	0.023 (0.017)
Property debt	0.149*** (0.052)	0.342*** (0.050)	0.059** (0.025)	0.105** (0.046)	0.048* (0.025)	0.023 (0.018)	0.104*** (0.040)
Competition	0.001 (0.006)	0.005 (0.004)	0.000 (0.002)	0.018*** (0.004)	0.006*** (0.002)	0.001 (0.002)	0.005 (0.003)
Costs	0.019*** (0.006)	0.013*** (0.004)	0.000 (0.002)	-0.006 (0.004)	-0.003 (0.002)	-0.002 (0.002)	0.007** (0.003)
Skills	0.005 (0.007)	-0.005 (0.005)	0.003 (0.002)	-0.002 (0.005)	0.003 (0.002)	0.005** (0.002)	0.006 (0.004)
Assets	-0.092*** (0.028)	-0.063*** (0.021)	0.002 (0.009)	-0.019 (0.021)	0.007 (0.009)	0.001 (0.009)	0.010 (0.017)
Observations	1384	1384	1298	1384	1298	1384	1384

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 6

DEMAND FOR EXTERNAL FINANCE

	2012	2014	TOTAL
5-10 years	0.002 (0.030)	-0.002 (0.033)	-0.000 (0.023)
11-20 years	-0.012 (0.028)	0.003 (0.033)	-0.001 (0.022)
Over 20 years	-0.000 (0.026)	-0.008 (0.032)	-0.005 (0.020)
Small	0.020 (0.019)	0.033** (0.015)	0.029** (0.012)
Medium	0.005 (0.024)	0.046* (0.025)	0.026 (0.017)
Ltd liability	0.036** (0.018)	-0.020 (0.019)	0.011 (0.013)
Family owned	0.056** (0.024)	0.041 (0.027)	0.057*** (0.018)
Foreign	0.001 (0.033)		-0.012 (0.029)
Other	0.021 (0.025)	-0.005 (0.020)	0.013 (0.015)
High-tech	-0.007 (0.027)	-0.011 (0.024)	-0.008 (0.018)
Other manufacturing	0.024 (0.030)	0.034 (0.028)	0.033 (0.021)
Hotels	0.036 (0.025)	-0.037* (0.021)	-0.009 (0.016)
Retail	0.016 (0.022)	0.015 (0.029)	0.009 (0.018)
Business services	0.036 (0.025)	0.002 (0.026)	0.016 (0.018)
Other	0.077*** (0.023)	0.015 (0.026)	0.047*** (0.018)
NI	0.001 (0.017)	-0.008 (0.014)	-0.008 (0.011)
Management competency	0.005 (0.004)	0.005 (0.004)	0.005* (0.003)
Customer payments	0.024 (0.016)	-0.013 (0.016)	0.008 (0.012)
Profit	-0.008 (0.017)	0.016 (0.014)	0.009 (0.011)
Property debt	0.171*** (0.034)	0.104*** (0.035)	0.142*** (0.025)
Competition	0.005* (0.003)	-0.002 (0.003)	0.002 (0.002)
Costs	0.006* (0.003)	0.007** (0.003)	0.007*** (0.002)
Skills	0.007** (0.003)	0.009*** (0.003)	0.008*** (0.002)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 6 (continued)

DEMAND FOR EXTERNAL FINANCE

	2012	2014	TOTAL
Assets	-0.039***	-0.017	-0.027***
	(0.014)	(0.014)	(0.010)
Year = 2014			0.002
			(0.011)
Observations	1314	1384	2698

Notes: Probit marginal effects reported with standard errors in parentheses.
*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 7

