sciendo

South East European Journal of Economics and Business
Volume 18 (2) 2023, 49-62
DOI: 10.2478/jeb-2023-0018

RELATIONSHIP BANKING, COLLATERAL, AND THE ECONOMIC CRISIS AS DETERMINANTS OF CREDIT RISK: AN EMPIRICAL INVESTIGATION OF SMEs

Besnik A. Krasniqi, Mrika Kotorri, Florin Aliu

Abstract

This study examines the impact of relationship banking and collateral on the probability of firm loan default in Kosovo. Using a sample of 2,320 loan-level data from an individual bank credit register, findings indicate that stronger firm-bank relationships reduce the probability of default, and tighter credit policies regarding higher collateral requirements and interest rates have the opposite effect. Re-specifying the model to control for the banking sector concentration Hirschman-Herfindahl Index (HHI) and the Net Interest Margin (NIM), the firm-bank relationship is no longer statistically significant. Results show that the crisis negatively impacts credit risk, while HHI positively affects the probability of loan default. This evidence suggests that banking relationship matters only in competitive markets. To test the potential interaction effect between relationship banking and collateral, Fairlie's (1999) decomposition technique is deployed. Our results imply that high concentration levels in the banking sector render firm-bank relationships relatively less important. This is of utmost importance for SMEs, banks, and policymakers.

JEL classification: *G21, O16*

Keywords: *SMEs, asymmetric information, banks, collateral, debt maturity, economic crises, relationship lending, banking market concentration*

Besnik A. Krasniqi, PhD
University of Prishtina, Faculty of Economy &
Kosovo Academy of Sciences and Arts
Republic of Kosovo
ORCID: 0000-0003-2440-3974

Mrika Kotorri, PhD (corresponding author)
University of Prishtina, Faculty of Economy
Agim Ramadani St, p.n. Prishtinë, 10000
Republic of Kosovo
E-mail: mrika.kotorri@gmail.com

Florin Aliu, PhD
School of Expertness and Valuation
Institute of Technology and Business
Ceske Budejovice, Czech Republic
Email: aliuf@mail.vstecb.cz
ORCID: 0000-0002-4876-6043

1. Introduction

The issue of small firm finance has intrigued researchers within both the entrepreneurship and finance literature. The role of bank finance in the growth of small and medium-sized enterprises (SMEs) is critical. For banks, particularly financial institutions involved in SME lending, a fundamental part of any lending process is the assessment and mitigation of the credit risk – the probability of loan default - which arises from asymmetric information (Krasniqi 2010a; Li et al. 2016; Zambaldi et al. 2011; Berger et al. 2011; Kärnä and Stephan 2022; Wernli and Dietrich 2022). Banks usually use collateral to alleviate information asymmetry of the issues relating to borrower quality, such as ex-ante adverse selection and/or ex-post moral hazard (Stiglitz and Weiss 1981; Bester 1987;

Besanko and Thakor 1987). Ex-ante, collateral is a signalling instrument of unobserved borrower characteristics, restricting adverse selection (Stiglitz and Weiss, 1981; Bester 1987; Chan and Thakor 1987; Berger et al. 2011; Agostino and Trivieri 2017). Ex-post, it is used as a mechanism to reduce the opportunistic behaviour of borrowers, inducing the alignment of interests between borrowers and banks and mitigating moral hazard problems. The mechanism of how banks mitigate credit risk has influenced the access and scope of the bank financing of SMEs. Collateral is expected to reduce credit risk and alleviate the negative impact of asymmetric information on equilibrium credit rationing arising from asymmetric information. Nevertheless, using collateral as an established device to mitigate risk has made it difficult for small firms to access external finance. From the perspective of the banks, the opaqueness of information of SMEs increases the risk associated with providing financing, inducing the bank to reduce loan maturity, increase the interest rate and introduce collateral requirements (Hernández-Cánovas and Koëter-Kant 2011). In the context of emerging countries and transitional economies, lending is particularly risky owing to information asymmetry problems in financial relations being potentially higher than in developed countries (Krasniqi 2010; Menkhoff, Neuberger, and Suwanaporn 2006). Other scholars point out the role of contextual factors and macroeconomic conditions, such as crises in bank lending policy (Peric et al. 2017). For example, lending to SMEs is even more risky during crises. This is particularly true for the 2008 global financial crisis, which resulted in banks tightening procedures and increasing requirements for lending to SMEs. Banks declined loans to firms with high credit risk due to their prudent lending, which typically increases during the recession (Hernández-Cánovas and Koëter-Kant, 2011). Small firms are the most likely to be affected by crises, as they cannot meet the higher collateral requirements and interest rates.

Given the above discussion, building trust through a bank-firm relationship, often referred to as relationship banking, is seen as an effective tool to mitigate credit risk, that is, the probability of loan default (Hernández-Cánovas and Martínez-Solano 2010; Jiménez and Saurina 2004; Kysucky and Norden 2015). Relationship banking serves as a mechanism to minimise adverse selection by facilitating the ex-ante screening of borrower creditworthiness by the bank and signalling trustworthiness by the borrower (Seijvers et al. 2010). Further, it minimises moral hazard by enabling closer ex-post monitoring by the bank. So, relationship lending alleviates information asymmetry, develops trust, ensures borrower discipline, and avoids borrowers' opportunistic behaviour, facilitating lending to SMEs in terms of lower interest rates and collateral requirements (Agostino and Trivieri 2017), reducing the probability of loan default. Relationship lending, however, may provide incentives to both borrowers and banks for opportunistic behaviour; the borrower may put less effort ex-post or take excessive risk, whilst the bank may exploit its power to increase interest rates and collateral requirements resulting in the hold-up problem (Berger et al. 2011; Agostino and Trivieri 2017; Seijvers et al. 2010). The elaboration above suggests potential endogeneity between relationship lending and collateral (Berger et al. 2011). Given the growing importance of relationship lending, examining its role in SME access to bank finance and, through that, the probability of loan default, especially in emerging markets and transition economies, is necessary.

The aim of this paper is not simply to disentangle the different information-asymmetry-related hypotheses from one another and empirically test them; instead, the article aims to investigate whether it is information asymmetry problems or higher levels of concentration in the banking sector that is critical to determining the probability of default. Further, it aims to empirically test the interaction effect between relationship banking and collateral. For this purpose, it uses an econometrics strategy different from that introduced in the existing literature, namely Fairlie's (1999) decomposition technique for non-linear models.

