



The use of personal guarantees in Irish SME lending

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Abstract

This *Letter* describes the use of personal guarantees (PGs) in Irish SME bank lending. To date, domestic or international evidence on this topic has been extremely sparse. Using data from the Red C / Department of Finance *SME Credit Demand Survey*, we show that one third of successful finance applications in Ireland from September 2012 to 2014 have a PG attached, with the most recent data suggesting that this rate was decreasing in 2014. Consistent with banks using PGs as a deterrent to default for borrowers perceived to be riskier, we find that PG usage is higher for new loans to smaller firms (in terms of both employment and turnover), younger firms, innovative firms, non-exporting firms and firms that made a loss in the previous six months. PGs are more prevalent among higher-value loans, suggesting PGs may also be used to reduce potential Loss Given Default. We also find that firms in the construction and wholesale/retail sector are most likely to have a PG attached to new lending. Finally, we find strong evidence that PGs are used in tandem with other forms of tangible business collateral such as land, buildings, machinery and other assets.

1 Introduction

An adequate supply of bank financing to the real economy is generally considered a key input to sustained economic growth. Previous research (Lawless et al., 2013) has shown that the limited availability of alternative sources of financing makes bank financing particularly important in Ireland. While a large literature has attempted to identify the existence and consequences of credit constraints and access to credit for Small and Medium Enterprises (SMEs), much less is known about the

conditions attached to SME loans. In this *Letter* we focus on the personal guarantee (PG), presenting overall trends in PG use and the characteristics of SMEs which increase the likelihood that a PG is requested by the bank.

From a prudential perspective, the use of a PG can act as an additional deterrent to default behaviour that lowers the probability of default (PD). Further, for a given PD, the existence of a PG may lower expected losses through higher recovery rates and analogously lower Loss Given Default (LGD).

From the borrower's perspective, and with

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a view to economic growth prospects, the widespread use of personal guarantees by banks could be detrimental to the development and expansion of new and existing enterprises. For the firm, the decision to borrow, invest and expand has uncertain outcomes. The use of PGs adds an additional layer of private risk to this investment decision, and in the event of poor business performance, there are obvious welfare implications, not only for the internal stakeholders of the business, but potentially for those outside of the business circle (the family of the applicant, for example). On the other hand, it is plausible that a PG makes possible certain loan contracts that would not have been advanced by the lender without such a guarantee.

The analysis in this *Letter* shows that one third of new SME loans in Ireland from 2012-2014 were coupled with a PG. There is no available international data against which to benchmark this number. We expect that *ex-ante* riskier, smaller and more opaque² borrowers are more likely to be subject to a PG. The analysis confirms this, finding that the probability of a PG is decreasing in the number of employees, turnover, age, profitability, and is higher for more innovative companies and for larger loans.

Banks are also found to request PGs more often for larger loan values suggesting that, controlling for a given PD, PGs are used to mitigate potentially high LGD on these high-value loans. We also find strong evidence of complementarity between PGs and business collateral: for loans without any specific collateral item attached, PG usage is 29 per cent, while for firms that post a specific security such as land, property, machinery or other assets, PG usage is 59 per cent.

The remainder of this letter is as follows – Section 2 provides a short outline of related literature. Section 3 introduces the dataset - the *RED C Credit Demand Survey* - and describes the overall trends in PG use. Section 4 presents the formal statistical methods employed and the main hypotheses explored. Section 5 present the economic results while Section 6 concludes.

²The term “opaque” is commonly used in the literature on small firm financing, and refers to borrowing enterprises for whom less verifiable, codifiable or publicly available financial information is available. Opaque firms are often those with shorter business track records, and those smaller in size.

2 Previous research

The economics literature generally assumes that for a bank, default losses can be mitigated either through rigorous borrower screening and/or collateralisation. An extensive theoretical literature on the use of collateral (see [Jimenez et al. \(2006\)](#) and [Berger et al. \(2011b\)](#) for a summary) suggests that banks use collateral to reduce *ex-ante* adverse selection problems (i.e. influencing the type of borrower that applies for a loan) or *ex-post* borrower moral hazard (i.e. influencing the behaviour of borrowers after loan issuance). Theories of *ex-ante* adverse selection suggest that low-risk borrowers will signal their quality by self-selecting into secured debt contracts with lower risk premiums while high-risk borrowers will select unsecured debt contracts with high risk premiums ([Berger et al., 2011b](#); [Bester, 1985](#)). *Ex-post* theories on the other hand suggest that when borrower risk is observable, banks will request collateral to reduce risks due to low borrower effort (moral hazard), difficulties in enforcing contracts and high monitoring costs. The latter behaviour can also be explained by banks' incentives to mitigate potential expected losses when borrowers are seen to have a higher probability of default.

