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ABSTRACT

The Gendered Impact of Social Norms on Financial Access and Capital Misallocation*

This paper provides evidence on the nature of financial constraints faced by women entrepreneurs, especially in contexts of stringent social norms. Using micro-data from the World Bank Enterprise Surveys for 61 countries, the analysis shows that formal firms managed by women do not face credit constraints on the extensive margin. They are equally likely to apply for credit as their male counterparts and experience lower rates of credit rejection, with a higher likelihood of opening credit lines. However, on the intensive margin, firms managed by women receive lower credit amounts, indicating signs of credit constraints. This disparity in access to credit cannot be explained by gender differences in risk profiles, profitability, or productivity. However, firms managed by women have lower sales per worker, suggesting challenges in accessing product and labor markets. The paper finds suggestive evidence of capital misallocation based on gender, particularly in countries with more restrictive gender and cultural norms. Firms managed by women demonstrate a 15 percent higher average return on capital compared to firms managed by men, indicating the potential benefits of increased access to credit for women-led businesses. These findings emphasize the importance of addressing gender-specific constraints to accessing finance and promoting gender-inclusive policies to enhance firm growth and reduce capital misallocation.

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1. Introduction

Most entrepreneurs, particularly female-led firms, are unable to grow their businesses beyond small-scale operations. Firm growth is constrained by many factors, including access to finance, skills, technology, and networks. Evidence points to significantly greater challenges in accessing finance among female-led businesses compared to their male counterparts.[1] The growth of women-led firms is further constrained by contextual factors such as regulatory and legal restrictions, social perceptions about women, and gender-based violence (Ubfal, 2023). As policy makers seek to improve the business environment for private investments, a deeper understanding of the specific constraints faced by women entrepreneurs can help maximize the efficacy of these efforts. This paper contributes to an understanding of financial constraints faced by women-managed firms, especially in contexts of stringent social norms, by using firm-level data from 61 countries.

Gender disparities in financial access can be attributed to demand-side factors, including social and cultural norms that affect the ability of female entrepreneurs to apply for credit (Cole and Mehran, 2018) or access external funds (Aspray and Cohoon, 2007; Asiedu et al., 2013; Guzman and Kacperczyk, 2019). On the supply side, explicit discrimination, such as imposing higher interest rates (Muravyev et al., 2009; Alesina et al., 2013), or additional implicit requirements on collateral (Cowling et al., 2020) or guarantors (Brock and De Haas, 2023), increases the probability of their credit application rejection (Aristei and Gallo, 2016).[2] These factors can vary significantly by country context where pronounced gender bias, in addition to systemic issues in the development of financial institutions, can play a crucial role (Hewa-Wellalage et al., 2022; Bertrand and Perrin, 2022).

Gender equality is crucial not only for its social value, but also for its significant impact on broader macroeconomic outcomes. For example, Morazzoni and Sy (2022) show that credit constraints that disproportionately penalize female-led firms lead to capital misallocation and aggregate production losses in the United States. Likewise, Ranasinghe (2024) finds that female-led firms face challenges in operating a business mainly due to higher credit market distortions which impose an implicit tax on capital. These distortions are especially higher in poorer countries, and negatively affect market shares and average firm size of female-led firms. It is not surprising that barriers to female entrepreneurship lead to large productivity losses, as shown in Chiplunkar and Goldberg (2021) for India.

We contribute to the literature by studying the misallocation of credit using cross-country data. Although country-level studies (e.g. Alesina et al., 2013; de Andrés et al., 2021; Morazzoni and Sy, 2022; Basiglio et al., 2023) allow for an understanding of financial frictions faced by female-led firms, they provide limited insights on the *entrenched* differences in gender inequalities in certain groups of

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[1]See for example, Coleman and Robb (2009); Muravyev et al. (2009); Bellucci et al. (2010); Stefani and Vacca (2013); Alesina et al. (2013); Ongena and Popov (2016); Aristei and Gallo (2016); Morazzoni and Sy (2022). However, some studies do not find evidence of gender-based differences in access to credit (Blanchflower et al., 2003; Bruhn, 2009; Bardasi et al., 2011; Aterido et al., 2013; Basiglio et al., 2023).

