# Girls Just Wanna Have Funds? The Effect of Women-Friendly Legislation on Women-Led Firms' Access to Credit

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## Abstract

Does a women-friendly legal environment really help women overcome discrimination in credit markets? By examining antidiscrimination laws and their implications for women-led businesses' access to credit in 124 countries, the current study differentiates an effect on discouragement (i.e., not asking for credit when they need it, demand-side) and an effect on the probability that they obtain credit (supply-side). Legal protections are associated with lower women-led firms' discouragement, but they do not attain more credit. This effect is notable with regard to emotional discouragement and prevails among smaller firms; the supply-side effect also vanishes in Muslim-majority countries. Finally, enforcement efforts dramatically amplify the effect of women-friendly laws on self-restrictions in terms of credit and enable women to access more credit. These results are robust to several tests.

**JEL Codes**: G21, J71, K38
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# 1. Introduction

As explained by Hyland et al (2020, p.475):

"One of the most salient and pervasive forms of gender discrimination is the unequal treatment of women and men by the law."

It is true that until recently, men and women did not have the same rights around the world: in some countries, women still do not have the right to vote, they cannot work in some sectors, or they do not have the right to open a bank account or ask for a credit alone. However, in the last years, many countries are trying to rebalance this legal difference in treatment between men and women and overcome such discrimination. To do so many countries have established gender-based protective laws, and gender equality is enshrined in the agendas of most participants in the Committee on the Elimination of Discrimination Against Women. Some of these laws are constitutional, such as Article 15 of the Serbian Constitution, which states that "The State shall guarantee the equality of women and men and develop equal opportunities policy." Others establish, for example, credit-specific clauses, such as the Equal Opportunity for Women Act in Honduras. Regardless of their forms though, a broader question is whether they work and lead to the desired effects. Indeed, even if laws are voted, if they do not have the desired effect, then the discrimination is maintained, and therefore the law is useless.

In this paper, we try to answer this fundamental question of the impact of law on the discrimination observed by women in the credit market. The aim of this paper is therefore twofold: firstly, it looks at the impact of the law and, more specifically, of legal disparities on the behavior of women and banks; secondly, it seeks to understand which economic, sociological, or psychological elements impact the effect of the law against discrimination.

From a banking point of view, discrimination still hinders women's dealings in credit markets. On the demand side, women tend to apply less for credit, arguably discouraged because they fear being denied (Alesina *et al.*, 2013). On the supply-side, their likelihood of receiving credit is lower than men's (Hansen and Rand, 2014), and when they ask for it, the terms of the loan are more restrictive (Becker, 1971).

That is, can laws reduce women's discouragement and/or increase their access to credit?

To address this fundamental concern, we explicitly seek to determine the impact of women-friendly laws on women-led businesses and banks. On the one hand, a country's gender-specific legislation might influence the credit-seeking behavior of women-led firms, in line with the demand-side argument. A favorable judicial framework, such as a clause prohibiting gender-based discrimination in access to credit, may affect women's perceptions of the likelihood they will be approved for business loans. On the other hand, explicit antidiscrimination laws might mitigate supply-side constraints directly, by prohibiting gender-based differential treatment. Therefore, we expect beneficial effects of such legislation on women's access to credit to support their businesses, and we test this prediction using a probit analysis that combines country-level data on gendered legislation from the Women, Business, and the Law indicators (*WBL*) with firm-level creditor and financial data extracted from Enterprise Surveys (*ES*). From these sources, we obtain a vast and representative sample, with variability in both temporal and cross-sectional dimensions, such that it includes 50,391 firms in 124 countries during the years 2010–2020.

To determine the effect of gendered legislation on female borrowers' sense of discouragement and actual loan approval, we consider two types of laws: antidiscrimination clauses in the national Constitution or legal prohibitions of discrimination by creditors. In relation to the former, we can test the general legal environment in which firms and their CEOs compete; with the second category, we can specify the direct impact of a law that explicitly protects women who apply for credit. Controlling for potential differences in the outcomes of the two types of law in turn means we can offer relevant insights for regulators and policy makers.

The results show that female entrepreneurs' sense of discouragement is weaker in the presence of a women-friendly judicial environment, but supply-side discrimination is not notably affected. We thus highlight a dichotomy between *de jure* and *de facto* changes: deeply entrenched social norms still hinder the efficacy of legal reforms, even after controlling for cultural and business environments. Then, through five extensions, we seek further insights. First, we clarify that women's emotional discouragement decreases if the legislation includes a female-specific clause, but their rational discouragement does not change. In this sense, favorable legislation encourages creditworthy borrowers to submit loan applications, seemingly because women tend to adopt more sentiment-based reasoning, so a gender-equality law may have a stronger effect on their emotional rather than rational perceptions of

discouragement. Second, when we split the data set into two subsamples of larger and smaller firms, we find stronger effects for smaller companies, perhaps because in these firms, the CEO exerts stronger influences over decision-making, in line with the CEO effect theory. Third, with regard to religion, we find that antidiscrimination laws only affect female borrowers' sense of discouragement in countries characterized by Christian and Indian religious majorities, but not in Islamic nations. Fourth, we also scrutinize the effect of regional economic development; the beneficial effect of gender-specific laws is observable only in high-income countries. Fifth, in line with Ullah *et al*. (2021), we shed light on how judiciary efficiency can reduce female borrowers' self-restriction, particularly if the law features a specific, women-friendly clause.

Next, we confirm the robustness of our results with six tests, in which we (1) control for borrower quality, focusing on who already has obtained a bank loan in the credit market, (2) use alternative measures of gender-specific law, (3) restrict the sample to respondents who consciously answered the questionnaire, (4) over-sample some countries to increase internal validity, (5) address the potential for endogeneity bias using an instrumental variable (IV) estimation, and (6) control for a potential selection bias by running a Heckman (1976) estimation.

These findings in turn offer two main contributions. First, we add to studies about the prevalence of gender-based differential access to credit by identifying determinants of supply-side discrimination that go beyond existing evidence related to structural dissimilarities between male- and female-owned businesses. In particular, we reveal the impacts of country-specific factors on loan application probability and bankers' decision-making, in line with Asiedu *et al.*'s (2012) predictions of the relevance of country particularities. Gender-based differences in access to credit vary widely across regions, and Ongena and Popov (2013) have shown that supply-side discrimination becomes exacerbated in countries with more severe inherited cultural gender biases (e.g., Yugoslavian countries) than in those with weaker such historical gender biases (for instance, Ireland). We complement such findings by including the national legal framework as a country-specific determinant of supply-based discrimination against female business owners. Second, we advance literature on the effects of national jurisdiction on credit access, using a discouragement lens. Beck and Levine (2004) document a positive correlation of the adaptability of the legal system or judicial independence with firms' willingness to access external funding. Ullah *et al.* (2021) similarly show that higher regulatory quality, better control of corruption, and law enforcement inhibit credit self-

rationing. To contribute to this stream of literature, we explore and confirm that a gendered legal environment can explain women-owned firms' credit-seeking behavior. To the best of our knowledge, no prior research attempts to quantify the effect of an antidiscrimination law on targeted borrowers - a critical blind spot, considering how cultural and social norms can overwhelm formal legal frameworks.

In Section 2, we discuss prior research, which provides the background that motivated our research. Section 3 contains descriptions of the data, empirical method, and variables. After we provide the results in Section 4, we offer robustness checks in Section 5, then conclude in Section 6.

## 2. Theoretical background

### 2.1. Law and access to credit

The law and finance view pioneered by La Porta, Lopez-de-Silanes, Shleifer and Vischny (1997; hereafter, LLSV) provides an early argument that the depth of the corporate credit market depends on the certainty of applicable laws and their enforcement. At the country level, substantial literature documents how the size of credit markets depends on creditor rights (LLSV, 1998; Djankov *et al*., 2007; Ullah *et al*., 2021); Beck *et al.* (2008) assert that institutional development is the most important characteristic for explaining cross-country variations in financing and obstacles to credit.

From a micro perspective, a sound legal framework should condition the likelihood and terms of credit agreements. For banks, stronger creditor protections lead to lower interest rates (Bae and Goyal, 2009), longer maturity dates (Qian and Strahan, 2007), more concentrated ownership loans (Esty and Megginson, 2003), and lower fees (Beck *et al.*, 2011) but also demands for more collateral (Qian and Strahan, 2007), because banks seek collateral they can seize more easily in case of default. Overall, high creditor rights environments should lower the risk from the bank's perspective.

For borrowers, enhanced regulatory quality also has beneficial effects, by reducing external financing costs and fostering their access to credit. Gropp *et al.* (1997), Berkowitz and White (2004), Berger *et al.* (2011), and Hackney (2016) all concur that higher bankruptcy exemption limits reduce the amount of credit available to borrowers though. We know of no discussions of the effect of antidiscrimination laws on lenders' decision-making.

Beyond legal rights, Demirgüç-Kunt and Maksimovic (1998) show that legal efficiency is critical; credit restrictions appear to diminish in more efficient legal systems (i.e., those that

score higher on an efficiency index). As Pistor *et al.* (2000) demonstrate, strong laws cannot substitute for weak judicial enforcement. Therefore, to stimulate access to credit, both high-quality laws protecting creditors' rights and rigorous law enforcement are required. In the same vein, Moro *et al.* (2018) cite the beneficial effect of contract enforceability for credit expansion, whereas new legal rights introduced to an existing judicial system, without adapting them to the local context, ultimately were ineffective.

### 2.2. Women-led firms and access to credit

Insufficient funding is one of the main reasons that small businesses fail (Coleman, 2000), so clarifying why some businesses struggle to access credit is a critical need, and prior literature has indicated that financial impediments vary across demographic groups. For example, despite increased shares of women-owned firms, they remain more credit-constrained, in formal channels, than men-owned firms (Berger and Udell, 2006). In turn, women-led enterprises tend to start up with less capital and rely more heavily on personal rather than external finance, including for their follow-up investments (Carter and Shaw, 2006; Coleman and Robb, 2009). On average, women-led firms also are younger and smaller than those maintained by their male counterparts, as well as disproportionately concentrated in competitive industries, such as commerce and service sectors (Coleman, 2007). Yet even after controlling for age, size, and sector, women-owned businesses still suffer reduced access to credit, which might reflect two broad causes.

