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Bank Credit Constraints for Women-Led SMEs: Self-Restraint or Lender Bias?

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Abstract

We test the existence of possible gender biases affecting the firm behaviour in demanding and obtaining bank credit using a cross-country sample of European SMEs. We show consistent evidence that female-led firms are more likely than their male counterparts to refrain from applying for loans. When they apply, apparently female-led enterprises do not seem to face gender discrimination from the lender. Interestingly, however, signs of gender bias appear to arise during the upside phase of the economy. Overall, our study provides support for policy actions aimed at reducing the frictions faced by women-led SMEs when accessing credit markets.

Keywords: Access to finance, Bank lending, SMEs, self-restraint, gender discrimination

JEL codes: D22, G21, G32, J16

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1. Introduction

Small- and Medium-sized Enterprises (SMEs) heavily rely on banks to finance their projects as they find it difficult to raise funds via capital markets (Caglayan and Xu, 2016; Cingano et al., 2016). The conditions faced by the SMEs when accessing bank credit are hence crucial for their existence and development (Vermoesen et al., 2013; Ferrando et al., 2017; Degryse et al., 2018). Specific issues concern the impact that such conditions may have on the businesses led by women managers. If we look at the worldwide data on the gender gap in 2018 (Global Gender Gap Index), significant gender inequalities, especially in economic participation and political empowerment, emerge even across European countries. This is not inconsequential, provided that gender differences may also affect the bank-firm relationship. Indeed, several studies demonstrate that problems in the access to finance represent a major impediment which may prevent women from successfully manage their businesses (see, among others, Marlow and Patton, 2005; World Bank, 2011).

The literature highlights the existence of issues faced by women-led firms, when accessing finance, from both the demand and the supply sides of the channel. More specifically, from the demand side there is a discrete branch of the literature highlighting that women-led enterprises tend to refrain from applying for bank credit because they generally feel less confident, than men, about their bargaining abilities when dealing with lenders. Hence, they more likely tend not to apply, thus behaving as discouraged borrowers (Bardasi et al., 2011; Freel et al., 2012; Ongena and Popov, 2016; Moro et al., 2017). Other scholars have also pointed that female-led businesses may be more likely to refrain from applying for external funds (e.g., equity capital) as they prefer to finance their projects via internal sources (Mukhtar, 2006; Carter et al., 2007; Coleman and Robb, 2009) – thus limiting their growth opportunities –, or by relying on networks of friends and family (inter alia, Guiso et al., 2004; Sena et al., 2012; Alesina et al., 2013; Lim and Suh, 2019). With regards to the supply side, on the other hand, a typical issue that female-led firms may face, compared to male-led enterprises, is a higher rate of rejection of their loan applications (inter alia, Cavalluzzo et al., 2002). Additionally, women-led businesses may experience a partial rejection from the lender (Treichel-Zimmerman and Scott, 2006; Kremel and Yazdanfar, 2015), or they can even face higher price conditions

or be required to provide higher collaterals than men in order to obtain credit (Muravyev et al., 2009; Bellucci et al., 2010; Wu and Chua, 2012; Alesina et al., 2013; Mascia and Rossi, 2017). It is also worth mentioning that the literature on this issue is not conclusive and a bunch of studies has not detected signs of gender-based discrimination (inter alia, Carter et al., 2007; Moro et al., 2017).

In this paper we build on the above literature to comprehensively investigate whether and in what way female-led companies are likely to be discriminated, compared to men, when they apply for bank loans, as well as whether and what reasons drive them to avoid applying for bank loans to finance their projects.

Various reasons motivate our study. First, although the topic appears to be widely debated, even recent papers – such as Bui et al. (2019) – underscore the need for more empirical investigations, in response to the numerous qualitative and theoretical works, on the potential gender gap faced by the SMEs when accessing finance. Second, as recently highlighted by Rostamkalaei et al. (2018), most of the papers still provide mixed evidence on the existence of gender issues in the access to finance, which motivates us to further investigate the topic. Third, the vast majority of existing studies usually tend to focus on single issues, rather than jointly considering a range of reasons, arising from the demand or the supply side of the bank lending market. In this regard, it is worth mentioning that most of the scholars in the field have investigated the issue of borrower discouragement to apply for bank loans, and loan rejection perpetrated by the lenders (inter alia, Presbitero et al., 2014; Moro et al., 2017; Cowling et al., 2019). What is missing though, to the best of our knowledge, is a study that jointly assesses a variety of motivations (from the borrowers' perspective) to not applying for loans, as well as a range of adverse outcomes (of the applications for bank lending) experienced by the SMEs.

By relying on the wealth of information provided by the Survey on the Access to Finance of Enterprises (SAFE) confidentially released by the European Central Bank (ECB), our study offers the following contributions. First, we extend the literature regarding the gender gap issues in the access to finance by concurrently considering – with an appropriate methodology – a variety of self-restraint motives of the firms, as well as a number of adverse outcomes arising from the applications for external finance. Notably, with regards to the former, in addition to the discouragement motivation we also investigate whether female-

led SMEs tend, more than men, to not applying for bank loans because of sufficient funds or for other reasons. When we turn to the results of the loan applications, not only we consider the mere rejection from the lender, but we also investigate whether female-led firms are more likely than men to be partially rejected or to refuse the loan because the price conditions are too costly. Overall, to do so we employ multinomial logistic models that allow simultaneous and efficient estimates to predict the probabilities of alternative outcomes of a categorically distributed dependent variable. In our study, these are represented by the non-applications reasons, from the demand side, and by the results of the applications, from the supply side. Furthermore, because the choice of appointing a female leader at the head of a company might not fully be exogenous (Adams and Ferreira, 2007; Sila et al., 2016; Mascia and Rossi, 2017), we care to address possible endogeneity affecting our estimates through the use of a two-step instrumental variable technique, in a similar fashion to Cumming (2008) and Heger and Tykvová (2009).

Second, we exploit the macroeconomic heterogeneity characterizing our data to detect whether possible disparities between female and male firms arise during different phases of the economic cycle. Negative macroeconomic scenarios indeed, by affecting banks, translate into lower lending quantity or higher cost of credit for SMEs (Cole and Sokolyk, 2016; Degryse et al., 2018). Therefore, the perception of such issues might significantly impact on the firm's behaviour leading, for instance, to discouragement conducts (Mac an Bhaird et al., 2016). Interestingly, recent studies on the access to finance have limited their analysis to the post-global financial crisis period in a specific country only (Cowling et al., 2019), or have exploited the country heterogeneity characterizing their data regardless of the time-specific macroeconomic conditions (Mascia and Rossi, 2017). To the best of our knowledge, hence, we are the first to explore whether differences in macroeconomic conditions affect the self-restraint behaviour of women-led firms, as well as the outcomes of their bank loan applications focusing on opposite dynamics of the business cycle occurred during and after a particular turbulent period across our sampled countries.

Our findings reveal that female-led firms are more likely than male-led ones to be financially constrained since they behave as discouraged borrowers. Moreover, they also tend to self-refrain as they rely, more than men-led businesses, on internal funding. Results are robust to various model specifications and are

corroborated after addressing endogeneity. In addition, female discouragement persists in both phases of the business cycle, whereas non-applications for sufficient funds and other reasons – by female-led SMEs – mainly come out during economic downturns. As regards the supply, signs of discrimination perpetrated by the lender against women arise only during the upside phase of the business cycle. Finally, our results highlight that, during economic downturns, female-led businesses are less likely, than men, to refuse a loan offer even if it is too costly.

The remainder of paper is organized as follows. In Section 2, we offer a review of the literature and define the research hypotheses. In Section 3, we describe the data and the methodology. In Section 4, we discuss the empirical results and provide additional analyses. Finally, Section 5 draws the conclusions.

2. Literature review and research hypotheses

There is a wide literature in the field of entrepreneurship that investigates whether the manager's gender is a major factor affecting the firms' inclination to access bank credit, as well as whether lenders behave differently when providing loans should the borrower be a man or a woman. Most of these papers however provide mixed evidence on the existence of gender issues in the access to finance (Rostamkalaei et al., 2018), and are usually focused on single concerns — such as borrower discouragement to apply for bank loans, and loan rejection perpetrated by the lenders — or investigate the behaviour of SMEs chartered in specific countries (inter alia, Presbitero et al., 2014; Cowling et al., 2019). Hence, more comprehensive and more conclusive studies on the shortcomings faced by the SMEs when accessing the bank lending channel are still needed to policy makers, especially because of the acknowledged importance of small businesses for the real economy in Europe.

Our setup enables us to investigate various issues potentially affecting the access to bank finance for SMEs. Therefore, in developing our testable hypotheses, we will survey two branches of the literature: one that highlights gender-based disparities arising from the demand side, and one that attributes the existence of gender gap issues to supply-driven factors.

2.1 *Demand-side predictions*

On the demand side there is some consensus around the view that women-led enterprises may tend to self-refrain from applying for bank credit, as their general inclination to be less confident and more risk-averse than men could lead them to be more sceptical about their ability in successfully obtaining funding (inter alia, Treichel-Zimmerman and Scott, 2006; Croson and Gneezy et al., 2009; Roper and Scott, 2009; Carter et al., 2015; Ongena and Popov, 2016; Malmström et al., 2017; Poczter and Shapsis, 2018; Chaudhuri et al., 2018). Because of differences between men's and women's characteristics, skills or preferences, female firms could hence behave as discouraged borrowers (Kon and Storey, 2003; Freel et al., 2012; Kalnins and Williams, 2014; Moro et al., 2017). We therefore propose to test the following hypothesis:

H1: *Female-led firms face a higher probability of not applying for bank loans, than their male counterparts, because they behave as discouraged borrowers (i.e., they refrain from applying for fear of rejection).*

The literature also argues that non-applications to bank loans can be due to a different attitude of women-led firms, which may prefer to resort to internal rather than external funds (inter alia, Mukhtar, 2006; Orser et al., 2006; Carter et al., 2007; Fairlie and Robb, 2009; Coleman and Robb, 2009; Sena et al., 2012) or to friends and family networks (inter alia, Guiso et al., 2004; Manolova et al., 2007; Watson and McNaughton, 2007; Kwong et al., 2012; Charness and Gneezy, 2012; Kwong et al., 2012; Sena et al., 2012; Alesina et al., 2013; Lim and Suh 2019). Relying on internal funds is viewed as a form of financial constraint (see, on this point, Fazzari et al., 1988; Guariglia and Liu, 2014; Sasidharan et al., 2015) which, in turn, may affect the firm's growth. Indeed, the choice of resorting to internal or external finance is not inconsequential, as debt financing – compared to internal finance – is supposed to generate, via the leverage effect, a more than proportional impact on growth (Carpenter and Petersen, 2002). However, female-led companies are usually less eager than male peers to expand their business — an attitude that essentially mirrors their higher risk-aversion (Alsos et al., 2006; Carter et al., 2015) which could justify their greater reliance on internal funds. In this regard, it is worth noting that, following the pecking order theory (Myers and Majluf, 1984), female-led SMEs might exhibit a stronger preference for internal rather than external sources of finance (Watson,

2006), potentially because of their higher need to be in control of most aspects of their business (Mukhtar, 2002). Another argument supporting this view relates to the information asymmetries in capital markets – between firms and potential providers of funds – that determine a wedge between the cost of internal and external finance, which is even more pronounced for SMEs (Carpenter and Petersen, 2002). Such evidence — coupled with the potential perception of women to be differently treated by the lenders — might then lead female managers to build up, over time, their own cushion of internal finances that could eventually lead them to be independent from banks. Ultimately, we cannot rule out the possibility that firms could also decide to avoid engaging with banks for other unknown reasons. All in all, this brings us to test the following hypothesis:

H2: *Female-led firms face a higher probability of not applying for bank loans, than their male counterparts, because they have sufficient funds or have other reasons for doing so.*

2.2 *Supply-side predictions*

As regards the issue of gender discrimination from the supply side, it is worth mentioning that the literature identifies two different types of discrimination, namely the taste-based or prejudicial discrimination – driven by preferences and beliefs that are not based on objective criteria – and the statistical discrimination – occurring when the collection of information on the firm's creditworthiness is difficult and costly. Thereby, in these situations, one easily infers the necessary information by observing evident features, such as gender (inter alia, Bellucci et al., 2010; Aristei and Gallo, 2016; Mascia and Rossi, 2017).