[2]Some studies also suggest that the rejection rates for credit applications vary by context, as evidenced in the United Kingdom where rejection rates for women-led firms were lower during the crisis perhaps due to their conservative financial behavior (Cowling et al., 2020).

countries. A cross-country approach enables us to juxtapose contextual factors, such as sociocultural aspects, with gender disparities in access to finance. For example, gender gaps in bank account ownership, savings, and borrowing opportunities are larger in countries with gender-restrictive laws and regulations (Demirguc-Kunt et al., 2013) and women's access to credit is particularly difficult in countries with persistent cultural belief in traditional gender roles (Ongena and Popov, 2016). Legal barriers, such as inheritance laws, can also hinder women's ability to access credit, given the salience of land as collateral for formal finance.[3]

Our research systematically examines gender disparities in access to finance across a range of countries, focusing on both extensive and intensive margins. While our study is comparable to Ongena and Popov (2016), it differs in the measures of extensive and intensive margins and covers a larger number of countries from WBES. Furthermore, we build on this work by examining the underlying factors that contribute to observed disparities and illustrating that gender gaps in credit access can have broader implications for capital misallocation. We show that these gender-driven disparities in credit access and misallocation are more prominent in countries with traditional social and cultural norms, defined as "a society's informal rules about appropriate or acceptable behavior" for women (Jayachandran, 2021). Specifically, we focus on norms that potentially constrain women's economic choices and outcomes. Using data from the World Values Survey, we proxy these norms with measures of social perceptions about women's roles at home and in the labor market. By classifying countries based on the restrictiveness of their social and cultural norms for women and merging this country classification with rich micro-data from the World Bank Enterprise Surveys (WBES) for 61 countries from 2008-2023, we find that:

First, female-managed formal firms sampled and surveyed by WBES do not face credit constraints on the extensive margin, measured by the likelihood of applying for credit or their credit application being rejected, conditional on applying. Our analysis suggests that female-managed firms are equally likely to apply for credit as their male counterparts. Moreover, female-managed firms have lower rates of credit rejection and a higher likelihood of opening credit lines. While there is no gender gap in the probability of applying for credit regardless of countries' social and cultural norms, the results on favorable outcomes at the extensive margin for women-led firms compared to male-led firms are driven mainly by traditional countries. This may be the result of a stronger selection process, where only the most capable women in traditional countries become managers of formal firms.[4]

Second, female-managed firms are credit constrained on the intensive margin, measured by the value of loans received by firms conditional on credit application and approval. This disparity in the amount of credit received is not explained by gender differences in firms' risk profiles, profitability, or productivity. Female-managed firms do have lower sales per worker, thereby suggesting higher frictions in accessing product and labor markets for productive workers. In traditional countries

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[3]Evidence suggests that distortions affecting land markets further deepen capital market misallocation (Duranton et al., 2015a).

[4]Using the cross-country variation in the proxy measures of social and cultural norms, we classify countries as more and less traditional than the median country. See Section 2.2.

with stricter social and cultural norms, women-managed firms face higher credit constraints on the intensive margin compared to other firms. Cultural barriers, such as explicit discrimination in allocation of credit or implicit bias that limits access to information and network opportunities, or requires additional guarantors (Brock and De Haas, 2023), may explain our results.

Third, there is suggestive evidence of distortion in allocation of capital away from women-managed firms, particularly in countries with more restrictive gender social and cultural norms. For instance, using the average revenue product of capital as an indicator of capital misallocation, female-managed firms have a 15% higher average return than male-managed firms. Finally, we formally illustrate that female-led firms could benefit from accessing higher levels of credit.

The paper beyond this point is organized as follows. Section 2 summarizes the data description and Section 3 presents the estimation strategy and the base results, followed by additional robustness checks. Section 4 concludes with some policy implications.

2. Data and Measurement

This section outlines the data sources used in our research and presents some of the descriptive stylized facts from this data.

