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SMEs' Access to Bank Financing During the Financial Crises in Europe

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This study explores the impact of the economy, banking market, and firm-specific factors on bank loan access for small and medium enterprises (SMEs) using data extracted from the Survey on the Access to Finance Enterprises (SAFE), covering the periods of the European sovereign debt crisis and the immediate post-crisis period from 28 European countries. We find that the rejection rates of bank credits spiked between 2009 and 2012 before declining in subsequent years. SMEs' applications are more likely rejected when the banking environment is more concentrated but are less discouraged from applying due to rising impaired loans of banks. Credit availability is significantly influenced by the country's legal framework for handling insolvency disputes and the growth of the credit information market, as we find that longer insolvency resolution times and increased credit information sharing result in higher probabilities of bank credit rejection. We also find that a feeble real economy is correlated with a more constrained credit supply and a shakier credit demand. More importantly, we build and subsequently empirically test hypotheses about factors determining credit demand and supply as well as the discouragement of SMEs in seeking bank loans, and the impact of past: rejections of bank credit, perception of deteriorations in banks' loan availability, and bank loan application, on the deterioration of current credit supply perceptions, future applications, and future rejections, with significant lessons for policy making.

Introduction

SMEs are key drivers of growth and development and represent 99% of total enterprises in the European economy; contributing 53% of value addition and 67% of total employment (Müller et al., 2021). These enterprises depend on banks for their financing needs and are constrained by limited available internal resources. However, access to the credit market is not an easy process. Some researchers argue that debt financing for these businesses is limited (Stiglitz & Weiss, 1981), while others claim socially ef-

ficient overinvestment (De Meza & Webb, 1987). Several factors, such as firms' preconditions, economic conditions, market competition, and broader credit availability, affect this finance availability. Enterprises such as SMEs also need help to access credit due to asymmetry of information, agency problems, and insufficient collateral (Berger & Udell, 2006). Furthermore, the resource allocation theory suggests credit provision for effective borrowers with appropriate investment financing and denial for poorly performing borrowers. This allocation mechanism leads to higher financing for efficient firms at a lower cost and lim-

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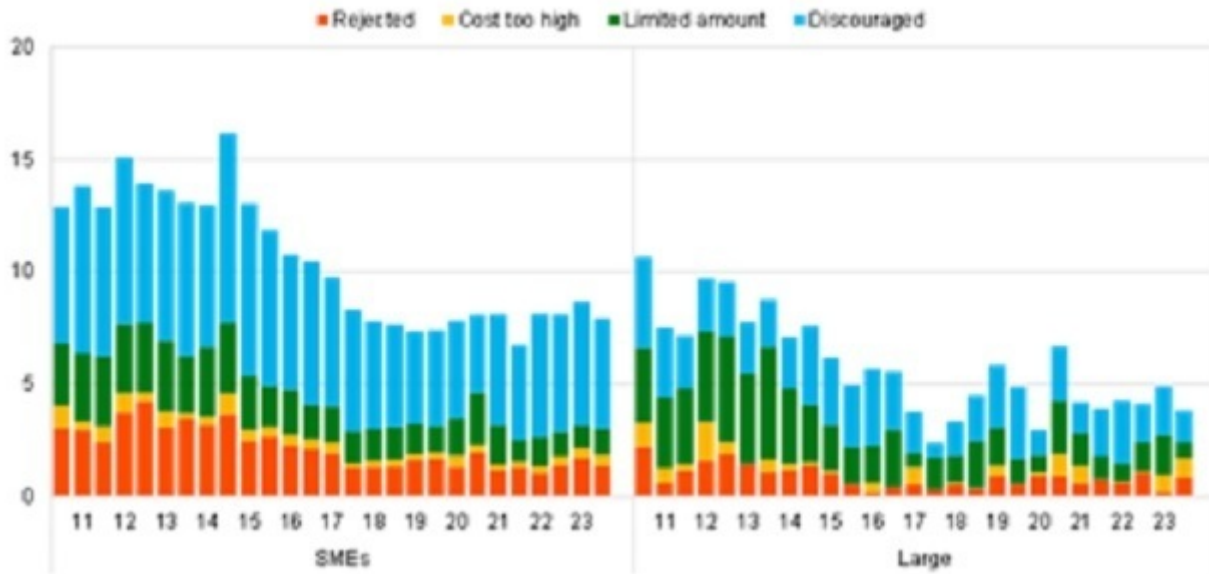


Figure 1. Obstacles in obtaining bank credit.

Source: European Central Bank, 2023

ited financing for firms who allocate resources inefficiently. The role of financial markets and institutions such as banks in better resource allocation has been highlighted by Diamond (1984), and more recently by Jaud et al. (2018). These issues were exposed during the 2008 financial crisis (Ferrando & Griesshaber, 2011) and the European sovereign debt crisis period of 2011 to 2013.

The crisis of 2008, when financial intermediaries were reluctant to lend to smaller firms, forced such firms to borrow at higher interest rates. The companies in these situations were less likely to survive, and their access to external finance was widely reduced (Clarke et al., 2012). The lack of access induced discouragement due to fear of rejection of the application, which created further barriers or willingness to apply for borrowing (Cavalluzzo & Wolken, 2005). Twice as many companies were reluctant to apply for credit for fear of being turned down (Freel et al., 2012). [Figure 1](#) illustrates that discouragement, limited access, high cost, and total rejection are the significant barriers to SMEs obtaining loans within the Euro region. In the SME finance survey conducted last year by the European Central Bank (ECB), the share of firms that applied for bank loans stood around 27%, within which around 14% of SMEs (compared to 7% of larger firms) pointed to significant obstacles for bank finance availability—the highest rate since 2016—due to transmission of monetary policy after COVID crisis and related money supply expansion and inflation.

Credit rationing is caused by flaws in the loan market and information asymmetry (Cenni et al., 2015). These constraints aggravated access to financing within the crisis period, and Berger and Udell (2006) also recognized common issues in smaller companies. Data shows that between 2008 and 2013, SMEs witnessed a 35% decline in bank credit in Europe (Bremus & Neugebauer, 2018). Not only was availability reduced during the crisis period, but terms and conditions (T&C) linked to credit were also less favourable. The

European Commission data of 2018 suggests that banking credit is one of the top three relevant sources of financing for SMEs in Europe. The banks, at best, can be judged in their institutional context and mechanisms to resolve the informational constraints. The banks have a competitive advantage in financing specific types of 'information-intensive' borrowers, such as SMEs. The World Bank studies suggest external factors, such as economic situation, industry competition, and legal systems, have a more significant impact on encouraging or discouraging bank lending to SMEs. For instance, according to Beck et al. (2008, p. 3), findings based on a survey of 91 banks perceive the SME segment as highly profitable, but macroeconomic instability, especially in developing countries, and competition in developed countries are the main obstacles.

Adrian and Shin (2009) recognize the importance of demand and supply factors in credit development, and the importance of the strength of balance sheets related to credit provision for businesses at the firm level. More importantly, access to financing is a significant concern, particularly for European SMEs due to their role in economic development and employment generation, as limited access to credit affects their operations and contribution to society. The frequent fluctuations in business environments, banks' related constraints, and volatility of financial markets during and immediately after two crises (financial and sovereign debt) compelled us to investigate in depth the hypothesis premises that firm-level intentions to seek bank credit and access depend on the firms' ability to meet the credit conditions while considering micro, macro, and core banking and firm-specific factors, especially for European SMEs. More specifically, the study aims to answer the following research questions:

RQ1: What are the firm-specific, macroeconomic, and banking factors that influence the supply and demand of bank loans to SMEs within Europe?

RQ2: Do all factors impact SMEs' demand and supply of bank loans equally?

The role of banks is best displayed in the context of institutional mechanisms for resolving informational constraints. This suggests that banks have a competitive advantage over securities markets when it comes to financing specific types of 'information-intensive' yet opaque borrowers, such as SMEs. This comparative advantage implies that the availability of bank financing may influence SMEs' business decisions, such as investment, leading to higher growth and profitability. Recent World Bank studies suggest that external factors—including the macroeconomic climate, banking industry rivalry, and national legal systems—have a greater impact on encouraging or discouraging bank lending to SMEs. For instance, according to Beck et al. (2008, p. 3), who based their findings on the survey responses of 91 banks, "banks perceive the SME segment to be highly profitable but perceive macroeconomic instability in developing countries and competition in developed countries as the main obstacles." After adjusting for country heterogeneity about prevailing economic and banking conditions, it stands to reason that the cross-sectional variance in company characteristics would reflect the cross-sectional variation in the supply of bank credit and related T&Cs. According to economic theory, therefore, banks would impose stricter loan T&Cs on riskier companies, subject to the business environment of the specific country.

The role that the company's perceptions of its financial health, prospects, and creditors' readiness to offer financing play have also been taken into consideration in several recent research papers. Casey and O'Toole (2014) discuss firms' perception of their profitability to represent operating conditions. Gómez (2019) utilizes the index of consumer confidence as a proxy of consumers' future expectations about future economic activity. Ferrando et al. (2017) state that firms with a perception of a better outlook have a higher chance of obtaining credit. Mac an Bhaird et al. (2016) consider perceptions about credit history and access to finance to be pressing issues and the willingness of banks to provide loans to be cognitive issues of SMEs as well as important factors in explaining demand and supply of external finance. Some other studies have considered perception about own profitability (Bongini et al., 2021; Casey & O'Toole, 2014; Holton et al., 2014), capital (R. Calabrese et al., 2021; Corbisiero & Faccia, 2020; Ferrando et al., 2017; and Holton et al., 2014), creditworthiness (Corbisiero & Faccia, 2020; Moro et al., 2020; and R. Calabrese et al., 2021), future outlook (R. Calabrese et al., 2021; Corbisiero & Faccia, 2020; and Holton et al., 2014), general economic outlook (Moro et al., 2020), and public support (Holton et al., 2014) to determine SMEs' finance problems in accessing, and subsequently using, external finance. Interestingly, these studies do not consider the opposite, such as how firms' characteristics, macroeconomic conditions, and the banking market would determine the SMEs' expecta-

tions of bank finance availability shortly. We do consider this and test two hypotheses in this regard, i.e., the impact of firms' related factors, economy, and banking conditions on current period credit availability as well perceptions of availability shortly (i.e., in six months).

Based on the above-mentioned research questions and arguments, we test four hypotheses in this study:

H₁: Firm-specific, macroeconomic conditions and bank characteristics influence the demand, supply, and terms and conditions (T&C) of bank loans for SMEs in Europe.

H₂: SMEs' future expectations of obstacles to bank credit supply are determined by current firm-specific, macroeconomic, and banking market conditions.

H₃: Future perceptions about credit supply impact, current supply, and T&C of SME bank loans.

H₄: Whether previous perceptions, applications, and rejections of SME bank credit have a bearing on future perceptions, applications, and rejections.

The study uses the European SMEs data between 2009-2013 and tests the above-mentioned four hypotheses. It contributes to the literature on bank credit to SMEs in several ways by identifying the factors that influence bank demand and credit access, particularly during/post-crisis periods. The study adds value to our understanding of access to financing and firm-specific, economy, and bank-related factors in crisis dynamics functioning. The study has adjusted the country heterogeneity by using the cross-sectional variance in firm-specific characteristics and reflecting the cross-section variation related to access. The dataset used in this study covers almost the entire period of post and immediate financial crisis, allowing us to examine how the impact of the macroeconomic and banking variables used evolved. Furthermore, the study period captures the sovereign debt crisis's impact too, allowing us to investigate any further development in T&Cs of bank loan rejection as well as future expectations about the supply of bank credit. This study also tries to provide a comprehensive story by not only discussing the determinants of demand and supply of bank credit but also supplementing the analysis by building scenarios, incorporating the role of future expectations about the availability of credit, and identifying factors that discourage SMEs applying for bank credit alongside how T&Cs of loans are impacted by various factors. All these contributions and deeper analysis help us to understand the story of debt constraints of SMEs in general, and European small and medium businesses in particular. The review of the literature performed in the next section and related cited studies show that an in-depth analysis of the sort we perform in this study is less frequent, and thus the study aims to address this gap and contribute to the emerging literature on European SME finance generally and during crisis periods.

The rest of the study is structured as follows: Section two discusses previous relevant literature. Section three describes the methodology, section four discusses the empirical findings and analytical results, and section five contains the conclusion, limitations, recommendations, and future directions.

1. Literature Review – Factors Impacting Demand/Supply of Bank Loans and Future Expectations

Research on access to finance for SMEs has always been a notable topic, but the financial crisis gave us a new angle for investigation. Research on SME finance and its drivers has been increasing in the last two decades and is still ongoing. Some of the recent studies on access to finance include Calabrese et al. (2021), Galanti et al. (2022), Crawford et al. (2023), Chen et al. (2024), Martinez et al. (2022), Boccaletti et al. (2024), and Calabrese et al. (2024), among many others. These studies have been conducted in different contexts but with a broader aim of understanding the drivers of SME access regarding external finance such as bank loans, overdrafts, and suppliers' finance. More importantly, authors such as Matthews et al. (2013) stress the financing complexity of SMEs and highlight how different factors impact differently at different stages of SMEs development.