Several studies suggest that the credit requirements imposed by banks are more likely to favour male rather than female-led firms, mainly because lenders have different perceptions about the entrepreneurs' potential (Marlow and Patton, 2005; Carter et al., 2007; Alsos and Ljunggren, 2017). Female-led firms indeed may face, compared to male-led enterprises, either a higher rate of rejection of their loan applications (Cavalluzzo et al., 2002), or a partial rejection from the lender (Treichel-Zimmerman and Scott, 2006; Kremel and Yazdanfar, 2015), or higher price conditions, or be required to provide higher collaterals for the supplied credit (Muravyev et al., 2009; Bellucci et al., 2010; Wu and Chua, 2012; Alesina et al., 2013;

Mascia and Rossi, 2017). It is worth noting, however, that this evidence is far from conclusive. Indeed, a bunch of other studies do not find signs of gender-based discrimination, as they show that women's constraints in the access to credit are mostly due to structural features of the firm, such as the size, the sector of activity, the manager's level of education and experience, the inability or resistance in providing good collaterals or personal guarantees (inter alia, Cavalluzzo and Cavalluzzo, 1998; Coleman, 2002; Blanchflower et al., 2003; Carter et al., 2007; Moro et al., 2017).

We therefore try to shed light on the potential discrimination motives, arising from the supply side, by testing the following hypotheses:

Female-led firms face a higher probability of being credit constrained, than their male counterparts, because:

H3*: they get rejection from the lender, or they decide to refuse the loan as it is too costly*;

H4*: they receive only part of the amount requested.*

3. Data, model and methodology

3.1 *Data*

We carry out our analysis by relying on firm-level data retrieved from the Survey on the Access to Finance of Enterprises (SAFE) that is jointly run by the European Central Bank (ECB) and the European Commission (EC). The SAFE is a harmonized and homogeneous dataset providing qualitative information on enterprises' financial needs, their experience in the access to finance, as well as a series of firm-level and financial characteristics provided on the basis of self-assessed perceptions.[1] Each survey round (the so-called *wave*) of the SAFE is addressed to a randomly selected sample of non-financial SMEs included in the Dun & Bradstreet business register.

Albeit the SAFE does not provide balance sheet data, it has a number of relevant advantages. First, it allows us to trace over time firms' decisions to either access to credit or self-refrain. It provides qualitative

[1] Because of the anonymity characterizing the survey, we are not able to link quantitative balance-sheet information related to the enterprises in our dataset.

information based on the firm perceptions concerning their experience in accessing credit, and distinguishes the different motives which are behind firms' decisions about financing. In addition, data are available for a large sample of European SMEs which allow us to take into account cross-country heterogeneity. Specifically, our analysis covers the 11 largest Euro-area economies (i.e., Austria, Belgium, France, Finland, Germany, Greece, Italy, Ireland, The Netherlands, Portugal, Spain), as they are the countries whose firms have been systematically surveyed, every round, since 2009.

The SAFE also offers information about the gender of the owner, director, or CEO of the surveyed firms. This information is available only from the second to the tenth wave of the survey (i.e., period spanning from July 2009 to March 2014). Therefore, we end up with a sample of 60,058 observations, collected from those nine waves. Specifically, 20,150 observations are from micro enterprises, 20,245 from small firms, 15,284 from medium businesses, and the remaining 4,379 observations refer to a sample of large firms which serves as control group. In Table OA1 and Table OA2 provided in the Online Appendix, we offer a snapshot of the sample observations by country and gender and by country and wave, respectively.

3.2 *Model, variables and methodology*

Considering the research hypotheses outlined in Section 2, our model estimates the probability of observing the possible outcomes of our dependent variables as follows:

$$P_i(\mathbf{Y}) = f(\textit{Female, firm characteristics, structural and cyclic macro, country, wave}) \quad (1)$$

where *Y* is one of the two dependent variables that we employ in our analysis, *Female* is our key regressor, the vector *firm characteristics* controls for the firm's features, *structural and cyclic macro* is a vector of country-level controls, whereas *country* and *wave* are vectors of country and time dummies, respectively.

3.2.1 *Dependent variables*

For the purpose of our analysis, we select two questions from the SAFE, namely *q7a_a* and *q7b_a*. Question *q7a_a* inquiries about the firms' choices in the application to bank credit and asks:

> "[With regards to bank loans], *could you please indicate whether you:* (1) *applied for them over the past 6 months;* (2) *did not apply because you thought you would be rejected;* (3) *did not apply because you had sufficient internal funds;* (4) *or did not apply for other reasons?"*

The values from 1 to 4, outlined in parentheses, denote the way each interviewee's answers were coded. Hence, we employ such information to generate our first dependent variable that we call "*applying for bank loans*".

Question *q7b_a* is addressed, instead, only to the firms that applied for bank loans and inquiries about the outcomes of the applications as follows:

> *"If you applied and tried to negotiate for* [bank loans] *over the past 6 months, did you:* (1) *receive all the financing you requested;* (2) *receive only part of the financing you requested;* (3) *refuse to proceed because of unacceptable costs or terms and conditions;* (4) *or have you not received anything at all?"*

Again, the values from 1 to 4, outlined in parentheses, denote the way each interviewee's answers were coded. We, therefore, employ this information to generate our second dependent variable that we identify as "*obtaining bank loans*".[2]

3.2.2 *Regressors*

The key variable of our investigation is *Female*, which is a dummy that equals one if the owner/director/CEO of the enterprise is female, and zero otherwise. It is worth noting that the information provided by the SAFE does not allow to distinguish across the three roles (i.e., owner, director, and CEO). We acknowledge that the lack of such detail is not negligible. However, it is not crucial in our investigation,

[2] In the Online Appendix (Table OA3) we provide a breakdown of the sample observations for both dependent variables.

as the firms in our sample are mainly micro and small. Therefore, we assume that, in most of the cases, the firm's owner is also the firm's manager (i.e., manager corresponds to owner-manager).[3]

Firm characteristics is a vector that includes both standard firm features (i.e., age, sector, size) and financial indicators, such as the perceived variations in capital, profitability and credit history of the surveyed enterprises. Specifically, to control for the firm's age we utilize the following three dummies; namely *very recent* that equals one if the firm is less than 2 years old, *recent* that has the value of one if the firm is between 2 and 5 years old, and *old* that equals one if the firm is between 5 and 10 years old.

In addition, we include industry fixed-effects to control for the firm's sector of activity; namely we employ the dummies *construction*, *manufacturing*, *wholesale/retail* that equal one when the firm belongs to the construction, manufacturing, and wholesale and retail trade sector, respectively. Then, to control for the size of the surveyed firms, we utilize other three dummies; namely *micro* that equals one if the firm has between 1 and 9 employees, *small* that equals one if the firm has between 10 and 49 employees, and *medium* that equals one if the firm has between 50 and 249 employees.

With regards to the financial controls we capture the perceived variations in a firm's capital via the dummies *capital up* and *capital down*. Notably, *capital up* (*down*) takes the value of one if the firm declares that its own capital has increased (decreased) over the past six months, and zero otherwise. Similarly, we control for changes in profitability via the dummies *profit up* (*down*) that equal one if a firm experienced an increase (decrease) of its profits during the previous six months, and zero otherwise. Moreover, we keep track of the declared variations in the firm credit history by generating *creditworthiness up* (*down*) that takes the value of one when an enterprise perceived an increase (decrease) of its creditworthiness over the past six months, and zero otherwise. It is worth noting that all these dummies are not capturing the *level* of capital, profitability and creditworthiness. Rather, they offer information about the firm's perception of the *change* experienced in each of the abovementioned measures. We expect that firms exhibiting positive variations in creditworthiness and profitability may be more likely to obtain a bank loan. Finally, we account

[3] To corroborate such assumption, we have checked whether the findings from our analyses change when we run our estimates on a sub-sample made of single-owner businesses only. Unreported results appear to be consistent.

for the change in the need of loans by including the dummies *demand up* (*down*) which equal one when a firm declares that its need for bank credit has increased (decreased) over the past six months, and zero otherwise. Overall, the inclusion of all these variables is aimed at limiting potential biases arising from our estimates, as well as to alleviate concerns that possible gender effects are driven by omitted variables rather than being signs of discrimination.

The *structural and cyclic macro* vector includes the growth of credit, the Index of Economic Freedom, the Herfindahl Index (HI) of bank concentration, the rate of unemployment, and a dummy accounting for the expansionary monetary policies. Notably, we account for the availability of credit in the economy by including the annual growth rate of bank loans provided to non-financial corporations, which we retrieve from the ECB Data Warehouse. Particularly, because the SAFE is run with biannual frequency, for the growth of credit we employ averages of quarterly data for each wave of the survey (similarly to Ferrando et al., 2017). We expect that, during periods characterized by a positive growth of credit, firms will be less likely to refrain from applying for credit as well as to face a negative outcome for their loan applications. Moreover, we utilize the Index of Economic Freedom to account for the impact of the legal-institutional environment on the functioning of the credit market. We expect that the higher the level of economic freedom, the easier and less costly the financial transactions. Additionally, we control for the structure of the banking market, in each country, via the HI of total assets' concentration that we collected from the ECB Data Warehouse. Furthermore, we account for the fluctuations in the business cycle by utilizing the rate of unemployment retrieved from Eurostat – which we compute as averages of quarterly data for each survey round. Overall, we expect that during a slowdown of the cycle, characterized by lower rates of employment, firms tend to suffer more when accessing credit markets, *ceteris paribus*. Finally, we keep track of a period of expansionary monetary policy that followed the announcement of the Outright Monetary Transactions (OMT) Program in 2012 by employing a specific dummy. We suppose that firms can more easily access bank credit during periods characterized by high volumes of money in circulation. Table 1 shows the summary statistics related to the variables included in our specifications, whereas variables' descriptions

and sources are provided in Table A1 in the Appendix. The matrix reporting pairwise correlations between the regressors is available in the Online Appendix (Table OA4).