DETERMINANTS OF CREDIT CONSTRAINTS

	2012		2014		OVERALL	
	Standard controls	Borrower quality controls	Standard controls	Borrower quality controls	Standard controls	Borrower quality controls
5-10 years	-0.064** (0.029)	-0.066** (0.029)	0.003 (0.018)	0.003 (0.016)	-0.031* (0.017)	-0.033* (0.018)
11-20 years	-0.028 (0.031)	-0.033 (0.030)	-0.001 (0.017)	0.002 (0.016)	-0.018 (0.018)	-0.021 (0.018)
Over 20 years	-0.050* (0.028)	-0.059** (0.028)	0.001 (0.017)	0.004 (0.016)	-0.026 (0.017)	-0.030* (0.017)
Small	0.002 (0.019)	-0.001 (0.019)	-0.008 (0.009)	-0.010 (0.009)	-0.006 (0.010)	-0.007 (0.010)
Medium	-0.030* (0.018)	-0.031* (0.018)	-0.017 (0.010)	-0.019* (0.011)	-0.024** (0.010)	-0.027*** (0.010)
Ltd liability	0.010 (0.017)	0.001 (0.017)	-0.004 (0.012)	0.000 (0.011)	0.004 (0.010)	0.001 (0.010)
Family owned	0.016 (0.023)	0.003 (0.021)	-0.002 (0.014)	-0.003 (0.012)	0.006 (0.013)	0.001 (0.012)
Foreign	-0.030 (0.025)	-0.030 (0.028)			-0.021 (0.019)	-0.020 (0.021)
Other	0.003 (0.022)	0.000 (0.023)	0.000 (0.012)	0.001 (0.011)	0.004 (0.012)	0.002 (0.012)
High-tech	0.036 (0.036)	0.064* (0.037)	-0.025* (0.014)	-0.016 (0.013)	-0.009 (0.017)	0.007 (0.016)
Other manufacturing	-0.004 (0.028)	0.007 (0.026)	-0.023 (0.015)	-0.018 (0.012)	-0.019 (0.016)	-0.011 (0.014)
Hotels	0.006 (0.024)	0.011 (0.023)	-0.016 (0.016)	-0.007 (0.015)	-0.010 (0.015)	-0.004 (0.014)
Retail	0.017 (0.024)	0.025 (0.022)	-0.015 (0.018)	-0.012 (0.015)	-0.003 (0.015)	0.002 (0.014)
Business services	0.017 (0.025)	0.032 (0.025)	0.005 (0.018)	0.015 (0.018)	0.007 (0.016)	0.021 (0.016)
Other	0.006 (0.022)	0.013 (0.020)	-0.006 (0.018)	-0.003 (0.015)	-0.004 (0.015)	0.002 (0.013)
NI	-0.008 (0.016)	-0.006 (0.015)	-0.007 (0.010)	-0.007 (0.010)	-0.007 (0.009)	-0.006 (0.009)
Management competency		0.004 (0.004)		-0.004* (0.002)		-0.001 (0.002)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 7 (continued)

DETERMINANTS OF CREDIT CONSTRAINTS

	2012		2014		OVERALL	
	Standard controls	Borrower quality controls	Standard controls	Borrower quality controls	Standard controls	Borrower quality controls
Customer payments		0.003 (0.014)		-0.003 (0.009)		-0.001 (0.009)
Profit		-0.057*** (0.019)		0.006 (0.008)		-0.018* (0.009)
Property debt		0.102*** (0.033)		0.033 (0.023)		0.066*** (0.021)
Competition		0.003 (0.003)		0.004** (0.002)		0.004** (0.002)
Costs		0.002 (0.003)		0.002 (0.002)		0.002 (0.002)
Skills		0.006* (0.003)		0.003 (0.002)		0.004** (0.002)
Assets		-0.042*** (0.013)		-0.002 (0.008)		-0.018** (0.008)
Year = 2014					-0.033*** (0.008)	-0.025*** (0.009)
Observations	1314	1314	1384	1384	2698	2698

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 8

CREDIT CONSTRAINTS AND FIRM OUTCOMES, COMBINED DATA

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Credit constraints	0.229 (0.225)	0.067 (0.223)	0.230 (0.192)	-0.034 (0.167)
5-10 years	-0.084** (0.039)	-0.017 (0.039)	-0.023 (0.027)	-0.139*** (0.037)
11-20 years	-0.114*** (0.037)	0.017 (0.037)	-0.049* (0.026)	-0.145*** (0.035)
Over 20 years	-0.153*** (0.035)	-0.009 (0.035)	-0.076*** (0.024)	-0.224*** (0.034)
Small	0.059*** (0.023)	0.042* (0.022)	0.121*** (0.017)	0.101*** (0.021)
Medium	0.099*** (0.032)	0.122*** (0.032)	0.167*** (0.027)	0.174*** (0.031)
Ltd liability	0.084*** (0.025)	0.151*** (0.025)	0.038** (0.016)	0.031 (0.022)
Family owned	0.010 (0.028)	-0.012 (0.028)	0.017 (0.019)	0.025 (0.026)
Foreign	0.065 (0.071)	0.097 (0.074)	0.000 (0.049)	0.037 (0.063)
Other	0.049* (0.027)	0.014 (0.027)	0.023 (0.018)	0.017 (0.024)
Year = 2014	0.166*** (0.021)	-0.051** (0.021)	0.096*** (0.015)	0.272*** (0.020)
High-tech	-0.008 (0.039)	0.068* (0.039)	-0.005 (0.029)	0.079** (0.036)
Other manufacturing	0.039 (0.038)	0.247*** (0.036)	0.040 (0.029)	0.046 (0.033)
Hotels	0.013 (0.034)	-0.120*** (0.032)	-0.029 (0.024)	0.014 (0.030)
Retail	-0.016 (0.034)	-0.138*** (0.032)	-0.042* (0.022)	0.018 (0.030)
Business services	0.010 (0.036)	0.096*** (0.036)	-0.000 (0.026)	0.072** (0.032)
Other	-0.053* (0.032)	0.082** (0.032)	-0.022 (0.023)	0.025 (0.029)
NI	-0.078*** (0.021)	0.122*** (0.020)	-0.046*** (0.016)	-0.048** (0.019)
Urban	-0.006 (0.019)	-0.027 (0.019)	-0.001 (0.014)	-0.006 (0.018)
Managerial competency	0.012*** (0.005)	0.013*** (0.005)	-0.004 (0.004)	0.005 (0.005)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 8 (continued)