First, according to a supply-side view (which encompasses both Becker's [1957] views tasted-based and statistical discrimination from Arrow [1973]), bankers' decisions on loan applications and requirements vary for male and female prospects, notwithstanding their similarities in riskiness or creditworthiness. Becker (1971) argues that credit markets discriminate against female-owned businesses by charging higher interest rates and requiring tougher contractual arrangements. However, empirical evidence has not confirmed whether women-led businesses face tighter credit conditions *ceteris paribus*. A plethora of literature demonstrates that female-led companies are more likely to be discriminated against by credit grantors (Muravyev *et al*., 2009; Agier and Szafarz, 2013; Alesina *et al.*, 2013 among others) and face tightened loan requirements (Bellucci *et al*., 2010; Hansen and Rand, 2014), . On the other hand, several pieces of evidence endorse the absence of gender-based discrimination (Madill *et al*., 2006; Bardasi *et al*., 2011; Aterido *et al*., 2013). Leaning against the wind, Wellalage and Locke (2017) even assert that women-owned firms are on average 3% less likely to be credit constrained than men-owned firms in South Asia.

Second, demand-side arguments stress the fewer credit applications received from women-led businesses, arguably due to their fear of denial (Ongena and Popov, 2016; Moro *et al.*, 2018; Naegels *et al.*, 2021). Research backing these divergences suggests that differences in risk preferences and attitudes between men and women may affect borrowers' approaches to applying for external funding (see Croson and Gneezy, 2009, for a survey about feminine risk aversion). Overall, these so-called discouraged borrowers may exceed, in number the businesses whose loan applications are actually denied (Freel *et al.*, 2012; Gama *et al.*, 2017).

Overall then, we find that today's legal environments generally make it easier for women to obtain credit at more attractive conditions, but women continue to experience discrimination in credit markets. From a demand point of view, they are more discouraged and therefore ask for less credit. From a *supply-side* premise, they obtain less credit, at less advantageous conditions. Considering the evidence established by prior research, and the relevant impacts of gender-based discrimination in credit markets, we thus were motivated to research how legal environments—and more specifically, legal protections for women—influence the discrimination women experience. Because a protective legal environment aims to enhance credit access, we anticipate that women-friendly legal environments help reduce discrimination, on both the demand and supply sides.

## 3. Data and methodology

### 3.1. Data

To construct the variables that represent access to credit, we employ ES data, obtained from the World Bank. This survey, conducted since the 1990s and widely used in prior research, gathers firm-level data related to the business environment from owners and top managers. The ES covers a large set of topics, including access to finance, corruption, infrastructure, crime, competition, labor, obstacles to growth, and performance measures. To avoid any identification problems due to the global economic crisis, we focus on surveys from 2010–2020, which come from 124 countries (see Appendix B), and we adopt a standardized cross-country comparison approach. These data include a time dimension, but they represent pooled cross-sectional data (not panel), because different companies are interviewed in each wave.

The ES data set provides precise indicators of whether a company needed, applied for, and obtained credit. We consider all these different steps, such that our research includes companies that needed credit but decided not to apply (i.e., discouraged firms) and those that

applied but were denied or rationed. For these two groups, we rely on responses to questions K.16, K.17, and K.20 of the Finance section of the ES.

To assess the quality of the women-friendly legal environment, we draw on the WBL Survey, provided by the World Bank and based on annual series dating back to 1970. It synthetizes formal laws and regulations related to women's economic abilities in 190 countries, using eight indicators (mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension) that can define women's interactions with national law as they start, progress through, and end their careers.

### 3.2. Econometric specification

In our effort to understand how legal environments determine credit access for women-led firms, we focus on both demand-side (discouragement) and supply-side (probability of obtaining the loan) considerations, with the following probit model:

$$Access\ to\ credit_{i,t} = \alpha + \beta * CEO\ Woman_{i,t} + \gamma * Legal\ environment_{j,t} + \delta * \left(CEO\ Woman_{i,t} * Legal\ environment_{j,t}\right) + \boldsymbol{\theta} * \boldsymbol{Control_{i,j,t}} + \varepsilon_{i,j,t} \quad (1)$$

The subscript *i* refers to the firm, *j* to the country where the firm operates, and *t* to year; $\varepsilon$ is an idiosyncratic error term.

### 3.3. Variables

#### 3.3.1. Dependent variable

The measure of access to credit comprises two dependent variables: *Discouraged* and *Fully Obtained*. To construct the *Discouraged* variable, we use question K.16, pertaining to whether the firm applied for credit in the previous fiscal year, as excerpted here:

> K.16. Referring again to the last fiscal year [year], did this establishment apply for any lines of credit or loans?
>
> – Yes.
>
> – No.
>
> – Don't know (spontaneous).

Furthermore, discouragement implies that a firm might not apply for credit, despite needing it, so we also include question K.17, as follows:

> *K.17. What was the main reason why this establishment did not apply for any line of credit or loan?*
>
> – *No need for a loan, establishment had sufficient capital.*

- *Application procedures were complex.*
- *Interest rates were not favorable.*
- *Collateral requirements were too high.*
- *Size of loan and maturity were insufficient.*
- *Did not think it would be approved.*
- *Other.*
- *Don't know (spontaneous).*

Then we apply the definition of a discouraged borrower provided by Chakravarty and Xiang (2013) (see also Han *et al*., 2009): A firm is discouraged if it needed credit but did not apply, whether because (*i*) the application procedures were too complex, (*ii*) the interest rates were not favorable, (*iii*) collateral requirements were too high, (*iv*)the size of loan and maturity were insufficient (i.e., anticipated rationing), or (*v*) the companies did not think it (the application) would be approved.[1] Businesses that chose the "no need" or "don't know" responses are not defined as discouraged and are excluded from the main data set. *Discouraged* equals 1 if the firm does not ask for a loan for the other reasons, and 0 otherwise.

For the *Fully Obtained* variable, among firms that applied for a loan, we gather responses to question K.20, which pertains to the application outcome:

*K.20. Referring only to this most recent application for a line of credit or loan, what was the outcome of that application?*

- *Application was approved in full.*
- *Application was approved in part.*
- *Application was rejected.*
- *Application was withdrawn.*
- *Application still in process.*
- *Don't know (spontaneous).*

If their applications were approved fully, we classified the firms as not rationed. In line with extant literature on rationing (Jaffee and Stiglitz, 1990), firms that received partial funding and those whose applications were rejected are classified as rationed. Thus, *Fully Obtained* equals 1 only if the application was approved in full, and 0 if it was rationed.

[1] A stricter definition of discouragement only includes firms that needed credit, did not apply, but also were creditworthy (e.g., Kon and Storey, 2003). The notion of creditworthiness is difficult to measure in advance though. In the robustness checks, we include only firms with existing lines of credit, which have been identified previously as creditworthy by a bank, to test this stricter definition.

### 3.3.2. Gendered law measures

Among the independent variables, *CEO Women* is a dummy variable, equal to 1 if the CEO of the company is a woman at the time of loan application.

To assess the legal environment, we focus on two questions from the WBL:

*Does the constitution contain a non-discrimination clause?*

*Does the law prohibit discrimination by creditors on the basis of sex or gender in access to credit?*

Using the responses, we can construct two variables:

- *Clause Against Discrimination in Constitution* is a dummy variable, equal to 1 if the constitution contains such a clause. We use this variable as a measure of the general legal environment in which the firm functions.
- *Law Against Discrimination in Credit* is a dummy variable, equal to 1 if the law prohibits discrimination by creditors based on sex or gender. With this variable, we specifically measure the protections that women receive when they request credit.

Then, to gain a better understanding of how women's behavior changes, according to the legal environment, we interact these previous variables (*CEO Woman×Legal environment*). If $\delta$ were to emerge as negative and significant in the *Discouraged* sample, we would have evidence that female CEOs working in a women-friendly legal environment are less discouraged than their male counterparts, for example.

### 3.3.3. Controls

As control variables, we follow previous literature. As indicated by Gama *et al*. (2017), we control for CEO experience (*Manager Experience*), because the more experienced a CEO is, the better the chances that the company will obtain a loan. Then we control for a vector of firm-specific variables, related to riskiness and creditworthiness. The logarithmic values of size and age correlate with the probability of obtaining credit, and thus with discouragement (Cole and Sokolyk, 2016). We also use the firm's ownership structure (*Sole Ownership*) and legal status (*Limited Corp.*), in line with Freel *et al.* (2012). With an *Obstacle* dummy variable, we assess whether the firm considers it difficult to gain access to credit (=1), which likely informs its probability of being discouraged. Moreover, we consider *F.S. Certified*, a dummy variable equal to 1 if the firm has a certified financial statement, which provides a form of hard information that tends to be prominent in bank–borrower relationships (Berger and Udell, 2006). The variable *Saving Account* provides a control for the firm's familiarity with formal financial services. We follow Presbitero *et al.* (2014) and control for firm internationalization

by including dummies for *Export* to identify direct and indirect exporters and *Foreign Own* to indicate if the owner is located abroad. The percentage of R&D investment (*R&D*) provides a relevant indicator of riskiness (Riding *et al.*, 2012).

We also consider two macroeconomic variables: rate of inflation (*Inflation*) and ratio of domestic banking credit to gross domestic product (GDP) (*Financial Development*) (Bertrand *et al.*, 2021). With these controls, we can mitigate the potential for omitted variable bias in relation to the local economic environment, which shapes both the quantity of credit available and lawmaking.

Then with another set of dummy variables, we control for sector-related characteristics, to capture time-invariant, specific effects of industries. Using the year of application, we control for aggregate shocks. Finally, though no theoretical evidence confirms the relevance of clustering the standard errors, the joint impact of the law and women's status seems strongly likely to vary across countries (e.g., due to cultural differences). Therefore, we cluster our standard errors by country, to check this possibility.[2]

#### 3.3.4. Descriptive statistics

Table 1 contains the descriptive statistics of key variables for the analysis. Notably, a similar proportion of female CEOs appears in Panel A, pertaining to discouraged borrowers, and in Panel B, which reflects the fully obtained analysis. The high number of female CEOs likely stems from the inclusion of many microenterprises in our sample.

In Panel A, 25% of the firms can be defined as discouraged. In line with extant literature, we observe a greater rate of discouragement, compared with applications, among women-led businesses. Yet more applicants come from countries with more women-friendly laws or greater legal efficiency. Among firm characteristics, discouraged firms appear more opaque (Moro *et al.*, 2018) and have less banking experience. In Panel B, we find that only 20% of loan applicants obtained the full loan amount they requested. On average, women experience a higher probability of being rationed than obtaining full credit. The legal environment improves access to credit though. In terms of firm characteristics, higher opacity relates to a lower probability of obtaining credit, consistent with Moro *et al.* (2018).

## 4. Results

### 4.1. Access to credit and women-friendly legal environments

#### 4.1.1. Main estimations

[2] The results remain unchanged without the clustered standard errors; they are available on request.