– TABLE 1 HERE –

3.2.3 *Methodology*

To estimate model (1), we use multinomial logistic regressions. This method is suitable when the dependent variable is qualitative and has more than two outcome categories with no natural ordering. Indeed, in a multinomial logistic setting, binary logistic regressions are simultaneously run for comparison among the various outcome categories, which permit efficient analysis of the estimates as opposed to multiple independent logit models. The use of both qualitative and quantitative regressors is admitted with such a technique that employs maximum likelihood to assess the regression's function. Additionally, our empirical setup includes calibrated weights to adjust the sample to be representative of the population from which it is extracted (as in Ferrando et al., 2017). Furthermore, we correct standard errors to address heteroskedasticity and we cluster them at the country level in order to remove potential bias affecting the estimates. Finally, we carry out all our tests by including either country and time dummies separately or, alternatively, country*time dummies – while dropping our country-level regressors – in order to control for unobserved time-varying country characteristics.

3.3 *Endogeneity*

There is a discrete consensus in the literature around the view that the gender of a firm's leader might not be exogenous (Adams and Ferreira, 2007; Sila et al., 2016; Mascia and Rossi, 2017). Thus, any potential correlation between the leader's gender and the outcomes of our dependent variables accounting for the bank loans' (non-) applications and results may be spurious. Specifically, omitted firm characteristics can be source of endogeneity. Indeed, unobservable factors, such as corporate culture, may guide the choice regarding the gender of the firm leadership.

In order to cope with such potential endogeneity issue, we employ a two-step approach in a similar fashion to Cumming (2008), and Heger and Tykvová (2009). Notably, in the first step we utilize a logit model to investigate the determinants of our *Female* dummy. More specifically, for identification purposes, we need an instrument that is strongly correlated with the *Female* regressor and is not correlated with the error term. We, therefore, identify the share of female employment by sector of activity in each country as a proper instrument for our *Female* dummy (as in Mascia and Rossi, 2017). We retrieve this instrument from Eurostat and utilize averages of quarterly data for each wave of the survey. Hence, we regress *Female* on the rate of female employment and a variety of firm and country controls from model (1). Then, in the second stage, we estimate model (1) by employing our multinomial logistic setting where we include the predicted values from the first step instead of using the *Female* dummy.

As an additional robustness check, we address the endogeneity issue by employing an alternative instrument. Indeed, we are aware that the use of the share of female employment by sector may present some limitations due to the fact that an industry with, say, a higher portion of female workers might not necessarily be an industry with a corresponding share of women entrepreneurs/managers. Therefore, to further corroborate our analysis, we instrument our Female dummy by employing the share of female self-employment, by sector of activity. Like the previous instrument, this variable is available quarterly from Eurostat, and we thus link its averages to each survey round. Finally, this variable is only available for a smaller sample, which is also the reason why we do not employ it as the main instrument.[4]

4. Empirical Results

4.1 *Multinomial logistic analysis*

We start our empirical analysis by simultaneously testing hypotheses H1–H2 through the use of our multinomial logistic setting. Notably, we estimate model (1) with the first of the two dependent variables (i.e., *applying for bank loans*). More specifically, the use of such methodology requires us to specify a base

[4] For the sake of clarity, this instrument is available – for all the sampled countries – for the "Manufacturing" and "Wholesale/Retail" industries. As regards the "Construction", the variable is missing for Austria, France, Ireland, and Portugal. No observations are available for the "Mining" industry.

outcome (i.e., *applied*) against which comparing the remaining outcomes of the dependent variable under investigation. (i.e., *non-application for fear of rejection, for sufficient funds, for other reasons*). The first four columns in Table 2 report the results of a test carried out utilizing country and time dummies individually; the remaining four columns, instead, report the same test when employing country*time dummies in lieu of the country-level controls.

Starting from Column 2 of Table 2 (hypothesis H1), we observe that the coefficient related to *Female* is positive and highly significant at the 1% level, signalling that women are more likely than men to not applying for fear of rejection. The same result is observed in Column 6 where we employ country*time dummies in lieu of the country-level controls. This evidence underscores that, in the Euro area, women seem to behave as discouraged borrowers anticipating a possible denial from the lender. Such a finding is consistent with theories emphasising the greater lack of confidence characterizing women (inter alia, Carter et al., 2015; Moro et al., 2017).

Moving to Columns 3–4 and 7–8 of Table 2, where we test hypothesis H2, again we find that *Female* is highly significant at the 1% level.[5] This suggests that female-led firms are more likely than men to not applying for bank loans because of sufficient funds and for other reasons, as opposed to the applied outcome. This evidence gives support to the idea that women either suffer, more than men, from potential frictions characterizing the credit markets thus leading them to rely on internal finance (inter alia, Fazzari et al., 1988), or are less inclined than men in exploiting possible growth opportunities – hence not requesting additional finance (Alsos et al., 2006; Carter et al., 2015; Malmström et al., 2017) –, or are simply more parsimonious in the use of funds. Furthermore, the result from Columns 4 and 8 would, for instance, signal that women turn to the bank-lending channel less than men as they, maybe, prefer to rely on informal channels, such as family or other social ties (Alesina et al., 2013).

– TABLE 2 HERE –

[5] Unreported tests show that results from Table 2 are confirmed if we exclude, from our analysis, the observations related to large firms.

As regards the controls employed in the model, it is worthy of note that the dummy *capital up* enters with a negative sign suggesting that, when firms increase their capital endowment, their probability of not applying for bank loans diminishes.[6] Moving to the country-level controls, interestingly we observe the significance of the unemployment rate and the OMT variable in Column 2 of Table 2. Specifically, an increase in the unemployment rate leads firms to doubt of their success in case of a loan application – given the negative macroeconomic environment surrounding their enterprise – and consequently brings them to eventually give up. In contrast, during periods of expansionary monetary policy – as captured by our OMT dummy – firms seem to regain confidence towards the banking system thus showing a reduction in their fear of rejection.

As per the supply side, Table 3 shows regressions arising from model (1) when employing our second dependent variable (i.e., *obtaining bank loans*) to estimate hypotheses H3–H4. Here we assess the occurrence of a bias between female- and male-led firms by looking at the different forms of financial constraints perpetrated by the lender (i.e., *applied and got part of the loan requested, applied and refused because the loan was too costly, applied and was rejected*) as opposed to the base outcome (i.e., *applied and got everything*). The first four columns in Table 3 report regressions results when we estimate model (1) by employing country and time dummies separately. The remaining four columns, instead, show the results obtained when including country*time dummies in lieu of the country-level controls.

– TABLE 3 HERE –

Overall, we find that the *Female* dummy is never significant across the various columns, suggesting that there is no sign of bias against women by the loan officers. This result contradicts previous studies highlighting the opposite (inter alia, Cavalluzzo et al., 2002; Bellucci et al., 2010).

Moving to the firm-level controls, in Table 3 we note that the coefficients of the dummies *creditworthiness down* and *capital down* are generally positive and significant, implying that a perceived deterioration in the firm's credit history and capital endowment are associated, as expected, to a greater

[6] Results do not change appreciably if we employ three continuous variables (taking values of –1 when decreased, 0 when unchanged, and 1 when increased) to capture the change in the levels of capital, profit, and creditworthiness – rather than using two dummies per each firm characteristic (six dummies overall) as we are doing here.

probability of receiving only part of the required funds, refusing the loan because of its high costs, as well as facing a rejection from the lender. As regards the country-level variables, we observe the positive significance of the unemployment rate, suggesting that worsening employment levels lead lenders to refuse the loan application or, at best, provide only part of the required credit presumably because of the severe macroeconomic conditions. In contrast, the negative and significant coefficients of the OMT dummy (Columns 3 and 4, Table 3) underscore that the probability, for SMEs, of refusing the proposed loan or to be denied credit diminishes during periods of expansionary monetary policy. Additionally, some interesting insights emerge with respect to the structural controls. First, the coefficient of the banking market *concentration* has a negative and significant sign (Column 4, Table 3). This result corroborates the information hypothesis (Dell'Ariccia and Marquetz, 2006; Fungáčováet al., 2017), which suggests that the higher the banking market concentration, the higher the incentive for banks to focus on relationship lending. This enables banks to reduce information asymmetries – thanks to a greater amount of soft information collected throughout the relationship – and favours the functioning of the credit market. Finally, the variable accounting for a country's *Economic Freedom* presents a negative and significant coefficient in Column 4, which highlights that firms are less likely to face a loan rejection in countries characterized by greater levels of economic freedom.[7]

In additional analyses, that we do not report for the sake of brevity, we observe that similar findings are detected when the demand and supply for other sources of finance – namely, *i*) trade credit, *ii*) other external financing, and *iii*) bank overdraft, credit line or credit cards overdraft – are investigated.[8] Notably, we find that female-led SMEs are also more likely to not applying for each of the three abovementioned sources of finance, compared to male-led ones, for fear of rejection, for sufficient funds, and for other reasons. In contrast, and in line with the results from Table 3, female-led SMEs do not appear to be discriminated when they apply for trade credit, for other external finance, and for bank overdrafts. These findings bring novel

[7] In unreported analyses, we find that our results do not change when we employ an alternative measure of economic freedom, that is the "Economic Freedom of the World" Index provided by the Fraser Institute.

[8] The SAFE, indeed, also enquires – via questions *q7a_b*, *q7a_c*, and *q7a_d*, respectively – the reasons that led enterprises not to applying for trade credit, other external financing, and bank overdrafts (the latter being available only from the third wave of the survey). Furthermore, limited to the enterprises that applied for one of the abovementioned sources of finance – the SAFE also enquires about the outcome of their applications via questions *q7b_b*, *q7b_c*, and *q7b_d*.

evidence to a branch of the literature that has traditionally investigated the attitude of firms and credit institutions with respect to bank loans demand and supply, and seem to suggest that self-restraint is intrinsically rooted in women's behaviour.

4.2 *Robustness check: interaction terms*

A concern that may arise from our investigation is that the self-restraint behaviour of women is guided by deteriorations in the firms' performance, rather than be a sign of potential gender bias. To address the issue, we re-estimate an alternative version of equation (1) where we include an interaction term between our *Female* dummy and a measure of the change in the firm's performance. Specifically, because the SAFE is not linked to the enterprises' balance sheet data, we capture variations in performance by utilizing the declared increase in the firm's profits (*profit up*). If our hypothesis is corroborated, we should yet find a positive coefficient for *Female* even when firms exhibit better performances. Table 4 displays the results of such a test. Albeit the interaction term is never significant, we observe that *Female* always remains positive and statistically significant in almost all columns (i.e., all columns except the one related to the non-application for other reasons). This suggests that women-led firms are more likely than men-led ones to not applying for credit because they are discouraged or because they have sufficient funds, and this result does not appear to be driven by the economic conditions of the enterprise.[9]

Overall, the message we get from this test is that female-led SMEs appear to unconditionally self-refrain from applying for bank loans for fear of rejection or because they own enough funds even if their businesses are profitable. This is unfortunate considering that past performance may serve to signal, to banks, the viability of the firm (Eddleston et al., 2016) and hence have greater chances of success with a loan application. This result particularly highlights that policy makers should act in order to mitigate the concerns faced by female-led SMEs – especially when they behave as discouraged – and help them gain confidence about their abilities in successfully run their businesses and potentially grow.

[9] We find analogous results – that we do not report for the sake of brevity – when we interact *Female* with variables accounting for the improvements in the firm's credit history (*creditworthiness up*) and capital (*capital up*).