CREDIT CONSTRAINTS AND FIRM OUTCOMES, COMBINED DATA

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Property debt	-0.027 (0.036)	-0.003 (0.035)	0.014 (0.029)	-0.009 (0.032)
Profit	0.172*** (0.020)	0.023 (0.021)	0.089*** (0.014)	0.193*** (0.018)
Competition	-0.006 (0.004)	-0.004 (0.004)	-0.008*** (0.003)	-0.007** (0.003)
Costs	-0.001 (0.004)	-0.006 (0.004)	-0.000 (0.003)	-0.008** (0.004)
Skills	0.007 (0.005)	0.014*** (0.004)	0.013*** (0.004)	0.011** (0.004)
Assets	0.097*** (0.021)	0.076*** (0.021)	0.023 (0.015)	0.135*** (0.020)
Observations	2698	2698	2698	2698

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 9

CREDIT CONSTRAINTS AND FIRM OUTCOMES, 2012

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Credit constraint	0.251 (0.233)	-0.034 (0.206)	0.196 (0.174)	-0.017 (0.162)
5-10 years	-0.088* (0.053)	-0.005 (0.051)	0.002 (0.032)	-0.148*** (0.048)
11-20 years	-0.158*** (0.048)	0.079 (0.050)	-0.043 (0.028)	-0.171*** (0.045)
Over 20 years	-0.158*** (0.046)	-0.035 (0.047)	-0.042 (0.026)	-0.233*** (0.042)
Small	0.061* (0.035)	0.038 (0.035)	0.045** (0.022)	0.051* (0.030)
Medium	0.070 (0.046)	0.094** (0.047)	0.144*** (0.037)	0.201*** (0.045)
Ltd liability	0.082** (0.032)	0.156*** (0.034)	0.039** (0.018)	0.043 (0.027)
Family owned	0.025 (0.036)	0.057 (0.043)	0.015 (0.019)	0.023 (0.031)
Foreign	0.078 (0.072)	0.114 (0.077)	0.001 (0.047)	0.020 (0.064)
Other	0.105** (0.043)	0.021 (0.045)	0.030 (0.024)	0.047 (0.033)
High-tech	-0.006 (0.066)	-0.049 (0.072)	-0.009 (0.040)	0.168*** (0.056)
Other manufacturing	0.048 (0.056)	0.177*** (0.060)	0.018 (0.032)	0.089** (0.039)
Hotels	0.019 (0.048)	-0.193*** (0.050)	0.032 (0.027)	0.087*** (0.033)
Retail	-0.041 (0.046)	-0.172*** (0.049)	-0.017 (0.023)	0.050 (0.031)
Business services	-0.039 (0.051)	0.112** (0.056)	0.006 (0.028)	0.087** (0.038)
Other	-0.079* (0.044)	0.044 (0.049)	0.014 (0.025)	0.094*** (0.032)
NI	-0.004 (0.028)	0.113*** (0.031)	-0.004 (0.017)	-0.002 (0.024)
Urban	-0.018 (0.026)	-0.016 (0.028)	0.007 (0.015)	-0.008 (0.022)
Managerial competency	0.010 (0.006)	0.012 (0.008)	0.001 (0.005)	0.010* (0.006)
Property debt	-0.004 (0.046)	-0.019 (0.047)	0.010 (0.032)	-0.055 (0.036)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 9 (continued)