In this part of the paper, we will examine the supply and demand for finance by focusing on SMEs' access to enough credit alongside the role of different firm-specific, economic, and banking market variables in determining the demand and supply. Information asymmetries usually hamper SMEs' borrowing capacity, as having complete information is an ideal option, but the cost of collecting said information is a significant hurdle (Baas & Schrooten, 2006). Andries et al. (2018) state that firm characteristics are critical for the loan allocation process to reveal the overall firm performance and growth possibilities.

Some researchers claim that obtaining external financing is more difficult for younger, small, and emerging businesses than for larger and more established ones (Artola & Genre, 2011; Ferrando & Mulier, 2013). Notably, in times of crisis, these companies suffer more from deteriorating external credit funding conditions, allowing us to conclude that age and ability to obtain external capital are positively correlated (Bougheas et al., 2006; Gregory et al., 2005). Some, however, discover a negative correlation, while others do not detect a statistically significant correlation (Cole et al., 2019; Kumar & Francisco, 2005). Similarly, Ferrando and Griesshaber (2011) discover that the age and ownership of enterprises are essential for perceived funding barriers among enterprises. Although researchers, including Canton et al. (2010), and Bougheas et al. (2006), found that SMEs' age and stronger connections with banks promote access to external finance, others have not found a significant relationship between these variables (Cole et al., 2019).

Companies often seek external financing when internal capital is insufficient to finance positive, present-value projects. Moral hazard issues arise when an organization needs more external support than it has available from internal resources (Biswas, 2014). In these situations, firms are hungry for credit and seek to obtain external finance, although they could subsequently default, leading to both adverse selection and moral hazard issues. More likely, though, is that an average bank understands and anticipates this in advance. Therefore, regardless of age or size, financially troubled businesses will probably find it more difficult to

secure outside funding than financially sound businesses (Keasey et al., 2015). Additionally, firms are more likely to be deterred from applying for bank loans, particularly if the process for allocating credit is dependent on financial statements. Additionally, the sector of activity appears to be a significant factor that affects SMEs' access to financing. Manufacturing and industrial businesses, for example, have less access to external financing constraints than those in the services, trade, or technology sectors (Martinez-Cillero et al., 2020).

Further, other studies found that the owner's gender can impact an SME's demand and loan access (Coleman & Robb, 2016). For example, Campanella and Serino (2019) discovered that women who run small businesses face higher financing interest rates, more collateral requirements, and higher rejection rates than men. Hence, women-owned businesses face discrimination in loan applications (Asiedu et al., 2012) and could be discouraged from applying for loans during tight credit conditions periods. On the other hand, Bardwell et al. (2003) state that women-led home-based businesses are likely to be smaller, without international business, operate fewer hours, and are most often located in suburban and rural geographical areas. This explains why these firms would face more constraints in accessing external finance and related discouragement.

Financial developments associated with the country's macroeconomic and legislative conditions similarly affect SMEs' access to capital (Beck et al., 2008). Becket et al. (2005) claim that inadequate financial, legal, and enforcement institutions and mechanisms significantly harm SMEs and lead to tighter funding conditions. For instance, during the financial crisis, SMEs suffered from worsening external funding and deteriorating financing conditions (Ferrando & Mulier, 2015). The relevance of country-level determinants on the use and availability of bank loans is reflected in the diversity in capital structure among countries (Hall et al., 2004). Europe is an intriguing context because it has a significantly advanced banking industry (Langfield & Pagano, 2016) and credit market, but it also has a variety of institutional settings and heterogeneity in its macroeconomic environment. Information is crucial for determining a company's creditworthiness, and incomplete or inaccurate information may impede a company's ability to obtain bank credit. Furthermore, sharing information allows for the alleviation of moral hazards and adverse selection, two main challenges for the credit market (Padilla & Pagano, 2000). However, depending on the borrower's quality, increased information sharing may result in less lending (M. Brown et al., 2009). A borrower's credit rating may be negatively impacted by disclosing "black" or default information, increasing the possibility of credit rationing, nonetheless.

About country-level heterogeneities of demand and supply of external credit, Holton et al. (2014) suggest that a country's debt overhang, leading to higher bond yields, as well as its service debt and economic growth affect, SMEs' credit financing. Economic growth impacts the demand for credit due to its impact on the expected return

on investment (ROI) and the supply because of adverse economic shocks, which could hurt the asset prices, income, and prospects of businesses, increasing the risk of lending. Countries' debt overhang can force businesses to deleverage, in turn lowering their desire to invest and reducing the demand for credit. From the supply perspective, banking institutions with large loan books need to deleverage regardless of the loan applicant quality (Blanchard et al., 2009). Hence, the build-up of debt may cause loan applications from credit-worthy applicants to be turned down. Ferrando et al. (2017) found that a solid supply-driven decline in loan access emerges from sovereign stress. Furthermore, businesses in countries with higher GDP per capita report fewer funding challenges (Beck et al., 2006). Banks in mature economies are likely to be better informed, which will reduce screening errors, increase bank applications, and reduce discouragement. This suggests that borrower discouragement is negatively correlated with economic development as measured by GDP (Kon & Storey, 2003, p. 47). In a developing country context, Verma et al. (2021) suggest that for listed SMEs in India, for example, the order of preferred finance is current liabilities followed using reserves, short-term finance such as credit cards, and, lastly, long-term borrowings. Becket et al. (2005) state that smaller companies have more severe funding restrictions due to inadequate financial and legal structures. However, Chakravarty and Xiang (2013) found that regulatory considerations for small businesses in developing nations have less impact on borrower discouragement.

Banking markets play a significant role in determining the flow of funds to smaller and medium-sized businesses. For example, divergences in average loan rates among European countries are an essential sign of fragmentation. From the supply side, it represents bank default frequencies, competition for banking services, and "structural differences" in demand, such as creditworthiness (Horváth, 2018). During the financial crisis, several banks tended to allocate sizable portions of their portfolios to the debt securities issued by domestic sovereigns, and the economies that were more severely affected by the financial crisis, such as Greece, Ireland, Italy, Portugal, and Spain, saw a sharp decline in investor confidence in the banking sector (Ferrando et al., 2017). Additionally, these lenders have been negatively impacted by the sharp decrease in bank profitability and the depletion of bank capital reserves, forcing them to modify their risk exposure, which decreased their ability to lend (Wehinger, 2014). As a result, SMEs are typically more vulnerable and impacted than larger firms when bank lending is reduced.

Similarly, according to the bank market power (BMP) theory, less competitive banking markets result in fewer credit options and higher borrowing costs. On the other hand, the alternative information theory suggests that less competitive banking markets discourage banks from investing in relationship banking and, in turn, greater credit availability (Carbó-Valverde et al., 2009). Canton et al. (2013) support this by stating that higher bank concentration results in better-perceived access to bank financing. The interest rates charged by banks are a "screening mech-

anism" and represent a risk of default. Within this, Brown et al. (2011) find that higher interest rates deter creditworthy businesses from seeking loans. They observe considerable cross-country disparities and argue that high interest rates are the leading cause of business borrower discouragement in Eastern Europe. Nevertheless, although interest rates are used as a signaling mechanism, this could be more efficient in case of a lack of complete information, causing higher application costs for good borrowers (Kon & Storey, 2003). As a result, companies with investment prospects with a positive NPV may be deterred by a higher interest rate and decide not to pursue or delay the opportunity. In addition, as discussed in the introduction section, the perception of the potential borrower about their financial condition as well as bank credit supply could be based on previous experience dealing with banks, which could lead to fewer applications for bank credit.

The above-mentioned studies make it abundantly evident that capital structure, profitability, and the competitiveness of the local banking market are some of the key elements that determine the accessibility of external finance to SMEs. A country's economic circumstances, including indebtedness, credit information flow, government bond yield, and GDP growth, also significantly impact credit supply. A firm's unique characteristics, such as age, size, financial position, autonomy, and several other factors, are also crucial in securing external finance. It has also been the focus of some empirical contributions to differentiate between the supply and demand effects by employing firm-specific characteristics (Kashyap et al., 1992), bank data (Albertazzi & Marchetti, 2010), and survey data (Ciccarelli et al., 2012; Del Giovane et al., 2011; Hempell & Kok, 2010). Therefore, this study considers country-level factors that affect the supply and demand of bank finance by using the evidence collected from a broader base of European countries' SME data. The literature suggests several pertinent elements are essential in determining access to financing. Consequently, these factors are considered in an econometric model of the demand and supply of bank loans to determine the barriers and access to financing of SMEs in a testable framework.

2. Methodology and Data

The main objectives of this study are to test the conditional probability of SMEs getting a loan or not, subject to whether they have applied for the loan. For SMEs investigated in this study, statistical models such as logit and probit models have been applied, as these were developed by Ohlson (1980) and have been globally adopted. These models have been adopted in similar studies such as (Shin & Kolari, 2004), and (Berger et al., 2005). Like Calabrese et al. (2021). We use a two-step Heckman (Heckman, 1979) selection model in STATA, which allows us to estimate an unbiased causal effect between variables based on a response schedule and a selection function (Briggs, 2004).

The method simulates the supply and demand of a firm's external financing. Therefore, in this study, the selection function is the SME decision to apply for the loan (demand), represented by a dummy variable that takes the

value of '1' if the firm applied for the bank loan and '0' otherwise (when discouraged or did not need). The second equation represents the outcome model, which reflects whether the firm obtained the bank loan (supply). We represent this by another dummy variable that takes the value of '1' if the firm applied but was refused, refused the loan due to high costs, or received only a part of it (less than 75%). The rejection propensity of the credit application of firm i is modeled by the following latent function:

$$C_i^* = X_i\beta + e_{1i} \quad (\text{credit rejection equation}) \quad (1)$$

where β is a vector of parameters to be estimated, and X_i is a vector of independent variables that affect credit supply (rejection). The unobserved characteristics of firms are captured by a random variable e_{1i} with the distribution of $e_{1i} \sim N(0,1)$. the binary outcome represents the latent credit supply rejection propensity: [a] either the firm gets credit ($C_i^* \leq 0$) and consequently $C_i^* = 0$, or [b] the credit application is rejected ($C_i^* > 0$) and then $C_i^* = 1$. The above binary outcome is only observed if the firm has previously applied for credit. That is, if [c]:

$$Z_i\gamma + e_{2i} > 0 \quad (\text{credit demand/selection equation}) \quad (2)$$

where γ is a vector of parameters to be estimated, and Z_i is a vector of independent variables that affect the decision to apply for the credit (demand). Like (1), e_{2i} is another random variable with $e_{2i} \sim N(0,1)$ that accommodates unobserved firms' characteristics that affect application decisions. Following some of the recent studies in this area, summarized in the review of literature section, such as Beck et al. (2008), Artola and Genre (2011), Holton et al. (2014), Ferrando and Mulier (2013), Ivashina and Scharfstein (2010) and Jimenez et al. (2012), X and Z vectors are identified with firm-specific and other variables (economic and banking market).

In estimating the above-mentioned models, the study uses the data extracted from the SAFE survey and related questionnaires. Every six months, the European Commission and the ECB jointly administer the SAFE questionnaire, which was launched in 2009. Companies in the survey are categorized by nation, firm size class, and economic activity, and are chosen at random from the Dun & Bradstreet business record. To be adequately representative of larger economies, the sample sizes vary throughout nations. About 15–20% of the sample's total number of enterprises are from Germany, Spain, France, and Italy. The data extracted from these surveys has been used extensively by several studies cited in this paper. The sample includes 50,000 firms based on their size: micro (1 to 9 employees), small (10 to 49 employees), and medium-sized (50 to 249 employees). Firms in this dataset represent construction, wholesale or retail, and manufacturing sectors. The number of employees represents firm size, and age is used to estimate a company's accumulation of experience. Four age categories: new (very young) firms' category (<2 years), relatively new firms (2–5 years), experienced (5–10 years), and highly experienced (10+ years) are used. Firms' gender ownership, as in women-headed firms, and the firm's operational performance are used in addition to other variables of supply and demand for banking finance, including profitability, capital, and level of debt. Finally, the company's

debt by debt-to-income ratio, reflecting whether there was an increase in the past six months, is measured.

Consistent with the factors mentioned above, Finaldi and Parlapiano (2018) state that the characteristics of borrowers (such as their economic sector, age, turnover, ownership structure, exports, and primary financial needs) are associated with the interest rates levied against non-financial enterprises in European countries. Slow economic development and tight monetary conditions may also affect the loan demand. Demand may be lower due to depressed investment expectations and higher financing costs, while supply may fall due to a potential increase in the agency costs of borrowing (Jiménez et al., 2012). Therefore, the firm data from the SAFE survey is combined with country-specific and bank-level variables. Banking market conditions are approximated by several factors such as capitalization, loan quality indicators (net charge-off and impaired loans), interbank ratio, competition, loan growth, profitability (return on equity), and cost (price of borrowed funds and the interest rate charged on loans).