The effect of bank-borrower relationship strength on collateral usage has also been explored in the literature (see [Berger et al. \(2011b\)](#) and [Berger et al. \(2011a\)](#) for a review). Asymmetric information related to borrower quality diminishes with the length and depth of the bank-borrower relationship. However, research exploring the effects of relationship strength on collateral usage has found mixed results. For example, [Ono and Uesugi \(2009\)](#) find that longer relationships lead to more collateral usage while [Berger et al. \(2011a\)](#) find the contrary.

Previous research on PGs in particular, rather than the usage of collateral in general, is limited. The notable exception is [Ono and Uesugi \(2009\)](#), who find that PGs are positively correlated with collateral usage, suggesting a complementarity between these forms of credit condition. They also find higher PG usage where interest rates are higher and turnover is lower. These findings all point towards a pattern where PG usage goes hand-in-hand with other factors associated with

higher-risk borrowers.

3 Data and Descriptive Statistics

We employ data from the *RED C SME Credit Demand Survey*, which is conducted every six months by the Irish Department of Finance (latest wave carried out in September 2014). The survey collects application and success rate data for a number of bank finance products, including overdrafts, loans (and restructures for both), invoice discounting, leasing/hire purchase and bonds. The survey also collects extensive information on SME characteristics, including financial performance indicators, debt levels and sentiment/expectations.

In each survey wave, approximately 1,500 telephone interviews are conducted and the sample is representative across the three SME size categories (Micro, Small and Medium) and also for the 16 main business sectors in Ireland. The survey also collects information on collateral types and loan conditions, including PGs. This PG question is asked for SMEs with at least one successful or partially successful finance application in the previous six months.³

Table 1 presents the rate of PG use across a number of firm characteristics. One third of finance applications are backed by a PG. We use data from four six-monthly survey waves (ending March 2013, September 2013, March 2014 and September 2014) and it is evident that PG use has declined somewhat over time, down from 38 per cent in September 2013 to 28 per cent in September 2014.

A number of firm characteristics appear to be correlated with PG use. For example, the rate of PG usage decreases with firm age, with those in the youngest age category (0-10 years) showing the highest PG rate of 37 per cent and those in the oldest category (30+ years) having the lowest (29 per cent). PG use also declines for larger SMEs, with medium-SMEs having the lowest PG rate of 23 per cent, compared to 37 per cent and 36 per cent for micro and small SMEs respectively. Furthermore, PG use is low for high turnover SMEs (above €5M) and high for SMEs with turnover be-

tween €100,000 and €5 million (particularly so for SMEs in the €500K-€1M category).

Firms posting specific business collateral, such as land, buildings, machinery or other assets, have a PG usage rate that is more than double that of firms not posting collateral. This provides initial evidence of a complementarity between PG and other forms of collateral: where borrowers or loans are deemed to warrant any security, lenders request both PG and the specific collateral in a bundle, rather than trading off between the two security types.

The financial health of the SME also influences the use of PGs – firms that made a loss in the previous six months have a PG rate of 38 per cent while those that made a profit have a rate of 32 per cent. This pattern is consistent with banks' usage of PGs as a commitment device to mitigate the risks associated with *ex-ante* more risky borrowers. Furthermore, innovative firms (SMEs that introduced new or improved goods or services) are likely to be considered riskier by banks, as such activities are, by their nature, untested. In this regard, we find that such firms have a PG rate of 37 per cent, compared to 31 per cent for non-innovators.

The construction sector stands out as the sector with the highest rates of PG usage. This may relate to the high share of self-employed contractors in the sector, or to the perception of the sector as high-risk following the Irish financial crisis. The wholesale and retail sectors also appear to have higher-than-average PG usage.