This study makes several contributions to the existing small firm finance literature. To the best of our knowledge, it is the first to estimate a model on the probability of loan default using a unique database of internal firm loan accounts from a commercial bank in the transitional economy of Kosovo. Further, it integrates banking sector competition and profitability measures (HHI and NIM) into the credit risk analysis, indicating that doing so improves the accuracy of results. Another contribution is that, unlike other studies in the existing literature, it is the first to deploy Fairlie's (1999) decomposition technique for non-linear models to investigate relationship-banking differences in the default probability concerning the impact of collateral. We find that relationship banking has a negative impact on the likelihood of default, suggesting that SMEs may benefit from building relational trust, which, in turn, enables banks to have more insider information for more accurate ex-ante evaluation and ex-post monitoring of loans. Findings indicate that tighter loan policies, that is, higher collateral and interest rate requirements, increase the probability of default. This suggests that, in the Kosovan context,

collateral is not used as a signal of more credible borrowers or to foster ex-post good behaviour among borrowers, which would enable banks to mitigate adverse selection and moral hazard problems; instead, results are in line with the "lazy bank hypothesis" and/or the ex-ante adverse selection hypothesis. Results, however, are largely not robust to specification changes. Upon including banking sector concentration and profitability measures, relationship banking is no longer statistically significant, while loan maturity has the opposite sign and is statistically significant. The effect of banking sector concentration is highly statistically significant and positively impacts credit risk. The crises resulted in the overall impact on banking policy, which caused banks to introduce more prudent lending policy resulted in better SME loan performance in both model specifications. No empirical support is found for the interaction effect between relationship banking and collateral in determining the probability of default.

The remainder of the article is structured as follows. The next section reviews the literature on the relationship between credit risk, collateral, and relationship banking. Section 3 presents the empirical methodology, and the empirical findings are discussed in Section 4. Section 5 draws concluding remarks and offers policy recommendations for banks and SME managers. It highlights limitations and suggestions for future research.

2. Theory and hypotheses

The small and medium-sized enterprises (SMEs) contribute substantially to jobs and income (Hashi and Krasniqi 2011; Audretsch et al. 2014; De Wit and De Kok 2014; Krasniqi 2010b; Peci 2015), innovation and export (Krasniqi and Desai 2017; Kotorri and Krasniqi 2018; Mahmutaj and Kransniqi 2020) leading to economic growth (Carree and Thurik 2010; Krasniqi and Desai 2016). Considering SMEs' contribution to economic growth, the literature was concerned with the factors preventing small firms from unlocking their full growth potential, and access to finance was among the first on the list. Since SMEs usually do not have access to capital markets, bank financing often remains the only option for external funding. This was particularly important for growth-oriented SMEs with higher capital requirements to support their growth strategies (Krasniqi 2012). Therefore, it was important for the literature to examine the determinants of small firms' access to bank finance, as bank financing constitutes the primary source of external funding (Behr et al. 2011). An essential aspect of financial relations between banks and SMEs is that the latter, owing to their size and lack of history and reputation, are characterised by data opaqueness, which leads to asymmetric information problems. Given these issues, one strand of the literature focused on collateral and relationship banking, as they are expected to impact not only access but also the loan performance of small firms. This, in turn, is likely to have long-term implications for banks' lending policies toward small firms. Following is a discussion of factors influencing loan default.

2.1. Collateral

The impact of collateral on credit risk has been the subject of burgeoning research. Explanations for the extensive use of collateral are founded in theories of banking and financial contracting which aim at reducing risk under asymmetric information about borrower quality based on the well-known Stiglitz-Weiss (1981) model. Owing to problems related to the market efficiency of the supply of finance to small firms and the potential problem of credit rationing, not all firms could access the funds they require (Berger and Udell 1998). The literature contains several attempts to theoretically and empirically explain the relationship between collateral and credit risk. Behr et al. (2011) and Berger et al. (2011) show that different theoretical views have been developed, leading to different empirical interpretations of the relationship between collateral and credit risk. The first view argues that the collateral pledged by borrowers serves as a signalling device, which reduces asymmetric information, and, in turn, may help mitigate ex-ante adverse selection faced by banks before the loan is contracted (Bester 1985; Stiglitz and Weiss 1981). The low-risk borrowers are expected to pledge more and better collateral, considering their lower risk, which implies that they are less likely to lose the collateral. So, "good borrowers" signal and help the bank to reduce the ex-ante adverse selection problem at the time of loan decision. This interpretation is challenged by the other group of studies claiming that collateral is a mechanism of sharing risk between the borrower and the bank, which gives incentives to the borrowers to act as per the lending contract and, in turn, may reduce ex-post moral hazard (Boot and Thakor 1994; Lacker 2001). According to these studies, even if the bank knows the borrower's credit quality, ex-ante collateral is used by banks to mitigate moral hazard problems once the loan has been disbursed, reducing monitoring costs. In doing so, the collateral pledged helps align the lenders' and borrowers' interests, reducing credit risk. The third group of studies combines the

two types of information asymmetry problems (Carlier and Renou 2005, 2006). In addition, collateral also represents a transaction cost for both banks and borrowers (Steijvers et al. 2010; Berger et al. 2011). The former incurs screening and monitoring costs, registration fees and other enforcement/disposal expenses. Monitoring costs are incurred ex-post, i.e. when banks try to ensure that customers act according to their contracts, while the rest is incurred prior to the bank's lending decision. Despite benefiting from the lower interest rates associated with collateralised assets, borrowers risk losing them if the return on the project is too low. Further, they incur opportunity costs associated with the collateralised assets, which may have been used more productively. Due to asymmetric information, banks will incur a relatively high transaction cost per unit if they deal with small firms compared to large firms, as banks' collateral-related costs depend on the number of loans made rather than the size of loans (Parker 2004). In competitive markets, aiming at minimising costs, banks prefer to make a few large loans rather than many small ones, yielding the required result. Storey (1994a) emphasises that due to collateral-related costs, banks' decisions are biased towards larger firms. These costs usually have an inverse relationship with the loan size (Krasniqi 2010). Firms with a lower likelihood of success will be willing to pay higher interest rates associated with riskier projects, as they may not perform consistently with the contract or in the worst-case scenario, may choose not to repay the loan at all (moral hazard problem). Owing to their limited ability to monitor investment projects (which may now include more risky ones,) banks decide on increasing interest rates and collateral requirements. This may push away good borrowers, who might choose not to apply for a loan (although they may have viable projects), as they might consider higher interest rates and collateral requirements too risky. Banks will ration the supply of credit and tighten credit conditions, such as collateral requirements to protect themselves against potential opportunistic behaviour of dishonest borrowers, that is, adverse selection and moral hazard. Simultaneously, as per the "lazy bank hypothesis" collateral reduces banks' incentives to assess and monitor, since they consider collateral as a substitute for ex-ante screening and ex-post monitoring, particularly when lending to small firms (Steijvers et al. 2010). Hence, banks have an increased incentive to engage in riskier projects. The higher collateral requirements and the associated costs pose a greater burden on small firms than larger firms. Following these arguments, one would expect a negative relationship between collateral and credit risk. Yet, the empirical evidence on the impact of collateral on loan default is inconclusive. According to Berger et al. (2011), the mixed empirical evidence results from the fundamental issue of identifying asymmetric information.