2.1 Firm-level data

Our main source of data is the World Bank Enterprise Surveys (WBES) which are nationally representative surveys of formal firms with 5 plus employees.[5] Although the WBES covers both manufacturing and services, our sample is limited to the manufacturing sector only because capital is not reported for the latter. Beyond surveying a wide range of countries, the survey instrument used in WBES includes several questions on access to finance for firms. These questions can help in understanding the sources of finance; the reasons for not applying for formal finance; rejection of credit application, if they do apply; collateral requirements; and the loan amount received, conditional on successful application.

To measure differences by gender at the firm level, most studies use the gender of the firm owner, sometimes even restricting to sole proprietorship firms (e.g., Alesina et al. (2013)). Other studies define a threshold of female ownership such as considering a firm as female-owned when at least one of the owners is a woman (e.g., Aterido et al. (2013)).[6] However, female ownership does not necessarily reflect the participation of women in the decision-making process, especially in large firms with many owners (Piras et al., 2013). In order to capture the role of women in managing the performance of a firm, we take advantage of the information on the gender of the firm's top manager available in the WBES.

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[5]WBES micro-data, including a comprehensive cross-country harmonized dataset, are publicly available at https://www.enterprisesurveys.org/en/enterprisesurveys. We use the last comprehensive dataset released on June 2023 containing information for the period 2008-2023.

[6]Piras et al. (2013) highlight that restricting the analysis to sole proprietorship reduces the sample size and the types of firms. In addition, using a threshold to classify a firm as female-owned implies a degree of arbitrariness.

2.2 Contextual data

A novelty of our analysis is the distinction of gender disparities in firms' financial access, performance, and capital misallocation across countries that differ in their gender and cultural norms. We classify countries by their level of traditionality based on social perceptions about the role of women using data from the World Value Survey (WVS). To construct our measure of social perceptions towards women, we experimented with several variables from WVS, but narrowed down to the variable answered by countries that overlap with the coverage in the WBES dataset. This variable measures the level of agreement with the statement "When jobs are scarce, men should have more right to a job than women". The variable is also used in other studies such as Li (2021) to measure gender norms.[7] For each country, the share of adults who agree or strongly agree with the statement in the initial year of WVS is computed. Traditional countries are defined as those having this share of adults above the cross-country median value. For robustness checks, we experiment with different thresholds such as terciles as well as an alternative outcome-based measure, that is, female labor force participation (see Section 3.3).

2.3 Sample cleaning

Before proceeding with the analysis, we make the following adjustments to the sample. *First*, we restrict our firm sample to countries with available complementary data on societal attitudes toward women and female labor outcomes noted in Section 2.2. *Second*, we restrict the sample to firms with fewer than 1,000 full-time employees who report positive values for sales, labor, intermediate inputs, and capital.[8] Our final sample includes 61 countries and 21,411 observations after dropping observations with missing values in our variables of interest.[9] In our sample of 61 countries, 28 are classified as more traditional and 33 as less traditional, when using the median of the WVS indicator as the threshold. Table A.1 in the Appendix provides details on variable definitions.

2.4 Descriptive stylized facts

In this subsection, we report some interesting stylized facts, using unconditional means, that emerge from our sample comprising 61 countries.

Stylized Fact #1: The share of female-led firms is significantly smaller than male-led ones, and more so in traditional countries. Using the gender of the firm's top manager as a criterion for measuring female leadership, 14% of the firms in our sample are led by women, with this percentage varying from 12% in more traditional countries to 17% in less traditional ones. By comparison, in the United States, 23% of firms have a female active owner (Morazzoni and Sy, 2022),[10] while 21% of firms have a female solo entrepreneur or a female decision maker in Spain (de Andrés et al., 2021) and Italy (Basiglio et al., 2023) respectively.[11] In India, data drawn from the fourth round of the Micro,

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[7]In addition to this, we also considered the following questions: "Being a housewife is just as fulfilling as having a paid job"; "A woman has to have children to be fulfilled"; "University is more important for a boy than for a girl"; and "A pre-school child suffers with working mother", but they are constrained by the overlap with WBES country coverage.