The government bond yield, GDP growth rate, GDP per capita, and public/private debt accumulation relative to GDP, are used to test for the impact of heterogeneous local socio- and macroeconomic conditions across European countries. The evidence suggests that high leverage built the foundation of the financial crisis and amplified the magnitude of the downturn in the euro area. This was illustrated through the investment losses correlated with the rate of private debt accumulation before the crisis (Ferrando et al., 2017). The business environment of the country is added through two variables approximated by the development of the credit market and related information sharing (credit depth of information) as well as the insolvency resolution framework (time to resolve insolvencies).

3. Empirical Results and Discussions

The two dependent variables are binary (firm's applications, and rejected =1); thus, the following probit Heckman selection specification is used for firm i

$$\begin{aligned} \text{Firm financing} \\ &= \theta + \beta \text{Firm characteristics} \\ &\quad + \delta \text{Macroeconomic \& business environment} \\ &\quad + \alpha \text{Banking market conditions} + \varepsilon \end{aligned} \quad (3)$$

The firm-specific characteristics and macroeconomic and banking conditions define the acceptance or rejection of credit applications, for which the test for the marginal effect of each set of characteristics is conducted separately alongside different thresholds of macro and bank-specific variables and their impact on rejection probabilities. Subsequently, for more deeper analysis, discouragement of SMEs (not applied =1) is investigated, where a demand for external loan (=1) is treated as a selection equation. The ordered probit model is used to model the T&Cs of the loans approved and the impact of the vector of variables X_i on the perceived supply of bank loans in the next six months. Lastly, the panel nature of some firms that are followed from 2009 to 2013 in the SAFE survey is used to measure the impact of previous perceptions on current credit supply and perceptions. Appendix 1 A contains the list of the

Table 1. Descriptive Statistics of Banking, Financial Market and Macro Economy (percentiles)

	BNK_CAP	BNK_LIMP	BNK_PBORF	BNK_INTBR	BNK_COMP	BNK_LGROW	BNK_PROF
P25	7.19	3.68	1.81	47.01	0.06	-2.44	3.12
P50	7.90	4.57	2.16	60.61	0.08	0.79	3.89
P75	9.48	7.75	2.59	75.76	0.14	3.86	5.61
P99	10.64		4.45	175.47	0.30	11.06	10.74
	GVT_DBT	PVT_DBT	CRED_INFD	TIME_INS	GDP_GRAT	GDP_PC	GOVE_YIE
P25	56.10	152.65	4.00	1.10	-2.37	31.090	2.91
P50	85.00	183.60	5.00	1.50	0.04	39.772	3.83
P75	108.30	234.30	5.00	1.90	1.45	43.834	5.24
P99	163.90	315.90	6.00	4.00	4.34	49.842	19.93

above-mentioned vector variables X_i along with sources of data.

Before presenting regression results, it is important to understand some descriptive statistics of the main variables alongside some statistics on loans and related T&Cs over the sample period. [Table 1](#) reports the descriptive statistics represented by the 25th, 50th, 75th, and 99th percentiles of some financial/banking markets, legal structure, and economic activity/cycle indicators. The difference between lower percentiles, such as the 25th, and higher percentiles, such as the 75th and 99th, indicate a considerable variation in the competition conditions, credit cycles, price of funds, time to resolve insolvencies, country-specific GDP growth rates, and other macroeconomic and financial conditions across European countries. This is expected since the sample covers five years and many countries with averages of more than 8,000 individual banks. This heterogeneity in the sample is exploited to estimate conditional application/rejection probabilities, the building of the scenarios, and the analysis of T&Cs and discouraged borrowers.

[Table 2](#) reports information on the firm-specific variables of interest and rejection rates and T&Cs. The table shows that based on size, micro-sized smaller firms face increased loan covenants, reduced maturity periods, and higher rejection rates than larger firms. Similar disadvantages are not reported for loan interest rate, fee, size, and collateral arrangements. Firms affiliated with the construction industry disproportionately suffered the most with rejections of loan applications and T&Cs. The lowest rejection rates are reported for firms with an age band of 5-10 years, but the same cannot be said for T&Cs. As expected, a higher proportion of younger firms reported increased loan covenants. Some variations are noticed, too, when evaluating women-headed firms compared to those led by men. Lastly, the highest rejection rates, as well as an increase in the interest rate and collateral, are reported for those firms with the suggestion of a decline in government guarantees. However, these firms also reported increases in loan size and maturity period.

The marginal effects of regression results of equations (1-3) are presented in [Table 3](#). These estimates indicate that small, medium, and large firms' applications are less likely to be rejected than a micro-level firm with less than 10 employees (reference category). Thus, the bigger the

firm's size, the lower the probability of rejection. The firm size is statistically significant for both the refusal of the loan and the firms' willingness to apply for the loan. The size effect on bank loans is related to the banks' perception that small businesses present higher risks and costs than large businesses. The results are consistent with those of Cardone Riportella & Casasola, 2003; Ferrando & Ruggieri, 2018; Hutchinson, 2004; Krasniqi, 2010; Kumar & Francisco, 2005; and Petersen & Rajan, 1994. Young firms with accumulated experience of five years or less face a higher risk of rejection than older firms with more than 10 years of age (reference category). Holton et al. (2014) and Beck et al. (2008) also highlight that older and larger firms face a lower probability of rejection than smaller and younger firms. Older firms may have more internal resources while smaller firms may have higher growth potential, meaning the latter requires credit finance to invest more, leading to increased demand for bank loans. According to some authors, the age of SMEs and their ability to obtain external capital are positively correlated (Bougheas et al., 2006; Gregory et al., 2005). Researchers such as Kumar & Francisco, 2005; and Petersen & Rajan, 1994 discovered a negative correlation between these factors, while others did not find a statistically significant relation (Cole et al., 2019).

Women-headed firms have a slightly higher chance of rejection and a lower probability of applying for bank loans. However, the coefficient attached to this rejection is not statistically significant. Several studies are consistent with these results, such as Coleman, 2000; Sara & Peter, 1998; and Guercio et al., 2015. Beck et al. (2018) also highlight a gender bias in the credit market that causes women-led businesses to pay higher interest rates and receive less bank credit, leading to discouragement in seeking external finance. Calcagnini and Lenti (2008) and Galli et al. (2018) also document that female borrowers experience higher loan denial rates despite not having any (legal) disadvantage in access to credit. Interestingly, financial autonomy's impact on the probability of rejection is statistically insignificant. However, autonomous firms are more likely to seek bank loans. Firms engaged in construction activities have a higher probability of rejection, while firms within the manufacturing industry have a higher probability of loan approval. However, companies within these industries all have a lower probability of applying during periods of

Table 2. Descriptive Statistics of Variables Used (%)

	Application rejection	Bank loan terms and conditions (T&C)					
	rates	Interest rate ↑	Charges/Commission/fee ↑	Size/credit line ↑	Maturity period↑	Collateral requirements ↑	Covenants change yes
2009_1	13.98	37.15	8.21	22.44	12.52	3.11	2.94
2009_2	15.82	35.81	7.95	22.15	10.07	1.78	2.28
2010_1	21.20	40.09	6.35	21.32	9.83	3.53	3.46
2010_2	19.90	60.81	3.39	20.17	9.80	4.14	3.63
2011_1	22.81	64.87	3.04	21.07	10.66	3.34	2.40
2011_2	24.34	61.09	3.50	23.67	12.17	3.41	2.86
2012_1	26.03	50.76	4.35	26.48	13.41	3.02	2.43
2012_2	23.13	44.31	4.67	19.06	9.39	3.08	2.20
2013_1	21.48	41.39	4.43	18.82	9.46	3.09	2.03
FSIZE_VSMALL	28.68	47.16	4.28	23.39	11.27	3.09	3.14
FSIZE_SMALL	21.04	48.82	4.78	22.05	10.61	3.49	2.89
FSIZE_MEDIUM	17.36	49.42	5.37	20.76	9.34	2.82	2.20
FSIZE_LARGE	14.70	53.05	5.73	18.97	14.55	3.50	2.41
AFFL_MING	20.17	50.45	4.68	20.32	9.39	3.05	2.45
AFFL_CONS	26.63	51.10	4.29	26.76	13.06	2.96	3.07
AFFL_MAN	22.43	47.95	5.21	22.13	10.62	3.11	2.52
AFFL_RET	21.25	46.50	4.92	21.58	9.98	3.33	2.96
AGE_VYNG	20.44	27.49	3.42	14.77	5.41	3.33	3.76
AGE_YNG	29.15	43.30	4.68	19.84	10.15	3.57	3.63
AGE_MAGE	24.90	47.87	5.94	23.31	10.86	4.31	3.62
AGE_OLD	19.93	50.41	4.95	21.73	11.01	3.00	2.47
HEAD_WOM	23.65	49.53	4.05	20.34	10.53	2.64	2.89
HEAD_NWOM	20.84	49.03	5.04	21.76	10.83	3.24	2.65
PROF_DEC	26.31	55.88	4.23	28.03	13.41	2.79	2.89
LOPROF_WOR	29.37	59.37	4.15	31.86	15.61	2.75	2.54
ACCPUB_WOR	35.12	64.19	3.37	36.16	17.55	3.75	2.59
OWN_WOR	34.48	58.81	3.81	35.48	16.45	3.22	3.05
DEBAS_INC	24.97	56.27	4.08	25.29	12.49	3.06	2.79
CHIS_WOUN	23.24	51.66	4.13	23.49	11.35	2.53	2.54

uncertainty and crisis, with retail's marginal effect being statistically significant. The business industry affiliation significantly affects how easily SMEs can acquire financing (Guercio et al., 2016). Instead of the services, trade, or technology industries, manufacturing, and industrial sector businesses face fewer constraints regarding access to bank financing. The reason is that these businesses have more fixed assets that can be utilized as collateral and are perhaps less prone to extreme business cycles and related downturns.

Firm financial performance indicators such as profitability, indebtedness, and capitalization all indicate interesting results. The lower profits during the prior six months are significantly related to higher loan rejection, as are negative profit prospects, access to public guarantees, and worsening working capital. Unsurprisingly, firms with improved capital positions are more likely to obtain the requested

loan (Andreeva & García-Posada, 2019; Ferrando & Griesshaber, 2011; Ferrando & Mulier, 2015; Holton et al., 2014; Mac an Bhaird et al., 2016; Öztürk & Mrkaic, 2014). Interestingly, firms that experienced a decline in profitability in the last six months, combined with a worsening credit history and economic perception of deteriorating economic outlook are less likely to apply for bank credit. However, the opposite could be said when access to public guarantees and the outlook of profitability worsen. Interestingly, worsening perceptions of banks' willingness to provide finance do not deter SMEs from applying for bank credit. The demand for bank loans that arise due to financing of fixed investment discourages firms from applying, while firms are more likely to demand and apply for such loans if the demand is due to internal funds issues. This could be related to the low investment opportunities during and after the financial crisis or not matching the banks' borrowing

Table 3. Average Marginal Effects of SME's Bank Credit Rejection and Application

Variables	(1) Bank loans rejection	(2) SE	(3) Bank loans application	(4) SE
FSIZE_SMALL	-0.04237***	0.01036	0.06977***	0.00584
FSIZE_MEDIUM	-0.06813***	0.01549	0.11586***	0.00682
FSIZE_LARGE	-0.08409***	0.01936	0.15094***	0.01190
FSTAT_AUTON	-0.00816	0.01149	0.11186***	0.01418
AFFL_CONS	0.01921***	0.00720	-0.01001	0.00877
AFFL_MAN	-0.01829***	0.00606	-0.00945	0.00626
AFFL_RET	-0.00782	0.01062	-0.03312***	0.00552
AGE_VYNG	0.06840***	0.01526	0.05298***	0.01023
AGE_YNG	0.07670***	0.01146	-0.00865**	0.00369
AGE_MAGE	0.02969***	0.01005	-0.00407	0.00639
HEAD_WOM	0.00074	0.00892	-0.02070***	0.00465
PROF_DEC	0.01072**	0.00514	-0.01251***	0.00476
LOPROF_WOR	0.02207***	0.00839	0.01748***	0.00509
ACCPUB_WOR	0.10225***	0.00770	0.04275***	0.00388
OWN_WOR	0.07004***	0.00709	-0.00555	0.01023
DEBAS_INC	0.01568*	0.00843	0.16163***	0.01224
CHIS_WOUN	0.00822	0.00950	-0.04773***	0.00676
ECON_WOR			-0.03496***	0.00534
BWILL_WOR			0.19525***	0.01499
NEED_INV			-0.01136***	0.00440
NEED_WCAP			0.00072	0.00603
NEED_IFUN			0.01280**	0.00507
UP_MARK			0.00191	0.00541
BNK_CAP	-0.01658***	0.00481		
BNK_LCHG	-0.00025**	0.00011		
BNK_LIMP	-0.00121*	0.00069		
BNK_INTBR	-0.00028***	0.00008		
BNK_COMP	0.41124***	0.15236		
BNK_LGROW	-0.00759***	0.00205		
BNK_PROF	0.00211***	0.00046		
BNK_PBORF	0.02505***	0.00591		
BNK_INT			0.00028	0.00765
GVT_DBT	-0.00048	0.00034		
TIME_INS	0.05434***	0.01274		
CRED_INFD	0.15629***	0.01865		
GDP_GRAT	-0.00379**	0.00193	-0.00404***	0.00144
PVT_DBT	0.00024	0.00022	-0.00035	0.00024
GDP_PC	-0.01011***	0.00095		
GOVE_YIE			-0.00803***	0.00129

Notes. *** p<0.01, ** p<0.05, * p<0.1. Marginal effects estimates. Original estimation was done using the Heckman selection regression framework.

requirements regarding creditworthiness. Ferrando et al. (2013) claim that enterprises that experience low internal funds due to a drop in turnover and profit margin are likely to be perceived as less creditworthy, but, interestingly, our estimates show that this does not necessarily get translated into a lower probability of application for bank loans.