The results of the multivariate probit analysis are discarded in Table 2. For analyses involving both the *Discouraged* dependent variable (Panel A) and *Fully Obtained* variable (Panel B), Columns (1) and (4) present the variables of interest and controls. Then we enter the interaction of *Law Against Discrimination in Credit* and *CEO Female* in Columns (2) and (5) and the interaction of *Clause Against Discrimination in Constitution* and *CEO Female* in Columns (3) and (6). The initial evidence from Column (1) establishes that women-owned firms are more likely to be discouraged, but Columns (2) and (3) suggest that this effect can be mitigated if legislation includes either a constitutional clause or a specific law against discrimination in access to credit. In terms of magnitude, the marginal effects in Column (2) indicate that women-led firms are 26% more discouraged than men. In Columns (2) and (3), the interaction between *CEO Female* and the legal environment variables are always negative and statistically significant. From a demand-side perspective, a favorable legal environment encourages female CEOs to apply for external financing, in line with our prediction.

However, being a woman lowers the likelihood of obtaining a loan. This supply-side, gender-based effect is economically consequential: The average probability of being rationed by creditors is 18.8% in Column (5). The interaction terms are positive but insignificant, so a women-friendly legal framework does not alleviate discrimination, regardless of the inclusion of firm- and country-level controls. Stated differently, lower *de jure* gender discrimination does not guarantee a smaller gender gap in access to credit, in contrast with our expectation.

The most informationally opaque firms (smallest and youngest) are more likely to be discouraged (Chakravarty and Xiang, 2013); their reasonable anticipation of financing obstacles likely contributes to their sense of discouragement. Similar to extant literature, we find that firms run by owners with less experience are more self-restrained in terms of credit, perhaps due to a lack of self-confidence. The Panel B results hint that firm size, manager experience, and transparency (measured by *F.S. Certified*) are relevant decision-making criteria for loan providers. Familiarity with financial services, as captured by *Savings account*, is positively and significantly correlated with the probability of obtaining a loan. Finally, the coefficient of the R&D dummy is negative and statistically significant. Perhaps investing in innovative processes contributes to perceptions of idiosyncratic riskiness. No other coefficients offer any explanatory power for the estimates in Panel B.

#### 4.1.2. Sensitivity analysis

To test the sensitivity of our main results, we control for additional country-level variables, directly related to women's behavior or the legal environment. They do not appear

in the main estimations because these values are missing for several countries. Yet cultural factors shape women's behavior (Ongena and Popov, 2013), such that in a more gender-biased or male-oriented country, we might expect to observe a higher degree of discrimination. Therefore, we include the Gender Inequality Index (*GII*), created by the United Nations Development Program to capture inequalities, as a control. Higher values on this index indicate more intense disparities between men and women. In addition, we use a Hofstedian measure of masculinity (*Masculinity*), on which a high score implies that the society embraces more masculine traits (see Appendix A for variable definitions). With regard to the credit market, we add a *Getting Credit Score*, developed by Doing Business, which reveals the depth and breadth of credit markets (Bertrand and Klein, 2021) by measuring the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders, as well as the depth of credit information. As the results in Table 3 reveal, regardless of these specifications, the results remain the same as in the main analysis.

### 4.2. Going further

In this section, we present in-depth analyses, based on research extensions in which we attempt to clarify some details of the effects that we find.

#### 4.2.1. Emotional versus rational discouragement

In our main analysis, we estimated discouragement using a definition by Chakravarty and Xiang (2013), which encompasses two broad categories of reasons for discouragement: (1) factual hindrances, such as complex application procedures, unfavorable interest rates, excessive collateral requirements, or insufficient loan size and maturity, or (2) anticipated denial or rejection of the loan application. The former reasons are more rational in their basis, whereas the latter is an emotional prediction that leads to discouragement. Therefore, we reestimate the initial model separately for:

- *Rational discouragement*, a dummy variable that equals 1 if the reason invoked is that the application procedures are complex, interest rates are unfavorable, collateral requirements are excessive, or loan size and maturity are insufficient, and 0 otherwise, and
- *Emotional discouragement*, a dummy variable that equals 1 if the firm decides not to apply for fear that the application will be rejected), and 0 otherwise.

The results in Table 4 reveal negative, significant coefficients of both *CEO Female* $\times$ *Law Against Discrimination in Credit* and *CEO Female* $\times$ *Clause Against Discrimination in Constitution*, confirming that female borrowers are less likely to suffer emotional

discouragement in countries with stronger women-friendly legislation. In contrast, these effects are not statistically significant in relation to rational discouragement. Theoretically, women may be more risk-averse than their male counterparts (Croson and Gneezy, 2009), and Harris and Jenkins (2006) document greater pessimism in women's decision-making, such they overestimate the likelihood of negative outcomes. Our finding insinuates that a more supportive legal environment mitigates emotional biases that women display when choosing not to apply for loans.

#### 4.2.2. Gender effects by firm size

Beck *et al*. (2005) demonstrate that small firms are more adversely affected by financial obstacles; applying trade-off theory, Shah *et al*. (2017) also indicate that larger firms enjoy greater corporate leverage, especially in countries with faster, more efficient judicial systems. The CEO effect may differ in smaller firms, relative to those effects observed in large, publicly traded firms. As Quigley *et al*. (2021) note, the most salient discrepancy between small and large firms is the degree of monitoring and oversight they face. Thus, *a priori*, the flexibility that smaller businesses enjoy may increase the influence of the CEO, which is limited by regulatory constraints imposed on larger companies. The CEO's personal traits and demographic characteristics, including gender, in turn may have a stronger influence on decision-making by smaller firms, so we investigate how the legal environment influences female borrowers' sense of discouragement across firms of different sizes. To this end, we rerun our main estimation but split the sample by size. Whereas no consensus exists regarding the appropriate firm size classification at an international scale, the ES stratifies its data based on firm size into three groups: small firms with fewer than 5 employees, medium firms with 5–99 employees, and large firms with more than 100 employees. Therefore, we merge small and medium firms, to match European and U.S. definitions of small and medium-sized enterprises, which we compare to large firms.

The estimation results are in Table 5. We find a negative, significant effect of *CEO Female × Law Against Discrimination in Credit* and *CEO Female × Clause Against Discrimination in Constitution* only for smaller firms in the *Discouraged* specification (Columns (1) and (2)). None of the other coefficients is statistically significant. That is, smaller, women-led firms are less likely to be discouraged in the presence of an antidiscrimination legal clause, whereas the same effect is not observable for larger firms, which aligns with the CEO effect argument. On the supply side, we do not observe any altered effect of legislation on credit granting, regardless of firm size.

### 4.2.3. Differential effects by country-level income

Existing literature provides mixed results about the persistence of gender-biased discouragement in countries with different characteristics. Using the ES, Chakravarty and Xiang (2013) find that women-owned firms' sense of discouragement is more prevalent in low-income countries, whereas Bardasi *et al*. (2011) find that such businesses in Central Asia and Europe are more likely to be discouraged, but an opposite relationship arises among sub-Saharan African firms. Moreover, credit availability might be fostered in high-income countries, due to the effectiveness of their financial regulations and institutions (Miller, 2003; Djankov *et al*., 2007). To account for cross-country heterogeneity, we therefore split the data set into three subsamples: *High-Income*, *Middle-Income*, and *Low-Income* countries, in line with the World Bank's 2021–2022 classification.[3]

The estimation results in Table 6 indicate a mitigating effect of gendered legislation on female borrowers' discouragement in developed countries only. Perhaps the marginal beneficial effect derived from a women-friendly legal clause is greater in wealthier countries than in developing ones. Due to the powerful information asymmetry that tends to occur in low-income countries, antidiscrimination laws might exert weaker effects. Lower financial development, as reflected in poor bank branch penetration in lower-income countries, also might reduce these influences.

### 4.2.4. Differential effects by religion

Religion, understood as a set of beliefs and values that affect individual and community worldviews, correlates with the legal system (North *et al.*, 2013) and women's behavior (Guiso *et al.*, 2002). Controlling for individual and regional characteristics, Demirgüc-Kunt *et al.* (2013) document a lower likelihood that Muslim consumers hold a formal bank account, compared with their non-Muslim counterparts, though these authors do not find any significant difference in terms of access to credit. In-group norms among Muslim populations also tend to diminish women's economic empowerment (Ross, 2008). Therefore, we seek to ascertain if religious norms might counteract the influence of gendered laws on a country level. To do so, we use World Bank classifications to subdivide the initial sample into four categories, corresponding to the four major world religions: Christianity, Hinduism, Buddhism, and

[3]The distribution by income types is available at https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

Islam.[4] Reflecting both data availability and the similarity of their views on women (Desai and Temsah, 2014), we chose to combine Hinduism and Buddhism in an *Indian religion* category.

The results in Table 7 suggest that gender-specific legal rights have beneficial effects on women-led firms' sense of discouragement in countries dominated by non-Muslim religions, but the coefficient for the Muslim sample is statistically insignificant. Perhaps deeply entrenched social norms prevail over legal mandates in Islamic countries, so women-friendly regulation does not affect borrowers' sense of discouragement. Congruent with our initial results, we do not observe any effect of the legal environment on supply-side discrimination across countries with different religious traditions.

#### 4.2.5. Effects of law enforcement

We consider the efficiency of the debt enforcement mechanisms for each country, because judicial enforcement of debt contracts can lower the cost of financial intermediation for both households and firms (Laeven and Majnoni, 2005). Examining both creditor rights and the execution of contracts, Bae and Goyal (2009) determine that enforceability, not merely the introduction of legal rights, determines loan contracts; better enforceability increases loan sizes, lengthens the loan maturity, and curtails loan spreads. Accordingly, we expect a joint beneficial effect of gendered laws and legal enforcement on both demand- and supply-side discrimination. To test this hypothesis, we reestimate our regression model after adding two interaction terms that include the gendered law variables, the CEO's gender, and our law efficiency measure (*Efficiency*). An index developed by Djankov *et al*. (2008) can measure the present, terminal value of the firm after bankruptcy costs, such that higher scores indicate more efficient debt enforcement processes.

Table 8 presents the results, including the negative and significant coefficients for both *CEO Female* $\times$ *Law Against Discrimination in Credit* $\times$ *Efficiency* and *CEO Female* $\times$ *Clause Against Discrimination in Constitution* $\times$ *Efficiency*. Law enforceability appears to diminish demand-side discrimination. We also observe a similar effect for the supply side, such that both triple interactions are positive and statistically significant. We cannot detect any effect of the presence of a women-friendly law from the creditor side, but rule of law increments increase the proportion of loans granted to female applicants by banking institutions. These findings are notable, especially for policymakers, because legislative efficiency is fundamental for achieving *de jure* and *de facto* convergence.