– TABLE 4 HERE –

4.3 *Addressing endogeneity*

As pointed out in Section 3.3, the choice of hiring a female leader at the head of an enterprise might not be completely exogenous. To cope with such a concern, we employ a two-step approach following Cumming (2008), and Heger and Tykvová (2009). As widely described earlier, we use the biannual share of female employment by sector of activity as an instrument for our *Female* dummy. However, because the SAFE does not provide information about the main activity carried out by large firms – thus implying that we are not able to link their observations with our instrument –, we are forced to carry out our endogeneity checks on the sample formed by SMEs only. Therefore, our sample size decreases by about 7% to 55,679 observations – which is, anyway, a minor drop.[10]

In Table 5 we report the estimates of the first logistic step, where we find that the instrument has a highly significant positive impact (at the 1% level) on the probability of female leadership. This significant result is an essential condition to go forward with our investigation and thus carry out the second step of such methodology. Therefore, in Table 6 and Table 7 we report the estimates of the final stage of our two-step approach, where we estimate model (1) via a multinomial logistic model that utilizes – in lieu of the original *Female* dummy – the predicted value of *Female* obtained from the first step logistic estimation.[11]

– TABLE 5, TABLE 6, and TABLE 7HERE –

Starting from Table 6 – where we employ the first of our dependent variables – we observe that, even after correcting for endogeneity, *Female* has a significant positive effect on the probability of the various non-application reasons. To rule out the possibility that the inclusion of country and time dummies generates collinearity with the macro and structural controls (as utilized in the first four columns of Table 6), we re-estimate our model, first excluding time dummies only, then omitting both time and country dummies at the same time. Results, not reported for the sake of brevity, confirm our previous findings. In addition, our

[10] Note that, to avoid collinearity with the (sector-invariant) instrument, we omit to include the dummies accounting for the enterprise's sector of activity.
[11] Unreported tests highlight that our results are robust to using bootstrapped standard errors.

evidence further improves when we drop the country-level controls and include country*time dummies in Columns 5–8. Overall, this result underscores that our earlier findings are corroborated even after addressing the endogeneity concern.

We now repeat the same procedure for the second of our dependent variables, namely 'obtaining bank loans'. Results are displayed in Table 7 where we find that *Female* is never statistically significant across the various specifications, confirming that women do not appear to be differently treated compared to men.

To corroborate our findings, we then use the alternative variable – as described in Section 3.3 – to instrument our Female dummy. Namely, we utilize the share of female self-employment by sector of activity. Overall, unreported tests show that our two-step multinomial logistic results still hold when we employ this alternative instrument.

4.4 *Additional analysis: The impact of the economic cycle*

In this Section we exploit the macroeconomic heterogeneity characterizing our set of data. Notably, we aim to investigate whether variations in the macroeconomic conditions over time exert a different impact on both the self-restraint behaviour of women-led firms as well as on the outcomes of their bank loan applications. The underlying hypothesis is that, for instance, during recessions all SMEs will be more likely to deal with an impaired credit market – and, hence, worse access conditions – than in the upside phase of the cycle (Cole and Sokolyk, 2016; Degryse et al., 2018).

Because our time span is not long enough to detect a complete business cycle, we split our dataset in two distinct subsamples; namely one gathering all the observations related to firms whose country – in a given wave – faced a negative growth of the GDP, and the other collating the observations related to firms whose economy – in a given wave – experienced a null or positive growth of the GDP.[12] We therefore re-estimate model (1) for both our dependent variables, in both sub-samples. Results are reported in the different Panels of Table 8 and Table 9.

[12] It is worth clarifying that this is not a geographical split grouping, say, six countries in a bucket and the remaining five in the other. Rather, via this sample split, the same country can be present in both subsamples. Indeed, the split is based on the growth of GDP (either negative, or null/positive), which can vary wave by wave within the same country.

– TABLE 8 and TABLE 9 HERE –

Some interesting findings arise from this analysis. Specifically, in Table 8 – where we employ 'applying for bank loans' as dependent variable – we observe that female-led SMEs turn out to be discouraged during both phases of the economic cycle, as testified by the positive and significant sign of *Female* in case of non-application for fear of rejection (see Panel A and Panel B of Table 8 for regression results in the two sub-samples). Additionally, as reported at the bottom side of Table 8, the Wald test highlights that the coefficients of *Female* in Columns 2 and 6 are not statistically different between the two Panels, suggesting that female-led firms do not appear to behave differently during opposite phases of the business cycle. Interestingly, from this analysis we observe that, even when the macroeconomic scenario appears to be favourable for the success of enterprises, women do not seem to feel confident about their capabilities and – anticipating a subsequent denial – do not even try to submit a loan application. Furthermore, from Table 8 we learn that female-led SMEs are more likely than male-led ones to refrain from applying for loans – because of sufficient funds and other reasons – only during the economic downturns. This evidence could be interpreted as good news by policymakers. Indeed, it might reveal that female-led companies are less susceptible to financial distress during turbulent times, as they are more likely than men to be able to rely on an internal cushion of funds.

When we move to the supply side, unexpected differences between opposite phases of the business cycle emerge (see Panel A and Panel B of Table 9 for regression results in the two sub-samples). We observe that during periods of negative economic growth, female-led firms appear to be less likely to reject credit when the price conditions are too high (see Columns 3 and 7 of Panel A in Table 9).[13] This is because women-led businesses might feel that bank credit is the only available funding, given the economic downturn. Therefore, by accepting worse conditions, they are basically carrying a much larger burden compared to male peers. This excessive burden might then translate into additional levels of stress and consequent decreasing rates of success than otherwise would be the case. In turn, this provides a partial explanation for

[13] We are conscious that the Female coefficients in Columns 3 and 7 of Panel A and B (Table 9) are only mildly statistically different (being their Wald-test p-values around 10% – see the bottom side of the table).

the self-restriction into reiterating loans' applications. Moving to Panel B of Table 9, we observe that during the upside of the business cycle female-led enterprises face a greater likelihood, than male-led ones, to see their loan applications rejected by the lender. More specifically, unreported marginal effects – computed on regressions outputs from Columns 4 and 8 of Table 9 Panel B – show that the probability for women to receive a loan denial during a period of positive growth of the GDP is 2.2% higher than men. Moreover, the Wald test reported at the bottom side of the table underscores that the *Female* coefficients between the Panel A and Panel B of Table 9 are statistically different. Our results document that during times of crisis lenders might be less willing to provide credit in general, thus not particularly discriminating women. In contrast, when the economy runs a positive phase, banks seem to favour male-led enterprises. The absence of gender bias in the full sample might thus reflect a counterbalancing effect of the opposite results we detect in the two subsamples.

5. Conclusions

Bank credit is a pivotal financing tool for SMEs. A rich literature investigates the existence of possible differences in the behaviour of firms and lenders when the formers try to access bank loans. However, the empirical evidence on these issues is far from conclusive and supposedly driven by the different country-setting investigated.

In this paper we focus on a large sample of European SMEs and apply an efficient methodology in order to detect potential differences, between male and female-led companies, with regards to the propensity to use bank credit as well as the outcome of their loan applications. Specifically, using multinomial logistic models, from the demand side we investigate the existence of gender differences in the behaviour of enterprises by testing whether female-led businesses are more likely than men not to applying for loans (i.e., for fear of rejection, sufficient internal funds, other reasons), with respect to the base outcome (i.e., 'applied'). From the supply side, instead, we test whether female-led firms appear more credit-constrained by the lender, than their male peers. Then we address possible endogeneity affecting our estimates by employing a two-stage technique. Finally, we exploit the macroeconomic heterogeneity characterizing our

sample to detect any possible difference in the behaviour of firms and banks during different phases of the business cycle.

Our findings suggest that female-led firms have a greater propensity to self-refrain from credit applications compared to men. This evidence turns out to be stable, for the whole sample, to different model specifications, and is confirmed even after addressing the endogeneity concerns. Additionally, female discouragement persists in both phases of the business cycle, whereas non-applications for sufficient funds and other reasons – by female-led SMEs – mainly come out during economic downturns. From the supply side, we interestingly observe that signs of gender bias from the lender only arise during the upsides of the economy but not from the whole sample. Finally, our results highlight that, during economic downturns, female-led businesses are less likely, than men, to refuse a loan offer even if it is too costly.

Overall, our analysis particularly reveals that the inclination of women to not applying for bank loans due to sufficient funds is not a completely negative outcome. Indeed, our further tests highlight that this behaviour most likely arises during economic downturns, which could eventually signal that female-led businesses are less susceptible to stress – given that they do not need to rely on external providers of finance.

In addition, our investigation highlights the prevalence of a self-restraint behaviour by female-led firms, rather than a consistent attitude of lenders to deny credit. This evidence is crucial from a policy perspective. Indeed, borrowers' discouragement implies forgone investment opportunities for firms and lost selling opportunities for banks (Freel et al., 2012).

Therefore policy-making Bodies – such as the European Institute of Gender Equality (EIGE) – might endeavour to design and suggest policies aimed at addressing the self-restraint attitude of women-led businesses by, for instance, helping female managers to gain confidence towards the bank-credit market, thus encouraging the use of external sources of finance. More generally, such policies should also aim at helping women leaders to acquire more confidence about their ability in running the business. Addressing these issues is also fundamental because such demand-driven behaviours produce suboptimal allocation of resources, growth constraints, and losses in employment opportunities.

Differently from other survey-based contribution in the literature, our study – given its large and comprehensive sample of female- and male-owned companies across a large set of countries – has the advantage of providing a better representativeness of the SMEs operating in different areas of the European continent. However, we also acknowledge a major limitation of our analysis which does not control for the education and skills of the firm's CEO/manager/owner. Using such information – if available – would allow to gain more knowledge about the importance of other personal traits in relation to the attitude towards the use of external finance. Future research could therefore expand further in this direction.

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Table 1: Summary statistics

This table presents summary statistics of the variables employed in our analyses. 'Applying for bank loans' is a variable that equals one/two/three/four if a firm applied/did not apply because of possible rejection/did not apply because of sufficient internal funds/did not apply for other reasons during the past six months, respectively. 'Obtaining bank loans' is a variable that equals one/two/three/four if a firm applied and got everything/applied but only got part of it/applied but refused because cost too high/applied but was rejected during the past six months, respectively. 'Female' is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Medium' is a dummy variable that equals one if the firm has between 50 and 249 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. 'Construction' is a dummy variable that equals one if the firm's main activity is construction. 'Manufacturing' is a dummy variable that equals one if the firm's main activity is manufacturing. 'Wholesale/Retail' is a dummy variable that equals one if the firm's main activity is wholesale or retail trade. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program.