Table 3 indicates that the negative marginal effect attached to GDP growth and GDP per capita shows that a country with better economic conditions is associated with a lower probability of bank credit rejection and a significantly lower probability of applying (perhaps due to the availability of other sources as well as internal funds when the economy is growing well). This could be associated

with the fact that, in such conditions, firms no longer need to apply for bank loans because the economy is thriving, which allows them to generate accumulated profits to finance positive NPV projects. Becket al. (2006) state that countries with higher a GDP per capita and economic development report lower financial constraints. Government bond yield shows a negative relation with the bank loan application. Holton et al. (2014) report that higher sovereign bond yields lead to a higher probability of rejection of bank loans. This implies that the impact of the turbulence in bond markets on the real economy involves increased pressure on the banking system, which dissuades potential loan applicants.

It is necessary to examine how banking indicators and macroeconomic factors, such as credit information asymmetry and time to resolve insolvency, play a role in determining SMEs' bank credit access. Bank credit is considered the main source of external finance by SMEs, meaning variables related to the local banking activity across countries are further analyzed by considering different thresholds of bank-specific variables (25th, 50th, and 99th percentiles). [Table 4](#) outlines the average conditional probability of bank loan rejection for SMEs throughout the survey period at three different thresholds of variables, representing banking conditions and business environment, in particular. Available empirical evidence based on published studies shows that banking capitalization was lower during the financial crisis up to 2009 (Goddard et al., 2009) and then increased in the subsequent years. Wehinger (2014) states that there were difficulties in banks' access to wholesale funding due to the 2008 crisis because banks were obliged to evaluate their risk exposure, meaning their lending capacity was lowered. Hempell and Sorensen (2010) demonstrate that supply restrictions have impacted bank lending in the euro area during the crisis period.

The probabilities presented in [Table 4](#) imply that higher capitalization leads to a lower probability of bank loan rejection. It is evident that a 1% increase in capitalization results in a 1.7% decrease in rejection probability. The relationship between the rejection probability and the capitalization in terms of percentiles is also presented at the level of P25, P50, and P99. There is contrasting empirical evidence of the effect of bank competition/concentration on credit availability. There are two main hypotheses; the *information hypothesis* states that as banking rivalry increases, banks will be less able to internalize the benefits of assisting opaque enterprises leading to tighter lending conditions (Petersen & Rajan, 1995). In contrast, the *market power hypothesis* contends that increased competition results in lower interest rates and broader access to credit (Carbó-Valverde et al., 2009). Chong et al. (2013) also claim that lower bank concentration reduces financial constraints. The marginal effect results suggest that lower banking competition (higher concentration) increases the rejection probability, consistent with the *market power hypothesis* as supported by Mc Namara et al. (2020). [Table 4](#) shows yearly conditional rejection probabilities across three levels of competition. Higher concentration in the banking industry (Herfindahl index is high) leads to a

higher probability of rejection, approximately 34% in 2013. In contrast, high competition in the industry (Herfindahl index is low) leads to a significantly lower probability of rejection, around 13% in 2009 and 18% in 2013.

Regarding results relating to the quality of loans, an increase in impaired loans to gross loans decreases the probability of loan rejection. [Table 4](#) illustrates this further across the survey period, indicating that higher impaired loans lead to a lower probability of rejection. This is an interesting finding; however, Corbisiero and Faccia (2020) discovered evidence of a non-linear relationship between the bank asset quality represented by non-performing loans to gross loan ratio and loan rejections. They argue that a higher non-performing loans (NPL) ratio does not necessarily signal bank vulnerability when it is at reasonably low levels. Instead, it might indicate the implementation of a more aggressive business strategy and, as a result, may be linked to fewer credit rejections. Similarly, credit rationing is more likely to occur when there is less sharing of credit information between lenders and credit reporting service providers (Mc Namara et al., 2020). One of the main proxies of credit market development in a local market relates to the sharing of information and is captured by the credit depth information index (CDI) in our study. Unlike the literature, the results show that a higher CDI score results in a higher bank loan rejection probability. This is illustrated in [Tables 3](#) and [4](#), where an index score of 6 is associated with an increase of approximately 41% in the probability of rejection, whilst an index score of 2 raises the rejection probability by an average of 3%. While our findings refute previous literature, they support Brown et al. (2009), who assert that increased information sharing decreases lending based on the borrower's quality. A borrower's credit rating may be negatively impacted by disclosing "black" or default information, increasing the possibility of credit rationing (Padilla & Pagano, 2000).

The quality of a country's legal structure is essential to the efficient operation of its credit markets (Beck, 2000). Kundid and Ercegovac (2011) argue that more efficient insolvency procedures support SMEs' development. Our results presented in [Tables 3](#) and [4](#) reveal that the higher the number of years a country's legal system takes to settle the dispute, the higher the probability of credit rejection is for SMEs. An increase of one year in time to resolve insolvency raises the rejection threshold by 1.5% on average. Mc Namara et al. (2020) confirm that a country's business environment influences SMEs' capital decision-making. SME debt is higher in nations with more effective bankruptcy laws (regarding recovering debt) and fewer bank capital requirements.

The estimates presented in previous tables and related discussions allowed us to examine the individual marginal effect of different variables on credit rejection and understand the impact of the different thresholds of each variable individually on the probability of loan rejection. To further understand the severity/ease of the conditions (firm-specific, bank-specific, and country-specific), we generated five scenarios to observe the cumulative impact of several variables, at the same time, on bank credit rejection probability

Table 4. SME's Conditional Bank Loans Rejection Probabilities at Thresholds of Banking Industry and Economic/Financial Variables

Percentiles		(1)	(2)	(3)	(4)	(5)
Variables		2009_2	2010_2	2011_2	2012_2	2013_1
BNK_CAP	P25	0.16916	0.19602	0.22676	0.22341	0.21762
	P50	0.14559	0.17682	0.20794	0.21866	0.20082
	P99	0.11150	0.14193	0.17761	0.17579	0.05843
BNK_LCHG	P25	0.14416	0.18040	0.21856	0.20995	0.19772
	P50	0.13608	0.17115	0.20806	0.20645	0.19473
	P99	0.13317	0.16499	0.20066	0.20014	0.16940
BNK_LIMP	P25	0.13944	0.17570	0.21375	0.21398	0.20345
	P50	0.13929	0.17427	0.21319	0.21116	0.19859
	P99	0.13648	0.16860	0.19848	0.18512	0.17055
BNK_INTBR	P25	0.14977	0.17811	0.21359	0.21120	0.19985
	P50	0.14354	0.17317	0.21135	0.20884	0.19819
	P99	0.11908	0.16056	0.19357	0.19721	0.16338
BNK_COMP	P25	0.13101	0.15600	0.18949	0.18548	0.18203
	P50	0.13443	0.16391	0.20292	0.20590	0.18478
	P99	0.17629	0.22242	0.26640	0.25922	0.34620
BNK_LGROW	P25	0.15161	0.19867	0.23246	0.23490	0.22700
	P50	0.13803	0.16950	0.19061	0.19642	0.19350
	P99	0.10603	0.13940	0.16216	0.14244	0.11021
BNK_PROF	P25	0.13719	0.17033	0.21685	0.21003	0.19114
	P50	0.13935	0.17335	0.21884	0.21061	0.19501
	P99	0.14366	0.17987	0.22592	0.21979	0.24669
BNK_PBORF	P25	0.13323	0.16267	0.19212	0.18693	0.17845
	P50	0.13567	0.16582	0.20185	0.19564	0.18002
	P99	0.17387	0.20287	0.25175	0.26898	0.28803
TIME_INS	P25	0.12550	0.15705	0.19054	0.18613	0.16479
	P50	0.13905	0.17755	0.21354	0.20879	0.18573
	P99	0.16378	0.20544	0.24441	0.27197	0.34933
CRED_INFID	P25	0.01374	0.02204	0.03092	0.03097	0.05501
	P50	0.05486	0.07832	0.10218	0.10181	0.12652
	P99	0.33552	0.39426	0.44574	0.44307	0.45402

Notes. *** p<0.01, ** p<0.05, * p<0.1. Original estimation was done using the Heckman selection regression framework with estimates presented in [Table 3](#). Probabilities are calculated by keeping all other variables used in the application rejection equation in [Table 3](#) constant (at means).

in more detail. These different rejection probability estimates under five scenarios are presented in [Table 5](#). Scenario 1 refers to the initial/average state of the probability of rejection evaluated at average values of all independent variables presented in [Table 3](#). The probability of rejection increases between 2009 and 2011 and drops slightly from 2012 onwards. Scenario 2, conversely, implies conditions where the firm's access to public guarantees, own capital position, outlook, and credit history have worsened (other variables fixed at mean). We observe a higher probability of rejection; for instance, going up to 39.1% in 2013. Scenario 3 reflects circumstances in which all the conditions stated above have improved. A significant drop (14% compared to 39% in 2013) in the probability of loan rejection remained almost stable from 2011 to 2013. These findings

confirm that firm-specific characteristics have a significant impact on bank credit rejection probabilities.

Scenario 4 tests for the probability of application rejection when accounting for the impact of the banking market while also including firm-specific factors mentioned in scenario 2. The results imply an even higher probability of credit rejection if firm-related factors have worsened and the country's banks have less capitalization, lower competition, and generate higher returns. Scenario 5 shows a significantly low probability of rejection when all firm-related factors have improved and the firm operates within an environment in which banks have higher capitalization, higher competition, and lower profits. These results suggest that the health of bank capital reserves and competition in the market mitigate the effects on the probability of credit rejection. Higher capital reserves and higher com-

Table 5. SME's Conditional Bank Loans Application Rejection Probabilities Based on Different Scenarios

	(1)	(2)	(3)	(4)	(5)
Scenarios	2009_2	2010_2	2011_2	2012_2	2013_1
Scenario_1- overall average mean probability	0.13903***	0.17304***	0.21043***	0.20795***	0.19458***
Scenario_2 - firm access to public guarantees, own capital position, outlook (profit/sale), and credit history all worsened	0.31142***	0.35624***	0.39744***	0.40009***	0.39144***
Scenario_3 - opposite of Scenario_2	0.09166***	0.11692***	0.14248***	0.14569***	0.14072***
Scenario_4 -firm access to public guarantees, own capital position, outlook (profit/sale), and credit history all worsened] plus firm operating in an environment where banks are less capitalized, facing less competition (high concentration) and earn higher profit	0.36599***	0.42658***	0.45211***	0.44644***	0.46948***
Scenario_5 - opposite of Scenario_4	0.07110***	0.08210***	0.11130***	0.11554***	0.10846***

Notes. *** p<0.01, ** p<0.05, * p<0.1. Probability estimates. Original estimation was done using the Heckman selection regression framework with estimates presented in [table 3](#). _2 indicates second half of the calendar year and _1, the first half.

petition reduce rejection probability regardless of the low profits generated by the banks. Gambacorta and Marques-Ibanez (2011) found that banks with weaker core capital positions and a greater reliance on market funding curtailed their loan supply more severely during the recent crisis than banks with higher capital ratios. Nonetheless, this does not align with the information theory's claim that less competitive banking markets increase credit availability (Petersen & Rajan, 1995). It is also evident that the probability of rejection is higher after the financial and sovereign debt crisis, reflecting the impact of the economic downturn on the credit supply.