[4] No country with a Jewish majority has established women-friendly legal clauses.

# 5. Robustness checks

## 5.1. Alternative measure of discouragement

Kon and Storey's (2003) stricter definition of discouragement only includes creditworthy borrowers who arguably could get loans that they need but who do not apply. A non-creditworthy prospect who does not apply would be rational, so this firm is not classified as discouraged. Accordingly, we adopt Petersen and Rajan's (1994) reasoning and focus on firms that possess an existing line of credit with some financial institution; firms with existing credit already have demonstrated their ability to repay their loans, so they likely are creditworthy. When we replicate the initial analysis, including only borrowers with a line of credit, we address 16,266 firms that need credit and 7,273 that request it. We observe in Table 9 that our results are in line with the main findings: In a women-friendly legal environment, women tend to be less discouraged (Columns (1) and (2)) but do not receive more credit (Columns (3) and (4)).

## 5.2. Alternative measure of women-friendly legal environment

Several alternative measures can reflect women-friendly legal environments. We use three, capturing the expansion of gendered law in different countries: a dummy for the presence of quotas for women on corporate boards (*Quota for Women on Board*), a dummy for the existence of legislative and municipal quotas for women (*Municipal Quota Women*), and the WBL index (*WBL Index*), which ranges between 0 and 100, such that a higher value implies lower legal inequalities between men and women. The comparison of the results in Table 10, which provides the findings attained with the alternative legal variables, indicates that they remain the same for all alternative variables. That is, women's sense of discouragement is less important in countries with women-friendly laws, but the probability of obtaining a loan is not affected.

## 5.3. Truthful respondents

To ensure the quality of the data, the ES includes a question about how truthful the respondent is: *Truthful*, *Somewhat truthful*, or *Not truthful*. Therefore, to check the quality of our results, we adopt a similar logic and run our analysis only with respondents who identify as *Truthful* in their answers. Table 11 displays the results, obtained from a sample of 31,666 truthful respondents that need credit and 6,774 that ask for it. The results again remain unchanged.

## 5.4. Alternative sample construction

Another sample bias that might influence our results reflects the representativeness of the different countries included in our study. If one or more of these countries is overrepresented in the sample of borrowers, it may drive the results. Therefore, we removed all countries that account for more than 5% of the observations from the sample.[5] This criterion refers to three countries: India (almost 10% of the sample), Egypt (6%), and Russia (5%). As Table 12 shows, the estimations still remain consistent with the main results, in terms of both discouragement (Columns (1) and (2)) and rationing (Columns (3) and (4)).

### 5.5. Instrumental variable analysis

The model may suffer from reverse causality concerns, because even though no endogeneity exists with regard to gender (gender is unlikely to change as a function of discouragement or credit likelihood), it might arise between the dependent variables and the women-friendly legal environment measures. That is, depending on the probability that women business owners might be discouraged or fail to obtain credit, legislators may be more or less likely to enact new laws to protect them. Therefore, we perform an instrumental variable (IV) regression. Many economics and legal studies identify the legal origins of a country as a good instrument for similar assessments (La Porta *et al.*, 1998), and Bradford *et al.* (2021, p. 207) note that the legal origins "may be an important predictor of legal substance in well-established legal regimes," such as the presence of a clause in the Constitution. We use the legal origins (*French, German* or *English Origin*) and type of law system (*Civil Law*) as instruments to address potential endogeneity. However, the presence of laws against discrimination in a credit market is a more recent development than clauses in the Constitution, so the legal origin or system might have a more minor role in this case. Therefore, we sought another instrument to add more validity and determined that a country's decision to sign the *Convention on the Elimination of All Forms of Discrimination Against Women* (CEDAW) offers a reasonable option. The CEDAW, created in 1979 by the United Nation, aims to eliminate discrimination against women, and signing on signals a country's strong commitment to fight against such discrimination. Thus, this prior commitment likely affects the implementation of laws today.

The results for the IV analysis in Table 13 indicate that, regardless of the specification, the exogeneity test is not significant; the additional IVs are exogeneous. The high and significant F-test also indicates that our instruments are relevant. The results remain the same for both discouragement and the probability of obtaining credit.

[5] We also run the test with a 3% threshold, but the results remain the same; they are available on request.

### 5.6. Self-selection

Finally, our sample is subject to a potential self-selection bias, in that it consists of firms that need or ask for credit (Cole and Sokolyk, 2016). Therefore, we use Heckman's (1979) methodology to estimate the probability that a firm needs credit, then calculate the inverse Mills ratio ($\lambda_1$) as a selection factor that we include in the *Discouraged* equation. We apply the same procedure and exclusion variables used by Léon (2015), who presents these variables in more detail. In a Heckman procedure, exclusion variables are included in the selection equation, so to be relevant, they must influence the need for loans but not directly affect borrower discouragement or loan approval. We use the following exclusion variables: (1) perceived constraints due to an inadequately educated workforce, (3) the natural logarithm of firm sales, and (3) a dummy variable equal to 1 if the firm applied to obtain a construction-related permit and 0 otherwise. Following Cole and Sokolyk (2016), we also control for a potential self-selection bias related to firms' assessments of their probability of obtaining credit (after removing discouraged firms). That is, in accordance with our *Discouraged* analysis, we construct new Mills ratios ($\lambda_2$ for the law and $\lambda_3$ for the constitution) that we include in the *Fully Obtained* equation.

Table 14 displays the results. Column (1) refers to the probability of needing credit; Columns (2) and (3) pertain to the probability of being discouraged, including $\lambda_1$. Then Columns (4) and (5) involve the probability of obtaining full credit, so they include $\lambda_2$ and $\lambda_3$. The results remain stable. Furthermore, and interestingly, the Mills ratios are all negative and significant, indicating the likely existence of a self-selection problem.

## 6. Conclusion

To establish the effect of laws on women-led businesses' access to credit, we draw on a large data set, covering 124 countries and the period from 2010 to 2020. The results indicate that women-led firms are more likely to apply for a loan if legislation includes an antidiscrimination clause, but differential treatment persists on the supply side—even after controlling for cultural and credit environments. It also is robust to a battery of checks. These worrisome findings indicate that, irrespective of judicial policies, enterprises run by women still end up being unnecessarily credit-constrained by formal banking institutions.

To gain more precise insights, we also determine that gender-equality laws soften emotional discouragement, so female CEOs' self-rationing exists for reasons beyond their fears of loan rejection and reflects their assessments of the judicial environment. Consistent with

prior theory, the CEO effect arises only for smaller firms and in developed countries. However, the mitigating effects of gender-equality laws are less observable in Muslim-majority countries. We also corroborate prior evidence (Ullah *et al.*, 2021) that indicates that legal efficiency mitigates women-led businesses' discouragement.

These findings have considerable implications for policy makers and legislators. Antidiscrimination lawmaking is a key tool to foster women-owned firms' willingness to apply for a loan, which tends to be lower than the willingness displayed by male owners (Bardasi *et al.*, 2011; Aterido *et al.*, 2013). But such *de jure* efforts to address gender discrimination do not prompt parallel *de facto* changes on the supply side. Legal enforcement thus represents a necessary but seemingly not sufficient tactic to reduce gender gaps in women-led firms' credit access.

The results raise additional questions about the impact of the legal environment on individual behavior. Culture appears to exert a powerful influence on business owners' decisions, perhaps especially women's, and it is intrinsically linked to the law of the land. Thus, a promising route for research might be to address explicitly how culture moderates the link between women's financial choices and behaviors and the legal environment in which they operate their businesses.

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## Table 1. Descriptive statistics