4 Methods and Hypotheses

We attempt to formalise these preliminary data explorations by estimating the following binary logit model:

$$Prob(PG) = f(BR, AI, LGD)$$

where *BR*, *AI* and *LGD* contain variables that proxy borrower risk, asymmetric information and Loss Given Default, respectively. We hypothesise that the bank's decision to impose a PG is higher where borrowers are more observably risky, where information asymmetries are more prevalent, and where LGD is higher for a given level of borrower risk.

³The type of finance application (loan, overdraft etc.) to which the PG is attached is unknown for 33 per cent of SMEs. These firms applied for more than one finance type in the previous six months and the PG question does not differentiate between finance types. The analysis therefore focuses on all types of finance applications and does not control for product types

In our data, we proxy borrower risk using an indicator for changes in profitability in the last six months and a dummy variable for product innovation. Firms adding or improving their products will be considered more risky by lenders than firms trading solely on existing established product lines.

To measure asymmetric information, we use three variables that proxy for the financial opacity of firms: number of employees, value of turnover, and firm age. Smaller firms, in terms of employment or turnover, are often considered in the SME financing literature to be more opaque, as there is likely to be less publicly available information on their performance. Younger firms are considered more opaque as they are likely to have less of a proven financial track record or credit history.

On Loss Given Default (LGD), we expect that banks are more likely to ask for a PG when the expected losses from a default event are higher. For any given probability of default (PD), a loan for a larger euro amount will have a higher LGD. We therefore hypothesise that, controlling for the size and risk of the borrowing enterprise, larger SME loans are more likely to have PGs. All regressions also include controls for business sector, bank and survey wave. A summary of the variables employed is provided in Table 2.

In a model extension, we also test whether PGs are a complement or a substitute to other forms of specific business collateral such as land, machinery, buildings and other assets. We do not have a strong *a priori* expectation on the direction of this relationship. Previous research from Japan (Ono and Uesugi, 2009) finds that PG and other collateral are complements, suggesting that for a riskier type of borrower or a given loan product, banks are more likely to require borrowers to provide multiple forms of security, rather than to trade off between differing security types.

5 Results

The logit results and marginal effects are presented in Table 3. The sample size (661) is considerably below that of the number of successful/partially successful finance applications (1,379) as we have excluded SMEs with missing observations on a number of independent variables, most notably, turnover and finance amount. Furthermore, the analysis excludes very large finance applications

above €700K (79 SMEs). This cut-off point is motivated by analysis of the population of SME loans from the Central Bank of Ireland's Loan-Level data. For the most recent data available (June 2014), the 99th percentile of originating loan balance begins at €700,248. This exclusion is therefore intended to increase the representivity of our analysis.

Columns one and two present the results of a model of borrower risk and informational asymmetries. We find the expected sign on our two proxies for borrower risk: SMEs that introduced new or improved goods or services are 11 percentage points more likely to have a PG, a large increase relative to the mean (33%). Furthermore, making a profit or breaking even in the previous six months reduces the probability of PG use by 9 and 12 percentage points respectively (compared to the reference group – SMEs that made a loss).

The impact of informational asymmetries is also consistent with our initial hypotheses: a ten-year increase in a firm's age makes PGs one percentage point less likely, while ten additional employees have a similar effect. These magnitudes are visualised in Figures 1 and 2. Firms that are ten years old have a PG probability of 35 per cent, while a firm that is 50 years old has a probability of 30 per cent. In terms of size, firms with ten employees have a PG probability of 36 per cent, while those with one hundred employees have a probability of 20 per cent.

Columns (3) and (4) introduce the Loss Given Default element to the equation via the inclusion of the loan value as a control variable. Magnitudes and significance levels for our proxies for borrower risk and information asymmetries are extremely stable when this variable is introduced. An increase in the loan amount from €100,000 to €250,000 (roughly equating to a one-standard-deviation increase from the mean) increases the probability of PG use from 32.9 to 38.7 per cent.

Columns (5) and (6) introduce a dummy variable for the existence of a specific form of collateral. Again, our proxies for borrower risk and information asymmetries are robust to the introduction of this additional control. The coefficient estimate suggests a complementarity with a high degree of statistical and economic significance: for firms that have a specific business collateral attached to their loan approval, there is a 29.8 percentage point increase in PG usage. Given a baseline PG probability of 33 per cent, this represents

a near-doubling in the probability. Further, the impact of the loan amount is statistically insignificant in this model, suggesting that the simultaneous posting of PGs and specific collateral is highly correlated with larger loan amounts, where banks are most concerned about mitigating potential losses.