[8]We define the sample of interest following Ranasinghe (2024). By selecting firms with fewer than 1,000 full-time employees, we drop 240 firms representing only 1% of the total number of firms in the final sample.

[9]Table A.2 in the Appendix lists the countries, sample size, and years with available data.

[10]In our sample 11% of firms has at least one female owner.

[11]The numbers for Italy are for small firms (fewer than 50 employees) and these figures stand at 6% and 7% for medium

Small and Medium Enterprises (MSME) Survey for the year 2006–2007 suggests that 13% of firms are owned by a woman and 11% are female-managed (Chaudhuri et al., 2020).

Stylized Fact #2: Female-managed formal firms do not seem to differ widely in their demand for finance relative to male-led firms, but the former have limited access to the amount of credit, especially in traditional countries. Unconditional averages suggest that firms managed by a woman are more likely to apply for credit, their credit applications are less likely to be rejected and, consequently, female-managed firms are more likely to have an open line of credit. Nevertheless, on average, the credit received by female-managed firms is lower than that in male-managed firms (Table 1). Three points are worth noting here: *First*, among the firms that did not apply for credit, 67% of female-managed firms and 62% of male-managed firms did not apply for credit because they believed their firms did not need loans, implying that women's perception of the need for formal finance may be different. *Second*, although both female and male-managed firms in our sample primarily use own funds to finance their fixed assets and working capital, there are modest gender differences in traditional countries (Appendix Table A.3). *Lastly*, when separating the sample by social perceptions about women, differences in the unconditional average value of debt are higher in traditional countries (Table 1). These points suggest that while women-led firms are equally likely to apply for credit, they remain credit-starved. The reasons for not applying for formal finance may be embedded in their perception of the financial needs of the firm, or traditional social settings where finding own sources of finance may be more acceptable.

Stylized Fact #3: Female and male-managed firms differ in the underlying attributes that may matter for their demand and access to credit. On average, female-led firms are younger, smaller, have lower sales per worker and are more likely to operate in low-tech manufacturing. However, they are also more profitable and more likely to export relative to male-led firms (Table 1). Finally, female-led firms are not significantly different from their male counterparts on their risk profile and total factor productivity (TFP). The higher profitability and comparable TFP of female-led firms, although unexpected, aligns with the findings of Morazzoni and Sy (2022) and can be rationalized by the more rigorous selection of women managers in formal firms with over five employees.

(50-249 employees) and large-size (over 250 employees) firms, respectively (Basiglio et al., 2023).