This table provides descriptive statistics for the variables used in the study. It displays a test of difference in the mean of all independent and control variables, given the value of *Discouraged* (*Applicant* vs. *Discouraged*) and *Fully Obtained* (*Rationed* vs. *Fully Obtained*). We test the mean difference with a Student t-test. Statistics are reported in parentheses. *, **, and *** denote a significant difference from 0 at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A:* Discouraged Analysis | | | | | | *Panel B*: Fully Obtained Analysis | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Applicant | Discouraged | Mean Diff. Test | N | Mean | Std. Dev. | Rationed | Fully Obtained | Mean Diff. Test | N |
| ***Dependent variables*** | | | | | | | | | | | | |
| Discouraged | 0.250 | 0.433 | | | | 46,333 | | | | | | |
| Fully Obtained | | | | | | | 0.199 | 0.399 | | | | 8,948 |
| ***Independent variables*** | | | | | | | | | | | | |
| CEO Female | 0.166 | 0.372 | 0.165 | 0.270 | -0.104** | 46,333 | 0.168 | 0.374 | 0.174 | 0.167 | 0.007* | 8,948 |
| *Legal environment* | | | | | | | | | | | | |
| Law Against Discrimination in Credit | 0.380 | 0.485 | 0.408 | 0.295 | 0.113*** | 46,333 | 0.49 | 0.5 | 0.432 | 0.504 | -0.072*** | 8,948 |
| Clause Against Discrimination in Constitution | 0.738 | 0.440 | 0.753 | 0.733 | 0.020*** | 46,333 | 0.706 | 0.456 | 0.694 | 0.709 | -0.015 | 8,948 |
| WBL Index | 75.784 | 14.124 | 76.892 | 72.453 | 4.439*** | 46,333 | 80.446 | 13.456 | 75.522 | 81.668 | -6.146*** | 8,948 |
| Legislative Quotas Women | 2.825 | 7.650 | 3.726 | 2.576 | 1.150*** | 32,277 | 2.11 | 7.142 | 3.377 | 1.810 | 1.566*** | 7,891 |
| Quotas for Women on Board | 0.622 | 4.489 | 0.672 | 0.439 | 0.233*** | 31,815 | 0.279 | 3.024 | 0.400 | 0.251 | 0.149 | 7,795 |
| Municipal Quotas Women | 9.464 | 14.498 | 12.363 | 8.565 | 3.798*** | 40,432 | 2.746 | 8.621 | 4.302 | 2.382 | 1.920*** | 8,021 |
| Efficiency | 38.274 | 18.649 | 39.397 | 33.788 | 5.609*** | 24,674 | 39.538 | 18.994 | 37.227 | 40.033 | -2.806*** | 6,177 |
| Getting Credit Score | 68.92 | 18.335 | 70.754 | 68.309 | 2.445*** | 46,333 | 65.433 | 19.539 | 67.041 | 66.841 | 0.201 | 8,948 |
| *Cultural variables* | | | | | | | | | | | | |
| Masculinity | 50.027 | 14.018 | 50.138 | 49.712 | 0.427* | 28,915 | 47.644 | 16.765 | 47.972 | 46.132 | 1.840** | 4,603 |
| GII | 0.374 | 0.165 | 0.358 | 0.423 | -0.065*** | 43,982 | 0.327 | 0.145 | 0.318 | 0.360 | -0.041*** | 8,864 |
| *Firm characteristics* | | | | | | | | | | | | |
| Manager Experience | 18.703 | 14.722 | 19.337 | 16.800 | 2.537*** | 46,333 | 21.406 | 24.006 | 19.046 | 21.992 | -2.946*** | 8,948 |
| Log(Size) | 3.389 | 1.374 | 3.475 | 3.131 | 0.345*** | 46,333 | 3.789 | 1.437 | 3.416 | 3.881 | -0.465*** | 8,948 |
| Log(Age) | 2.884 | 0.937 | 2.912 | 2.800 | 0.112*** | 46,333 | 2.984 | 0.961 | 2.908 | 3.002 | -0.094*** | 8,948 |
| Sole Ownership | 0.497 | 0.500 | 0.471 | 0.574 | -0.103*** | 46,333 | 0.371 | 0.483 | 0.419 | 0.359 | 0.060*** | 8,948 |
| Limited Corp. | 0.132 | 0.338 | 0.135 | 0.122 | 0.013*** | 46,333 | 0.14 | 0.348 | 0.136 | 0.142 | -0.006 | 8,948 |
| Obstacle | 0.188 | 0.391 | 0.148 | 0.308 | -0.160*** | 46,333 | 0.226 | 0.418 | 0.417 | 0.179 | 0.238*** | 8,948 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F.S. Certified | 0.499 | 0.500 | 0.521 | 0.432 | 0.089*** | 46,333 | 0.541 | 0.498 | 0.482 | 0.556 | -0.074*** | 8,948 |
| R&D | 0.172 | 0.377 | 0.179 | 0.148 | 0.031*** | 46,333 | 0.227 | 0.419 | 0.229 | 0.219 | -0.010 | 8,948 |
| Saving Account | 0.888 | 0.315 | 0.898 | 0.859 | 0.039*** | 46,333 | 0.923 | 0.267 | 0.893 | 0.930 | -0.037*** | 8,948 |
| Export | 0.996 | 0.066 | 0.995 | 0.997 | -0.001 | 46,333 | 0.997 | 0.057 | 0.997 | 0.997 | 0.001 | 8,948 |
| Foreign Own. | 0.086 | 0.281 | 0.095 | 0.060 | 0.035*** | 46,333 | 0.101 | 0.302 | 0.103 | 0.096 | 0.007 | 8,948 |
| Trade Credit | 10.414 | 20.912 | 10.339 | 10.639 | -0.301 | 46,333 | 15.262 | 24.128 | 15.464 | 14.450 | 1.013 | 8,948 |
| *Macroeconomic variables* | | | | | | | | | | | | |
| Inflation | 4.984 | 5.654 | 4.855 | 5.374 | -0.520*** | 46,333 | 5.373 | 6.411 | 5.325 | 5.567 | -0.241 | 8,948 |
| Financial Development | 46.899 | 27.259 | 47.784 | 44.241 | 3.542*** | 46,333 | 48.478 | 27.605 | 48.862 | 46.934 | 1.928** | 8,948 |
| *Instruments* | | | | | | | | | | | | |
| Civil Law | 0.905 | 0.293 | 0.911 | 0.881 | 0.031*** | 24,674 | 0.927 | 0.259 | 0.937 | 0.883 | 0.054*** | 6,177 |
| English Origin | 0.095 | 0.293 | 0.089 | 0.119 | -0.031*** | 24,674 | 0.073 | 0.259 | 0.063 | 0.117 | -0.054*** | 6,177 |
| French Origin | 0.612 | 0.487 | 0.602 | 0.653 | -0.052*** | 24,674 | 0.649 | 0.477 | 0.653 | 0.631 | 0.022 | 6,177 |
| German Origin | 0.293 | 0.455 | 0.310 | 0.227 | 0.082*** | 24,674 | 0.279 | 0.448 | 0.284 | 0.253 | 0.032* | 6,177 |
| CEDAW | 0.638 | 0.481 | 0.627 | 0.670 | -0.043***" | 46,333 | 0.600 | 0.490 | 0.608 | 0.568 | 0.041** | 8,948 |

## Table 2. Main results

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A:* Discouraged | | | *Panel B:* Fully Obtained | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| CEO Female | 0.054*** | 0.066*** | 0.154*** | -0.046* | -0.083* | -0.016* |
| | (0.003) | (0.005) | (0.000) | (0.085) | (0.081) | (0.051) |
| Law Against Discrimination in Credit | -0.089*** | -0.083*** | -0.083*** | -0.034 | -0.048 | -0.034 |
| | (0.000) | (0.000) | (0.000) | (0.396) | (0.274) | (0.407) |
| CEO Female × Law Against Discrimination in Credit | | -0.028** | | | 0.071 | |
| | | (0.036) | | | (0.401) | |
| Clause Against Discrimination in Constitution | -0.128*** | -0.127*** | -0.099*** | -0.061* | -0.062* | -0.055 |
| | (0.000) | (0.000) | (0.000) | (0.087) | (0.084) | (0.159) |
| CEO Female × Clause Against Discrimination in Constitution | | | -0.144*** | | | -0.041 |
| | | | (0.000) | | | (0.668) |
| Manager Experience | -0.005*** | -0.005*** | -0.005*** | 0.009*** | 0.009*** | 0.009*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Log(Size) | -0.074*** | -0.074*** | -0.073*** | 0.122*** | 0.123*** | 0.122*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Log(Age) | -0.014* | -0.014* | -0.014* | 0.026 | 0.026 | 0.027 |
| | (0.056) | (0.058) | (0.062) | (0.142) | (0.145) | (0.140) |
| Sole Ownership | 0.084*** | 0.084*** | 0.085*** | 0.013 | 0.013 | 0.013 |
| | (0.000) | (0.000) | (0.000) | (0.726) | (0.736) | (0.723) |
| Limited Corp. | 0.056*** | 0.056*** | 0.057*** | 0.000 | 0.002 | 0.000 |
| | (0.007) | (0.007) | (0.006) | (0.992) | (0.968) | (0.994) |
| Obstacle | 0.551*** | 0.551*** | 0.551*** | 0.662*** | 0.661*** | 0.662*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| F.S. Certified | -0.203*** | -0.203*** | -0.203*** | 0.094*** | 0.094*** | 0.094*** |
| | (0.000) | (0.000) | (0.000) | (0.008) | (0.008) | (0.007) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Saving Account | -0.055*** | -0.056*** | -0.057*** | 0.103* | 0.101* | 0.103* |
| | (0.010) | (0.009) | (0.007) | (0.089) | (0.093) | (0.088) |
| Export | 0.296*** | 0.296*** | 0.295*** | -0.004 | -0.004 | -0.004 |
| | (0.007) | (0.007) | (0.008) | (0.988) | (0.989) | (0.989) |
| Foreign Own. | -0.058** | -0.058** | -0.058** | 0.061 | 0.061 | 0.061 |
| | (0.027) | (0.028) | (0.028) | (0.270) | (0.272) | (0.267) |
| Trade Credit | -0.002*** | -0.002*** | -0.002*** | 0.000 | 0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.984) | (0.976) | (0.987) |
| R&D | -0.101*** | -0.101*** | -0.099*** | -0.091** | -0.091** | -0.092** |
| | (0.000) | (0.000) | (0.000) | (0.023) | (0.023) | (0.022) |
| Inflation | 0.010*** | 0.010*** | 0.010*** | 0.002 | 0.001 | 0.002 |
| | (0.000) | (0.000) | (0.000) | (0.582) | (0.643) | (0.567) |
| Financial Development | -0.001*** | -0.001*** | -0.001*** | 0.002*** | 0.002*** | 0.002*** |
| | (0.000) | (0.000) | (0.000) | (0.006) | (0.005) | (0.006) |
| Sector dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Cluster | Country | Country | Country | Country | Country | Country |
| Constant | -0.126 | -0.127 | -0.148 | 0.495 | 0.494 | 0.490 |
| | (0.329) | (0.327) | (0.254) | (0.356) | (0.356) | (0.361) |
| Observations | 46,333 | 46,333 | 46,333 | 8,948 | 8,948 | 8,948 |
| Pseudo $R^2$ | 0.079 | 0.079 | 0.079 | 0.083 | 0.083 | 0.083 |

## Table 3. Sensitivity analysis

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. In Columns (1), (2), (5), and (6), we control for the cultural environment using *Masculinity*. In Columns (3), (4), (7), and (8), we control for the legal environment with *Getting Credit Score* and *Legal Rights Index*. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A:* Discouraged | | | | *Panel B:* Fully Obtained | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| CEO Female | 0.033 | 0.094** | 0.066*** | 0.144*** | -0.052 | -0.007 | -0.083 | -0.015 |
| | (0.340) | (0.026) | (0.006) | (0.000) | (0.618) | (0.951) | (0.179) | (0.856) |
| Law Against Discrimination in Credit | 0.320*** | 0.325*** | -0.058*** | -0.061*** | 0.342*** | 0.360*** | -0.054 | -0.039 |
| | (0.000) | (0.000) | (0.003) | (0.001) | (0.000) | (0.000) | (0.224) | (0.344) |
| CEO Female × Law Against Discrimination in Credit | -0.007* | | -0.041** | | 0.092 | | 0.074 | |
| | (0.080) | | (0.029) | -0.131*** | (0.468) | | (0.381) | |
| Clause Against Discrimination in Constitution | -0.265*** | -0.243*** | -0.158*** | (0.000) | -0.081 | -0.083 | -0.055 | -0.048 |
| | (0.000) | (0.000) | (0.000) | | (0.235) | (0.253) | (0.129) | (0.218) |
| CEO Female × Clause Against Discrimination in Constitution | | -0.087* | | -0.137*** | | 0.021 | | -0.041 |
| | | (0.097) | | (0.000) | | (0.876) | | (0.674) |
| Masculinity | -0.004*** | -0.004*** | | | -0.003** | -0.003** | | |
| | (0.000) | (0.000) | | | (0.045) | (0.046) | | |
| GII | 3.719*** | 3.695*** | | | 3.069*** | 3.071*** | | |
| | (0.000) | (0.000) | | | (0.000) | (0.000) | | |
| Getting Credit Score | | | 0.004*** | 0.004*** | | | -0.001 | -0.001 |
| | | | (0.000) | (0.000) | | | (0.376) | (0.397) |
| Control variables | All | All | All | All | All | All | All | All |
| Cluster | Country | Country | Country | Country | Country | Country | Country | Country |
| Constant | -2.699*** | -2.704*** | -0.399*** | -0.415*** | -0.444 | -0.445 | 0.531 | 0.526 |
| | (0.000) | (0.000) | (0.003) | (0.002) | (0.398) | (0.396) | (0.323) | (0.328) |
| Observations | 27,104 | 27,104 | 46,333 | 46,333 | 4,587 | 4,587 | 8;948 | 8,948 |
| Pseudo $R^2$ | 0.110 | 0.110 | 0.081 | 0.081 | 0.121 | 0.121 | 0.083 | 0.083 |