In closing this section, on the one hand, the collateral can make borrowers behave according to the contract and incentivises the borrower to repay the loan because they can lose the collateral. In this sense, the collateral can have a positive impact on reducing the default rates. On the other hand, there are also situations where borrowers have no choices to access external finance because they may face financial distress. Under these circumstances, the collateral may not have an expected positive effect on reducing the loan default. There are also situations, especially in a weakly installed institutional environment, where the enforcement of collateral rights is not adequate, and collateral cannot be used effectively to prevent opportunistic behaviour. Based on the arguments developed above, there is non-agreement in the literature on the impact of collateral on credit risk among small firms.

2.2. Relationship banking

Several studies examine the effect of relationship banking on credit risk arguing that it helps minimise adverse selection and moral hazard arising from information asymmetry. The borrowers provide, and the banks gather proprietary soft information about the borrowers, which may mitigate information asymmetry problems, convey information in support of the borrowers' creditworthiness, reduce incentives for opportunistic behaviour of both lenders and borrowers, ensure borrower discipline, prevent strategic default, secure better lending conditions, and develop mutual trust. Thus, the parties build a relationship which each party expects to be mutually beneficial. In this context, small and opaque borrowers have the incentive to build long-term lending relationships with banks aiming at minimising information asymmetry problems in exchange for better lending conditions (Chakraborty and Hu 2006; Jimenez et al. 2006; Hernández-Cánovas and Martínez-Solano 2010; Voordeckers and Steijvers 2006; Brick and Palia 2007; Steijvers et al. 2010; Bharath et al. 2011). Given the arguments favouring the relationship being mutually beneficial, a negative impact of relationship banking on credit risk is expected.

The foundation of relationship banking consists of the efforts of the borrowers to convey information about their creditworthiness to the banks in their attempts to minimise information asymmetry and benefit from better lending conditions. Relationship banking may take time to develop. Yet, once established, it implies that the borrower has enabled the

bank to have superior information compared to other potential lenders. Conditional on the strength of the relationship – duration and concentration - the bank's incentive to behave opportunistically increases. So, the bank may monopolise the information and lock the borrower into a credit relationship and exploit their market power to the detriment of the lending conditions, giving rise to the hold-up problem (Berger et al. 2011; Agostino and Trivieri 2017; Seijvers et al. 2010). Tighter lending conditions imply higher costs for the borrower, particularly small firms. Strong relationship banking may also cause the "soft-budget constraint problem". Given a strong lender-borrower relationship, the bank may agree to renegotiate the debt, increasing the borrower's incentive to behave opportunistically or engage in hazardous projects (Bolton and Scharfstein 1996). Contrary to the arguments elaborated above, the hold-up and the soft-budget constraint problems suggest a positive correlation between relationship lending and credit risk. Consequently, the a priori effect of relationship lending on the probability of loan default is inconclusive.

2.3. Banking sector concentration

Empirical analyses of the structure-conduct-performance paradigm have started with Bain's (1951) seminal work, followed by several other studies attempting to confirm the impact of concentration, efficiency, or both, on profitability. This has brought about two schools of thought with diametrically opposing views, the structure-conduct performance school of thought and the Chicago school. The former school of thought considers the positive relationship between concentration and profitability to be evidence of the ability of large producers to collude in an oligopoly context or concentrated markets, leading to output restrictions and increases in both prices and profits. The Chicago school challenged this view, arguing that a positive relationship is not per se evidence of market power but rather evidence of an efficiency-profitability relationship. Irrespective of which one of the explanations holds, market concentration may enhance banks' market power, which, when exploited, increases the burden on the clients. Accordingly, banks operating in highly concentrated markets have a larger room to manoeuvre in terms of increasing collateral requirements and interest rates. Thus, they have lower incentives to assess and monitor their clients/loans giving rise to the "lazy bank hypothesis". This suggests that in highly concentrated banking sectors, banks are more able to shift the burden of credit risk to their clients. Consequently, banks have a higher incentive to engage in more risky lending, increasing the probability of loan default. The findings of Akins et al. (2016) support the view that banks operating in more concentrated markets are more inclined to engage in risky projects, have higher loan losses, face more regulatory interventions, and are more likely to fail. Similar evidence is provided by Corvoisier and Gropp (2001). Using a Cournot model, they find reduced competition in the EU banking sector may have induced less competitive pricing practices among banks. Yet, Guerra, Tabak and Penaloza (2009) in their study of the Brazilian banking sector, find no support for the positive relationship between concentration and market power exploitation in terms of interest rate increases. Consequently, the a priori impact of the banking sector concentration on credit risk is inconclusive.

2.4. Endogeneity between collateral and relationship banking

The literature on credit risk is enriched by studies acknowledging the potential endogeneity between relationship banking and collateral. A pool of studies empirically examine the interaction effect of collateral and relationship lending on credit risk (e.g. Jiménez and Saurina 2004), while a separate stream of literature analyses the impact of the latter on collateral (Berger et al. 2011; Hanedar et al 2014; Steijvers et al. 2010). The theoretical underpinnings for the endogeneity between collateral and relationship lending are set by the "lazy bank hypothesis" (Berger et al. 2011). The hypothesis posits that in their efforts to resolve information opaqueness/asymmetry problems banks value collateral and screening as substitutes. As a result, when collateral is pledged banks' incentives for ex-ante efforts to build a relationship with the borrower are reduced, and hence they are more likely to engage in risky projects. The heavy reliance on collateral rather than relationship lending suggests a positive bias in the effect of collateral on credit risk.

As argued above, aiming at minimising information asymmetry problems both borrowers and banks invest in their financial relations, whereby the borrower secures the main bank information advantages over other banks. Depending on the breadth and depth of the relationship, borrowers may end-up "locked-in" to the financial relation increasing the bank's incentive to behave opportunistically. So, owing to a strong relationship, the bank may "misuse" its market power to increase interest rates and collateral requirements resulting in the hold-up problem (Berger et al. 2011; Agostino and Trivieri 2017). This potential endogeneity between relationship lending and collateral introduces a positive bias in the impact of collateral on credit risk.