Table 1: Characteristics of firms with female versus male managers

| | All | | | Social perceptions about women: | | | | | |
| | | | | More traditional | | | Less traditional | | |
	Female	Male	Mean diff. test	Female	Male	Mean diff. test	Female	Male	Mean diff. test
Manager experience	18.55	20.70	-2.149***	17.56	19.34	-1.788***	19.53	22.84	-3.311***
Firm age: < 10 years	0.25	0.22	.029***	0.31	0.24	.068***	0.20	0.20	0.003
Firm age: Between 10 and 19 years	0.36	0.34	0.012	0.40	0.37	.033***	0.31	0.30	0.007
Firm age: 20 years or more	0.39	0.43	-.042***	0.29	0.39	-.1***	0.49	0.50	-0.01
Firm size: Less than 20 FT workers	0.61	0.57	.035***	0.60	0.56	.042***	0.62	0.60	0.017
Firm size: Between 20 and 99 FT workers	0.31	0.33	-.019**	0.30	0.34	-.041***	0.32	0.32	0.009
Firm size: 100 FT workers or more	0.08	0.09	-.016***	0.10	0.10	-0.001	0.05	0.08	-.026***
Sector: Low tech intensity	0.76	0.60	.153***	0.77	0.63	.146***	0.74	0.56	.177***
Sector: Medium tech intensity	0.14	0.25	-.114***	0.13	0.25	-.118***	0.15	0.27	-.113***
Sector: High tech intensity	0.10	0.14	-.04***	0.10	0.13	-.028***	0.11	0.17	-.063***
Exporting firm	0.33	0.29	.036***	0.27	0.22	.049***	0.38	0.40	-0.019
Firm received audit	0.40	0.43	-.03***	0.44	0.44	-0.002	0.36	0.41	-.051***
Credit application	0.20	0.14	.06***	0.15	0.09	.059***	0.25	0.22	.032**
Credit rejection	0.10	0.13	-.029*	0.17	0.17	0.007	0.05	0.10	-.047**
Credit constraint	0.28	0.34	-.063***	0.35	0.39	-.04***	0.21	0.27	-.057***
Has an open line of credit	0.28	0.20	.083***	0.17	0.11	.052***	0.40	0.34	.061***
Type of institution that granted credit: private bank	0.84	0.82	0.02	0.71	0.71	-0.01	0.89	0.88	0.01
Type of institution that granted credit: state own bank	0.13	0.13	-0.01	0.28	0.21	.069**	0.06	0.09	-.029*
Type of institution that granted credit: non-bank financial	0.03	0.04	-0.01	0.01	0.07	-.056***	0.04	0.03	0.01
Type of institution that granted credit: other	0.01	0.01	0.00	0.00	0.01	-0.01	0.01	0.01	0.00
Log of value of debt	10.75	11.21	-.456***	9.70	10.80	-1.104***	11.18	11.42	-.241**
Leverage	0.01	0.00	0.007	-0.01	0.00	-0.017	0.03	-0.01	0.031
Profits/Revenue	0.14	-0.01	.15***	0.12	-0.01	.131***	0.16	-0.01	.17***
TFP	0.01	0.00	0.01	0.03	0.00	0.029	-0.01	0.00	-0.01
Log of sales per worker	-0.39	-0.16	-.233***	-0.31	-0.10	-.207***	-0.46	-0.24	-.227***
Avg. return to capital	1.18	1.00	.188***	1.23	1.01	.214***	1.14	0.97	.172***
Capital distortion	0.80	0.75	0.049	0.80	0.69	0.114	0.80	0.85	-0.051

Sources: World Bank Enterprise Surveys, World Value Surveys and World Development Indicators. Notes: Calculations using survey weights. See Table A.1 in the Appendix for details on variables definition and section 2 for details on the classification of countries as More or Less traditional.

Stylized Fact #4: An expansion in the share female-led firms is associated with a reduction in gender gaps in capital utilization relative to male-owned firms in less traditional countries (Figure 1). This finding is aligned with a study by Morazzoni and Sy (2022) for the United States who demonstrate that the share of women-led firms is negatively correlated with a gender-driven capital misallocation indicator. In our sample, this result holds strongly for less traditional countries, but the relationship is reversed in traditional countries.[12] It is possible that the selection process for women to become top managers in formal firms is much more rigorous in traditional countries but is not accompanied by changes in social norms and attitudes that can reduce gaps in capital allocation.