## Table 4. Analysis by type of discouragement

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A:* Discouraged | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| | Emotional | Emotional | Rational | Rational |
| CEO Female | 0.020 | 0.120* | 0.067*** | 0.140*** |
| | (0.680) | (0.065) | (0.005) | (0.000) |
| Law Against Discrimination in Credit | -0.049 | -0.041 | -0.078*** | -0.079*** |
| | (0.244) | (0.295) | (0.000) | (0.000) |
| CEO Female × Law Against Discrimination in Credit | -0.011** | | -0.033 | |
| | (0.041) | | (0.370) | |
| Clause Against Discrimination in Constitution | -0.045 | -0.014 | -0.126*** | -0.101*** |
| | (0.190) | (0.720) | (0.000) | (0.000) |
| CEO Female x Clause Against Discrimination in Constitution | | -0.141* | | -0.125 |
| | | (0.075) | | (0.301) |
| Control variables | All | All | All | All |
| Cluster | Country | Country | Country | Country |
| Constant | -1.460*** | -1.485*** | -0.291** | -0.309** |
| | (0.000) | (0.000) | (0.027) | (0.019) |
| Observations | 46,036 | 46,036 | 46,333 | 46,333 |
| Pseudo $R^2$ | 0.069 | 0.070 | 0.071 | 0.071 |

## Table 5. Analysis by size

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. We split our sample based on firm size, such that Columns (1), (2), (5), and (6) refer to small firms, and Columns (3), (4), (7), and (8) feature large firms. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A:* Discouraged | | | | *Panel B:* Fully Obtained | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Small & Medium Size | | Large Size | | Small & Medium Size | | Large Size | |
| CEO Female | 0.030 | 0.109*** | 0.202*** | 0.345*** | -0.081 | -0.066 | -0.123 | 0.105 |
| | (0.254) | (0.002) | (0.000) | (0.000) | (0.246) | (0.483) | (0.385) | (0.571) |
| Law Against Discrimination in Credit | -0.087*** | -0.086*** | -0.029 | -0.026 | -0.087* | -0.081* | 0.072 | 0.106 |
| | (0.000) | (0.000) | (0.554) | (0.569) | (0.086) | (0.084) | (0.415) | (0.201) |
| CEO Female × Law Against Discrimination in Credit | -0.021*** | | -0.033 | | 0.032 | | 0.181 | |
| | (0.003) | | (0.713) | | (0.739) | | (0.341) | |
| Clause Against Discrimination in Constitution | -0.142*** | -0.115*** | -0.058 | -0.024 | -0.078* | -0.078* | -0.012 | 0.011 |
| | (0.000) | (0.000) | (0.136) | (0.574) | (0.061) | (0.086) | (0.872) | (0.889) |
| CEO Female × Clause Against Discrimination in Constitution | | -0.128*** | | -0.218 | | 0.002 | | -0.180 |
| | | (0.002) | | (0.522) | | (0.984) | | (0.404) |
| Control variables | All | All | All | All | All | All | All | All |
| Cluster | Country | Country | Country | Country | Country | Country | Country | Country |
| Constant | -0.139 | -0.159 | 0.211 | 0.186 | 0.209 | 0.210 | 1.302 | 1.257 |
| | (0.323) | (0.261) | (0.595) | (0.640) | (0.805) | (0.804) | (0.147) | (0.167) |
| Observations | 36,623 | 36,623 | 9,702 | 9,702 | 2,906 | 2,906 | 2,670 | 2,670 |
| Pseudo $R^2$ | 0.071 | 0.072 | 0.109 | 0.110 | 0.078 | 0.078 | 0.076 | 0.076 |

## Table 6. Analysis by income

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. We split our sample based on the country level of income, such that Columns (1), (2), (7), and (8) pertain to low income countries; Columns (3), (4), (9), and (10) refer to medium income countries; and Columns (5), (6), (11), and (12) involve high income countries. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | | | | | *Panel B*: Fully Obtained | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| | Low Income | | Medium Income | | High Income | | Low Income | | Medium Income | | High Income | |
| CEO Female | -0.028 | 0.026 | -0.093 | 0.067 | 0.098*** | 0.182*** | 0.278 | 0.066 | -0.235 | -0.491 | -0.063 | -0.001 |
| | (0.944) | (0.765) | (0.263) | (0.630) | (0.000) | (0.000) | (0.529) | (0.691) | (0.237) | (0.198) | (0.343) | (0.991) |
| Law Against Discrimination in Credit | -0.257 | -0.260* | 0.371** | 0.354** | 0.134*** | 0.127*** | -0.745*** | -0.752*** | -0.715*** | -0.652*** | 0.052 | 0.048 |
| | (0.108) | (0.093) | (0.026) | (0.033) | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) | (0.280) | (0.277) |
| CEO Female × Law Against Discrimination in Credit | 0.015 | | 0.035 | | -0.056** | | -0.128 | | -0.108 | | -0.028 | |
| | (0.969) | | (0.953) | | (0.013) | | (0.778) | | (0.778) | | (0.765) | |
| Clause Against Discrimination in Constitution | 0.119* | 0.135* | -0.069 | -0.041 | -0.142*** | -0.114*** | 0.267** | 0.239* | 0.985*** | 0.936*** | -0.078* | -0.063 |
| | (0.085) | (0.065) | (0.496) | (0.688) | (0.000) | (0.000) | (0.036) | (0.078) | (0.002) | (0.003) | (0.074) | (0.183) |
| CEO Female × Clause Against Discrimination in Constitution | | -0.069 | | -0.247 | | -0.144*** | | 0.173 | | 0.350 | | -0.097 |
| | | (0.550) | | (0.154) | | (0.001) | | (0.443) | | (0.423) | | (0.391) |
| Control variables | All | All | All | All | All | All | All | All | All | All | All | All |
| Cluster | Country | Country | Country | Country | Country | Country | Country | Country | Country | Country | Country | Country |
| Constant | 0.210 | 0.216 | -0.100 | -0.100 | -0.307** | -0.326** | 0.376 | 0.377 | 0.403 | 0.415 | 0.496 | 0.486 |
| | (0.807) | (0.801) | (0.800) | (0.800) | (0.023) | (0.016) | (0.575) | (0.573) | (0.796) | (0.788) | (0.368) | (0.378) |
| Observations | 6,915 | 6,915 | 2,651 | 2,651 | 36,767 | 36,767 | 1,679 | 1,679 | 402 | 402 | 6,848 | 6,848 |
| Pseudo $R^2$ | 0.100 | 0.100 | 0.093 | 0.094 | 0.071 | 0.071 | 0.100 | 0.101 | 0.164 | 0.165 | 0.081 | 0.082 |

## Table 7. Analysis by religion

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. We split our sample based on religion, such that Columns (1), (2), (7), and (8) refer to Christian countries; Columns (3), (4), (9), and (10) indicate Indian religion countries; and Columns (5), (6), (11), and (12) refer to Islamic countries. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | | | | | *Panel B*: Fully Obtained | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| | Christianity | | Indian Religion | | Islam | | Christianity | | Indian Religion | | Islam | |
| CEO Female | 0.019 | 0.060 | -0.002 | 0.060 | -0.008 | -0.022 | -0.075 | 0.010 | -0.285* | -0.485 | 0.034 | 0.200 |
| | (0.625) | (0.121) | (0.956) | (0.572) | (0.874) | (0.881) | (0.388) | (0.909) | (0.075) | (0.195) | (0.768) | (0.583) |
| Law Against Discrimination in Credit | -0.091*** | -0.098*** | -1.095*** | -1.078*** | -0.364*** | -0.373*** | -0.054 | -0.038 | 0.709 | 0.694 | -0.253* | -0.291** |
| | (0.004) | (0.001) | (0.000) | (0.000) | (0.000) | (0.000) | (0.358) | (0.491) | (0.284) | (0.296) | (0.083) | (0.037) |
| CEO Female × Law Against Discrimination in Credit | -0.033** | | -0.009** | | -0.054 | | 0.096 | | -0.186 | | -0.185 | |
| | (0.024) | | (0.033) | | (0.528) | | (0.391) | | (0.502) | | (0.288) | |
| Clause Against Discrimination in Constitution | -0.176*** | -0.156*** | 2.141*** | 2.165*** | -0.592*** | -0.597*** | -0.115** | -0.109** | -1.373 | -1.616 | -0.207 | -0.194 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.014) | (0.029) | (0.352) | (0.281) | (0.154) | (0.190) |
| CEO Female × Clause Against Discrimination in Constitution | | -0.104** | | -0.072** | | -0.004 | | -0.050 | | 0.144 | | -0.263 |
| | | (0.041) | | (0.032) | | (0.980) | | (0.663) | | (0.716) | | (0.484) |
| Control variables | All | All | All | All | All | All | All | All | All | All | All | All |
| Cluster | Country | Country | Country | Country | Country | Country | Country | Country | Country | Country | Country | Country |
| Constant | -0.456 | -0.469 | -4.328*** | -4.336*** | 0.310 | 0.318 | -0.205 | -0.203 | 2.542 | 2.868 | 0.216 | 0.229 |
| | (0.202) | (0.190) | (0.000) | (0.000) | (0.223) | (0.211) | (0.799) | (0.802) | (0.383) | (0.325) | (0.711) | (0.695) |
| Observations | 24,090 | 24,090 | 10,526 | 10,526 | 10,831 | 10,831 | 5,985 | 5,985 | 923 | 923 | 1,990 | 1,990 |
| Pseudo $R^2$ | 0.139 | 0.139 | 0.050 | 0.050 | 0.082 | 0.082 | 0.104 | 0.104 | 0.118 | 0.118 | 0.084 | 0.084 |