In the presence of information opacity, borrowers consider collateral as a signalling tool, which enables them to convey information about their creditworthiness, and in exchange, benefit from lower interest rates and longer loan maturity. In doing so, they invest in their relationships with the banks. On the other hand, the banks use these relationships to lend to borrowers with higher information opacity (Berger and Udell 2002). Such borrowers, in turn, are expected to pledge more collateral, suggesting that relationship banking impacts collateral while being affected by unobserved firm opacity. According to Berger et al. (2011), a positive relationship between collateral and relationship strength is expected since they both correlate positively with unobserved firm opacity. As a result, again, there is a positive bias in the impact of collateral on credit risk.

Another source of endogeneity may be the soft-budget constraint problem arising from relationship banking. In their attempts to minimise borrowers' opportunistic behaviour and ensure their discipline, banks tighten lending conditions by requiring collateral (Hernandez-Canovas and Martinez-Solano 2006; Ono and Uesugi 2009; Kano et al. 2011), increasing interest rates (Hernández-Cánovas and Martínez-Solano 2010; Kano et al. 2011; Stein 2011) and/or reducing maturity. Consequently, the positive correlation between relationship lending and collateral causes an upward bias in the effect of collateral on credit risk.

2.5. Financial crises

Financial crises have an essential impact on banks' risk-averseness and lending policies, particularly towards SMEs. Studies provide empirical evidence that banks reduce their credit supply more during crises (Fraser 2009; Fraser et al. 2012; Iyer et al. 2013). The literature also suggests that SMEs show a higher level of distress, particularly at the peak of financial crises-a faster decline in profitability. Moreover, the ability of such firms to repay loans becomes a concern for banks (Udell 2015). Empirical evidence from the UK shows that during the recession of the early 1990s, the relationships between banks and SMEs deteriorated, with complaints that banks were too quick to foreclose on loans and did not fully pass on reductions in base rates (Fraser 2009). During the 2008 financial crisis, empirical evidence from the UK indicates that SMEs were strongly affected by the collapse in bank lending (Fraser 2012). According to this analysis, small firms in the UK faced several problems, such as greater difficulty in accessing finance, withdrawal of promised finance by banks, drastic interest rate increases, and arrangement fee increases. Further, at times of crises, as banks become more risk-averse and tighten their lending policies, small firms are more likely to be required to pledge collateral and find it more challenging to meet the higher collateral requirements. Considering these arguments, banks, due to their increased risk-averseness arising from financial crises, switch to tighter lending policies, increasing firms' credit risks. These effects are felt stronger by smaller firms with insufficient collateral, shorter history, and higher information opacity. Consequently, in the context of SME lending, the 2008 crisis is expected to positively impact small firms' credit risk.

2.6. Control variables

In developed countries, banks extensively use owners' characteristics to measure borrower creditworthiness (Berger and Udell 1998; Hartarska and Vega 2006). Given their importance, we control for a set of owner and firm characteristics in this study. Other control variables include the sector in which the firm operates, banking sector characteristics and macroeconomic indicators.

3. Methodology

3.1. Data and the sample

The database used for this study is based on a sample of 2320 SME loans stemming from a unique bank Credit Information Register (CIR) of one of the three key banks in Kosovo. This database records monthly information on all SME loans granted by the bank. The database provides information on the firm and entrepreneur level characteristics (firm size and firm, location, sector, number of owners, manager's age, and gender) as well as characteristics of SME loans (mainly the size of the loan, maturity, amount of lean, percentage value of collateral and default rates). An essential contribution of our study is that we rely on unique information from bank credit registries which is rarely used in the existing literature on small firms in transition. Most of the previous studies rely on an often small and biased sample of firms biased towards large borrowers (Jiménez and Saurina 2004). Most of the studies on small firms rely on survey responses collected from SMEs which sometimes is a cause of concern in terms of reliability. In this study, we take advantage of the CIR of the bank, and we have used data on all loan transactions carried out by a local bank in one specific year, 2016.

The data used have been subjected to firm-size filters. The analysis has been limited to firms with less than 250 employees. Also, only loans with Kosovo residents in the private sector have been included; hence loans with non-residents have been excluded from further analysis (less than 10 cases). The loan default definition is based on the IFRS definition.[1] The loan default is considered to have occurred when 90 days after the date of the maturity, the firm debt balance has not been paid, which usually is classified as category D and E. This definition is adopted by the Central Bank of Kosovo.

3.2. Model Specification

The probability of default can be analysed within the utility maximisation framework. Accordingly, the firm as the decision-making unit is assumed to maximise utility from current and future consumption, including in its choices the possibility of (1) defaulting on the loan or (2) not defaulting on the loan, subject to a set of constraints. The firm decides in favour of option one only if the positive effects resulting from this option outweigh the negative effects. This suggests that the firm chooses one of the options, conditional on a set of influencing factors. In Table 1, the variable labels and their respective definitions are listed.

Table 1. Variable Label and Variable Definition

Label	Definition
P	Equals 1 if the loan defaults
Loan characteristics	
Relationship_banking	Equals 1 if the firm has taken a loan from the bank in the past
Loan_amount	Size of the loan in Euros
Loan_interest	Effective interest rate at which the loan is issued
Loan_maturity	Equals 1 if the loan maturity is equal to or greater than one year
Loan_collateral	Collateral pledged by the firm as a share of the total loan amount, in per cent
After_crisis	Equals 1 if the firm loan was issued after 2008
Firm characteristics	
Firm_age	Firm age in years
Firm_age_sq	Firm age squared in years
Firm_size	Number of employees
Firm_size_sq	Number of employees squared
Gender	Equals 1 if the firm owner is female (in case of more than one owner, if the female owner hold majority of ownership, then equals 1, otherwise 0)
Manager_age	Age of the firm manager in years
No_owners	Number of owners within the firm
Urban	Equals 1 if the firm operates in an urban area
Industry characteristics	
Agriculture	Equals 1 if the firm operates in the agricultural sector
Production	Equals 1 if the firm operates in the production sector
Service	Equals 1 if the firm operates in the service sector
Construction	Equals 1 if the firm operates in the construction sector
Trade	Equals 1 if the firm operates in the trade sector
Market concentration characteristics	
HHI	Hirschman-Herfindahl Index in the year the loan was issued
NIM	Net Interest Margin in the year the loan was issued
Macroeconomic characteristics	
Growth	Annual economic growth rate in the year the loan was issued

Empirically, we investigate two alternative firm behaviours relating to loan repayment: whether the firm loan will default or not, implying that the outcome is dichotomous, bounded between 0 and 1. Hence, the probit specification will be used. In probit, the error term is independent of the explanatory variables and is symmetrically distributed around zero. Further, the error term is assumed to follow the normal distribution.