Figure 1: Average return to capital of female-managed firms

a. Less traditional countries   b. More traditional countries

β=-2.384   β=1.781
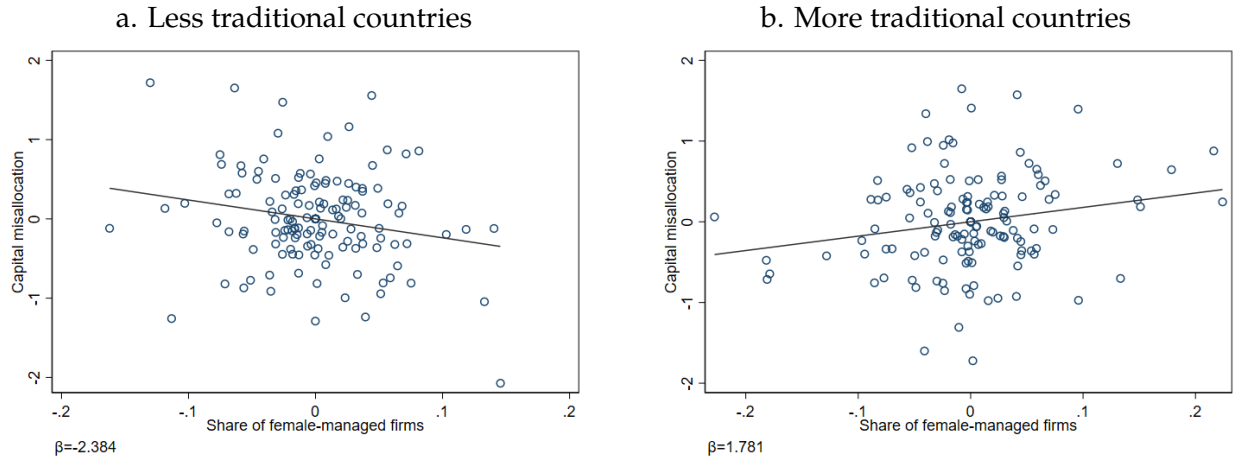
Sources: World Bank Enterprise Surveys and World Value Surveys.
Notes: The figure shows the capital misallocation of female-managed firms and share of female-managed firms across countries and years. Capital misallocation defined as the log of average return product of capital, as in Morazzoni and Sy (2022). Estimates include controls for all the variables used in our main regressions. More and less-traditional countries according to social perceptions about women.

3. Estimation Results

This section provides estimates on gender gaps in access to finance at the extensive and intensive margins along with the broader implications of these gaps on capital misallocation in more traditional and less traditional countries. The last sub-section checks the robustness of our results through a series of tests.

3.1 Gender gaps in access to finance

This section presents the model for estimating gender gaps in access to credit, both on the extensive and intensive margins. This is followed by the discussion on estimation results.

3.1.1 Estimation strategy

Gender differences in firms' access to finance can be estimated as:

$$Y_{ict} = \alpha F_{ict} + X_{ict}\beta + \delta_s + \phi_c + \gamma_t + u_{ict} \tag{1}$$

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[12]See Section 3 for empirical indicators of misallocation at the firm level.

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where Y_{ict} measures the extensive margin in access to finance for firm i, in country c and year t according to one of the following four indicator variables: (i) credit application in the last fiscal year; (ii) rejection in most recent credit application (conditional on having applied for credit); (iii) credit constrained, defined as credit application rejection (as in ii) or not applying for credit due to interest rates not being favorable, collateral requirements being too high or the size of loan and maturity being insufficient. The indicator takes the value 0 when the firm received a loan (conditional on application) or did not apply because it did not need it; (iv) having open lines of credit. In addition, the intensive margin in access to finance is measured using the (logarithm) of the level of business debt (conditional on having open lines of credit) for firm i, in country c and year t.

Our main variable of interest, F_{ict}, is an indicator of whether the manager of firm i is a female. All estimations include firm and manager attributes, X_{ict}, that is, manager's gender and experience, indicators of firm age, indicators of the legal status of the firm, percentage of the firm that is privately owned, indicators of firm size, an indicator of whether the firm exports and whether it has financial statements certified by external auditors. For the model where Y_{ict} is an indicator of credit application rejection or being credit constrained, X_{ict} also includes firm i leverage (debt to capital ratio). All estimations control for industry (δ_s), country (ϕ_c) and year (γ_t) fixed effects.[13] Model 1 is estimated by ordinary least squares and standard errors are clustered at the country level.

To infer how the gender gaps differ based on social norms, we estimate an expanded model that includes an interaction between the gender of the firm manager, F_{ict}, and the indicator for the country being traditional using the proxy for social and cultural norms from the WVS (T_c):

$$Y_{ict} = \alpha F_{ict} + \theta F_{ict} * T_c + \lambda T_c + X_{ict}\beta + \delta_s + \phi_c + \gamma_t + u_{ict} \qquad (2)$$

In the following sub-sections, we present the results distinguishing between less traditional countries (estimate of α in model 2) and more traditional countries (sum of α and θ in model 2).