Finally, a number of time and sector controls are significant across all specifications – it is apparent that PG use has decreased from March 2014 by nine percentage points relative to March 2013, and the PG rate for wholesale and retail, and construction sectors are significantly higher (10 and 20 percentage points higher respectively than the base category – manufacturing).

6 Concluding Remarks

This letter describes the use of personal guarantees (PGs) in Irish SME lending since 2012. The goal

of this research is to inform regulators and stakeholders of what has been, until now, an under-researched feature of Irish SME financing. Overall, we find that about one third of successful finance applications have a personal guarantee attached. Furthermore, there is evidence that this level has declined in recent surveys. Our regression analysis highlights a number of SME characteristics that affect the probability of PG use by banks. Riskier borrowers, borrowers with higher degrees of information opaqueness, and loans with larger potential losses, are all subject to higher rates of PG. Whether or not such banking practices act as a deterrent to viable investment projects – particularly for young start-ups – is unknown and represents an important avenue for potential future research.

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Tables

Table 1: Share of Personal Guarantees (PG) by SME characteristics

All SMEs	32.99%	<i>Turnover</i>	
		0-€100K	23.01%
<i>Survey wave</i>		€100K-€500K	38.50%
Oct. '12 – Mar. '13	35.10%	€500K-€1M	43.59%
Apr. '13 – Sep. '13	38.35%	€1M-€5M	38.55%
Oct. '13 – Mar. '14	30.59%	€5M-€20M	25.44%
Apr. '14 – Sep. '14	27.86%	€20M+	10.87%
<i>Age</i>		<i>Last 6 months:</i>	
0-10 years	37.35%	Made a Loss	38.31%
11-20 years	36.10%	Broke Even	32.19%
21-30 years	30.79%	Made a Profit	31.86%
30+ years	29.10%		
		<i>Finance Amount Request</i>	
<i>Sector</i>		0-€20K	31.55%
Manufacturing	30.65 %	€20K-€50K	32.77%
Wholesale/Retail	35.06%	€50K-€200K	34.55%
Hotels/Restaurants	32.82%	€200K+	32.58%
Services	31.03%		
Construction	37.27%	<i>Other</i>	
		Non-Innovation	30.89%
<i>Size</i>		Innovation	36.95%
Micro (0-9 employees)	36.67%	Non-Exporters	33.79%
Small (10-49 employees)	36.06%	Exporters	30.75%
Medium (50-249 employees)	22.69%	Non-ICT	33.04%
		ICT	32.52%
<i>Other Collateral</i>			
No other collateral	27.5%		
Other specific collateral	59.49%		

Table 2: Descriptive Statistics for Variables Employed

	Type	N	Mean	Std. Dev.	Min.	Max.
<i>Dependent Variable</i>						
Personal Guarantee	D	661	0.328	0.467	0	1
<i>Independent Variable</i>						
Turnover ('000s)	C	661	4652.166	7432.810	0	50000
Age	C	661	28.147	25.734	1	233
Innovation	D	661	0.348	0.4767	0	1
Employees	C	661	32.768	39.625	1	245
Finance Amount (000's)	C	661	100.757	142.903	0.001	700
Made a Profit	D	661	0.542	0.499	0	1
Broke Even	D	661	0.289	0.454	0	1
Made a Loss	D	661	0.169	0.375	0	1
Specific Collateral	D	661	.136	.343	0	1
<i>Survey Wave</i>						
Oct. '12 – Mar. '13	D	661	0.242	0.429	0	1
Apr. '13 – Sep. '13	D	661	0.209	0.407	0	1
Oct. '13 – Mar. '14	D	661	0.289	0.454	0	1
Apr. '14 – Sep. '14	D	661	0.260	0.439	0	1
<i>Sector</i>						
Manufacturing	D	661	0.163	0.370	0	1
Wholesale/Retail	D	661	0.307	0.462	0	1
Hotels/Restaurants	D	661	0.079	0.269	0	1
Services	D	661	0.343	0.475	0	1
Construction	D	661	0.089	0.285	0	1
Agriculture	D	661	0.018	0.133	0	1

where 'Type' indicates whether the variable is continuous (C) or dummy (D)