	Observations	Mean	Median	St. Dev.	p1	p99
Dependent variables						
Applying for bank loans	60,058	2.625	3.000	1.085	1.000	4.000
Obtaining bank loans	14,866	1.591	1.000	0.994	1.000	4.000
Key regressor						
Female	60,058	0.125	0.000	0.331	0.000	1.000
Firm-level controls						
Profit up	60,058	0.246	0.000	0.431	0.000	1.000
Profit down	60,058	0.466	0.000	0.499	0.000	1.000
Creditworthiness up	60,058	0.213	0.000	0.409	0.000	1.000
Creditworthiness down	60,058	0.141	0.000	0.348	0.000	1.000
Capital up	60,058	0.253	0.000	0.434	0.000	1.000
Capital down	60,058	0.203	0.000	0.403	0.000	1.000
Demand up	60,058	0.190	0.000	0.392	0.000	1.000
Demand down	60,058	0.135	0.000	0.341	0.000	1.000
Micro	60,058	0.336	0.000	0.472	0.000	1.000
Small	60,058	0.337	0.000	0.473	0.000	1.000
Medium	60,058	0.254	0.000	0.436	0.000	1.000
Very recent	60,058	0.017	0.000	0.127	0.000	1.000
Recent	60,058	0.066	0.000	0.248	0.000	1.000
Old	60,058	0.126	0.000	0.332	0.000	1.000
Construction	60,058	0.100	0.000	0.300	0.000	1.000
Manufacturing	60,058	0.256	0.000	0.436	0.000	1.000
Wholesale/Retail	60,058	0.336	0.000	0.472	0.000	1.000
Country-level controls						
Credit growth	60,058	-0.141	0.400	4.004	-10.150	8.400
Economic Freedom	60,058	67.814	69.200	5.575	55.400	81.300
Unemployment rate	60,058	11.693	9.400	6.477	4.700	27.400
Concentration	60,058	0.091	0.060	0.079	0.021	0.370
OMT	60,058	0.478	0.000	0.500	0.000	1.000

Table 2: The impact of gender on the non-applications for bank loans

This table displays regression results for the multinomial logistic model presented in Section 3.2, concerning the impact of gender on the non-applications for bank loans. The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied/did not apply because of possible rejection/did not apply because of sufficient internal funds/did not apply for other reasons during the past six months, respectively. **Female** is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Medium' is a dummy variable that equals one if the firm has between 50 and 249 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. 'Construction' is a dummy variable that equals one if the firm's main activity is construction. 'Manufacturing' is a dummy variable that equals one if the firm's main activity is manufacturing. 'Wholesale/Retail' is a dummy variable that equals one if the firm's main activity is wholesale or retail trade. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied	(2) Did not apply because of possible rejection	(3) Did not apply because of sufficient internal funds	(4) Did not apply for other reasons	(5) Applied	(6) Did not apply because of possible rejection	(7) Did not apply because of sufficient internal funds	(8) Did not apply for other reasons
Female	**(base)**	**0.296***** **(0.09)**	**0.102***** **(0.04)**	**0.096***** **(0.03)**	**(base)**	**0.295***** **(0.09)**	**0.100***** **(0.04)**	**0.098***** **(0.03)**
Credit growth		-0.032 (0.03)	-0.021* (0.01)	0.011 (0.02)				
Economic Freedom		-0.051 (0.08)	-0.042 (0.04)	-0.014 (0.04)				
Unemployment rate		0.132*** (0.02)	0.008 (0.03)	0.045 (0.03)				
Concentration		-5.669 (5.62)	1.837 (1.61)	-0.080 (3.66)				
OMT		-0.463*** (0.14)	-0.077 (0.06)	0.014 (0.10)				
Profit up		-0.033 (0.07)	-0.004 (0.06)	-0.093 (0.06)		-0.040 (0.07)	-0.002 (0.06)	-0.093* (0.06)
Profit down		0.048 (0.06)	-0.071* (0.04)	0.100*** (0.02)		0.047 (0.05)	-0.068* (0.04)	0.098*** (0.02)
Creditworthiness up		-0.222 (0.15)	-0.266*** (0.08)	-0.303*** (0.11)		-0.202 (0.15)	-0.271*** (0.08)	-0.309*** (0.12)
Creditworthiness down		0.238*** (0.09)	-0.791*** (0.14)	-0.391*** (0.11)		0.247*** (0.09)	-0.787*** (0.14)	-0.385*** (0.11)
Capital up		-0.309*** (0.07)	-0.006 (0.03)	-0.312*** (0.07)		-0.314*** (0.08)	-0.007 (0.03)	-0.309*** (0.07)
Capital down		0.510*** (0.13)	-0.124** (0.05)	0.104 (0.07)		0.518*** (0.13)	-0.126** (0.05)	0.103 (0.07)
Demand up		-1.118*** (0.13)	-2.908*** (0.14)	-2.176*** (0.11)		-1.122*** (0.13)	-2.917*** (0.14)	-2.175*** (0.12)
Demand down		-0.143 (0.11)	-0.329*** (0.09)	-0.357*** (0.10)		-0.141 (0.11)	-0.325*** (0.09)	-0.351*** (0.10)
Micro		1.576*** (0.17)	0.556*** (0.13)	0.777*** (0.12)		1.565*** (0.17)	0.557*** (0.13)	0.778*** (0.13)
Small		1.001*** (0.16)	0.246 (0.16)	0.356*** (0.12)		0.995*** (0.16)	0.247 (0.16)	0.357*** (0.12)
Medium		0.503*** (0.11)	0.051 (0.09)	0.042 (0.08)		0.496*** (0.12)	0.052 (0.09)	0.043 (0.08)
Very recent		-0.066 (0.18)	-0.293 (0.18)	-0.163 (0.25)		0.047 (0.15)	-0.311 (0.19)	-0.111 (0.24)
Recent		0.549***	0.019	0.309***		0.530***	0.039	0.299***

		(0.09)	(0.06)	(0.11)		(0.10)	(0.06)	(0.11)
Old		0.297***	0.080	0.218***		0.300***	0.089	0.215***
		(0.10)	(0.08)	(0.06)		(0.10)	(0.08)	(0.06)
Construction		-0.003	-0.152***	-0.097		-0.007	-0.150***	-0.097
		(0.11)	(0.05)	(0.07)		(0.11)	(0.05)	(0.07)
Manufacturing		-0.162**	0.069	0.050		-0.157**	0.068	0.043
		(0.08)	(0.07)	(0.07)		(0.08)	(0.07)	(0.07)
Wholesale/Retail		-0.001	0.163***	0.168***		0.005	0.164***	0.170***
		(0.07)	(0.04)	(0.06)		(0.06)	(0.04)	(0.06)
Observations	60,058	60,058	60,058	60,058	60,058	60,058	60,058	60,058
Pseudo R-squared	0.144	0.144	0.144	0.144	0.151	0.151	0.151	0.151
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES

Table 3: The impact of gender on the results of the applications for bank loans

This table displays regression results for the multinomial logistic model presented in Section 3.2, concerning the impact of gender on the results of the applications for bank loans. The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied and got everything/applied but only got part of it/applied but refused because cost too high/applied but was rejected during the past six months, respectively. **Female** is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Medium' is a dummy variable that equals one if the firm has between 50 and 249 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. 'Construction' is a dummy variable that equals one if the firm's main activity is construction. 'Manufacturing' is a dummy variable that equals one if the firm's main activity is manufacturing. 'Wholesale/Retail' is a dummy variable that equals one if the firm's main activity is wholesale or retail trade. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied and got everything	(2) Applied but only got part of it	(3) Applied but refused because cost too high	(4) Applied but was rejected	(5) Applied and got everything	(6) Applied but only got part of it	(7) Applied but refused because cost too high	(8) Applied but was rejected
Female	**(base)**	**0.041**	**0.035**	**0.202**	**(base)**	**-0.085**	**-0.058**	**0.108**
		(0.16)	**(0.38)**	**(0.14)**		**(0.06)**	**(0.17)**	**(0.10)**
Credit growth		-0.013	-0.009	0.013				
		(0.01)	(0.04)	(0.02)				
Economic Freedom		-0.010	-0.032	-0.183**				
		(0.05)	(0.12)	(0.08)				
Unemployment rate		0.054**	0.127*	0.107***				
		(0.03)	(0.07)	(0.04)				
Concentration		-7.143	-3.427	-18.963***				
		(5.06)	(5.49)	(5.91)				
OMT		-0.079	-1.440***	-0.348*				
		(0.13)	(0.31)	(0.18)				
Profit up		0.001	0.158	0.261*		-0.030	0.050	0.239***
		(0.06)	(0.30)	(0.14)		(0.04)	(0.19)	(0.09)
Profit down		0.100**	0.102	0.267***		0.148***	0.161	0.303***
		(0.04)	(0.20)	(0.04)		(0.03)	(0.11)	(0.05)
Creditworthiness up		0.041	-0.183	-0.120		0.002	-0.136	-0.134**
		(0.08)	(0.27)	(0.10)		(0.04)	(0.15)	(0.06)
Creditworthiness down		0.573***	0.698***	0.965***		0.581***	0.621***	0.979***
		(0.05)	(0.25)	(0.12)		(0.06)	(0.21)	(0.11)
Capital up		-0.247***	-0.072	-0.039		-0.159***	-0.021	-0.177***
		(0.02)	(0.22)	(0.08)		(0.05)	(0.11)	(0.07)
Capital down		0.411***	0.451**	0.622***		0.402***	0.510***	0.622***
		(0.12)	(0.18)	(0.12)		(0.07)	(0.12)	(0.08)
Demand up		0.447***	-0.522**	0.007		0.433***	-0.334*	0.030
		(0.11)	(0.26)	(0.17)		(0.08)	(0.19)	(0.15)
Demand down		0.268**	-0.096	0.258		0.179**	0.033	0.368**
		(0.13)	(0.21)	(0.17)		(0.09)	(0.19)	(0.15)
Micro		-0.199	0.776**	1.403***		-0.261	0.613	1.355***
		(0.23)	(0.34)	(0.28)		(0.20)	(0.38)	(0.24)
Small		-0.174*	0.323	0.923***		-0.193**	0.272	0.845***
		(0.10)	(0.23)	(0.21)		(0.09)	(0.28)	(0.21)
Medium		-0.134***	-0.122	0.637***		-0.149***	-0.119	0.592***
		(0.05)	(0.29)	(0.15)		(0.05)	(0.33)	(0.15)
Very recent		0.260	-0.122	0.661**		0.409	0.332	0.726***
		(0.29)	(0.36)	(0.27)		(0.34)	(0.37)	(0.23)
Recent		0.221**	0.558*	0.896***		0.261***	0.475**	0.810***

		(0.09)	(0.33)	(0.12)		(0.09)	(0.24)	(0.12)
Old		0.041	-0.009	0.455***		0.073	0.010	0.434***
		(0.20)	(0.37)	(0.16)		(0.08)	(0.28)	(0.09)
Construction		0.287**	0.293**	0.309**		0.228*	0.198	0.221*
		(0.11)	(0.14)	(0.14)		(0.12)	(0.16)	(0.12)
Manufacturing		-0.084	-0.561***	-0.212**		-0.050	-0.409**	-0.153*
		(0.10)	(0.21)	(0.09)		(0.09)	(0.20)	(0.08)
Wholesale/Retail		-0.036	-0.258	-0.057		0.011	-0.026	-0.047
		(0.05)	(0.21)	(0.13)		(0.07)	(0.22)	(0.13)
Observations	14,866	14,866	14,866	14,866	14,866	14,866	14,866	14,866
Pseudo R-squared	0.127	0.127	0.127	0.127	0.133	0.133	0.133	0.133
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES

Table 4: The impact of gender on the non-applications for bank loans – Interactions