3.1.2 Econometric challenges

This reduced form model estimation has three main econometric challenges. *First*, despite our extensive controls and fixed effects, there could still be unobserved factors influencing access to credit that correlate with the gender of the firm's top manager. These factors include, for example, the income level of top managers, their educational background and quality, and their social networks. If the attributes of women managers related to these factors are expected to be inferior to those of male managers, then OLS will overestimate the gender gap in access to finance in equation 1 due to *omitted variable* bias.

Second, endogeneity creeps into equation 1 as women's ability to position as firm managers may be influenced by demand and supply conditions in access to finance. For example, sensitivity of discriminatory practices by financial institutions may discourage a firm's top manager to be a woman.

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[13]Data includes 19 industries within the manufacturing sector.

While *simultaneity bias* may overestimate the effect of being a female manager, understanding the size of this effect, particularly from the supply side (financial intermediaries), is crucial. Therefore, if OLS estimates of the female dummy in our regression capture such a supply-side bias it may not be a significant concern from the perspective of understanding the gender gaps in access to credit.

Finally, our estimation may suffer from *sample selection bias* which arises when women-led firms facing credit constraints are less likely to apply for loans even when financially constrained.[14] In such circumstances, only the marginally more productive and capable women are likely selected into managerial positions in formal firms with over 5 employees, implying that OLS will be an underestimation of gender gaps in credit access.

Our estimations control for several characteristics of the firm and the top manager available in WBES along with industry, country, and year fixed effects, allowing us to mitigate, at least partially, some of the potential biases. For example, women managers can self-select in certain manufacturing industries or manage firms of sizes that are more likely credit rationed (e.g., in sectors with low tangible capital that may be offered as collateral) (World Bank, 2021); gender differences in manager experience can also influence credit access and firms' performance (Ranasinghe, 2024); controlling for exports proxies for firm capabilities and market diversification that can vary by manager's gender and affect credit access and performance (Muzi et al., 2023); the indicator of whether a firm has its financial statements certified by external auditors is a measure of financial transparency and can potentially improve credit access (Aristei and Gallo, 2016). By including the gender of the top manager instead of the female owner, we can partially avoid the bias that arises from loan officers' concerns that female owners might prioritize personal constraints, such as childcare or household expenses, over business needs. Lastly, to get a sense of the selection bias, we consider the underlying performance metrics of firms, such as profitability and productivity, by the gender of their top-manager, in addition to the outcome on extensive margins of loan applications.

In addition, we conduct a series of robustness checks, including an instrumental variable estimation; sensitivity to the sample period; representativeness of our sample; threshold for defining traditional countries; and alternative measures of gender and social norms. Despite these efforts, findings from our analysis should be interpreted cautiously, given the multiple sources of bias.

3.1.3 Base results

Estimation results for five alternative measures of credit access are presented in Table 2. Panel A presents results for all countries, while Panel B differentiates the results between more and less traditional countries. Our results suggest that female-managed firms are equally likely to apply for credit as male-managed firms (column 1).[15] Moreover, these firms have lower likelihood of credit application rejection (difference of 5.3 percentage points relative to male-managed firms) and lower chances of being credit constraint (difference of 5.9 percentage points relative to male-managed firms) (columns 2 and 3), which may explain their higher likelihood of having a business debt

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[14]Although the survey instrument asks for reasons for not applying for a loan, including perceptions of not requiring a loan or fearing rejection, it is challenging to distinguish facts from beliefs or the underlying reasons for such beliefs.

[15]This finding holds even when controlling for firm leverage.

(difference of 4.3 percentage points in favor of female-managed firms) (column 4).

In Panel B of Table 2, where we distinguish across countries based on their traditional social norms, we find no gender differences in the likelihood of applying for credit, while the favorable differences for female-managed firms in terms of lower likelihoods of credit application rejection and of being credit constrained and higher likelihood of having a credit line are possibly driven by strongly positive outcomes in more traditional countries.