## Table 8. Efficiency analysis

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | *Panel B*: Fully Obtained | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| CEO Female | -0.015 | -0.182 | 0.115 | 0.177 |
| | (0.864) | (0.103) | (0.500) | (0.567) |
| Law Against Discrimination in Credit | 0.685*** | -0.173*** | 0.447*** | -0.108** |
| | (0.000) | (0.000) | (0.000) | (0.040) |
| Clause Against Discrimination in Constitution | -0.130*** | -0.228*** | -0.113*** | -0.288* |
| | (0.000) | (0.001) | (0.010) | (0.051) |
| Efficiency | 0.009*** | -0.009*** | 0.004** | -0.008** |
| | (0.000) | (0.000) | (0.040) | (0.024) |
| CEO Female × Law Against Discrimination in Credit | 0.121 | | -0.016 | |
| | (0.326) | | (0.952) | |
| CEO Female × Efficiency | 0.000 | 0.007** | -0.004 | -0.003 |
| | (0.854) | (0.011) | (0.306) | (0.648) |
| CEO Female × Clause Against Discrimination in Constitution | | 0.345*** | | -0.112 |
| | | (0.009) | | (0.742) |
| Law Against Discrimination in Credit × Efficiency | -0.025*** | | -0.016*** | |
| | (0.000) | | (0.000) | |
| Clause Against Discrimination in Constitution × Efficiency | | 0.001 | | 0.004 |
| | | (0.640) | | (0.262) |
| CEO Female × Law Against Discrimination in Credit × Efficiency | -0.003* | | 0.003** | |
| | (0.068) | | (0.035) | |
| CEO Female × Clause Against Discrimination in Constitution × Efficiency | | -0.011*** | | 0.003** |
| | | (0.001) | | (0.032) |
| Control variables | All | All | All | All |
| Cluster | Country | Country | Country | Country |
| Constant | -0.668*** | -0.341 | 0.554 | 0.803 |
| | (0.006) | (0.181) | (0.331) | (0.169) |
| Observations | 24,674 | 24,674 | 6,176 | 6,176 |
| Pseudo $R^2$ | 0.123 | 0.111 | 0.093 | 0.087 |

## Table 9. Discouraged borrowers with existing lines of credit

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. This table includes results involving firms that already have obtained a line of credit. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | *Panel B*: Fully Obtained | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| CEO Female | 0.090* | 0.042 | -0.109 | 0.030 |
| | (0.060) | (0.522) | (0.155) | (0.765) |
| Law Against Discrimination in Credit | -0.082** | -0.052 | -0.072 | -0.049 |
| | (0.032) | (0.142) | (0.185) | (0.326) |
| CEO Female x Law Against Discrimination in Credit | -0.135** | | 0.107 | |
| | (0.046) | | (0.301) | |
| Clause Against Discrimination in Constitution | 0.005 | 0.023 | -0.085* | -0.066 |
| | (0.882) | (0.497) | (0.052) | (0.167) |
| CEO Female x Clause Against Discrimination in Constitution | | -0.091** | | -0.116 |
| | | (0.034) | | (0.320) |
| Control variables | All | All | All | All |
| Cluster | Country | Country | Country | Country |
| Constant | -0.706 | -0.726 | -0.582 | -0.598 |
| | (0.141) | (0.130) | (0.157) | (0.147) |
| Observations | 16,266 | 16,266 | 7,273 | 7,273 |
| Pseudo $R^2$ | 0.116 | 0.116 | 0.058 | 0.058 |

## Table 10. Alternative measures of women-friendly legal environment

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B . This results reflect alternative measures of women-friendly legal environment. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | | | *Panel B*: Fully Obtained | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (7) | (4) | (5) | (6) | (8) |
| CEO Female | 0.028 | 0.046** | 0.049** | 0.407*** | -0.120** | -0.101** | -0.095* | -0.003 |
| | (0.174) | (0.033) | (0.023) | (0.000) | (0.011) | (0.037) | (0.051) | (0.989) |
| Quotas for Women on Board | 0.003* | | | | 0.018*** | | | |
| | (0.078) | | | | (0.001) | | | |
| CEO Female × Quotas for Women on Board | -0.008** | | | | -0.018 | | | |
| | (0.019) | | | | (0.368) | | | |
| Legislative Quotas Women | | 0.009*** | | | | 0.015*** | | |
| | | (0.000) | | | | (0.000) | | |
| CEO Female × Legislative Quotas Women | | -0.005* | | | | -0.007 | | |
| | | (0.075) | | | | (0.289) | | |
| Municipal Quotas Women | | | 0.005*** | | | | 0.013*** | |
| | | | (0.000) | | | | (0.000) | |
| CEO Female × Municipal Quotas Women | | | -0.006** | | | | -0.008 | |
| | | | (0.010) | | | | (0.132) | |
| WBL Index | | | | -0.004*** | | | | -0.015*** |
| | | | | (0.000) | | | | (0.000) |
| CEO Female x WBL Index | | | | -0.005*** | | | | -0.001 |
| | | | | (0.000) | | | | (0.740) |
| Control variables | All | All | All | All | All | All | All | All |
| Cluster | Country | Country | Country | Country | Country | Country | Country | Country |
| Constant | -0.202 | -0.294** | -0.322** | -0.316*** | 0.469 | 0.315 | 0.126 | 0.245 |
| | (0.149) | (0.037) | (0.023) | (0.000) | (0.281) | (0.469) | (0.773) | (0.460) |
| Observations | 33,937 | 33,937 | 33,937 | 87,225 | 8,206 | 8,206 | 8,206 | 11,226 |
| Pseudo $R^2$ | 0.075 | 0.076 | 0.075 | 0.081 | 0.084 | 0.086 | 0.087 | 0.095 |

## Table 11 – Truthful answers

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. This table reports results for firms with truthful answers. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. In all columns, we control for all previous control variables. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | *Panel B*: Fully Obtained | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| CEO Female | 0.115*** | 0.220*** | -0.007 | 0.015 |
| | (0.000) | (0.000) | (0.919) | (0.878) |
| Law Against Discrimination in Credit | -0.071*** | -0.070*** | -0.041 | -0.050 |
| | (0.005) | (0.003) | (0.438) | (0.309) |
| CEO Female × Law Against Discrimination in Credit | -0.032** | | -0.055 | |
| | (0.048) | | (0.583) | |
| Clause Against Discrimination in Constitution | -0.045** | -0.010 | -0.080* | -0.070 |
| | (0.026) | (0.675) | (0.057) | (0.129) |
| CEO Female × Clause Against Discrimination in Constitution | | -0.168*** | | -0.069 |
| | | (0.000) | | (0.543) |
| Control variables | All | All | All | All |
| Cluster | Country | Country | Country | Country |
| Constant | -0.390** | -0.417*** | 0.573 | 0.561 |
| | (0.013) | (0.008) | (0.412) | (0.422) |
| Observations | 31,666 | 31,666 | 6,774 | 6,774 |
| Pseudo $R^2$ | 0.082 | 0.083 | 0.089 | 0.089 |

## Table 12. Alternative sample

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. These results refer to an alternative sample, achieved by removing the three countries that each represent more than 5% of the sample (India, Egypt, and Russia). The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | *Panel B*: Fully Obtained | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| CEO Female | 0.053* | 0.171*** | -0.078 | -0.031 |
| | (0.059) | (0.000) | (0.223) | (0.725) |
| Law Against Discrimination in Credit | -0.029 | -0.026 | 0.001 | 0.013 |
| | (0.172) | (0.179) | (0.985) | (0.765) |
| CEO Female × Law Against Discrimination in Credit | -0.028** | | 0.061 | |
| | (0.041) | | (0.481) | |
| Clause Against Discrimination in Constitution | -0.073*** | -0.034* | -0.024 | -0.021 |
| | (0.000) | (0.083) | (0.512) | (0.604) |
| CEO Female  Clause Against Discrimination in Constitution | | -0.193*** | | -0.020 |
| | | (0.000) | | (0.846) |
| Control variables | All | All | All | All |
| Cluster | Country | Country | Country | Country |
| Constant | -0.175 | -0.209 | 0.124 | 0.118 |
| | (0.256) | (0.175) | (0.750) | (0.761) |
| Observations | 36,073 | 36,073 | 8,652 | 8,652 |
| Pseudo $R^2$ | 0.094 | 0.094 | 0.079 | 0.079 |

## Table 13. IV analysis

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. This table reports the results of an IV regression in which legal origin, type of law, and CEDAW signature are used as instruments for *Law Against Discrimination in Credit* and *Clause Against Discrimination in Constitution*. The exogeneity test (J-test) and relevance test (F-test) appear at the bottom of each column. The dependent variable is *Discouraged* in Panel A and *Fully Obtained* in Panel B. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions.

| | *Panel A*: Discouraged | | *Panel B*: Fully Obtained | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| CEO Female | -0.003 | -0.009 | 0.004 | -0.012 |
| | (0.712) | (0.291) | (0.812) | (0.429) |
| Law Against Discrimination in Credit* | -0.032*** | | 0.001 | |
| | (0.000) | | (0.899) | |
| CEO Female x Law Against Discrimination in Credit* | -0.037*** | | 0.007 | |
| | (0.000) | | (0.723) | |
| Clause Against Discrimination in Constitution* | | -0.045*** | | 0.029** |
| | | (0.000) | | (0.010) |
| CEO Female x Clause Against Discrimination in Constitution* | | -0.046*** | | -0.005 |
| | | (0.000) | | (0.542) |
| Control variables | All | All | All | All |
| Cluster | Country | Country | Country | Country |
| Constant | 0.145*** | 0.303*** | 0.307*** | 0.689*** |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Observations | 41,648 | 41,648 | 7,002 | 7,002 |
| $R^2$ | 0.262 | 0.278 | 0.245 | 0.243 |
| Instruments | Civil Law<br>French Origin<br>German Origin<br>English Origin<br>CEDAW | | | |
| Exogeneity (J-stat) | 0.684 | 1.700 | 0.923 | 0.872 |
| | (0.365) | (0.190) | (0.243) | (0.287) |
| Relevance (F-stat) | 149.26 | 143.67 | 98.36 | 94.12 |
| | (0.000) | (0.000) | (0.000) | (0.000) |