This table displays regression results for the multinomial logistic model presented in Section 3.2, concerning the impact of gender on the non-applications for bank loans. The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied/did not apply because of possible rejection/did not apply because of sufficient internal funds/did not apply for other reasons during the past six months, respectively. **Female** is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Medium' is a dummy variable that equals one if the firm has between 50 and 249 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. 'Construction' is a dummy variable that equals one if the firm's main activity is construction. 'Manufacturing' is a dummy variable that equals one if the firm's main activity is manufacturing. 'Wholesale/Retail' is a dummy variable that equals one if the firm's main activity is wholesale or retail trade. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied	(2) Did not apply because of possible rejection	(3) Did not apply because of sufficient internal funds	(4) Did not apply for other reasons	(5) Applied	(6) Did not apply because of possible rejection	(7) Did not apply because of sufficient internal funds	(8) Did not apply for other reasons
Female	**(base)**	**0.262***** **(0.07)**	**0.081**** **(0.04)**	**0.048** **(0.05)**	**(base)**	**0.257***** **(0.08)**	**0.077**** **(0.04)**	**0.050** **(0.05)**
Profit up		-0.052 (0.06)	-0.013 (0.06)	-0.118 (0.07)		-0.062 (0.06)	-0.011 (0.05)	-0.119 (0.07)
Female * Profit up		0.180 (0.18)	0.101 (0.10)	0.249 (0.18)		0.197 (0.18)	0.111 (0.10)	0.250 (0.18)
Credit growth		-0.032 (0.03)	-0.021* (0.01)	0.011 (0.02)				
Economic Freedom		-0.051 (0.08)	-0.042 (0.04)	-0.014 (0.04)				
Unemployment rate		0.132*** (0.02)	0.008 (0.03)	0.045 (0.03)				
Concentration		-5.685 (5.63)	1.834 (1.61)	-0.098 (3.66)				
OMT		-0.463*** (0.14)	-0.077 (0.06)	0.013 (0.10)				
Profit down		0.048 (0.06)	-0.071* (0.04)	0.100*** (0.02)		0.047 (0.05)	-0.068* (0.04)	0.098*** (0.02)
Creditworthiness up		-0.222 (0.15)	-0.266*** (0.08)	-0.304*** (0.11)		-0.202 (0.15)	-0.271*** (0.08)	-0.310*** (0.12)
Creditworthiness down		0.238*** (0.09)	-0.791*** (0.14)	-0.392*** (0.11)		0.247*** (0.09)	-0.787*** (0.14)	-0.386*** (0.11)
Capital up		-0.308*** (0.07)	-0.006 (0.03)	-0.310*** (0.07)		-0.313*** (0.08)	-0.006 (0.03)	-0.308*** (0.07)
Capital down		0.511*** (0.13)	-0.123** (0.05)	0.105 (0.07)		0.520*** (0.13)	-0.125** (0.05)	0.105 (0.07)
Demand up		-1.118*** (0.13)	-2.908*** (0.14)	-2.176*** (0.11)		-1.122*** (0.13)	-2.917*** (0.14)	-2.176*** (0.12)
Demand down		-0.144 (0.11)	-0.329*** (0.09)	-0.358*** (0.10)		-0.142 (0.11)	-0.326*** (0.09)	-0.352*** (0.10)
Micro		1.575*** (0.17)	0.556*** (0.13)	0.777*** (0.12)		1.564*** (0.17)	0.557*** (0.13)	0.778*** (0.12)
Small		0.999*** (0.16)	0.245 (0.16)	0.354*** (0.12)		0.993*** (0.16)	0.247 (0.16)	0.355*** (0.12)
Medium		0.502*** (0.11)	0.050 (0.09)	0.041 (0.08)		0.495*** (0.12)	0.051 (0.09)	0.042 (0.08)
Very recent		-0.070	-0.295	-0.168		0.043	-0.313	-0.115

		(0.18)	(0.18)	(0.25)		(0.15)	(0.19)	(0.23)
Recent		0.549***	0.019	0.308***		0.529***	0.039	0.299***
		(0.09)	(0.06)	(0.11)		(0.10)	(0.06)	(0.11)
Old		0.297***	0.080	0.218***		0.300***	0.089	0.215***
		(0.10)	(0.08)	(0.06)		(0.10)	(0.08)	(0.06)
Construction		-0.004	-0.153***	-0.098		-0.008	-0.151***	-0.098
		(0.11)	(0.05)	(0.07)		(0.11)	(0.05)	(0.07)
Manufacturing		-0.162**	0.070	0.050		-0.157**	0.068	0.044
		(0.08)	(0.07)	(0.07)		(0.08)	(0.07)	(0.07)
Wholesale/Retail		-0.002	0.163***	0.168***		0.004	0.163***	0.170***
		(0.07)	(0.04)	(0.06)		(0.06)	(0.04)	(0.06)
Observations	60,058	60,058	60,058	60,058	60,058	60,058	60,058	60,058
Pseudo R-squared	0.144	0.144	0.144	0.144	0.151	0.151	0.151	0.151
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES

Table 5: Two-step multinomial logistic analysis (first step) — The impact of the share of female employment (by sector of activity) on the Female dummy

This table displays regression results of the first stage of the two-step multinomial logistic model discussed in Section 3.3, concerning the impact of the share of female employment (by sector of activity) on the Female dummy. The dependent variable is a variable that equals one if the firm's owner/director/CEO is female, and zero otherwise. The variable **Female Employment** is a variable accounting for the share of female employment, by sector of activity. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. The regression uses sampling weights that adjust the sample to be representative of the population. Additionally, the regression includes time and country dummies. The intercept is included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Female
Female Employment	**1.195***** **(0.19)**
Credit growth	0.015** (0.01)
Economic Freedom	0.005 (0.00)
Unemployment rate	0.001 (0.00)
Concentration	-1.450*** (0.54)
OMT	0.086* (0.05)
Profit up	-0.032 (0.03)
Profit down	-0.006 (0.04)
Creditworthiness up	0.006 (0.02)
Creditworthiness down	-0.037 (0.04)
Capital up	-0.292*** (0.03)
Capital down	0.035 (0.02)
Demand up	-0.109*** (0.03)
Demand down	-0.158* (0.09)
Micro	0.856*** (0.10)
Small	0.355*** (0.03)
Very recent	0.410*** (0.05)
Recent	0.344*** (0.07)
Old	0.106 (0.08)
Observations	55,679
Pseudo R-squared	0.035
Time dummies	YES
Country dummies	YES

Table 6: Two-step multinomial logistic analysis (second step) — The impact of gender on the non-applications for bank loans

This table displays regression results of the final stage of the two-step multinomial logistic model discussed in Section 3.3, concerning the impact of gender on the non-applications for bank loans. The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied/did not apply because of possible rejection/did not apply because of sufficient internal funds/did not apply for other reasons during the past six months, respectively. Here, the variable **Female** contains predicted values of the Female dummy obtained from the first step logistic estimation reported in Table 5. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied	(2) Did not apply because of possible rejection	(3) Did not apply because of sufficient internal funds	(4) Did not apply for other reasons	(5) Applied	(6) Did not apply because of possible rejection	(7) Did not apply because of sufficient internal funds	(8) Did not apply for other reasons
Female	**(base)**	**0.746****	**3.294*****	**3.045*****	**(base)**	**0.687****	**3.262*****	**3.041*****
		(0.35)	**(0.62)**	**(0.49)**		**(0.34)**	**(0.62)**	**(0.52)**
Credit growth		-0.012	-0.015	0.012				
		(0.03)	(0.02)	(0.02)				
Economic Freedom		-0.073	-0.065*	-0.039				
		(0.06)	(0.04)	(0.04)				
Unemployment rate		0.121***	0.006	0.046*				
		(0.02)	(0.03)	(0.03)				
Concentration		-4.844	3.301**	0.394				
		(3.68)	(1.67)	(2.74)				
OMT		-0.440**	-0.128**	-0.023				
		(0.20)	(0.06)	(0.12)				
Profit up		0.076	0.135***	0.000		0.070	0.133***	-0.003
		(0.12)	(0.05)	(0.03)		(0.12)	(0.05)	(0.03)
Profit down		0.120**	0.011	0.166***		0.116***	0.013	0.161***
		(0.05)	(0.07)	(0.04)		(0.04)	(0.07)	(0.04)
Creditworthiness up		-0.265**	-0.242***	-0.247***		-0.249**	-0.248***	-0.247***
		(0.11)	(0.05)	(0.06)		(0.11)	(0.05)	(0.06)
Creditworthiness down		0.172*	-0.771***	-0.419***		0.178*	-0.769***	-0.414***
		(0.10)	(0.17)	(0.11)		(0.09)	(0.17)	(0.11)
Capital up		-0.248***	0.159***	-0.132***		-0.247***	0.157***	-0.132***
		(0.09)	(0.04)	(0.04)		(0.09)	(0.04)	(0.04)
Capital down		0.483***	-0.186***	0.033		0.482***	-0.189***	0.033
		(0.10)	(0.04)	(0.04)		(0.10)	(0.04)	(0.04)
Demand up		-0.981***	-2.913***	-2.074***		-0.984***	-2.927***	-2.069***
		(0.11)	(0.18)	(0.11)		(0.12)	(0.19)	(0.11)
Demand down		-0.140	-0.377***	-0.377***		-0.144	-0.372***	-0.377***
		(0.11)	(0.08)	(0.12)		(0.11)	(0.08)	(0.12)
Micro		1.096***	0.519***	0.757***		1.095***	0.520***	0.756***
		(0.10)	(0.07)	(0.10)		(0.10)	(0.07)	(0.10)
Small		0.508***	0.197**	0.320***		0.510***	0.199**	0.320***
		(0.10)	(0.08)	(0.07)		(0.10)	(0.08)	(0.07)
Very recent		-0.091	-0.584***	-0.401*		-0.006	-0.612***	-0.363*
		(0.15)	(0.09)	(0.23)		(0.13)	(0.09)	(0.22)
Recent		0.457***	-0.270***	0.012		0.449***	-0.248***	0.001
		(0.08)	(0.06)	(0.06)		(0.09)	(0.06)	(0.06)
Old		0.256**	-0.081	0.072		0.262**	-0.073	0.069
		(0.10)	(0.09)	(0.08)		(0.10)	(0.08)	(0.08)

Observations	55,679	55,679	55,679	55,679	55,679	55,679	55,679	55,679
Pseudo R-squared	0.132	0.132	0.132	0.132	0.139	0.139	0.139	0.139
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES

Table 7: Two-step multinomial logistic analysis (second step) — The impact of gender on the results of the applications for bank loans