After discussing the role of different variables in determining the conditional probabilities of bank credit rejection for SMEs individually and as a group of interactive variables, it is important to understand how the banks perceive these firm-specific variables, and country and banking environment, and how they alter T&Cs when approving the bank loan application accordingly. Therefore, [table 6](#) contains estimated marginal effects of T&Cs on SMEs bank loans based on an ordered probit regression framework. The results reveal that firms whose profit increased are less likely to experience an interest rate and fee increase are more likely to experience loan maturity, collateral and covenants easing. In the loan size equation, a higher probability of increase is associated with higher firms' profitability. Enterprises in retail business, with lower current and future profitability, and higher leverage/lower capital are more likely to have their "covenants" tightened. For experienced enterprises, "covenants" are likewise more likely to be relaxed compared to very young ones. Firm size is another dimension that relates to information asymmetry. Larger and established companies are more likely to have established a reputation through time, which reduces their incentive to act in ways that can raise the likelihood of financial difficulty. In contrast, smaller and very young businesses experience a larger relative risk of failure, leading to correspondingly higher monitoring expenses (Jensen & McGuckjn, 1997) and related covenants.

Broadly speaking, the estimated marginal effects contained in [table 6](#) show that firm-specific variables, such as decreased profit, worsened outlook, lower access to public guarantees, and lower capital reserves, are statistically significant across most banks' terms and conditions. Firms with worsening conditions of these characteristics are charged higher interest rates and fees, provided restricted loans, tightened maturity, and require more collateral and covenants. From the bank's perspective, interest rates are increased with higher banking capitalisation, and increasing price of borrowed funds. Finally, macroeconomic factors indicate that higher GDP per capita results in lower interest rates, and higher loan size and maturity. On the other hand, GDP growth rate has no significant impact on interest rates but is negatively correlated with maturity and loan size, implying further easing but increased collateral and covenants. Increased government debt also has a bearing on interest rate increases. Generally, by looking at the statistical significance of marginal effect estimates, one could conclude that bank-related variables appear to impact more of a loan's T&Cs compared to economic and institutional environment variables.

So far, most of our analysis has related to determinants of firms that have applied for bank loans. However, it is important to understand another aspect of this research, which is borrower discouragement and, in turn, the factors that force SMEs not to apply for bank loans. For this purpose, the estimated marginal effects results are presented in [table 7](#) and are generally consistent with our previous findings. These estimates are again generated using selection equation framework (with demand for funds entering as a selection equation), as discussed in the methodology section. Relatively larger firms are less likely to be discouraged from bank loans than very small (referenced) firms. Experienced and older firms are comparatively less discouraged in crises environments based on the analysis of marginal effects, which implies that application fees perhaps considerably increase discouragement (Kon & Storey, 2003). Hence, smaller businesses are at a disadvantage when applying for intermediated financing because it costs

Table 6. Average Marginal Effect Estimates of the T&C of SMEs' Bank Loans Supply

Variables	(1) Interest increased	(2) Fee increased	(3) Size increased	(4) Maturity increased	(5) Collateral increased	(6) Covenants Increased
FSTAT_AUTON	-0.00742	-0.00800	0.00896	0.00353	-0.03850***	-0.02090*
HEAD_WOM	0.02387**	0.02034*	-0.00648	-0.00783*	0.01411	0.00372
AGE_VYNG	-0.00043	-0.06105***	0.00263	0.01673*	-0.00888	-0.05950**
AGE_YNG	0.02619**	0.01304	0.00075	-0.00398	0.01234	0.01065
AGE_MAGE	0.00872	-0.02109**	-0.00018	-0.00118	0.02113**	0.01710
FSIZE_SMALL	-0.01457*	-0.02700***	0.01537***	0.00582*	-0.01632*	-0.01925**
FSIZE_MEDIUM	-0.03583***	-0.05168***	0.02937***	0.01758***	-0.04436***	-0.03177***
FSIZE_LARGE	-0.02959**	-0.05898***	0.05041***	0.01235**	-0.06652***	-0.04896***
AFFL_CONS	-0.00097	0.01216	-0.01302*	-0.00813*	0.03380***	0.02206*
AFFL_MAN	-0.01590*	0.00737	0.00270	0.00173	0.01270	0.00426
AFFL_RET	0.00617	0.01526*	-0.01180**	-0.00466	0.03794***	0.02314**
DEBAS_INC	0.00090	0.00810	0.04922***	0.02256***	0.01385*	0.00485
CHIS_WOUN	0.02371***	0.00922	-0.02010***	-0.00413	0.01421*	-0.00332
PROF_DEC	0.02131***	0.02638***	-0.01712***	-0.00621**	0.02602***	0.01970**
LOPROF_WOR	0.03222***	0.04502***	-0.02279***	-0.00712**	0.06660***	0.06503***
ACCPUB_WOR	0.05767***	0.08458***	-0.03628***	-0.00875***	0.11281***	0.12007***
OWN_WOR	0.04669***	0.04100***	-0.04216***	-0.00932***	0.08125***	0.06883***
BNK_CAP	0.01011**	0.00040	0.00111	0.00067	-0.00758	-0.01208**
BNK_LCHG	-0.00123***	-0.00053**	0.00037***	0.00004	-0.00013	-0.00056**
BNK_LIMP	-0.00605***	-0.00200	0.00017	-0.00021	0.00326*	0.00160
BNK_INTBR	-0.00230***	-0.00096***	-0.00008	0.00009	-0.00016	0.00008
BNK_COMP	0.26711	0.23660	0.18058*	0.04621	0.11681	0.11814
BNK_LGROW	-0.00729***	-0.00526**	0.00521***	0.00064	-0.00589**	-0.00968***
BNK_PROF	-0.00128	-0.00131	-0.00087*	-0.00035	0.00108	0.00290***
BNK_PBORF	0.03902***	0.01224	0.00410	-0.00535	0.00389	-0.00071
GVT_DBT	0.00139***	0.00011	0.00042*	0.00028	-0.00005	0.00007
TIME_INS	0.00005	0.01683	-0.02251	0.02734***	0.00355	-0.02028
CRED_INFD	0.05340*	0.07656**	-0.03273*	-0.00256	0.01151	0.02265
GDP_GRAT	0.00279	0.00625**	-0.01061***	-0.00700***	0.00931***	0.01334***
PVT_DBT	-0.00034	-0.00029	0.00021	0.00004	0.00015	0.00010
GDP_PC	-0.00349*	-0.00337*	0.00308***	0.00196**	0.00079	-0.00091

Notes: *** p<0.01, ** p<0.05, * p<0.1; d stands for dummy variable. Marginal effects estimates. Original estimation was done using an ordered probit regression framework. All models from columns 1 to 6 estimated separately. For each equation, others value for dependent variables are unchanged (2) and decreased (3).

more for banks to collect data on them due to their opacity. Second, older firms may have established financial ties, meaning they are better able to reduce information asymmetries. Our results support that larger, older businesses are less likely to be turned down for debt (Xiang & Worthington, 2015 A). Interestingly, financially autonomous and women-headed enterprises are more likely to be discouraged about applying for bank credit. Similarly, a worsened outlook, lower access to public guarantees, and lower capital reserves result in further discouragement. Poor business conditions cause businesses to endure liquidity strain and, in turn, significantly amplify the magnitude of these factors during economic downturns. The insignificant relation between GDP growth rate and discouragement

among borrowers supports Chakravarty and Xiang's (2013) findings that economic growth has no bearing on this issue.

Increased discouragement is also associated with higher government bond yields, implying that financial sector stress negatively affects SME loan demand by passing higher sovereign yields through the credit channel. A higher ratio of private sector credit (to GDP) lowers discouragement. This suggests an inertia effect, whereby enterprises may be more likely to apply for bank loans when there is a plentiful supply of current credit for the private sector. Although this outcome contradicts Holton et al.'s (2014) conclusion, it nonetheless supports the procyclical nature of intermediated debt markets (Ruis et al., 2009). Lastly, except for impaired loans, bank-specific variables are mostly insignificant for borrower discouragement. Al-

Table 7. Analysis of SME's Discouraged Borrowers

Variables	(1)	(2)	(3)
	Not applied for bank credit	Not applied for bank credit	Not applied for bank credit
FSIZE_SMALL	-0.02213***	-0.02207***	-0.02209***
FSIZE_MEDIUM	-0.03923***	-0.03906***	-0.03925***
FSIZE_LARGE	-0.06036***	-0.06017***	-0.06024***
FSTAT_AUTON	0.01186**	0.01170**	0.01157**
AFFL_CONS	0.00209	0.00207	0.00179
AFFL_MAN	-0.01014*	-0.01015*	-0.01026**
AFFL_RET	-0.00517	-0.00514	-0.00527
AGE_VYNG	0.00567	0.00566	0.00593
AGE_YNG	0.03011***	0.03061***	0.03043***
AGE_MAGE	0.01197***	0.01195***	0.01162***
HEAD_WOM	0.01130**	0.01156**	0.01167**
PROF_DEC	-0.00379	-0.00376	-0.00387
LOPROF_WOR	0.00874**	0.00852**	0.00860**
ACCPUB_WOR	0.02661***	0.02661***	0.02664***
OWN_WOR	0.03328***	0.03328***	0.03333***
DEBAS_INC	0.00776**	0.00776**	0.00772**
CHIS_WOUN	0.00078	0.00077	0.00073
BNK_CAP	-0.00038	-0.00027	
BNK_LCHG	-0.00017	-0.00010	
BNK_LIMP	-0.00243**	-0.00185**	
BNK_INTBR	-0.00005	-0.00003	
BNK_COMP	-0.12483	-0.15191	
BNK_LGROW	-0.00121	-0.00146	
BNK_PROF	-0.00074	-0.00079*	
BNK_PBORF	-0.00633	-0.00691	
GVT_DBT	0.00104***	0.00089***	0.00047**
TIME_INS	0.02819*	0.03527**	0.00829
CRED_INFD	0.01789	0.02348	0.00806
GDP_GRAT	0.00225	0.00342**	0.00213
PVT_DBT	-0.00034**	-0.00025**	-0.00005
GDP_PC	-0.00377**	-0.00311**	-0.00237**
LEG_RIGHT	-0.01231**	-0.01187**	-0.00471
GOVE_YIE	0.00508***	0.00499***	0.00431***

Notes: *** p<0.01, ** p<0.05, * p<0.1; Marginal effects estimates. Original estimation was done using the Heckman selection regression framework where dependent variable is equal to 1 when SME did not apply because of possible rejection selection equation is estimated with dependent variable equal to one if SME's need for external finance has increased/un-changed over the past 6 months.

though the marginal impacts are minimal, a higher impairment of bank loans does not increase the risk of discouragement. As a result, “good borrowers” are less likely to experience discouragement, and “discouragement [may thus be] an effective rationing mechanism” (Han et al., 2009).

The empirical estimates presented in [tables 3-7](#) and the related analysis performed confirm the acceptance of hypothesis 1, developed and stated in the introduction section. Broadly speaking, firm-specific factors, and prevailing banking and macroeconomic conditions, do impact the demand and supply of SMEs' bank loans. Our estimates also show that some of these factors are more important and

impact on demand/supply differently (low or high). In the case of some factors, SMEs are greatly discouraged and would hesitate to even apply for bank loans. Based on these findings, there are several policy lessons for those involved in improving the credit availability for family-run smaller and medium size businesses for when going gets tough, as during crisis periods.

The previous estimates and related discussion allow for a review of the marginal effects of credit application and rejection from the firms, banks, and macroeconomic perspective. The analysis also revealed how the variations in these variables alter the terms and conditions set by banks when deciding on granting the loan to SMEs as well as discour-

agement of businesses about applying for credit. One of the contributions of this study is also to examine the impact of different factors (firms, economic and banking) on future expectations and the perceived credit constraints from the SME's perspective. The main purpose of this investigation was to explain the attitudes of business owners, who grow pessimistic about the outcome of a loan application due to deteriorating external conditions and internal firm-specific characteristics. [Table 8](#) shows the marginal effects derived from an ordered probit regression framework relating to the firms' perception and future expectations of constraints to bank credit. Age and size are statistically significant, indicating that the larger and older the firm is, the more likely it is to have a positive perception of future bank credit supply (higher probability of positive future expectations). This is consistent with previous literature such as Lee (2014) and Artola (2011), who found that younger firms perceive financial obstacles as pressing future problems. The analysis reveals that firms operating in the manufacturing, construction, and retail sectors have a worse perception than companies operating within mining. These results also signal that firms within these affiliates face higher financing constraints than the mining industry. A decrease in profitability coupled with an increase in leverage leads to pessimism about the future supply of bank credit. The perception of worsening of credit history, working capital, and profitability outlook, all lead to perceived deterioration in future credit supply, nonetheless. A few other insights could be drawn by looking at equations where SMEs' perceived supply of credit is expected to remain the same.

Furthermore, higher GDP growth rates, low government bond yields, and a low credit depth index bring better expectations of future bank credit supply. Available empirical evidence also suggests that SMEs operating in countries with higher GDP per capita and GDP growth have fewer perceived financial barriers (Beck et al., 2006; Clarke et al., 2012). Low corporate rate tax, higher legal rights, and lower time to resolve insolvency all result in better perceptions and less perceived future credit constraints. The empirical estimates presented in [Table 8](#) and the related discussion above do lead us to accept hypothesis 2. Broadly speaking, the findings of our study confirm that several firm-specific factors, combined with the prevailing environment proxied by economic and banking industry conditions, not only influence the current demand and supply of bank credit but also future expectations about the availability of bank capital. Again, several steps need to be taken by the relevant governments and regulators to address the concerns in the current environment of credit availability to SMEs, as they impact future expectations and small and medium-sized firms will adjust their operational and expansionary plans, accordingly, leading to less growth and employment creation of these businesses if perceptions about credit supply constraints persists.