CREDIT CONSTRAINTS AND FIRM OUTCOMES, 2012

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Profit	0.125*** (0.029)	-0.023 (0.033)	0.058*** (0.017)	0.081*** (0.021)
Competition	-0.003 (0.005)	0.001 (0.005)	0.001 (0.003)	-0.005 (0.004)
Costs	-0.003 (0.005)	0.000 (0.006)	-0.006** (0.003)	-0.012*** (0.004)
Skills	0.005 (0.006)	0.008 (0.006)	0.003 (0.004)	0.000 (0.005)
Assets	0.173*** (0.030)	0.158*** (0.031)	0.042** (0.019)	0.166*** (0.026)
Observations	1314	1314	1314	1314

Notes: Probit marginal effects reported with standard errors in parentheses.
 *** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 10

CREDIT CONSTRAINTS AND FIRM OUTCOMES, 2014

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Credit constraint	0.887 (0.705)	1.753 (1.191)	1.363* (0.820)	1.228 (0.753)
5-10 years	-0.087 (0.059)	-0.065 (0.066)	-0.056 (0.051)	-0.131** (0.060)
11-20 years	-0.090 (0.057)	-0.061 (0.064)	-0.068 (0.048)	-0.115** (0.057)
Over 20 years	-0.156*** (0.054)	-0.013 (0.062)	-0.108** (0.047)	-0.204*** (0.055)
Small	0.055* (0.032)	0.070* (0.037)	0.178*** (0.029)	0.133*** (0.033)
Medium	0.123*** (0.047)	0.174*** (0.053)	0.203*** (0.043)	0.177*** (0.049)
Ltd liability	0.082** (0.041)	0.148*** (0.043)	0.059* (0.032)	0.035 (0.041)
Family owned	-0.019 (0.045)	-0.074 (0.046)	0.022 (0.036)	0.017 (0.046)
Other	0.025 (0.038)	0.004 (0.042)	0.023 (0.029)	0.004 (0.039)
High-tech	0.010 (0.053)	0.160*** (0.058)	0.024 (0.048)	0.062 (0.054)
Other manufacturing	0.049 (0.053)	0.336*** (0.059)	0.077 (0.050)	0.046 (0.054)
Hotels	0.023 (0.050)	-0.036 (0.053)	-0.058 (0.043)	-0.009 (0.051)
Retail	0.019 (0.057)	-0.044 (0.061)	-0.043 (0.047)	0.039 (0.061)
Business services	0.046 (0.053)	0.072 (0.060)	-0.008 (0.047)	0.066 (0.054)
Other	-0.026 (0.051)	0.118** (0.056)	-0.036 (0.044)	-0.015 (0.053)
NI	-0.136*** (0.032)	0.134*** (0.035)	-0.054* (0.028)	-0.055* (0.033)
Urban	-0.007 (0.030)	-0.049 (0.032)	-0.022 (0.026)	-0.018 (0.031)
Managerial competency	0.015* (0.008)	0.018* (0.010)	-0.001 (0.007)	0.008 (0.009)
Profit	0.218*** (0.030)	0.054 (0.033)	0.097*** (0.024)	0.266*** (0.031)
Property debt	-0.075 (0.060)	-0.034 (0.075)	-0.012 (0.061)	0.015 (0.064)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

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Table 10 (continued)

CREDIT CONSTRAINTS AND FIRM OUTCOMES, 2014

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Competition	-0.010 (0.006)	-0.017** (0.007)	-0.019*** (0.006)	-0.013** (0.006)
Costs	0.001 (0.006)	-0.016** (0.007)	0.002 (0.005)	-0.008 (0.006)
Skills	0.006 (0.007)	0.017** (0.009)	0.019*** (0.007)	0.016** (0.008)
Assets	0.034 (0.029)	0.008 (0.032)	0.009 (0.025)	0.100*** (0.031)
Observations	1384	1384	1384	1384