This table displays regression results of the final stage of the two-step multinomial logistic model discussed in Section 3.3, concerning the impact of gender on the results of the applications for bank loans. The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied and got everything/applied but only got part of it/applied but refused because cost too high/applied but was rejected during the past six months, respectively. Here, the variable **Female** contains predicted values of the Female dummy obtained from the first step logistic estimation reported in Table 5. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied and got everything	(2) Applied but only got part of it	(3) Applied but refused because cost too high	(4) Applied but was rejected	(5) Applied and got everything	(6) Applied but only got part of it	(7) Applied but refused because cost too high	(8) Applied but was rejected
Female	**(base)**	**0.032**	**-1.133**	**-0.922**	**(base)**	**0.010**	**-0.998**	**-0.901**
		(1.04)	**(3.96)**	**(1.48)**		**(0.99)**	**(4.04)**	**(1.57)**
Credit growth		-0.019	0.002	0.010				
		(0.02)	(0.02)	(0.03)				
Economic Freedom		0.001	-0.010	-0.096*				
		(0.03)	(0.07)	(0.06)				
Unemployment rate		0.029	0.085	0.076**				
		(0.03)	(0.07)	(0.03)				
Concentration		-2.511	-9.475*	-11.468***				
		(3.18)	(5.42)	(3.82)				
OMT		0.016	-0.564	-0.114				
		(0.13)	(0.35)	(0.26)				
Profit up		-0.047	0.103	0.223**		-0.052	0.099	0.221**
		(0.06)	(0.17)	(0.09)		(0.06)	(0.17)	(0.09)
Profit down		0.199***	0.201*	0.308***		0.195***	0.184*	0.293***
		(0.04)	(0.12)	(0.04)		(0.04)	(0.11)	(0.04)
Creditworthiness up		-0.008	-0.136	-0.139*		-0.005	-0.116	-0.137**
		(0.05)	(0.14)	(0.07)		(0.05)	(0.14)	(0.07)
Creditworthiness down		0.564***	0.566***	0.958***		0.560***	0.567***	0.967***
		(0.07)	(0.21)	(0.10)		(0.07)	(0.22)	(0.10)
Capital up		-0.096	-0.085	-0.256***		-0.093	-0.086	-0.243***
		(0.07)	(0.15)	(0.08)		(0.08)	(0.15)	(0.07)
Capital down		0.391***	0.512***	0.627***		0.401***	0.503***	0.626***
		(0.07)	(0.13)	(0.08)		(0.07)	(0.13)	(0.08)
Demand up		0.416***	-0.260	0.005		0.417***	-0.270	0.011
		(0.09)	(0.20)	(0.15)		(0.09)	(0.21)	(0.15)
Demand down		0.141*	0.033	0.374**		0.146*	0.033	0.383**
		(0.08)	(0.22)	(0.16)		(0.09)	(0.23)	(0.16)
Micro		-0.116	0.779***	0.841***		-0.119	0.772**	0.840***
		(0.20)	(0.29)	(0.16)		(0.20)	(0.30)	(0.16)
Small		-0.037	0.402***	0.286**		-0.039	0.410***	0.279**
		(0.08)	(0.11)	(0.11)		(0.08)	(0.11)	(0.12)
Very recent		0.351	0.422	0.555***		0.431	0.434	0.722***
		(0.32)	(0.50)	(0.19)		(0.33)	(0.52)	(0.25)
Recent		0.214***	0.495	0.849***		0.226***	0.476	0.825***
		(0.08)	(0.31)	(0.08)		(0.08)	(0.31)	(0.09)
Old		0.069	-0.042	0.441***		0.059	-0.021	0.433***
		(0.07)	(0.27)	(0.11)		(0.07)	(0.28)	(0.10)

Observations	13,310	13,310	13,310	13,310	13,310	13,310	13,310	13,310
Pseudo R-squared	0.110	0.110	0.110	0.110	0.124	0.124	0.124	0.124
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES

Table 8: The impact of gender on the non-applications for bank loans, during different phases of the business cycle

This table displays regression results for the multinomial logistic model presented in Section 3.2, concerning the impact of gender on the non-applications for bank loans during both negative phases of the business cycle (Panel A) and positive ones (Panel B). The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied/did not apply because of possible rejection/did not apply because of sufficient internal funds/did not apply for other reasons during the past six months, respectively. **Female** is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. The set of country-level controls (which are added in Columns 1–4) include: 'Credit growth' which is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round; 'Economic Freedom' which is an aggregate measure of a country's overall economic freedom; 'Unemployment rate' which is the annual unemployment rate based on averages of quarterly data for each survey round; 'Concentration' which is the Herfindahl index (HI) of total assets concentration (for the banking sector); 'OMT' which is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. The set of firm-level controls (added to all the regressions) include: 'Profit up' which is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months; 'Profit down' which is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months; 'Creditworthiness up' which is a dummy variable that equals one if the firm's credit history improved in the past six months; 'Creditworthiness down' which is a dummy variable that equals one if the firm's credit history worsened in the past six months; 'Capital up' which is a dummy variable that equals one if a firm's own capital increased in the past six months; 'Capital down' which is a dummy variable that equals one if a firm's own capital decreased in the past six months; 'Demand up' which is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months; 'Demand down' which is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months; 'Micro' which is a dummy variable that equals one if the firm has between 1 and 9 employees; 'Small' which is a dummy variable that equals one if the firm has between 10 and 49 employees; 'Medium' which is a dummy variable that equals one if the firm has between 50 and 249 employees; 'Very recent' which is a dummy variable that equals one if the firm is less than 2 years old; 'Recent' which is a dummy variable that equals one if the firm is between 2 and 5 years old; 'Old' which is a dummy variable that equals one if the firm is between 5 and 10 years old; 'Construction' which is a dummy variable that equals one if the firm's main activity is construction; 'Manufacturing' which is a dummy variable that equals one if the firm's main activity is manufacturing; 'Wholesale/Retail' which is a dummy variable that equals one if the firm's main activity is wholesale or retail trade. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied	(2) Did not apply because of possible rejection	(3) Did not apply because of sufficient internal funds	(4) Did not apply for other reasons	(5) Applied	(6) Did not apply because of possible rejection	(7) Did not apply because of sufficient internal funds	(8) Did not apply for other reasons
Panel A: *if GDP growth <0*								
Female	**(base)**	**0.337*** **	**0.214*** **	**0.167*** **	**(base)**	**0.337*** **	**0.203*** **	**0.171*** **
		(0.10)	**(0.03)**	**(0.05)**		**(0.10)**	**(0.03)**	**(0.05)**
Firm controls	YES	YES	YES	YES	YES	YES	YES	YES
Country controls	YES	YES	YES	YES				
Observations	26,328	26,328	26,328	26,328	26,328	26,328	26,328	26,328
Pseudo R-squared	0.135	0.135	0.135	0.135	0.140	0.140	0.140	0.140
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES
Panel B: *if GDP growth* ≥0								
Female	**(base)**	**0.260** **	**0.029**	**0.041**	**(base)**	**0.261** **	**0.032**	**0.037**
		(0.12)	**(0.05)**	**(0.06)**		**(0.13)**	**(0.05)**	**(0.06)**
Firm controls	YES	YES	YES	YES	YES	YES	YES	YES
Country controls	YES	YES	YES	YES				
Observations	33,730	33,730	33,730	33,730	33,730	33,730	33,730	33,730
Pseudo R-squared	0.148	0.148	0.148	0.148	0.152	0.152	0.152	0.152
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES
Wald test of the difference between Female in Panel A and Panel B								
Chi^2		2.26	6.54	4.47		2.23	5.64	4.94
$Prob>Chi^2$		0.133	0.011	0.035		0.136	0.018	0.026

Table 9: The impact of gender on the results of the applications for bank loans, during different phases of the business cycle

This table displays regression results for the multinomial logistic model presented in Section 3.2, concerning the impact of gender on the results of the applications for bank loans during both negative phases of the business cycle (Panel A) and positive ones (Panel B). The dependent variable – which is also described in Section 3.2 – is a variable that equals one/two/three/four if a firm applied and got everything/applied but only got part of it/applied but refused because cost too high/applied but was rejected during the past six months, respectively. **Female** is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. The set of country-level controls (which are added in Columns 1–4) include: 'Credit growth' which is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round; 'Economic Freedom' which is an aggregate measure of a country's overall economic freedom; 'Unemployment rate' which is the annual unemployment rate based on averages of quarterly data for each survey round; 'Concentration' which is the Herfindahl index (HI) of total assets concentration (for the banking sector); 'OMT' which is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. The set of firm-level controls (added to all the regressions) include: 'Profit up' which is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months; 'Profit down' which is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months; 'Creditworthiness up' which is a dummy variable that equals one if the firm's credit history improved in the past six months; 'Creditworthiness down' which is a dummy variable that equals one if the firm's credit history worsened in the past six months; 'Capital up' which is a dummy variable that equals one if a firm's own capital increased in the past six months; 'Capital down' which is a dummy variable that equals one if a firm's own capital decreased in the past six months; 'Demand up' which is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months; 'Demand down' which is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months; 'Micro' which is a dummy variable that equals one if the firm has between 1 and 9 employees; 'Small' which is a dummy variable that equals one if the firm has between 10 and 49 employees; 'Medium' which is a dummy variable that equals one if the firm has between 50 and 249 employees; 'Very recent' which is a dummy variable that equals one if the firm is less than 2 years old; 'Recent' which is a dummy variable that equals one if the firm is between 2 and 5 years old; 'Old' which is a dummy variable that equals one if the firm is between 5 and 10 years old; 'Construction' which is a dummy variable that equals one if the firm's main activity is construction; 'Manufacturing' which is a dummy variable that equals one if the firm's main activity is manufacturing; 'Wholesale/Retail' which is a dummy variable that equals one if the firm's main activity is wholesale or retail trade. All regressions use sampling weights that adjust the sample to be representative of the population. Additionally, regressions outputs in Columns 1–4 (5–8) include time and country (country*time) dummies. Intercepts are included but not reported. Heteroskedasticity-robust standard errors, clustered at the country level, appear in parentheses. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.

	(1) Applied and got everything	(2) Applied but only got part of it	(3) Applied but refused because cost too high	(4) Applied but was rejected	(5) Applied and got everything	(6) Applied but only got part of it	(7) Applied but refused because cost too high	(8) Applied but was rejected
Panel A: *if GDP growth <0*								
Female	**(base)**	**-0.147**	**-0.775*** **	**-0.092**	**(base)**	**-0.146**	**-0.812*** **	**-0.103**
		(0.10)	**(0.25)**	**(0.15)**		**(0.09)**	**(0.25)**	**(0.15)**
Firm controls	YES	YES	YES	YES	YES	YES	YES	YES
Country controls	YES	YES	YES	YES				
Observations	6,754	6,754	6,754	6,754	6,754	6,754	6,754	6,754
Pseudo R-squared	0.115	0.115	0.115	0.115	0.120	0.120	0.120	0.120
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES
Panel B: *if GDP growth* ≥0								
Female	**(base)**	**0.186**	**0.627**	**0.468*** **	**(base)**	**0.178**	**0.622**	**0.486*** **
		(0.25)	**(0.52)**	**(0.17)**		**(0.25)**	**(0.52)**	**(0.18)**
Firm controls	YES	YES	YES	YES	YES	YES	YES	YES
Country controls	YES	YES	YES	YES				
Observations	8,112	8,112	8,112	8,112	8,112	8,112	8,112	8,112
Pseudo R-squared	0.121	0.121	0.121	0.121	0.134	0.134	0.134	0.134
Time dummies	YES	YES	YES	YES				
Country dummies	YES	YES	YES	YES				
Country*Time dummies					YES	YES	YES	YES
Wald test of the difference between Female in Panel A and Panel B								
Chi^2		0.03	2.41	3.49		0.07	2.50	4.54
Prob>Chi^2		0.866	0.121	0.062		0.793	0.114	0.033

Appendix

Bank Credit Constraints for Women-Led SMEs: Self-Restraint or Lender Bias?

Table A1: Variable descriptions and sources
This table shows descriptions and sources of the variables employed in our analyses.