In our next analysis, we test the impact of previous experiences of bank credit application/rejection on future expected supply of credit and related constraints (i.e., on the expectations of bank credit's availability in the next six

months). The marginal effect estimates contained in [table 9](#) show that bank loan (BL) application made in the current period (in the last six months) has no statistically significant impact on future credit availability expectations. This finding is consistent across different expectations (deterioration, unchanged, and improvement in supply). More importantly, all the SMEs rejected during the current period feel that credit availability will deteriorate and do not feel that it will remain the same or perhaps improve. Hence, current rejections could also have severe implications for future applications due to lower expectations. Interestingly, when the impact of role of T&Cs of the current loans on future expectations in relation to loans availability is considered, SMEs' current bad experience of increased interest rates and fees, reduced size, and increased collateral requirements and related covenants, all have a positive impact on deteriorated/unchanged expectations over the next six months' bank credit availability, or a negative impact on any chance of improving.

It is evident that it is not about making applications as such in determining the future expectations of credit availability, but rather, it is to do with the actual outcome in terms of rejection as well as the T&Cs of the current applications made for bank loans. Nonetheless, these findings confirm the labour market type '*scarring effect*' on future expectations. Broadly speaking, this leads to confirmation of our hypothesis 3 and related conclusion that the current experiences of SMEs in relation to credit availability as well as T&Cs of bank loans determine the future expectations of banks' credit supply to smaller and medium size enterprises in Europe.

Next, by using the panel nature of some firms that are tracked over time in the SAFE survey from 2009 to 2013, we test the impact of previous credit application experiences on future actual applications, rejections, and expectation of future deterioration in bank credit supply. By using a panel probit method that considers firm level heterogeneity, [table 10](#) contains marginal effect estimates after holding other factors (variables) constant. Previous bank loan rejections do not discourage firms from applying again for credit but do lead to future rejections and expectations of credit supply deterioration in the next six months. Similarly, the previous perception of deterioration in bank loan availability does not lead to a reduced probability of future applications but it does lead to a next-six-month perception of deterioration in bank credit supply. The impact on future rejection is though statistically insignificant. Lastly, the impact of previous bank loan applications on future applications is positive and statistically significant. This could result from weaker firms trying to obtain credit with no assurance that they will succeed or firms getting valuable experience from previous episodes and applying again to seek bank credit. Irrespective of the outcome, previous experience of applying for a bank loan does lead to future rejection as well. Broadly speaking, results contained in [table 10](#) and the related discussion do confirm the acceptance of hypotheses 4, as stated in our introduction section.

Table 8. Analysis of SMEs' Future Expectations of Obstacles to Bank Credit Supply

Variables	(1) Bank credit supply will deteriorate in next six months	(2) Bank credit supply will be unchanged in next six months	(3) Bank credit supply will improve in next six months
FSIZE_SMALL	-0.01302***	0.00219***	0.01083***
FSIZE_MEDIUM	-0.02772***	0.00466***	0.02306***
FSIZE_LARGE	-0.03014***	0.00507***	0.02507***
FSTAT_AUTON	0.00428	-0.00072	-0.00356
AFFL_CONS	0.02409***	-0.00405***	-0.02004***
AFFL_MAN	0.01049**	-0.00176**	-0.00873**
AFFL_RET	0.00869**	-0.00146**	-0.00723**
AGE_VYNG	-0.03222***	0.00542***	0.02680***
AGE_YNG	-0.01394**	0.00234**	0.01159**
AGE_MAGE	-0.01061**	0.00178**	0.00883**
HEAD_WOM	-0.00244	0.00041	0.00203
PROF_DEC	0.03247***	-0.00546***	-0.02701***
LOPROF_WOR	0.10093***	-0.01698***	-0.08395***
ACCPUB_WOR	0.08823***	-0.01484***	-0.07339***
OWN_WOR	0.04526***	-0.00761***	-0.03765***
DEBAS_INC	0.00735**	-0.00124**	-0.00611**
CHIS_WOUN	0.07274***	-0.01223***	-0.06050***
GVT_DBT	-0.00065***	0.00011***	0.00054***
USD_LIBOR	-0.07480***	0.01258***	0.06222***
TIME_INS	0.02343**	-0.00394**	-0.01949**
BNK_NPL	-0.00133	0.00022	0.00110
LEG_RIGHT	-0.01486**	0.00250**	0.01236**
CRED_INFD	0.04642***	-0.00781***	-0.03862***
PVT_DBT	0.00002	-0.00000	-0.00001
GDP_PC	0.00181	-0.00030	-0.00150
GDP_GRAT	-0.00717***	0.00121***	0.00596***
CTAX_RATE	0.00098**	-0.00017**	-0.00082**
GOVE_YIE	0.00313***	-0.00053***	-0.00260***

Notes: *** p<0.01, ** p<0.05, * p<0.1; d stands for dummy variable. Marginal effects estimates. Original estimation was done using an ordered probit regression framework.

4. Conclusions, Policy Implications, and Limitations

By building and testing the hypotheses, this study examines the firm-specific, banking, and economic factors that determine bank credit demand and supply for SMEs across European countries. The study data encompasses the immediate period of financial crisis and European sovereign debt crisis. Both crises had a significant bearing on SMEs' demand and supply of bank credit. Our hypotheses are that not only do firm-specific factors and banking and economic conditions impact credit supply and demand but they also help develop perceived supply of credit in the near future. In addition, current period experience of application and subsequent outcomes impact future application, rejections, and perceived supply of credit. We conclude that firm-specific, macroeconomic, and banking factors influence the granting or rejection of bank loans for SMEs. All the relevant factors have a variety of impacts on loan application

acceptances and rejections, and crises worsened the odds of receiving credit. It is also evident that the probability of rejection was higher during the immediate period of financial and subsequent European sovereign debt crisis until the first half of 2012.

In line with previous studies, age and size are key to obtaining access to finance and discouraging firms from seeking bank finance. Smaller and younger firms need help gaining this access. Our results show that women-headed SMEs are less likely to apply for loans during or immediately after a crisis. Hence governments should investigate this more carefully to promote women's entrepreneurship and growth. Either these firms are well managed/funded and do not need external finance, or some other factors are important in the decision-making. Firms are more likely to face further hardship in obtaining bank finance in case of low profitability (current and future) and declined capital. Additionally, the probability of rejection was lower for businesses that have access to public guarantees. High cap-

Table 9. SME's Future Expectations of Obstacles to Bank Credit Supply and Previous Six Months Experience

	(1) Bank credit supply will deteriorate in next six months	(2) Bank credit supply will be unchanged in next six months	(3) Bank credit supply will improve in next six months
BL applied	-0.00237	0.00040	0.00198
BL rejected	0.06597***	-0.01102***	-0.05495***
Interest (t)	0.04437***	0.03697***	-0.02031***
Fee (t)	0.03951***	0.03293***	-0.01808***
Size (t)	0.01694***	0.01411***	-0.00775***
Maturity (t)	0.02276***	0.01896***	-0.01041***
Collateral (t)	0.03010***	0.02507***	-0.01376***
Covenants (t)	0.03316***	0.02762***	-0.01516***

Notes. BL = bank loan. *** p<0.01, ** p<0.05, * p<0.1. Marginal effects estimates. Original estimation was done using an ordered probit regression framework. Regression also includes other variables contained in [Table 3](#).

Table 10. Feedback Effects of SME's Previous Bank Credit Experiences and Perceptions

	(1) Future applications	(2) Future rejections	(3) Current perceptions of deterioration in bank credit supply in next six months
Previous bank loan rejections	0.17265***	0.07571***	0.01153
Previous perception of deteriorations in banks' loan availability	0.07240***	0.00182	0.06475***
Previous bank loan application	0.22528***	0.03211***	0.01464

Notes. *** p<0.01, ** p<0.05, * p<0.1. Marginal effects estimates. Original estimation was done using a panel probit regression framework. Regression also includes other variables contained in [Table 3](#).

italization and competition in the banking industry facilitate access to bank credit and increase the probability of loan approval. Both an increase in credit information and a longer time to resolve insolvencies negatively impact bank credit approval. The firms' perceptions have a tangible effect on financing the SME sector. Therefore, businesses with serious financial issues are most discouraged from seeking bank loans when perceiving a declining credit history and an increasingly hostile banking environment. Several firm-specific, economic and institutional factors not only influence current-period application and acceptance of credit but also have a profound impact on future applications, outcomes, and expectations. Overall, these findings suggest that firm-specific factors are important, while banking, macroeconomic and business environment effects act as prior filtering mechanisms. Macroeconomic stress thus directly impacts the environment for SME financing, particularly in the banking sector. It may result in a cap on lending or an increase in interest rates alongside tightening of other T&Cs of the bank finance.

There is evidence of the application of resource allocation theory on the part of banks in allocating credits to SMEs. A lower level of banking competition helps banks to reject more finance applications from SMEs as banks are not compelled to lend more due to fear of losing market share. More profitable banks, due to better management

and allocation of resources, reject more applications from SMEs due to the opaque nature of SME businesses and their lack of collateral. A similar could be said of when the cost of borrowing for banks goes up; our estimates show that banks reject more SMEs' credit applications, as they deploy credit (resource) to less risky sectors. SMEs operating in these conditions must be more transparent in their record keeping and use alternative finance options, such as trade credit and market-based financing. Adverse future expectations risk exacerbating actual economic and financial repercussions and reducing investment. The valuable insights are that macroeconomic, financial, and banking-specific factors interchangeably affect SMEs' access to credit. Enterprises need to consider these situations when placing their applications for access to financing. This can be further addressed by governments building support systems for SMEs in crisis times by ensuring there is a regulatory framework that addresses the firm-specific supply constraints in depressing economic situations. Although our data coverage is limited to 2009 to 2013, the findings of the study are likely to be applicable in the current environment too, as nothing has changed significantly since then except the COVID period of two years. Since then, though, a sense of normality has been restored. The post-COVID period could be described as another crisis period and we do not antic-

ipate regression coefficients and related marginal effects/probabilities to change a great deal, nonetheless.

Some of the study's limitations include that the analysis combines firms from stressed and non-stressed countries. The impact of the financial crisis and the sovereign debt crisis could vary across European countries. The crisis that arose during COVID and related extensive borrowing by the European governments is another interesting area to be explored in terms of how it could impact SME finance in an individual European country. There is the potential for some similarities across European countries, but empirical testing has not been done on each country in this paper. Rather, estimation and empirical testing of hypotheses are

performed on pooled data from all European countries. The comparison of two crises and their impact on SME financing constraints in an individual country separately is a future research agenda, nonetheless. Furthermore, the SMEs used in the sample only operate within the manufacturing, construction, retail, and mining sectors. Hence, the findings cannot be generalized to all SMEs operating in all sectors. Future research could focus on extending the survey period and capturing a more detailed impact of the variables above individually at a country-specific level.