## Table 14. Selection model

This table reports coefficients and *p*-values (in brackets). All models are probit regressions at the firm level. This table reports the results of a selection model in two steps. In Column (1), we estimate the probability to need credit (Need), using the exclusion variables *Log(Sales)*, Construction, *WK*, and *country dummies*. In Columns (2) and (3), we estimate the probability to be *Discouraged* after controlling for the Mills ratio estimated in Column (1). In Columns (4) and (5), we estimate the probability to fully obtain (*Fully Obtained*) credit after controlling for the Mills ratio estimated, respectively, in Columns (2) and (3). In all columns, we control for all previous control variables. All models have variance robust to heteroscedasticity and clustered at the country level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Appendix A contains the variable definitions .

| | Need | *Panel A*: Discouraged | | *Panel B*: Fully Obtained | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| CEO Female | -0.006 | 0.035 | 0.127*** | -0.096 | -0.046 |
| | (0.640) | (0.141) | (0.000) | (0.121) | (0.581) |
| Law Against Discrimination in Credit | | -0.099*** | | -0.038 | |
| | | (0.000) | | (0.386) | |
| CEO Female × Law Against Discrimination in Credit | | -0.010*** | | 0.072 | |
| | | (0.004) | | (0.393) | |
| Clause Against Discrimination in Constitution | | | -0.127*** | | -0.048 |
| | | | (0.000) | | (0.218) |
| CEO Female × Clause Against Discrimination in Constitution | | | -0.137*** | | -0.015 |
| | | | (0.000) | | (0.874) |
| λ1 | | -1.446*** | -1.445*** | | |
| | | (0.000) | (0.000) | | |
| λ2 | | | | -0.307*** | |
| | | | | (0.001) | |
| λ3 | | | | | -0.310*** |
| | | | | | (0.001) |
| Log(Sales) | -0.002 | | | | |
| | (0.449) | | | | |
| Construction | 0.204*** | | | | |
| | (0.000) | | | | |
| WK | 0.112*** | | | | |
| | (0.000) | | | | |
| Country dummies | Yes | | | | |
| Control variables | All | All | All | All | All |
| Cluster | Country | Country | Country | Country | Country |
| Constant | 0.099 | 1.225*** | 1.204*** | 0.863 | 0.865 |
| | (0.610) | (0.000) | (0.000) | (0.116) | (0.115) |
| Observations | 84,657 | 46,333 | 46,333 | 8,948 | 8,948 |
| Pseudo $R^2$ | 0.107 | 0.099 | 0.099 | 0.084 | 0.084 |

## Appendix A. Variable definitions

| Variable name | Definition |
|---|---|
| ***Dependent variables*** | |
| Discouraged | Dummy variable equal to 1 if the firm is discouraged (i.e., decides not to apply), 0 if it applied for credit. |
| Discouraged (Emotional) | Dummy variable equal to 1 if the firm decided not to apply because of emotional reasons (application would be rejected), 0 otherwise. |
| Discouraged (Rational) | Dummy variable equal to 1 if the firm decided not to apply because of rational reasons (application procedures are complex, interest rates are unfavorable, collateral requirements are excessive, loan size and maturity are insufficient), 0 otherwise. |
| Fully Obtained | Dummy variable equal to 1 if the firm fully obtains the requested loan, 0 if it is rationed. |
| ***Independent variables*** | |
| CEO Female | Dummy variable equal to 1 if the manager of the firm is a woman, 0 otherwise. |
| *Legal environment variables* | |
| Law Against Discrimination in Credit | Dummy variable equal to 1 if the law prohibit discrimination by creditors on the basis of sex or gender in access to credit, 0 otherwise. |
| Clause Against Discrimination in Constitution | Dummy variable equal to 1 if the constitution of the country contains a clause on non-discrimination, 0 otherwise. |
| WBL Index | Index capturing the legal inequalities between men and women in terms of mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pension. The range is 0 to 100, the higher the index, the lower the legal inequalities. |
| Legislative Quotas Women | Legislative quotas (reserved seats) for female representatives in national parliament. |
| Quotas for Women on Board | Quotas for women on corporate boards. |
| Municipal Quotas Women | Legislative quotas (reserved seats) for female representatives in municipal councils. |
| Efficiency | Debt enforcement procedure for each country, defined as the present terminal value of the firm after bankruptcy costs. Higher scores indicate more efficient debt enforcement. |
| Getting Credit Score | Degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders, as well as the depth of credit information; the higher the index, the easier access to credit should be. |
| *Cultural variables* | |
| Masculinity | Hofstede's measure of masculinity, or preference in society for achievement, heroism, assertiveness, and material rewards for success. |
| GII | Gender Inequality Index (GII), created by the UN Development Programme, that measures inequalities in three human development aspects: reproductive health, empowerment, and economic status. The higher the value, the greater the disparities between men and women. |
| *Firm characteristics* | |
| Manager Experience | Manager experience (in years). |
| Log(Size) | Natural logarithm of firm total assets. |
| Log(Age) | Natural logarithm of firm age. |
| Sole Ownership | Dummy variable equal to 1 if the firm has only one owner, 0 if it has more. |
| Limited Corp. | Dummy variable equal to 1 if the firm is a limited corporation, 0 otherwise. |
| Obstacle | Dummy variable equal to 1 if the firm considers that access to finance is a "Major Obstacle" or a "Very Severe Obstacle", 0 otherwise. |
| F.S. Certified | Dummy variable equal to 1 if the firm's annual financial statements are checked or certified by an external auditor. |
| R&D | Dummy variable equal to 1 if the firm spent on formal R&D activities, 0 otherwise. |
| Saving Account | Dummy variable equal to 1 if firms have a checking or savings account, 0 otherwise |
| Export | Dummy variable equal to 1 if firm is a direct exporter (i.e., more than 10% exports in its sales), 0 otherwise |

| | |
|---|---|
| Foreign Own. | Dummy that equals 1 if firms have a foreign owner, 0 otherwise |
| Trade Credit | Proportion of total annual purchases of material inputs purchased on credit. |
| *Macroeconomic variables* | |
| Inflation | Rate of inflation |
| Financial Development | Domestic banking credit to the private sector, as a share of GDP |
| *Instruments* | |
| Civil Law | Dummy variable equal to 1 if the law in the country is a civil law, 0 if it's a common law. |
| English Origin | Dummy variable equal to 1 if the law in an English origin law, 0 otherwise. |
| French Origin | Dummy variable equal to 1 if the law in a French origin law, 0 otherwise. |
| German Origin | Dummy variable equal to 1 if the law in a German origin law, 0 otherwise. |
| CEDAW | Dummy variable equal to 1 if the country is a signatory to the CEDAW, 0 otherwise. |

## Appendix B. Sample of countries

| Country | Years | Country | Years | Country | Years |
|---|---|---|---|---|---|
| Afghanistan | 2014 | Grenada | 2010 | Papua New Guinea | 2015 |
| Albania | 2013; 2019 | Guatemala | 2010; 2017 | Paraguay | 2010; 2017 |
| Antigua and Barbuda | 2010 | Guinea | 2016 | Peru | 2010; 2017 |
| Argentina | 2010; 2017 | Guyana | 2010 | Philippines | 2015 |
| Armenia | 2013; 2020 | Honduras | 2010; 2016 | Poland | 2013; 2019 |
| Azerbaijan | 2013; 2019 | Hungary | 2013; 2019 | Portugal | 2019 |
| Bahamas | 2010 | India | 2014 | Romania | 2013; 2019 |
| Bangladesh | 2013 | Indonesia | 2015 | Russia | 2012; 2019 |
| Barbados | 2010 | Israel | 2013 | Rwanda | 2011; 2019 |
| Belarus | 2013; 2018 | Italy | 2019 | Senegal | 2014 |
| Belize | 2010 | Jamaica | 2010 | Serbia | 2013; 2019 |
| Benin | 2016 | Jordan | 2013; 2019 | Sierra Leone | 2017 |
| Bhutan | 2015 | Kazakhstan | 2013; 2019 | Slovak Republic | 2013; 2019 |
| Bolivia | 2010; 2017 | Kenya | 2013; 2018 | Slovenia | 2013; 2019 |
| Bosnia and Herzegovina | 2013; 2019 | Kosovo | 2013; 2019 | Solomon Islands | 2015 |
| Bulgaria | 2013; 2019 | Kyrgyz Republic | 2013; 2019 | South Sudan | 2014 |
| Burundi | 2014 | Lao PDR | 2016; 2018 | Sri Lanka | 2011 |
| Cambodia | 2016 | Latvia | 2013; 2019 | St Kitts and Nevis | 2010 |
| Cameroon | 2016 | Lebanon | 2013; 2019 | St Lucia | 2010 |
| Central African Republic | 2011 | Lesotho | 2016 | St Vincent and Grenadine | 2010 |
| Chad | 2018 | Liberia | 2017 | Sudan | 2014 |
| Chile | 2010 | Lithuania | 2013; 2019 | Suriname | 2010; 2018 |
| Colombia | 2010; 2017 | Malawi | 2014 | Tajikistan | 2013; 2019 |
| Costa Rica | 2010 | Malaysia | 2015 | Tanzania | 2013 |
| Croatia | 2013; 2019 | Mali | 2016 | Thailand | 2016 |
| Cyprus | 2019 | Malta | 2019 | Timor-Leste | 2015 |
| Czech Republic | 2013; 2019 | Mauritania | 2014 | Togo | 2016 |
| Côte d'Ivoire | 2016 | Mexico | 2010 | Trinidad and Tobago | 2010 |
| DRC | 2013 | Moldova | 2013; 2019 | Tunisia | 2013; 2020 |
| Djibouti | 2013 | Mongolia | 2013; 2019 | Turkey | 2013; 2019 |
| Dominica | 2010 | Montenegro | 2013; 2019 | Uganda | 2013 |
| Dominican Republic | 2010; 2016 | Morocco | 2013; 2019 | Ukraine | 2013; 2019 |
| Ecuador | 2010; 2017 | Mozambique | 2018 | Uruguay | 2010; 2017 |
| Egypt | 2013; 2016; 2020 | Myanmar | 2014; 2016 | Uzbekistan | 2013; 2019 |
| El Salvador | 2010; 2016 | Namibia | 2014 | Venezuela | 2010 |
| Estonia | 2013; 2019 | Nepal | 2013 | Vietnam | 2015 |
| Eswatini | 2016 | Nicaragua | 2010; 2016 | West Bank and Gaza | 2013; 2019 |
| Ethiopia | 2011; 2015 | Niger | 2017 | Yemen | 2013 |
| Gambia | 2018 | Nigeria | 2014 | Zambia | 2013; 2019 |
| Georgia | 2013; 2019 | North Macedonia | 2013; 2019 | Zimbabwe | 2011; 2016 |
| Ghana | 2013 | Pakistan | 2013 | | |
| Greece | 2018 | Panama | 2010 | | |