Variables	Description	Source
Dependent variables		
Applying for bank loans	Variable that equals one/two/three/four if (considering the bank loans) a firm applied/did not apply because of possible rejection/did not apply because of sufficient internal funds/did not apply for other reasons during the past six months, respectively.	ECB-EC: SAFE
Obtaining bank loans	Variable that equals one/two/three/four if (considering the bank loans) a firm applied and got everything/applied but only got part of it/applied but refused because cost too high/applied but was rejected during the past six months, respectively.	ECB-EC: SAFE
Key regressor		
Female	Dummy variable that equals one if the firm's owner/director/CEO is female, and zero otherwise.	ECB-EC: SAFE
Firm-level controls		
Profit up	Dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months.	ECB-EC: SAFE
Profit down	Dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months.	ECB-EC: SAFE
Creditworthiness up	Dummy variable that equals one if the firm's credit history improved in the past six months.	ECB-EC: SAFE
Creditworthiness down	Dummy variable that equals one if the firm's credit history worsened in the past six months.	ECB-EC: SAFE
Capital up	Dummy variable that equals one if a firm's own capital increased in the past six months.	ECB-EC: SAFE
Capital down	Dummy variable that equals one if a firm's own capital decreased in the past six months.	ECB-EC: SAFE
Demand up	Dummy variable that equals one if a firm's needs for bank loans increased in the past six months.	ECB-EC: SAFE
Demand down	Dummy variable that equals one if a firm's needs for bank loans decreased in the past six months.	ECB-EC: SAFE
Micro	Dummy variable that equals one if the firm has between 1 and 9 employees.	ECB-EC: SAFE
Small	Dummy variable that equals one if the firm has between 10 and 49 employees.	ECB-EC: SAFE
Medium	Dummy variable that equals one if the firm has between 50 and 249 employees.	ECB-EC: SAFE
Very recent	Dummy variable that equals one if the firm is less than 2 years old.	ECB-EC: SAFE
Recent	Dummy variable that equals one if the firm is between 2 and 5 years old.	ECB-EC: SAFE
Old	Dummy variable that equals one if the firm is between 5 and 10 years old.	ECB-EC: SAFE
Construction	Dummy variable that equals one if the firm's main activity is construction.	ECB-EC: SAFE
Manufacturing	Dummy variable that equals one if the firm's main activity is manufacturing.	ECB-EC: SAFE
Wholesale/Retail	Dummy variable that equals one if the firm's main activity is wholesale or retail trade.	ECB-EC: SAFE
Country-level controls		
Credit growth	The annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round.	ECB: Data Warehouse
Economic Freedom	An aggregate measure of a country's overall economic freedom.	Heritage Foundation
Unemployment rate	The annual unemployment rate based on averages of quarterly data for each survey round.	Eurostat
Concentration	The Herfindahl index (HI) of total assets concentration (for the banking sector).	ECB: Data Warehouse
OMT	Dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program.	*Our calculation*

Online Appendix

Bank Credit Constraints for Women-Led SMEs: Self-Restraint or Lender Bias?

Table OA1: Total observations and female firms' observations by country
This table displays frequencies and related percentages of both female-led firms' and overall firms' observations, by country.

	Total		Female		*Share of female-led firms by country*(%)
Country	Freq.	Percent	Freq.	Percent	
Austria	3,800	6.33	490	6.53	12.89
Belgium	3,642	6.06	427	5.69	11.72
Finland	3,643	6.07	477	6.36	13.09
France	8,921	14.85	1,112	14.82	12.46
Germany	8,670	14.44	1,216	16.2	14.03
Greece	3,849	6.41	391	5.21	10.16
Ireland	3,382	5.63	365	4.86	10.79
Italy	8,043	13.39	1,006	13.4	12.51
Portugal	3,734	6.22	546	7.28	14.62
Spain	8,704	14.49	1,117	14.88	12.83
The Netherlands	3,670	6.11	358	4.77	9.75
Total	60,058	100.00	7,505	100.00	12.50

Table OA2: Sample observations by country and survey wave
This table shows the distribution of the sample observations by country and wave.

Wave/Country	AT	BE	DE	ES	FI	FR	GR	IE	IT	NL	PT	*Total*
2	185	171	977	946	97	991	196	91	406	220	241	4,521
3	195	199	946	945	96	994	195	98	928	240	249	5,085
4	479	473	979	952	488	999	494	430	988	454	474	7,210
5	492	470	988	987	493	997	494	470	937	430	485	7,243
6	493	470	972	972	487	983	498	480	989	450	474	7,268
7	484	461	957	981	493	995	495	445	912	477	461	7,161
8	487	458	934	978	496	964	489	461	943	471	415	7,096
9	492	471	961	978	496	995	496	464	960	461	484	7,258
10	493	469	956	965	497	1,003	492	443	980	467	451	7,216
Total	3,800	3,642	8,670	8,704	3,643	8,921	3,849	3,382	8,043	3,670	3,734	60,058

[AT = Austria, BE = Belgium, DE = Germany, ES = Spain, FI = Finland, FR = France,
GR = Greece, IE = Ireland, IT = Italy, NL = The Netherlands, PT = Portugal.
The numbers from 2 to 10 identify the various rounds of the survey.]

Table OA3: Dependent variables – Observations by manager's gender
This table displays a breakdown of the sample observations for the various outcomes of our dependent variables, by gender.

Q7A a) Applying for bank loans	Total	%	male	female	% male	% female
Applied	15,697	26.14	14,036	1,661	89.42	10.58
Did not apply because of possible rejection	3,773	6.28	3,203	570	84.89	15.11
Did not apply because of sufficient internal funds	27,960	46.55	24,435	3,525	87.39	12.61
Did not apply for other reasons	12,628	21.03	10,879	1,749	86.15	13.85
Total	60,058	100.00	52,553	7,505	87.50	12.50

Q7B a) Obtaining bank loans	Total	%	male	female	% male	% female
Applied and got everything	9,885	66.49	8,850	1,035	89.53	10.47
Applied but only got part of it	2,906	19.55	2,634	272	90.64	9.36
Applied but refused because cost too high	339	2.28	303	36	89.38	10.62
Applied but was rejected	1,736	11.68	1,513	223	87.15	12.85
Total	14,866	100.00	13,300	1,566	89.47	10.53

Table OA4: Correlation matrix

This table shows pairwise correlations of the regressors employed in our analyses. 'Female' is a dummy that equals one if the firm's owner/director/CEO is female, and zero otherwise. 'Credit growth' is the annual growth rate of loans provided by credit institutions to non-financial corporations based on averages of quarterly data for each survey round. 'Economic Freedom' is an aggregate measure of a country's overall economic freedom. 'Unemployment rate' is the annual unemployment rate based on averages of quarterly data for each survey round. 'Concentration' is the Herfindahl index (HI) of total assets concentration (for the banking sector). 'OMT' is a dummy variable that equals one from the year of announcement (2012) of the Outright Monetary Transactions (OMT) Program. 'Profit up' is a dummy variable that equals one if a firm experienced an increase of the net income after taxes in the past six months. 'Profit down' is a dummy variable that equals one if a firm experienced a decrease of the net income after taxes in the past six months. 'Creditworthiness up' is a dummy variable that equals one if the firm's credit history improved in the past six months. 'Creditworthiness down' is a dummy variable that equals one if the firm's credit history worsened in the past six months. 'Capital up' is a dummy variable that equals one if a firm's own capital increased in the past six months. 'Capital down' is a dummy variable that equals one if a firm's own capital decreased in the past six months. 'Demand up' is a dummy variable that equals one if a firm's needs for bank loans increased in the past six months. 'Demand down' is a dummy variable that equals one if a firm's needs for bank loans decreased in the past six months. 'Micro' is a dummy variable that equals one if the firm has between 1 and 9 employees. 'Small' is a dummy variable that equals one if the firm has between 10 and 49 employees. 'Medium' is a dummy variable that equals one if the firm has between 50 and 249 employees. 'Very recent' is a dummy variable that equals one if the firm is less than 2 years old. 'Recent' is a dummy variable that equals one if the firm is between 2 and 5 years old. 'Old' is a dummy variable that equals one if the firm is between 5 and 10 years old. 'Construction' is a dummy variable that equals one if the firm's main activity is construction. 'Manufacturing' is a dummy variable that equals one if the firm's main activity is manufacturing. 'Wholesale/Retail' is a dummy variable that equals one if the firm's main activity is wholesale or retail trade.

	Female	Credit growth	Economic Freedom	Unempl.	Concentr.	OMT	Profit up	Profit down	Credit up	Credit down	Capital up	Capital down	Demand up	Demand down	Micro	Small	Medium	Very recent	Recent	Old	Construction	Manufacturing	Wholesale/ Retail
Female	1																						
Credit growth	0.009	1																					
Economic Freedom	-0.003	-0.002	1																				
Unemployment rate	-0.004	-0.521	-0.292	1																			
Concentration	-0.012	0.226	0.189	-0.002	1																		
OMT	0.004	-0.271	-0.100	0.154	0.043	1																	
Profit up	-0.030	0.089	0.135	-0.163	0.031	-0.030	1																
Profit down	0.019	-0.134	-0.139	0.224	-0.020	0.026	-0.533	1															
Creditw. up	-0.031	0.030	0.078	-0.112	-0.048	0.015	0.241	-0.194	1														
Creditw. down	0.002	-0.061	-0.118	0.124	-0.040	-0.004	-0.136	0.225	-0.211	1													
Capital up	-0.050	0.108	0.159	-0.195	0.052	0.006	0.373	-0.296	0.392	-0.157	1												
Capital down	0.030	-0.074	-0.029	0.117	0.004	0.007	-0.207	0.334	-0.160	0.340	-0.294	1											
Demand up	-0.019	-0.028	-0.095	0.083	-0.006	-0.005	-0.042	0.108	-0.022	0.191	-0.043	0.128	1										
Demand down	-0.029	0.003	0.062	-0.015	0.031	0.020	0.106	-0.071	0.207	-0.027	0.158	-0.057	-0.191	1									
Micro	0.139	-0.007	0.019	0.003	0.055	0.016	-0.084	0.066	-0.079	0.029	-0.108	0.134	-0.039	-0.055	1								
Small	-0.030	-0.003	0.021	0.003	0.050	0.006	-0.005	0.001	0.009	0.001	0.004	-0.031	0.000	0.008	-0.507	1							
Medium	-0.083	0.007	-0.028	-0.004	-0.076	-0.018	0.056	-0.044	0.054	-0.020	0.072	-0.080	0.024	0.032	-0.415	-0.417	1						
Very recent	0.033	0.015	-0.003	-0.038	-0.002	-0.032	0.018	-0.041	-0.004	-0.016	0.003	-0.006	-0.007	-0.016	0.076	-0.026	-0.040	1					
Recent	0.052	0.039	-0.011	-0.034	-0.014	-0.052	0.028	-0.032	0.014	-0.003	0.013	0.006	0.010	-0.027	0.123	-0.032	-0.075	-0.034	1				
Old	0.033	0.016	-0.018	0.002	0.010	-0.011	0.014	-0.005	0.013	0.008	0.006	0.021	0.013	-0.014	0.112	-0.014	-0.076	-0.049	-0.101	1			
Construction	-0.045	0.004	0.032	0.013	0.044	-0.001	-0.049	0.035	-0.035	0.036	-0.034	0.034	-0.002	0.000	0.021	0.058	-0.030	-0.006	-0.001	0.001	1		
Manufacturing	0.044	-0.076	-0.072	0.091	0.022	0.004	-0.041	0.064	-0.015	0.015	-0.047	0.042	0.009	-0.010	0.162	0.018	-0.096	0.011	0.017	0.005	-0.195	1	
Wholesale/Retail	0.083	0.046	0.131	-0.064	0.053	-0.002	0.006	-0.029	-0.015	-0.023	-0.004	0.014	-0.037	-0.022	0.115	0.014	-0.021	0.031	0.041	0.084	-0.237	-0.417	1