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References

- Adrian, T., & Shin, H. S. (2009). Prices and quantities in the monetary policy transmission mechanism. *Federal Reserve Bank of New York Staff Report*, 396. <https://doi.org/10.2139/ssrn.1483825>
- Albertazzi, U., & Marchetti, D. J. (2010). *Credit supply, flight to quality and evergreening: an analysis of bank-firm relationships after Lehman* (Working Paper No. 756). Bank of Italy Temi di Discussione. <https://doi.org/10.2139/ssrn.1670563>
- Andreeva, D., & García-Posada, M. (2019). *The impact of the ECB's targeted long-term refinancing operations on banks' lending policies: the role of competition*. <https://doi.org/10.2139/ssrn.3330525>
- Andrieş, A. M., Marcu, N., Oprea, F., & Tofan, M. (2018). Financial infrastructure and access to finance for European SMEs. *Sustainability*, 10(10), 3400. <https://doi.org/10.3390/su10103400>
- Artola, C., & Genre, V. (2011). *Euro area SMEs under financial constraints: belief or reality?* <https://doi.org/10.2139/ssrn.1966955>
- Asiedu, E., Freeman, J. A., & Nti-Addae, A. (2012). Access to credit by small businesses: How relevant are race, ethnicity, and gender? *American Economic Review*, 102(3), 532–537. <https://doi.org/10.1257/aer.102.3.532>
- Baas, T., & Schrooten, M. (2006). Relationship banking and SMEs: A theoretical analysis. *Small Business Economics*, 27, 127–137. <https://doi.org/10.1007/s11187-006-0018-7>
- Bardwell, S., Spiller, L. D., & Anderson, J. E. (2003). Differences between Women-Owned Home-Based & Office-Based Businesses: An Exploratory Study. *Journal of Small Business Strategy (Archive Only)*, 14(2), 58–72.
- Beck, T. (2000). *Financial Structure and Economic Development: Firm, Industry, and Country Evidence* (Vol. 2423). World Bank Publications.
- Beck, T., Behr, P., & Madestam, A. (2018). Sex and credit: Do gender interactions matter for credit market outcomes? *Journal of Banking & Finance*, 87, 380–396. <https://doi.org/10.1016/j.jbankfin.2017.10.018>
- Beck, T., Demirgüç-Kunt, A., Laeven, L., & Maksimovic, V. (2006). The determinants of financing obstacles. *Journal of International Money and Finance*, 25(6), 932–952. <https://doi.org/10.1016/j.jimonfin.2006.07.005>
- Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2008). Financing patterns around the world: Are small firms different? *Journal of Financial Economics*, 89(3), 467–487. <https://doi.org/10.1016/j.jfineco.2007.10.005>
- Beckett, R., Kennedy, J., Hyland, P., & Bretherton, P. (2005). *Facilitating a knowledge network of start-ups: some lessons from Australia*.
- Berger, A. N., Frame, W. S., & Miller, N. H. (2005). Credit scoring and the availability, price, and risk of small business credit. *Journal of Money, Credit and Banking*, 191–222. <https://doi.org/10.1353/mcb.2005.0019>
- Berger, A. N., & Udell, G. F. (2006). A more complete conceptual framework for SME finance. *Journal of Banking & Finance*, 30(11), 2945–2966. <https://doi.org/10.1016/j.jbankfin.2006.05.008>
- Biswas, A. (2014). Financing constraints for MSME sector. *International Journal of Interdisciplinary and Multidisciplinary Studies*, 1(5), 60–68.
- Blanchard, O. J., Cottarelli, C., Spilimbergo, A., & Symansky, S. (2009). *Fiscal policy for the crisis* (No. DP7130). CEPR Discussion Paper.
- Boccaletti, S., Ferrando, A., Rossi, E., & Rossolini, M. (2024). European SMEs' growth: the role of market-based finance and public financial support. *Small Business Economics*, 1–37. <https://doi.org/10.1007/s11187-024-00918-y>
- Bongini, P., Ferrando, A., Rossi, E., & Rossolini, M. (2021). SME access to market-based finance across Eurozone countries. *Small Business Economics*, 56(4), 1667–1697. <https://doi.org/10.1007/s11187-019-00285-z>
- Bougheas, S., Mizen, P., & Yalcin, C. (2006). Access to external finance: Theory and evidence on the impact of monetary policy and firm-specific characteristics. *Journal of Banking & Finance*, 30(1), 199–227. <https://doi.org/10.1016/j.jbankfin.2005.01.002>
- Bremus, F., & Neugebauer, K. (2018). Reduced cross-border lending and financing costs of SMEs. *Journal of International Money and Finance*, 80, 35–58. <https://doi.org/10.1016/j.jimonfin.2017.09.006>
- Briggs, D. E. (2004). *Brewing: science and practice* (Vol. 108). Woodhead Publishing.
- Brown, L., Wade, V., & Murphy, E. (2011). An eLearning framework for individual and organisational transformation: SME and large enterprise implications. In *EdMedia+ Innovate Learning* (pp. 23–27). Association for the Advancement of Computing in Education (AACE).
- Brown, M., Jappelli, T., & Pagano, M. (2009). Information sharing and credit: Firm-level evidence from transition countries. *Journal of Financial Intermediation*, 18(2), 151–172. <https://doi.org/10.1016/j.jfi.2008.04.002>
- Calabrese, G. G., Falavigna, G., & Ippoliti, R. O. B. E. R. T. O. (2024). Innovation policy and corporate finance: the Italian automotive supply chain and its transition to Industry 4.0. *Journal of Policy Modeling*, 46(2), 336–353. <https://doi.org/10.1016/j.jpolmod.2024.01.007>
- Calabrese, R., Girardone, C., & Scip, A. (2021). Financial fragmentation and SMEs' access to finance. *Small Business Economics*, 57(4), 2041–2065. <https://doi.org/10.1007/s11187-020-00393-1>

- Calcagnini, G., & Lenti, E. (2008). L'accesso al credito per l'imprenditoria femminile. In *I vincoli finanziari alla crescita delle imprese*. Carocci.
- Campanella, F., & Serino, L. (2019). Do personal characteristics of manager affect SMEs' Access to Bank Loan. *International Journal of Economics, Business and Finance*, 6(2), 1–14.
- Canton, E., Grilo, I., Monteagudo, J., & van der Zwan, P. (2010). *Investigating the perceptions of credit constraints in the European Union*. ERIM.
- Canton, E., Grilo, I., Monteagudo, J., & Van der Zwan, P. (2013). Perceived credit constraints in the European Union. *Small Business Economics*, 41, 701–715. <https://doi.org/10.1007/s11187-012-9451-y>
- Carbó-Valverde, S., Rodríguez-Fernandez, F., & Udell, G. F. (2009). Bank market power and SME financing constraints. *Review of Finance*, 13(2), 309–340. <https://doi.org/10.1093/rof/rfp003>
- Cardone Riportella, C., & Casasola, M. J. (2003). *What do we know about the financial behavior of the Spanish SME? an empirical analysis*.
- Casey, E., & O'Toole, C. M. (2014). Bank lending constraints, trade credit and alternative financing during the financial crisis: Evidence from European SMEs. *Journal of Corporate Finance*, 27, 173–193. <https://doi.org/10.1016/j.jcorpfin.2014.05.001>
- Cavalluzzo, K., & Wolken, J. (2005). Small business loan turn downs, personal wealth, and discrimination. *The Journal of Business*, 78(6), 2153–2178. <https://doi.org/10.1086/497045>
- Cenni, S., Monferrà, S., Salotti, V., Sangiorgi, M., & Torluccio, G. (2015). Credit rationing and relationship lending. Does firm size matter? *Journal of Banking & Finance*, 53, 249–265. <https://doi.org/10.1016/j.jbankfin.2014.12.010>
- Chakravarty, S., & Xiang, M. (2013). The international evidence on discouraged small businesses. *Journal of Empirical Finance*, 20, 63–82. <https://doi.org/10.1016/j.jempfin.2012.09.001>
- Chen, J., Calabrese, R., & Cowling, M. (2024). Does energy efficiency of UK SMEs affect their access to finance? *Energy Economics*, 129, 107251. <https://doi.org/10.1016/j.eneco.2023.107251>
- Chong, T. T. L., Lu, L., & Ongena, S. (2013). Does banking competition alleviate or worsen credit constraints small and medium-sized enterprises face? Evidence from China. *Journal of Banking & Finance*, 37(9), 3412–3424. <https://doi.org/10.1016/j.jbankfin.2013.05.006>
- Ciccarelli, M., Ortega, E., & Valderrama, M. T. (2012). *Heterogeneity and cross-country spillovers in macroeconomic-financial linkages*. <https://doi.org/10.2139/ssrn.2192417>
- Clarke, G. R. G., Cull, R., & Kisunko, G. (2012). External finance and firm survival in the aftermath of the crisis: Evidence from Eastern Europe and Central Asia. *Journal of Comparative Economics*, 40(3), 372–392. <https://doi.org/10.1016/j.jce.2012.01.003>
- Cole, R. A., Dietrich, A., & Frost, T. (2019). SME credit availability around the world: Evidence from the World Bank's Enterprise Surveys. In *Midwest Finance Association 2013 Annual Meeting Paper*. <https://doi.org/10.2139/ssrn.2043624>
- Coleman, S. (2000). access to capital and terms of credit: A comparison of men-and women-owned small businesses. *Journal of Small Business Management*, 38(3), 37.
- Coleman, S., & Robb, A. M. (2016). *The next wave: Financing women's growth-oriented firms*. Stanford University Press. <https://doi.org/10.1515/9781503600980>
- Corbisiero, G., & Faccia, D. (2020). Firm or bank weakness. Access to finance since the European sovereign debt crisis. *Access to Finance Since the European Sovereign Debt Crisis*.
- Crawford, J., Cui, Z. Y. A., & Kewley, D. (2023). Government finance, loans, and guarantees for small and medium enterprises (SMEs) (2000–2021): A systematic review. *Journal of Small Business Management*, 1–31.
- De Meza, D., & Webb, D. C. (1987). Too much investment: a problem of asymmetric information. *The Quarterly Journal of Economics*, 102(2), 281–292. <https://doi.org/10.2307/1885064>
- Del Giovane, P., Eramo, G., & Nobili, A. (2011). Disentangling demand and supply in credit developments: a survey-based analysis for Italy. *Journal of Banking & Finance*, 35(10), 2719–2732. <https://doi.org/10.1016/j.jbankfin.2011.03.001>
- Diamond, D. (1984). Financial intermediation and delegated monitoring. *Review of Economic Studies*, 51, 393–414. <https://doi.org/10.2307/2297430>
- Ferrando, A., & Griesshaber, N. (2011). *Financing obstacles among euro area firms: Who suffers the most?* <https://doi.org/10.2139/ssrn.1757728>
- Ferrando, A., Griesshaber, N., Köhler-Ulbrich, P., Pérez-Duarte, S., & Schmitt, N. (2013). Measuring the opinion of firms on the supply and demand of external financing in the euro area. In *Bank for International Settlements, Proceedings of the Sixth IFC Conference on "Statistical issues and activities in a changing environment"*.
- Ferrando, A., & Mulier, K. (2013). Do firms use the trade credit channel to manage growth? *Journal of Banking & Finance*, 37(8), 3035–3046. <https://doi.org/10.1016/j.jbankfin.2013.02.013>
- Ferrando, A., & Mulier, K. (2015). Firms' financing constraints: Do perceptions match the actual situation? *The Economic and Social Review*, 46(1, Spring), 87–117.
- Ferrando, A., Popov, A., & Udell, G. F. (2017). Sovereign stress and SMEs' access to finance: Evidence from the ECB's SAFE survey. *Journal of Banking and Finance*, 81, 65–80. <https://doi.org/10.1016/j.jbankfin.2017.04.012>
- Ferrando, A., & Ruggieri, A. (2018). Financial constraints and productivity: Evidence from euro area companies. *International Journal of Finance & Economics*, 23(3), 257–282. <https://doi.org/10.1002/ijfe.1615>