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 11

FINANCIAL DISTRESS INDEX

	2012	2014	TOTAL
5-10 years	-0.151 (0.125)	0.134 (0.157)	-0.023 (0.097)
11-20 years	0.013 (0.122)	-0.007 (0.154)	-0.006 (0.094)
Over 20 years	-0.011 (0.112)	0.078 (0.148)	0.026 (0.088)
Small	0.080 (0.087)	-0.047 (0.081)	0.016 (0.058)
Medium	-0.099 (0.121)	-0.227* (0.120)	-0.176** (0.083)
Ltd liability	0.137 (0.087)	0.070 (0.100)	0.103 (0.064)
Family owned	-0.072 (0.107)	-0.149 (0.111)	-0.076 (0.077)
Foreign	-0.162 (0.194)		-0.179 (0.187)
Other	0.195* (0.114)	-0.204** (0.094)	-0.052 (0.071)
High-tech	-0.035 (0.146)	-0.192 (0.124)	-0.148 (0.094)
Other manufacturing	-0.480*** (0.150)	-0.073 (0.118)	-0.240*** (0.093)
Hotels	-0.642*** (0.122)	-0.395*** (0.121)	-0.528*** (0.085)
Retail	-0.332*** (0.113)	-0.258* (0.135)	-0.290*** (0.084)
Business services	-0.088 (0.124)	-0.092 (0.118)	-0.095 (0.085)
Other	-0.278** (0.109)	-0.161 (0.118)	-0.219*** (0.078)
NI	-0.063 (0.076)	-0.195** (0.076)	-0.122** (0.053)
Managerial competency	-0.022 (0.018)	-0.020 (0.019)	-0.017 (0.013)
Profit	-0.644*** (0.078)	-0.473*** (0.069)	-0.544*** (0.052)
Property debt	0.457*** (0.110)	0.286** (0.145)	0.392*** (0.086)
Competition	0.026** (0.013)	0.034** (0.014)	0.030*** (0.009)
Costs	0.057*** (0.014)	0.041*** (0.014)	0.049*** (0.010)
Skills	-0.006 (0.015)	0.033* (0.017)	0.012 (0.011)
Year = 2014			-0.489*** (0.053)
Observations	1314	1384	2698

Notes: Ordered probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 12

FINANCIAL DISTRESS COMPONENTS, COMBINED SAMPLE

	WEAK ASSETS	PAYMENT DELAYS	POOR BANK RELATIONS	INTEREST RATE UP	FEES INCREASE
5-10 years	-0.179 (0.139)	0.065 (0.126)	0.007 (0.144)	-0.124 (0.196)	0.184 (0.188)
11-20 years	-0.086 (0.133)	0.057 (0.123)	-0.021 (0.140)	-0.085 (0.184)	0.137 (0.182)
Over 20 years	-0.211* (0.125)	0.182 (0.116)	0.028 (0.131)	-0.062 (0.176)	0.265 (0.171)
Small	-0.297*** (0.091)	0.011 (0.069)	0.057 (0.085)	0.163* (0.098)	0.081 (0.093)
Medium	-0.435*** (0.141)	-0.078 (0.096)	-0.217* (0.130)	-0.058 (0.137)	-0.002 (0.125)
Ltd liability	-0.136 (0.093)	0.237*** (0.079)	0.036 (0.097)	0.232* (0.124)	0.135 (0.110)
Family owned	-0.209* (0.107)	-0.001 (0.098)	-0.411*** (0.123)	0.164 (0.140)	0.015 (0.124)
Foreign	-0.128 (0.257)	0.310 (0.211)	0.133 (0.260)	-0.229 (0.466)	-0.472 (0.435)
Other	-0.275*** (0.100)	0.003 (0.085)	-0.155 (0.102)	0.023 (0.145)	-0.066 (0.123)
High-tech	-0.341** (0.156)	-0.179 (0.113)	-0.036 (0.144)	-0.042 (0.199)	-0.029 (0.187)
Other manufacturing	-0.128 (0.136)	-0.260** (0.110)	-0.208 (0.145)	0.002 (0.188)	-0.044 (0.171)
Hotels	-0.216* (0.122)	-1.116*** (0.119)	0.045 (0.122)	0.007 (0.171)	0.047 (0.150)
Retail	0.030 (0.118)	-0.508*** (0.104)	-0.146 (0.129)	0.145 (0.168)	0.279* (0.145)
Business services	-0.128 (0.130)	-0.070 (0.101)	-0.044 (0.131)	0.112 (0.175)	0.156 (0.158)
Other	-0.229* (0.117)	-0.204** (0.093)	-0.138 (0.121)	0.279* (0.154)	0.175 (0.139)
NI	-0.075 (0.076)	-0.054 (0.064)	-0.074 (0.078)	-0.277*** (0.090)	-0.069 (0.086)
Managerial competency	-0.048*** (0.018)	-0.007 (0.016)	-0.061*** (0.019)	0.069** (0.027)	0.017 (0.023)
Profit	-1.008*** (0.068)	-0.038 (0.063)	-0.254*** (0.072)	-0.059 (0.088)	-0.019 (0.083)
Property debt	0.408*** (0.123)	0.042 (0.100)	0.138 (0.123)	0.602*** (0.117)	0.431*** (0.114)
Competition	0.035** (0.014)	0.032*** (0.011)	0.003 (0.014)	0.026 (0.017)	0.013 (0.015)
Costs	0.049*** (0.014)	0.051*** (0.012)	-0.001 (0.015)	0.080*** (0.019)	0.112*** (0.018)
Skills	-0.061*** (0.018)	0.044*** (0.014)	0.002 (0.017)	-0.018 (0.021)	-0.013 (0.019)
Observations	2698	2698	2698	2698	2698