The objective of this model specification is to derive the probability of the firm loan default conditional on a set of explanatory variables:

$$\begin{aligned} &\mathrm{P_i}(Y=1|X)=\mathrm{P}(\mathrm{U_{A0}}\le U_{A1}) \\ &=P(Z_i\le\beta_i+\beta_iX_i)=F(\beta_1+\beta_2X_i) \end{aligned} \tag{1.1}$$

where P_i=Pr(Y=1|X) measures the probability of an outcome occurring given the values of X_i and Z_i denotes the standard normal variable, that is, $Z_i \sim N(0,\sigma_2)$ (Gujarati 2009). P_i gives the probability of loan default of firm i with i=1,…,N, where N denotes the total number of loans, which may fall in two alternative outcomes. Accordingly, a vector of observed explanatory variables describing loan, firm, industry, market concentration and macroeconomic characteristics is represented by X_i.

The probit distribution function, F, takes the form:

$$P_i=\Pr(y=1|x)=\frac{1}{\sqrt{2\pi}}\int_{-\infty}^{\beta_1+\beta_2x}e^{-z^2/2}dt \tag{1.2}$$

where P_i gives the probability of the company loan going into default compared to not going into default.

To get information about $U_{A1}(c)$ and β_1 and β_2 the inverse of (1.1) is taken:

$$U_{A1}=F^{-1}(U_{A1})=F^{-1}(P_i)=\beta_1+\beta_2X_i \tag{1.3}$$

where F^{-1} denotes the inverse of the normal cumulative distribution function. The vector of explanatory variables is represented by the term X_i, which is elaborated below.

Given the elaboration above, the econometrics proposition of the probability of loan default is as follows:

$$\begin{aligned} &P_i\ (Y=1|x)=r\ (\mathrm{loan_i},\ \mathrm{firm_i},\ \mathrm{industry_i},\\ &\mathrm{market\ concentration_i},\ \mathrm{growth},\ \omega_i) \end{aligned} \tag{1.4}$$

where $\mathrm{loan_i}$ is a vector of variables representing loan characteristics, $\mathrm{firm_i}$ is a vector of firm characteristics, $\mathrm{industry_i}$ is a vector of variables related to type of industry, $\mathrm{market\ concentration_i}$ is a vector of indicators of market concentration, growth stands for the annual economic growth rate, and ωi is the error term. The subscript i = 0, ..., n represents loans.

3.3. Empirical Results

In Table 2, under Model 1 (henceforth M1) and Model 2 (henceforth M2) the results of the probit estimation are reported. The last column shows the respective theoretical expectations regarding the impacts of the variables. The difference in specification between M1 and M2 is that the latter model controls for the impact of market concentration indicators in the banking sector, namely HHI and NIM. There are a few but, in the context of this analysis, highly important differences in results between the two specifications. Under M2, relationship banking is no longer statistically significant, maturity is statistically significant but has the opposite sign, whilst the HHI is highly statistically significant. For brevity, M2 results will be interpreted, and reference will be made to M1 only when there are significant differences.

Results are largely sensitive to specification changes. Upon controlling for the impact of banking sector concentration through HHI and NIM, contrary to findings of other studies and of M1, results do not suggest a statistically significant influence of relationship banking on the probability of loan default. Evidence shows a statistically significant and positive effect of the HHI, strongly supporting the 'lazy bank' hypothesis, that is, the hold-up problem arising from banks exploiting their market power. Given a high market concentration level, that is, a high HHI, banks' incentives to use their market power to the detriment of the lending conditions increase. This, in turn, reduces banks' incentives to evaluate and monitor the loans because they consider higher collateral requirements and interest rates as a substitute for ex-ante screening and ex-post monitoring, leading to a higher probability of loan default.

As regards collateral, its impact on credit risk was a priori inconclusive. Empirical evidence under both model specifications (M1 and M2), though, suggests a positive effect. This finding may align with either the adverse selection hypothesis or/and the lazy bank hypothesis developed above. The higher collateral requirements may lead to adverse selection whereby only riskier borrowers apply for loans, and/or to the "lazy bank problem" whereby banks have lower

Table 2. Probit estimation of the probability of loan default

	Model 1		Model 2	
Label	Dy/dx	P> | t |	Dy/dx	P> | t |
P				
Loan characteristics				
Relationship_banking	-0.02	0.03***	-0.006	0.51
Loan_amount	1.07E-07	0.76	-3.5E-07	0.48
Loan_interest	0.14	0.001***	0.32	0.001***
Loan_maturity	0.09	0.43	-0.75	0.001***
Loan_collateral	0.0007	0.001***	0.0004	0.05***
After_crisis	-3.1	0.001***	-2.85	0.001***
Firm characteristics				
Age	0.24	0.01***	0.12	0.31
Agesq	-0.01	0.01***	-0.01	0.30
size	-0.03	0.04***	-0.03	0.08*
Sizesq	0.0001	0.43	0.0001	0.48
Gender	0.16	0.37	0.15	0.47
Manager_age	-0.003	0.49	-0.7E-03	0.90
No_owners	-0.29	0.15	-0.29	0.23
Urban	-0.01	0.96	-0.04	0.77
Industry characteristics				
Agriculture	0.65	0.02***	0.62	0.05**
Production	0.21	0.37	0.14	0.60
Services	-0.11	0.61	-0.18	0.46
Construction	0.23	0.39	0.21	0.51
Trade	-0.11	0.58	-0.14	0.56
HHI			0.005	0.001***
NIM			0.19	0.45
Growth	-0.28	0.001***	-0.56	0.001***

incentives to evaluate ex-ante and/or monitor ex-post the behaviour of borrowers giving rise to the latter behaving opportunistically. Accordingly, if one or both hypotheses hold, pledging collateral will increase the probability of default.

Only the interest rate is statistically significant among the other three loan characteristics. As expected, higher interest rates increase the probability of loan defaults. Although results are broadly the same across specifications regarding the interest rate, it is essential to note that the impact of loan maturity has the opposite sign and is statistically insignificant when controlling for banking sector concentration, HHI.