Table 3: Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
	Logit	MFX	Logit	MFX	Logit	MFX
Turnover ('000s)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000* (0.000)	-0.000* (0.000)
Age	-0.007* (0.004)	-0.001* (0.001)	-0.007* (0.004)	-0.001* (0.001)	-0.009** (0.004)	-0.002** (0.001)
Innovation	0.538*** (0.182)	0.107*** (0.035)	0.550*** (0.183)	0.108*** (0.035)	0.518*** (0.189)	0.095*** (0.034)
Employees	-0.006* (0.003)	-0.001* (0.001)	-0.009** (0.004)	-0.002*** (0.001)	-0.009** (0.004)	-0.002** (0.001)
Made Profit	-0.475* (0.245)	-0.095** (0.048)	-0.547** (0.247)	-0.108** (0.048)	-0.538** (0.255)	-0.099** (0.046)
Broke Even	-0.604** (0.262)	-0.120** (0.051)	-0.653** (0.264)	-0.129** (0.051)	-0.615** (0.273)	-0.113** (0.049)
Sep '13	-0.026 (0.259)	-0.006 (0.055)	0.008 (0.260)	0.002 (0.054)	0.116 (0.270)	0.022 (0.052)
Mar '14	-0.519** (0.243)	-0.103** (0.048)	-0.468* (0.244)	-0.092* (0.048)	-0.444* (0.254)	-0.080* (0.046)
Sep '14	-0.334 (0.252)	-0.068 (0.051)	-0.290 (0.255)	-0.058 (0.051)	-0.117 (0.265)	-0.022 (0.050)
Wholesale/Retail	0.504* (0.281)	0.099* (0.053)	0.501* (0.282)	0.097* (0.053)	0.570* (0.297)	0.101** (0.051)
Hotels/Restaurants	0.180 (0.401)	0.033 (0.075)	0.289 (0.407)	0.054 (0.077)	0.171 (0.427)	0.028 (0.072)
Services	0.210 (0.281)	0.039 (0.052)	0.239 (0.282)	0.044 (0.051)	0.361 (0.298)	0.062 (0.050)
Construction	0.923** (0.367)	0.190** (0.075)	0.979*** (0.369)	0.199*** (0.074)	1.138*** (0.384)	0.216*** (0.072)
Agriculture	-0.146 (0.722)	-0.026 (0.123)	-0.237 (0.729)	-0.040 (0.118)	-0.180 (0.769)	-0.028 (0.116)
Finance ('000s)			0.002*** (0.001)	0.000*** (0.000)	0.001 (0.001)	0.000 (0.000)
Specific Collateral					1.619*** (0.270)	0.298*** (0.044)
Constant	0.082 (0.372)		-0.002 (0.374)		-0.260 (0.392)	
Observations	661	661	661	661	661	661
Pseudo R^2	0.083		0.092		0.138	

MFX refers to marginal effects at the mean.
*, ** and *** refer to statistical significance at the 10, 5 and 1 per cent, respectively.

Figures

Figure 1: Predicted probabilities from baseline model as a function of firm age

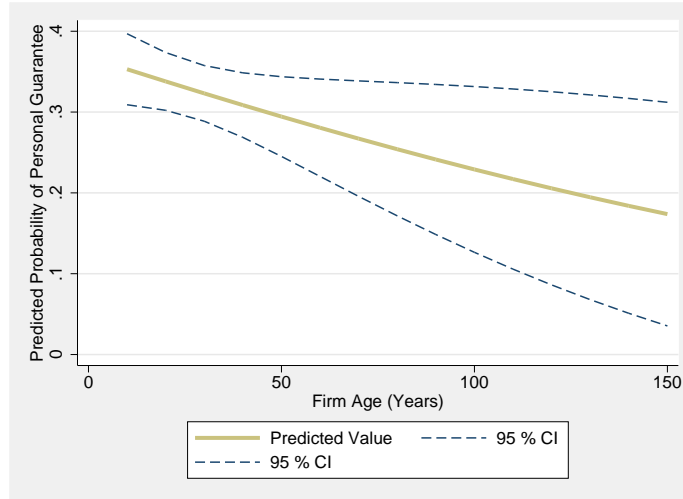


Figure 2: Predicted probabilities from baseline model as a function of employee numbers