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 13

FINANCIAL DISTRESS COMPONENTS, 2012

	WEAK ASSETS	PAYMENT DELAYS	POOR BANK RELATIONS	INTEREST RATE UP	FEES INCREASE
5-10 years	-0.205 (0.178)	0.063 (0.156)	-0.129 (0.198)	-0.259 (0.249)	0.292 (0.235)
11-20 years	0.033 (0.171)	0.138 (0.151)	0.008 (0.190)	0.013 (0.218)	0.241 (0.227)
Over 20 years	-0.196 (0.159)	0.268* (0.139)	-0.050 (0.172)	-0.059 (0.204)	0.401* (0.211)
Small	-0.266* (0.140)	0.038 (0.104)	0.300** (0.137)	0.234* (0.133)	0.177 (0.125)
Medium	-0.177 (0.197)	-0.032 (0.135)	-0.018 (0.197)	0.202 (0.180)	0.081 (0.165)
Ltd liability	-0.056 (0.123)	0.294*** (0.105)	-0.006 (0.140)	0.182 (0.160)	0.107 (0.136)
Family owned	-0.151 (0.152)	0.099 (0.134)	-0.533*** (0.196)	0.343* (0.179)	0.103 (0.163)
Foreign	-0.317 (0.282)	0.145 (0.224)	0.009 (0.273)	-0.402 (0.482)	-0.656 (0.451)
Other	0.056 (0.156)	0.322** (0.134)	-0.264 (0.192)	0.304 (0.204)	0.262 (0.166)
High-tech	-0.498* (0.259)	-0.121 (0.189)	0.053 (0.246)	0.021 (0.306)	-0.070 (0.267)
Other manufacturing	-0.437** (0.223)	-0.507*** (0.172)	-0.392 (0.244)	0.022 (0.258)	-0.217 (0.235)
Hotels	-0.305* (0.180)	-1.316*** (0.170)	0.052 (0.184)	-0.016 (0.235)	-0.308 (0.200)
Retail	-0.092 (0.167)	-0.721*** (0.145)	-0.204 (0.185)	0.066 (0.216)	0.138 (0.178)
Business services	-0.095 (0.186)	-0.179 (0.151)	-0.019 (0.200)	0.068 (0.239)	0.051 (0.203)
Other	-0.516*** (0.172)	-0.344** (0.135)	-0.230 (0.180)	0.309 (0.201)	-0.009 (0.172)
NI	-0.043 (0.109)	0.027 (0.096)	-0.051 (0.115)	-0.126 (0.131)	-0.091 (0.114)
Managerial competency	-0.082*** (0.024)	0.008 (0.022)	-0.089*** (0.028)	0.093*** (0.036)	0.020 (0.029)
Profit	-1.192*** (0.100)	0.070 (0.097)	-0.480*** (0.109)	-0.294** (0.118)	-0.115 (0.111)
Competition	0.016 (0.019)	0.037** (0.016)	-0.018 (0.022)	0.017 (0.022)	0.010 (0.019)
Costs	0.040** (0.020)	0.049*** (0.017)	-0.024 (0.022)	0.076*** (0.027)	0.094*** (0.024)
Skills	-0.070*** (0.024)	0.034* (0.018)	-0.023 (0.025)	-0.008 (0.026)	-0.017 (0.024)
Observations	1314	1314	1314	1314	1314