- Finaldi Russo, P., & Parlapiano, F. (2018). The Drop-in Non-Financial Firms' Cost of Credit: A Cross-Country Analysis. *Politica Economica*, 34(1), 23–44.
- Freel, M., Carter, S., Tagg, S., & Mason, C. (2012). The latent demand for bank debt: characterizing “discouraged borrowers.” *Small Business Economics*, 38(4), 399–418. <https://doi.org/10.1007/s11187-010-9283-6>
- Galanti, S., Leroy, A., & Vaubourg, A. G. (2022). Investment and access to external finance in Europe: Does analyst coverage matter? *International Review of Financial Analysis*, 81, 102108. <https://doi.org/10.1016/j.irfa.2022.102108>
- Galli, E., Mascia, D. V., & Rossi, S. P. S. (2018). Does corruption influence the self-restraint attitude of women-led SMEs towards bank lending? *CESifo Economic Studies*, 64(3), 426–455. <https://doi.org/10.1093/cesifo/ix021>
- Gambacorta, L., & Marques-Ibanez, D. (2011). The bank lending channel: lessons from the crisis. *Economic Policy*, 26(66), 135–182. <https://doi.org/10.1111/j.1468-0327.2011.00261.x>
- Goddard, J., Molyneux, P., & Wilson, J. O. (2009). The financial crisis in Europe: evolution, policy responses and lessons for the future. *Journal of Financial Regulation and Compliance*, 17(4), 362–380. <https://doi.org/10.1108/13581980911004352>
- Gómez, M. G. P. (2019). Credit constraints, firm investment, and employment: Evidence from survey data. *Journal of Banking & Finance*, 99, 121–141. <https://doi.org/10.1016/j.jbankfin.2018.11.016>
- Gregory, B. T., Rutherford, M. W., Oswald, S., & Gardiner, L. (2005). An empirical investigation of the growth cycle theory of small firm financing. *Journal of Small Business Management*, 43(4), 382–392. <https://doi.org/10.1111/j.1540-627X.2005.00143.x>
- Guercio, M. B., Oliveras, G., Vigier, H. P., & Briozzo, A. E. (2015). *Financiamiento externo desde una perspectiva de género*. <https://doi.org/10.31876/revista.v20i71.20196>
- Guercio, M. B., Vigier, H. P., Briozzo, A., & Martínez, L. B. (2016). Financing SMEs in the software and informatics services sector in Argentina. *Cuadernos de Economía*, 35(69), 615–635. <https://doi.org/10.15446/cuad.econ.v35n69.46654>
- Hall, G. C., Hutchinson, P. J., & Michaelas, N. (2004). Determinants of the capital structures of European SMEs. *Journal of Business Finance & Accounting*, 31(5–6), 711–728. <https://doi.org/10.1111/j.0306-686X.2004.00554.x>
- Han, L., Fraser, S., & Storey, D. J. (2009). Are good or bad borrowers discouraged from applying for loans? Evidence from US small business credit markets. *Journal of Banking & Finance*, 33(2), 415–424. <https://doi.org/10.1016/j.jbankfin.2008.08.014>
- Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica: Journal of the Econometric Society*, 153–161. <https://doi.org/10.2307/1912352>
- Hempell, H. S., & Kok, C. (2010). *The impact of supply constraints on bank lending in the euro area-crisis-induced crunching?* <https://doi.org/10.2139/ssrn.1698040>
- Hempell, H. S., & Sørensen, C. K. (2010). *The impact of supply constraints on bank lending in the euro area crisis induced crunching?* (No. 1262). ECB WP. <https://doi.org/10.2139/ssrn.1698040>
- Holton, S., Lawless, M., & McCann, F. (2014). Firm credit in the euro area: a tale of three crises. *Applied Economics*, 46(2), 190–211. <https://doi.org/10.1080/00036846.2013.824547>
- Horváth, K. (2018). Financial bootstrapping techniques: a systematic review of the literature. *On Research*, 1, 84–94. http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=3127
- Hutchinson, P. (2004). How much does growth determine SMEs' Capital Structure? *Small Enterprise Research*, 12(1), 81–92. <https://doi.org/10.5172/ser.12.1.81>
- Ivashina, V., & Scharfstein, D. (2010). Bank lending during the financial crisis of 2008. *Journal of Financial Economics*, 97(3), 319–338. <https://doi.org/10.1016/j.jfineco.2009.12.001>
- Jaud, M., Kukenova, M., & Strieborny, M. (2018). Finance, comparative advantage, and resource allocation. *Review of Finance*, 22(3), 1011–1061. <https://doi.org/10.1093/rof/rfx047>
- Jensen, J. B., & McGuckj, R. H. (1997). Firm performance and evolution: empirical regularities in the US microdata. *Industrial and Corporate Change*, 6(1), 25–47. <https://doi.org/10.1093/icc/6.1.25>
- Jiménez, G., Ongena, S., Peydró, J. L., & Saurina, J. (2012). Credit supply and monetary policy: Identifying the bank balance-sheet channel with loan applications. *American Economic Review*, 102(5), 2301–2326. <https://doi.org/10.1257/aer.102.5.2301>
- Kashyap, A. K., Stein, J. C., & Wilcox, D. W. (1992). *Monetary policy and credit conditions: Evidence from the composition of external finance* (NBER Working Paper No. 4015). <https://doi.org/10.3386/w4015>
- Keasey, K., Pindado, J., & Rodrigues, L. (2015). The determinants of the costs of financial distress in SMEs. *International Small Business Journal*, 33(8), 862–881. <https://doi.org/10.1177/0266242614529317>
- Kon, Y., & Storey, D. J. (2003). A theory of discouraged borrowers. *Small Business Economics*, 21(1), 37–49. <https://doi.org/10.1023/A:1024447603600>
- Krasniqi, B. A. (2010). Are small firms' credit-constrained? Empirical evidence from Kosova. *International Entrepreneurship and Management Journal*, 6(4), 459–479. <https://doi.org/10.1007/s11365-010-0135-2>
- Kumar, A., & Francisco, M. (2005). *Enterprise size, financing patterns, and credit constraints in Brazil: analysis of data from the investment climate assessment survey* (Vol. 6). World Bank Publications. <https://doi.org/10.1596/0-8213-6129-5>
- Kundid, A., & Ercegovic, R. (2011). Credit rationing in financial distress: Croatia SMEs' finance approach. *International Journal of Law and Management*. <https://doi.org/10.1108/17542431111111890>

- Langfield, S., & Pagano, M. (2016). Bank bias in Europe: effects on systemic risk and growth. *Economic Policy*, 31(85), 51–106. <https://doi.org/10.1093/epolic/eiv019>
- Lee, N. (2014). What holds back high-growth firms? Evidence from UK SMEs. *Small Business Economics*, 43(1), 183–195. <https://doi.org/10.1007/s11187-013-9525-5>
- Mac an Bhaird, C., Vidal, J. S., & Lucey, B. (2016). Discouraged borrowers: evidence for Eurozone SMEs. *Journal of International Financial Markets, Institutions and Money*, 44, 46–55. <https://doi.org/10.1016/j.intfin.2016.04.009>
- Martinez, L. B., Guercio, M. B., & Bariviera, A. F. (2022). A meta-analysis of SME literature based on the survey on access to finance of enterprises of the European central bank. *International Journal of Finance & Economics*, 27(2), 1870–1885. <https://doi.org/10.1002/ijfe.2247>
- Martinez-Cillero, M., Lawless, M., & O'Toole, C. (2020). Covid-19 pandemic and SME revenues in Ireland: What's the gap. *Economic and Social Research Institute Quarterly Economic Commentary*, 113–147. https://doi.org/10.26504/qec2020aut_SA_Martinez-Cillero
- Matthews, C. H., Schenkel, M. T., Ford, M. W., & Human, S. E. (2013). Financing complexity and sophistication in nascent ventures. *Journal of Small Business Strategy (Archive Only)*, 23(1), 15–30.
- Mc Namara, A., O'Donohoe, S., & Murro, P. (2020). Lending infrastructure and credit rationing of European SMEs. *The European Journal of Finance*, 26(7–8), 728–745. <https://doi.org/10.1080/1351847X.2019.1637357>
- Moro, A., Maresch, D., Fink, M., Ferrando, A., & Piga, C. (2020). Spillover effects of government initiatives fostering entrepreneurship on the access to bank credit for entrepreneurial firms in Europe. *Journal of Corporate Finance*, 62, 101603. <https://doi.org/10.1016/j.jcorpfin.2020.101603>
- Müller, J. M., Buliga, O., & Voigt, K. I. (2021). The role of absorptive capacity and innovation strategy in the design of industry 4.0 business Models-A comparison between SMEs and large enterprises. *European Management Journal*, 39(3), 333–343.
- Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 109–131. <https://doi.org/10.2307/2490395>
- Öztürk, B., & Mrkaic, M. M. (2014). *SMEs' access to finance in the euro area: what helps or hampers?* International Monetary Fund.
- Padilla, A. J., & Pagano, M. (2000). Sharing default information as a borrower discipline device. *European Economic Review*, 44(10), 1951–1980. [https://doi.org/10.1016/S0014-2921\(00\)00055-6](https://doi.org/10.1016/S0014-2921(00)00055-6)
- Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationships: Evidence from small business data. *The Journal of Finance*, 49(1), 3–37. <https://doi.org/10.1111/j.1540-6261.1994.tb04418.x>
- Petersen, M. A., & Rajan, R. G. (1995). The effect of credit market competition on lending relationships. *The Quarterly Journal of Economics*, 110(2), 407–443. <https://doi.org/10.2307/2118445>
- Ruis, A., Van Stel, A., Tsamis, A., Verhoeven, W., & Whittle, M. (2009). *Cyclicalities of SME Finance*. EIM Business and Policy Research.
- Sara, C., & Peter, R. (1998). The financing of male- and female-owned businesses. *Entrepreneurship & Regional Development*, 10(3), 225–242. <https://doi.org/10.1080/08985629800000013>
- Shin, G. H., & Kolari, J. W. (2004). Do some lenders have information advantages? Evidence from Japanese credit market data. *Journal of Banking & Finance*, 28(10), 2331–2351. <https://doi.org/10.1016/j.jbankfin.2003.09.006>
- Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393–410.
- Verma, S., Shome, S., & Patel, A. (2021). Financial preferences of listed SMEs in India: An empirical study. *Journal of Small Business Strategy (Archive Only)*, 31(3), 88–101. <https://doi.org/10.53703/001c.29738>
- Wehinger, G. (2014). SMEs and the credit crunch: Current financing difficulties, policy measures and a review of the literature. *OECD Journal: Financial Market Trends*, 2013(2), 115–148.
- Xiang, D., & Worthington, A. (2015). Finance-seeking behavior and outcomes for small- and medium-sized enterprises. *International Journal of Managerial Finance*, 11(4), 513–530. <https://doi.org/10.1108/IJMF-01-2013-0005>

Appendix A: Variables Description and Sources

Variables	Description	Source
FSIZE_VSMALL	Firm size very small (number of employees 1–9) (d)	Constructed from SAFE survey
FSIZE_SMALL	Firm size small (number of employees 10–49) (d)	Constructed from SAFE survey
FSIZE_MEDIUM	Firm size medium (number of employees 50–249) (d)	Constructed from SAFE survey
FSIZE_LARGE	Firm size large (number of employees 250+) (d)	Constructed from SAFE survey
FSTAT_AUTON	Firm financially autonomous (d)	Constructed from SAFE survey
AFFL_MING	Firm affiliation mining industry (d)	Constructed from SAFE survey
AFFL_CONS	Firm affiliation construction industry (d)	Constructed from SAFE survey
AFFL_MAN	Firm affiliation manufacturing industry (d)	Constructed from SAFE survey
AFFL_RET	Firm affiliation wholesale/retail industry (d)	Constructed from SAFE survey
AGE_VYNG	Firm age very young (<2 years) (d)	Constructed from SAFE survey
AGE_YNG	Firm age relatively young (2–5 years) (d)	Constructed from SAFE survey
AGE_MAGE	Firm age middle-aged (5–10 years) (d)	Constructed from SAFE survey
AGE_OLD	Firm age middle-aged (10+ years) (d)	Constructed from SAFE survey
HEAD_WOM	Firm headed by a woman (d)	Constructed from SAFE survey
HEAD_NWOM	Firm not headed by a woman (d)	Constructed from SAFE survey
PROF_DEC	Firm profit over the past 6 months decreased (d)	Constructed from SAFE survey
LOPROF_WOR	Firm-specific outlook (profit/sale) in last six months worsened (d)	Constructed from SAFE survey
ACCPUB_WOR	Firm access to public guarantees worsened in last six months (d)	Constructed from SAFE survey
OWN_WOR	Firm own capital position worsened in last six months (d)	Constructed from SAFE survey
DEBAS_INC	Firm debt/asset ratio increased in last six months (d)	Constructed from SAFE survey
CHIS_WOUN	Firm credit history unchanged/worsened in last six months (d)	Constructed from SAFE survey
ECON_WOR	General economic outlook worsened in last six months (d)	Constructed from SAFE survey
BWILL_WOR	Banks' willingness to lend worsened in last six months (d)	Constructed from SAFE survey
NEED_INV	Firm need for EF increased due to fixed investment in last six months (d)	Constructed from SAFE survey
NEED_WCAP	Firm need for EF increased due to inventories/WC in last six months (d)	Constructed from SAFE survey
NEED_IFUN	Firm needs for EF increased due to internal funds in last six months (d)	Constructed from SAFE survey
UP_MARK	Firm mark-up decreased in last six months (d)	Constructed from SAFE survey
BNK_CAP	Country level banking industry average capitalization (%)	BANKSCOPE
BNK_NPL	Country level banking average non-performing loans/total gross loans (%)	BANKSCOPE
BNK_LCHG	Country level banking industry average net charge-off/net income (%)	BANKSCOPE
BNK_LIMP	Country level banking industry average impaired loans/gross loans (%)	BANKSCOPE
BNK_INTBR	Country level banking industry average interbank ratio (%)	BANKSCOPE
BNK_COMP	Country level banking industry competition (average Herfindahl index)	BANKSCOPE
BNK_LGROW	Country level banking industry average loan growth (%)	BANKSCOPE
BNK_PROF	Country level banking industry average return on equity (%)	BANKSCOPE
BNK_PBORF	Country level banking industry average price of borrowed funds (%)	BANKSCOPE
BNK_INT	Country level banking industry average interest rate on loans (%)	BANKSCOPE
GVT_DBT	Country level govt. debt/GDP ratio (%)	World Development Indicators (WDI)
TIME_INS	Country level time to resolve insolvencies (years)	World Development Indicators (WDI)
CRED_INFID	Country level credit information asymmetry index (score 1–6)	World Development Indicators (WDI)
LEG_RIGHT	Country level strength of legal rights (0=weak to 12=strong)	World Development Indicators (WDI)
CTAX_RATE	Country level commercial corporate tax rate (%)	World Development Indicators (WDI)
GDP_GRAT	Country level GDP growth rate (%)	World Development Indicators (WDI)
PVT_DBT	Country level private debt/GDP ratio (%)	World Development Indicators (WDI)
GDP_PC	Country level GDP per capita (000 US\$)	World Development Indicators (WDI)
GOVE_YIE	Country level government bond yields (%)	World Development Indicators (WDI)
USD_LABOR	USD LIBOR (%)	World Development Indicators (WDI)

Notes. d indicates dummy variable. EF external finance.