The financial crisis has a statistically significant effect. Contrary to expectations, it has a negative sign under both model specifications. This empirical evidence suggests that the introduction of more prudent lending policies, that is, higher collateral requirements and interest rates, and more stringent monitoring rules, owing to banks becoming more risk-averse due to the crisis, leads to a reduction in the probability of default.

Among the dummy variables controlling for the sectors in which the firm that has been issued the loan operates, only the dummy capturing the effect of agriculture is statistically significant. As expected, loans issued for agriculture have a higher probability of default. Results are generally similar across specifications regarding the impact of the economic growth rate, at the time when the loan is issued. This variable has a negative and statistically significant impact suggesting that better macroeconomic conditions in the country reduce credit risk.

Contrary to the findings of the papers reviewed and to M1, results under M2 do not support firm characteristics being important determinants of credit risk. Out of the five variables capturing the effect of firm characteristics, only variable firm size is statistically

significant. Yet, the results do not support a non-linear relationship between firm size and the probability of default.

3.4. Fairlie's (1999) decomposition technique for non-linear models

As elaborated in the section on *endogeneity between collateral and relationship banking*, several studies have argued that endogeneity between relationship banking and collateral leads to an upward bias in the impact of collateral on credit risk. Without taking a critical view of the potential limitations of the technique, Jimenez and Saurina (2003) test for endogeneity by introducing an interaction term between the two variables. Kotorri (2010), in her analysis of model stability over time, critically examines the limitations of using interaction terms in non-linear models and provides arguments in favour of and deploys Fairlie's (1999) extension of the Blinder-Oaxaca decomposition to non-linear models.

In this paper, following the methodological discussion in Kotorri (2010) and given the binomial nature of the outcome variable, Fairlie's (1999) decomposition technique for non-linear models is used to investigate

Table 3. Fairlie's (1999) detailed decomposition technique for non-linear models

	Model 1		Model 2	
Overall difference	0.16		0.16	
Probability of default Group 1	0.21		0.21	
Probability of default Group 2	0.05		0.05	
Label	Coefficient	P> | t |	Coefficient	P> | t |
Loan characteristics				
Relationship_banking				
Loan_amount	8.36E-05	0.90	-9.1E-05	0.85
Loan_interest	-0.009	0.002***	-0.06	0.001***
Loan_maturity	-0.002	0.86	-0.08	0.001***
Loan_collateral	0.0009	0.33	-0.0005	0.46
After_crisis	0.11	0.001***	0.10	0.001***
Firm characteristics				
Firm_age	-0.07	0.10*	-0.002	0.84
Firm_age_sq	0.07	0.10*	0.001	0.90
Firm_size	0.008	0.03***	0.003	0.58
Firm_size_sq	-0.0001	0.96	0.0003	0.95
Gender	-0.0007	0.46	-0.0009	0.51
Manager_age	0.0002	0.71	-0.0002	0.74
No_owners	0.003	0.10*	0.0006	0.56
Urban	-0.0002	0.74	-0.0006	0.76
Industry characteristics				
Agriculture	0.001	0.16	0.001	0.26
Production	0.001	0.37	-0.0006	0.67
Service	-0.001	0.66	-0.002	0.55
Construction	-0.0006	0.50	-0.0013	0.52
Trade	0.001	0.61	0.001	0.61
Market concentration indicators				
HHI			0.22	0.001***
NIM			0.003	0.63
growth	0.001	0.54	-0.02	0.002***

relationship-baking differences in the default probability, in particular, whether the impact of collateral on credit risk varies depending on relationship banking. This technique provides a test of the statistical significance of the overall difference, in the probability of default between loans issued to borrowers that have a relationship with the bank (Group 1) and those that do not have a relationship with the bank (Group 2). Further, it identifies and quantifies the contributions of individual variables to the overall difference and tests the statistical significance of these individual contributions. To our knowledge, this technique has not been deployed in examining the potential interaction effect between collateral and relationship banking.

The table 3 reports the results of Fairlie's (1999) decomposition for the difference between relationship banking/no relationship banking using the independent variables of M1 and M2. For brevity, again, only the results of M2 will be interpreted.

Results suggest that the overall difference in the default probability between Group 1 and Group 2 is 0.16, with Group 1 having a higher credit risk (0.21). The decomposition estimates by individual variables indicate that only group differences in five independent variables make statistically significant contributions to the overall difference. Contrary to Jimenez and Saurina (2003), group differences in collateral do not create a statistically significant contribution to the overall difference and thus do not provide empirical support for the interaction effect between relationship banking and collateral.[2] This evidence, however, is in line with M2 results, given the statistically insignificant impact of collateral when controlling for the effect of banking sector concentration. Only group differences in loan characteristics, namely loan maturity and interest rate, contribute statistically significantly to the overall difference. The key factor in explaining the overall difference in the probability of default is the market concentration index, HHI. This finding indicates a strong interaction effect between HHI and relationship banking. Finally, the group differences in the two macroeconomic indicators, growth rate and crisis effect, account for statistically significant contributions to the overall difference in credit risk.

4. Concluding remarks and policy implications

This study has sought to evaluate the impact of relationship banking, collateral, economic crisis, and concentration and profitability in the banking sector on the probability of loan default in the post-conflict-economy settings of Kosovo. This study shows that stronger firm-bank relationships reduce the probability of default, and tighter credit policies regarding higher collateral requirements and interest rates have the opposite effect.

From the policy perspective, the study suggests that in the broader context of Kosovo's economy, relationship banking can be helpful for SMEs, which can build on relational trust, which, in turn, enables banks to have more insider information for more accurate ex-ante evaluation and ex-post monitoring of loans. In addition, SME owners/managers can benefit from networking with banks and building relationships and trust through which they can provide information and facilitate banks' decisions making access to loans easier. Further, as results indicate tighter loan policies, that is, higher interest rates and collateral requirements, increase the probability of default, suggesting that in the Kosovan context, collateral is not used as an ex-ante signal of more credible borrowers or to impose good behaviour among borrowers' ex-post. As such, banks cannot use collateral to mitigate adverse selection and moral hazard problems but should opt for alternative ways of mitigating risk, such as ex-ante adverse selection mechanisms (e.g., better screening and loan analysis of investment projects).

Yet, results on the role of banking relationships are sensitive to model specifications. Including banking sector concentration and profitability measures into the equation, relationship banking loses its statistical significance, while loan maturity has the opposite sign and is statistically significant. The effect of banking sector concentration is highly statistically significant and positively associated with credit risk, that is, the probability of loan default. This finding in line with the empirical evidence in Akins et al. (2016) and Corvoisier and Gropp (2001), suggesting that banks operating in concentrated markets may exploit their dominant position by increasing the burden on the clients (manoeuvre in terms of increasing collateral requirements and interest rates), and thus have lower incentives to assess and monitor their clients/loans giving rise to the 'lazy bank hypothesis" - shifting the burden of the credit risk to their clients.