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 14

FINANCIAL DISTRESS COMPONENTS, 2014

	WEAK ASSETS	PAYMENT DELAYS	POOR BANK RELATIONS	INTEREST RATE UP	FEES INCREASE
5-10 years	-0.095 (0.228)	0.187 (0.232)	0.145 (0.217)	0.116 (0.351)	0.194 (0.311)
11-20 years	-0.128 (0.221)	0.026 (0.231)	0.054 (0.215)	-0.108 (0.343)	0.088 (0.309)
Over 20 years	-0.211 (0.211)	0.113 (0.223)	0.168 (0.206)	0.030 (0.331)	0.091 (0.295)
Small	-0.232* (0.123)	0.132 (0.099)	-0.146 (0.111)	0.170 (0.150)	0.107 (0.152)
Medium	-0.529** (0.214)	0.010 (0.147)	-0.366** (0.175)	-0.203 (0.238)	0.187 (0.212)
Ltd liability	-0.178 (0.149)	0.066 (0.126)	0.124 (0.140)	0.362* (0.204)	0.178 (0.201)
Family owned	-0.087 (0.155)	-0.073 (0.152)	-0.313* (0.164)	-0.062 (0.243)	0.070 (0.210)
Other	-0.294** (0.141)	-0.069 (0.121)	-0.085 (0.130)	-0.132 (0.214)	-0.212 (0.201)
High-tech	-0.238 (0.199)	-0.133 (0.147)	-0.073 (0.180)	-0.170 (0.267)	0.131 (0.287)
Other manufacturing	0.083 (0.178)	-0.074 (0.147)	-0.100 (0.183)	-0.030 (0.270)	0.246 (0.268)
Hotels	-0.218 (0.175)	-1.001*** (0.172)	0.041 (0.167)	0.127 (0.251)	0.476* (0.255)
Retail	-0.052 (0.194)	-0.516*** (0.173)	-0.059 (0.194)	0.228 (0.266)	0.111 (0.312)
Business services	-0.300 (0.196)	-0.131 (0.144)	-0.028 (0.175)	0.128 (0.260)	0.236 (0.272)
Other	0.037 (0.171)	-0.363** (0.147)	0.024 (0.167)	-0.021 (0.264)	0.208 (0.269)
NI	-0.097 (0.115)	-0.171* (0.093)	-0.072 (0.109)	-0.588*** (0.137)	-0.097 (0.147)
Managerial competency	0.010 (0.027)	-0.020 (0.023)	-0.035 (0.028)	0.058 (0.044)	0.024 (0.039)
Profit	-1.017*** (0.105)	-0.318*** (0.088)	-0.071 (0.098)	0.179 (0.142)	-0.014 (0.136)
Property debt	0.394** (0.199)	-0.013 (0.172)	0.060 (0.185)	0.581*** (0.205)	0.420** (0.202)
Competition	0.038* (0.021)	0.010 (0.018)	0.018 (0.019)	0.036 (0.026)	0.013 (0.027)
Costs	0.031 (0.022)	0.006 (0.017)	0.026 (0.020)	0.065** (0.030)	0.090*** (0.031)
Skills	-0.038 (0.028)	0.064*** (0.022)	0.023 (0.024)	-0.029 (0.037)	0.011 (0.033)
Observations	1384	1384	1384	1384	1384

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Table 15

BANK OWNERSHIP AND CREDIT CONSTRAINTS

	2012		2014		OVERALL	
	Standard controls	Borrower quality controls	Standard controls	Borrower quality controls	Standard controls	Borrower quality controls
Irish in Ireland	-0.067 (0.049)	-0.043 (0.054)	0.659*** (0.034)	0.639*** (0.049)	-0.021 (0.035)	-0.014 (0.035)
Irish in NI	0.002 (0.033)	-0.014 (0.029)	0.020 (0.012)	0.021* (0.012)	0.020 (0.020)	0.015 (0.019)
NI(UK) in Ireland	-0.088** (0.043)	-0.076* (0.043)	.	.	-0.047* (0.025)	-0.044* (0.025)
NI(UK) in NI	-0.024 (0.031)	-0.032 (0.027)	0.008 (0.012)	0.009 (0.011)	-0.004 (0.018)	-0.004 (0.017)
Observations	737	737 (0.003)	673	673 (0.002)	1436	1436 (0.002)

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 16

BANK OWNERSHIP AND FIRM PERFORMANCE INDICATORS, COMBINED SAMPLE

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Irish in Ireland	0.083 (0.099)	-0.058 (0.075)	0.010 (0.080)	-0.112 (0.089)
Irish in NI	-0.013 (0.034)	0.031 (0.034)	-0.020 (0.025)	0.003 (0.031)
NI(UK) in Ireland	-0.049 (0.114)	0.033 (0.100)	0.050 (0.096)	-0.185* (0.105)
NI(UK) in NI	0.006 (0.034)	0.039 (0.035)	0.018 (0.025)	-0.032 (0.031)
Observations	1436	1436	1436	1436

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 17

BANK OWNERSHIP AND FIRM PERFORMANCE INDICATORS, 2012

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Irish in Ireland	-0.094	-0.221**	-0.041	-0.064
	(0.111)	(0.093)	(0.084)	(0.097)
Irish in NI	0.045	-0.005	0.020	0.018
	(0.045)	(0.049)	(0.030)	(0.038)
NI(UK) in Ireland	-0.140	-0.193	0.028	-0.082
	(0.137)	(0.128)	(0.108)	(0.120)
NI(UK) in NI	0.051	-0.011	0.013	-0.002
	(0.042)	(0.046)	(0.030)	(0.035)
Observations	737	737	737	737

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 18

BANK OWNERSHIP AND FIRM PERFORMANCE INDICATORS, 2014

	SALES GROWTH	TRADE	EMPLOYMENT	INVESTMENT
Irish in Ireland	0.308*	0.138	-0.053	-0.175
	(0.160)	(0.100)	(0.138)	(0.157)
Irish in NI	-0.064	0.039	-0.096	-0.039
	(0.057)	(0.054)	(0.059)	(0.057)
NI(UK) in Ireland	0.120	0.279**	0.044	-0.239
	(0.177)	(0.126)	(0.142)	(0.168)
NI(UK) in NI	-0.031	0.081	0.013	-0.082
	(0.057)	(0.056)	(0.057)	(0.062)
Observations	699	699	699	699

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 19

BANK OWNERSHIP AND FINANCIAL DISTRESS INDEX

	2012	2014	TOTAL
Irish in Ireland	-0.364	-0.204	-0.317
	(0.298)	(0.279)	(0.210)
Irish in NI	0.067	0.122	0.073
	(0.118)	(0.128)	(0.085)
NI(UK) in Ireland	-0.885**	-0.292	-0.605**
	(0.357)	(0.325)	(0.247)
NI(UK) in NI	-0.092	0.104	-0.005
	(0.115)	(0.139)	(0.088)
Observations	737	699	1436

Notes: Ordered probit marginal effects reported, standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 20

BANK OWNERSHIP AND DISTRESS COMPONENTS, COMBINED SAMPLE

	WEAK ASSETS	PAYMENT DELAYS	POOR BANK RELATIONS	INTEREST RATE UP	FEES INCREASE
Irish in Ireland	-0.362 (0.299)	0.479 (0.367)	-0.320 (0.373)	-0.299 (0.321)	-0.596** (0.301)
Irish in NI	-0.143 (0.132)	0.028 (0.102)	0.131 (0.142)	0.018 (0.140)	0.104 (0.128)
NI(UK) in Ireland	-0.282 (0.356)	0.433 (0.406)	-0.386 (0.440)	-0.726* (0.407)	-1.212*** (0.425)
NI(UK) in NI	-0.027 (0.128)	-0.098 (0.106)	0.120 (0.144)	-0.075 (0.145)	0.229* (0.125)
Observations	1436	1436	1436	1436	1436

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 21

BANK OWNERSHIP AND DISTRESS COMPONENTS, 2012

	WEAK ASSETS	PAYMENT DELAYS	POOR BANK RELATIONS	INTEREST RATE UP	FEES INCREASE
Irish in Ireland	-0.116 (0.391)	1.120** (0.538)	-0.448 (0.527)	-0.722* (0.389)	-0.726* (0.393)
Irish in NI	-0.430** (0.194)	0.155 (0.137)	0.171 (0.198)	0.196 (0.178)	0.265* (0.158)
NI(UK) in Ireland	-0.336 (0.485)	1.052* (0.590)	-0.433 (0.656)	-1.077** (0.511)	-1.740*** (0.580)
NI(UK) in NI	-0.127 (0.169)	-0.127 (0.134)	0.029 (0.219)	-0.147 (0.182)	0.244 (0.153)
Observations	737	737	737	737	737

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.

Table 22

BANK OWNERSHIP AND DISTRESS COMPONENTS, 2014

	WEAK ASSETS	PAYMENT DELAYS	POOR BANK RELATIONS	INTEREST RATE UP	FEES INCREASE
Irish in Ireland	-0.777 (0.490)	-0.068 (0.492)	-0.199 (0.582)	4.061*** (0.246)	-0.306 (0.605)
Irish in NI	0.194 (0.197)	0.107 (0.169)	0.101 (0.202)	-0.170 (0.252)	-0.140 (0.225)
NI(UK) in Ireland	-0.297 (0.551)	-0.275 (0.571)	-0.238 (0.662)	3.460*** (0.464)	-0.602 (0.720)
NI(UK) in NI	0.055 (0.207)	-0.093 (0.191)	0.218 (0.202)	0.122 (0.248)	0.208 (0.212)
Observations	699	699	699	699	699

Notes: Probit marginal effects reported with standard errors in parentheses.

*** indicates significance at the 1% level, ** at 5% and * at 10%.

Firm controls from Table 7 also included but not reported.



The Trade and Business Development Body
The Old Gasworks Business Park
Kilmorey Street, Newry Co. Down, BT34 2DE

Tel: 028 3083 4100 (048 from Ireland)
Textphone: 028 3083 4164 (048 from Ireland)
Fax: 028 3083 4155 (048 from Ireland)
Email: info@intertradeireland.com
Web: www.intertradeireland.com



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