Another interesting finding of the study is the very large negative and highly statistically significant effect of the 2008 global financial crisis on loan default. According to the empirical results of both model specifications, the crisis may encourage banks to introduce more prudent lending policies, resulting in better SME loan performance. Contrary to the literature on the endogeneity between collateral and relationship banking, empirical results do not support this hypothesis.

Regarding policy implications, the results indicate

that more prudent lending policies and baking sector concentration can increase banks' requirements on SMEs, which may constrain SMEs' access to bank debt differently than larger firms. This is important for SMEs, banks, and policymakers. Using bank relationships to enable banks easier, less costly, and more reliable access to information for firms, making loans for SMEs more accessible is not very useful for SME managers if banks operate in concentrated markets.

This study provides some preliminary insights into the association between relationship banking, collateral, economic crisis, and concentration and profitability in the banking sector on the probability of loan default. Considering the limitation of cross-sectional data, future analyses could extend our research by using panel data and including other country-specific variables related to institutional factors, which are highly important in determining the role of relationship banking under different institutional quality settings. Also, we acknowledge the limitations of our sample of SMEs that belong only to one bank in Kosovo, thus, making difficult any generalisability of the results; thus, we encourage scholars to use the data set of SMEs in all banks in future studies.

Endnotes

1 IFRS is a international financial reporting standard developed and approved by the International Accounting Standards Board (IASB), an independent, private-sector body that develops and approves International Financial Reporting Standards. IFRS 9 concerns the accounting and reporting specifically of financial instruments (see http://archive.ifrs.org/current-projects/iasb-projects/financial-instruments-a-replacement-of-ias-39-financial-instruments-recognitio/Pages/financial-instruments-replacement-of-ias-39.aspx , accessed on 10.02.2019)

2 The same holds when applying Fairlie's (1999) decomposition technique to M1 - group differences in collateral do not make a statistically significant contribution to the overall difference.

Acknowledgement:
This research was supported by the project: IVSUZO2301 - The impact of the circular economy on the share prices of companies listed on the stock exchange.

References

Agostino, M. and Trivieri, F. 2017. Collateral in lending relationships. A study on European SMEs microdata. *International Review of Applied Economics 31 (3): 339-356.*

Akins, B., Li, L., Ng, J., and Rusticus, T. O. 2016. Bank competition and financial stability: evidence from the financial crisis. *Journal of Financial and Quantitative Analysis 51 (1): 1-28.*

Ang, J. S. 1991. Small business uniqueness and the theory of financial management. *Journal of Small Business Finance 1 (1): 1-13.*

Audretsch, D. B., Coad, A., and Segarra, A. 2014. Firm growth and innovation. *Small Business Economics* 1-7.

Bain, J. S. (1951). Relation of profit rate to industry concentration: American manufacturing, 1936–1940. *The Quarterly Journal of Economics* 65 (3): 293-324.

Behr, P., Entzian, A., and Güttler, A. 2011. How do lending relationships affect access to credit and loan conditions in microlending?. *Journal of Banking & Finance 35 (8): 2169-78.*

Berger, A. N. and Udell, G. F. 1998. The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance 22 (6-8): 613-73.*

Berger, A. N., Espinosa-Vega, M. A., Frame, W. S., and Miller, N. H. 2011. Why do borrowers pledge collateral? New empirical evidence on the role of asymmetric information. *Journal of Financial Intermediation 20 (1): 55-70.*

Besanko, D. and Thakor, A. V. 1987. Collateral and rationing: sorting equilibria in monopolistic and competitive credit markets. *International Economic Review 671-689.*

Bester, H. 1985. Screening vs. rationing in credit markets with imperfect information. American economic review 75 (4): 850-55.

Bester, H. 1987. The role of collateral in credit markets with imperfect information. *European Economic Review 31 (4): 887-99.*

Bharath, S. T., Dahiya, S., Saunders, A., and Srinivasan, A. (2011). Lending relationships and loan contract terms. The Review of Financial Studies, 24(4), 1141-1203.

Bolton, P. and Scharfstein, D. S. (1996). Optimal debt structure and the number of creditors. *Journal of Political Economy* 104 (1): 1-25.

Boot, A. W. and Thakor, A. V. 1994. Moral hazard and secured lending in an infinitely repeated credit market game. *International Economic Review 899-920.*

Brick, I. E. and Palia, D. 2007. Evidence of jointness in the terms of relationship lending. *Journal of Financial Intermediation 16(3): 452-476.*

Carbo-Valverde, S., Rodriguez-Fernandez, F., and Udell, G. F. 2016. Trade credit, the financial crisis, and SME access to finance. *Journal of Money, Credit and Banking, 48(1):113-43.*

Carlier, G. and Renou, L. 2005. A costly state verification model with diversity of opinions. *Economic Theory 25(2): 497-504*.

Carree, M. A. and Thurik, A. R. 2010. *The impact of entrepreneurship on economic growth.' Handbook of entrepreneurship research*: 557-94. Springer.

Chakraborty, A. and Hu, C. X. 2006. Lending relationships in line-of-credit and nonline-of-credit loans: Evidence from collateral use in small business. *Journal of Financial Intermediation 15 (1): 86-107*.

Chan, Y. S. and Thakor, A. V. 1987. Collateral and competitive equilibria with moral hazard and private information. *Journal of Finance 42 (2): 345-363*.

Corvoisier, S. and Gropp, R. 2001. Contestability. Technology, and Banking. Frankfurt: European Central Bank.

De Wit, G. and De Kok, J. 2014. Do small businesses create more jobs? New evidence for Europe. *Small Business Economics, 42 (2) 283-95*.

Fairlie, R. W. 1999. The absence of the African-American owned business: An analysis of the dynamics of self-employment. *Journal of Labor Economics 17 (1): 80-108*.

Fraser, D. R., Rhee, S. G., and Shin, G. H. 2012. The impact of capital market competition on relationship banking: Evidence from the Japanese experience. *Journal of Empirical Finance 19 (4): 411-426*.

Fraser, S. 2009. Small firms in the credit crisis: Evidence from the UK survey of SME finances. Warwick Business School, University of Warwick.

Gujarati, D. (2009). *Econometrics by example*. Bloomsbury Publishing.

Hanedar, E. Y., Broccardo, E., and Bazzana, F. 2014. Collateral requirements of SMEs: The evidence from less-developed countries. *Journal of Banking & Finance 38: 106-121*.

Hartarska, V. and Gonzalez-Vega, C. 2006. What affects new and established firms' expansion? Evidence from small firms in Russia. *Small Business Economics 27 (2-3): 195-206*.

Hashi, I. and Krasniqi, B.A. 2011. Entrepreneurship and SME growth: evidence from advanced and laggard transition economies. International Journal of Entrepreneurial Behavior & Research 17 (5): 456-487.

Hernández-Cánovas, G. and Koëter-Kant, J. 2011. SME financing in Europe: Cross-country determinants of bank loan maturity. *International Small Business Journal 29 (5): 489-507*.

Hernández-Cánovas, G. and Martínez-Solano, P. 2010. Relationship lending and SME financing in the continental European bank-based system.' Small Business Economics 34 (4): 465-82.

Hernández-Cánovas, G., and Martínez-Solano, P. 2006. Banking relationships: effects on debt terms for small Spanish firms. *Journal of Small Business Management 44 (3): 315-333*.

Iyer, R., Peydró, J.-L., da-Rocha-Lopes, S., and Schoar, A. 2013. Interbank liquidity crunch and the firm credit crunch: Evidence from the 2007–2009 crisis. *The Review of Financial Studies 27 (1):347-72*.

Jiménez, G. and Saurina, J. 2004. Collateral, type of lender and relationship banking as determinants of credit risk. *Journal of Banking & Finance 28 (9): 2191-212*.

Jimenez, G., Salas, V., and Saurina, J. 2006. Determinants of collateral. *Journal Of Financial Economics 81 (2): 255-281*.

Kano-Nakata, M., Inukai, Y., Wade, L. J., Siopongco, J. D. C., and Yamauchi, A. 2011. Root development, water uptake, and shoot dry matter production under water deficit conditions in two CSSLs of rice: Functional roles of root plasticity. *Plant Production Science 14 (4): 307-317*.

Kärnä, A., and Stephan, A. 2022. Do firms in rural regions lack access to credit? Local variation in small business loans and firm growth. *Regional Studies 56 (11): 1919-1933*.

Kotorri, M. 2010. The probability of economic emigration in Kosovo. *Eastern European Economics 48 (6): 17-35*.

Kotorri, M. and Krasniqi, B. A. 2018. Managerial characteristics and export performance–empirical evidence from Kosovo. *South East European Journal of Economics and Business 13 (2): 32-48*.

Krasniqi, B. A. 2007. Barriers to entrepreneurship and SME growth in transition: the case of Kosova. *Journal of Developmental Entrepreneurship 12 (01): 71-94*.

Krasniqi, B. A. 2010a. Are small firms really credit constrained? Empirical evidence from Kosova. *International Entrepreneurship and Management Journal 6 (4): 459-79*.

Krasniqi, B. A. 2010b. *Determinants of Entrepreneurship and Small Business Growth in Transition Economies: The Case of Kosova*. PhD Thesis, Stoke on Trent: Staffordshire University.

Krasniqi, B. A. 2012. Building an expanded small firm growth model in a transitional economy: Evidence on fast growing firms. *Journal of East-West Business 18 (3): 231-273*.

Krasniqi, B. A. and Desai, S. 2016. Institutional drivers of high-growth firms: country-level evidence from 26 transition economies. *Small Business* Economics 47 (4): 1075-1094.

Krasniqi, B. A. and Desai, S. 2017. Institutions and export performance in 26 transition economies. *Entrepreneurship in transition economies: Diversity, trends, and perspectives*, 57-73.

Kysucky, V. and Norden, L. 2016. The benefits of relationship lending in a cross-country context: A meta-analysis. *Management Science 62* (1): 90-110.

Lacker, J. M. 2001. Collateralized debt as the optimal contract. *Review of Economic Dynamics 4 (4): 842-859*.

Li, K., Niskanen, J., Kolehmainen, M., and Niskanen, M. 2016. Financial innovation: Credit default hybrid model for SME lending. *Expert Systems with Applications 61: 343-55*.

Mac an Bhaird, C. 2013. Demand for debt and equity before and after the financial crisis. *Research in International Business and Finance 28: 105-17*.

Mahmutaj, L. R. and Krasniqi, B. 2020. Innovation types and sales growth in small firms evidence from Kosovo. *The*

South East European Journal of Economics and Business 15 (1): 27-43.

Menkhoff, L., Neuberger, D., and Suwanaporn, C. 2006. Collateral-based lending in emerging markets: Evidence from Thailand. *Journal of Banking & Finance 30 (1): 1-21*.

Ono, A. and Uesugi, I. 2009. Role of collateral and personal guarantees in relationship lending: Evidence from Japan's SME loan market. *Journal of Money, Credit and Banking 41 (5): 935-960*.

Parker, S. C. 2004. *The economics of self-employment and entrepreneurship*. Cambridge: Cambridge University Press.

Peci, F. (2015). What determines the allowance of bank loans for investment–an overview of Kosovo SMEs. *International Journal of Innovation and Economic* Development 1 (1): 27-35.

Peric, B. S. and Konjusak, N. (2017). How did rapid credit growth cause non-performing loans in the CEE countries?. *South East European Journal of Economics and Business 12 (2): 73-84.*

Steijvers, T., Voordeckers, W., and Vanhoof, K. 2010. Collateral, relationship lending and family firms. *Small Business Economics 34(3): 243-259.*

Stein, J. C. 2011. Liquidity regulation. In Federal Reserve Bank of Chicago Proceedings No. 1120.

*S*tiglitz, J. E. and Weiss, A. 1981. Credit rationing in markets with imperfect information. *The American Economic Review 71(3): 393-410.*

Storey, D. J. 1994. *Understanding the small business sector*. London: Routledge.

Tabak, B. M., Guerra, S. M., and de Souza Peñaloza, R. A. 2009. Banking concentration and the price-concentration relationship: the case of Brazil. *International Journal of Accounting and Finance 1 (4): 415-435.*

Udell, G. F. 2015. Issues in SME access to finance. European Economy 2: 61.

Voordeckers, W., and Steijvers, T. 2006. Business collateral and personal commitments in SME lending. *Journal of Banking & Finance 30 (11): 3067-3086.*

Zambaldi, F., Aranha, F., Lopes, H. and Politi, R. 2011. Credit granting to small firms: A Brazilian case. *Journal of Business Research 64 (3): 309-15.*