Prima facie, the results in access to credit at the extensive margin being equal or better for female-managed firms are surprising. It is even more puzzling that these outcomes are driven mainly by traditional countries where there is less gender parity such that social perceptions about women are less favorable. This can be rationalized because, first of all, our sample of firms comprises formal firms with at least 5 employees, implying some degree of sophistication and selection effects in attracting the more educated and experienced women. This may partially explain that, on average, female-managed firms have relatively higher profits compared to their male counterparts (Table 1). This is consistent with a process of stricter selection of women into entrepreneurship or firm management. These findings are consistent with the results on the United States in Morazzoni and Sy (2022) who argue that the higher relative profit margins observed in female-owned businesses may be because they face severe borrowing constraints such that only the more capable women select into entrepreneurship. In our case, we believe that such selection effects are at the core of explaining comparable or better access to credit on the extensive margin, and especially in more traditional countries.

On the intensive margin, however, female-managed firms receive lower loan amounts compared to firms with a male manager (39% lower debt than male-managed firms).[16,17] This finding cannot be explained by female-managed firms applying for credit at a lower rate (column 1) or facing more difficulties in accessing credit (columns 2 and 3). The results in panel B suggest that while female-managed firms receive lower amounts of loans in all countries, the difference could be starker in countries with unfavorable perceptions about women's role and economic potential. Women-managed firms in more traditional countries obtain 52% lower debt levels compared to their male counterparts, while this figure is 33% in less traditional countries. These differences in traditional countries may partially be explained by the types of institutions accessible to women-led firms. For instance, Panel B of Appendix Table A.4 suggests that women-led firms are more likely to receive credit from state-owned banks, and may have lower likelihood of accessing non-financial institutions.[18]

To explore the reasons behind lower levels of credit obtained by female-managed firms, we explore

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[16]For outcome variables expressed in logarithm, we apply the transformation $[\exp(\beta) - 1] * 100$ to interpret the coefficients as percentage changes.

[17]As discussed in Section 2.3, a small share of firms apply for credit and only some of them get their credit applications approved. This explains the smaller number of observations in column 5 of Table 2.

[18]We do not find any significant reported gender differences in collateral requirements or the type of collateral required, including in traditional countries (Appendix Table A.5).

Table 2: Gender gaps in credit access

	Credit application (1)	Credit rejection (2)	Credit constraint (3)	Has open line of credit (4)	Log(debt) (5)
A. All countries					
Female	0.03	-0.053	-0.059	0.043	-0.489
	[0.022]	[0.027]*	[0.019]***	[0.020]**	[0.196]**
Obs	21,411	3,144	21,411	21,411	3,222
R2	0.233	0.382	0.202	0.286	0.398
B. By social perceptions about women					
Female in less traditional countries	0.015	-0.021	-0.048	0.051	-0.394
	[0.032]	[0.034]	[0.022]**	[0.032]	[0.196]**
Female in more traditional countries	0.045	-0.109	-0.071	0.036	-0.727
	[0.029]	[0.034]***	[0.028]**	[0.022]	[0.406]*
Obs	21,411	3,144	21,411	21,411	3,222
R2	0.233	0.383	0.202	0.286	0.399

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: The sample includes 61 countries, of which 28 are classified as more traditional and 33 as less-traditional when using median of the WVS indicator as threshold. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Models in columns (1), (3) and (4) use all firms in our sample; model in column (2) restricts the sample to firms reporting the result of their most recent credit application; model in column (5) restricts the sample to firms with open lines of credit that report the value of their debt. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

if these firms are riskier, less profitable or less productive. Estimations presented in Table 3 suggest that there is no evidence of gender differences in leverage, that is, the debt-to-capital ratio, a measure of a firm's risk. These results are generally consistent in both more and less traditional countries (Panel B).[19]

While female-managed firms have comparable risks, they are relatively more profitable (column 2) and have no discernible differences in TFP (column 3) in both more traditional and less traditional countries. Female-managed firms have, on average, a profitability ratio that is 0.14 standard deviations above a country's mean value relative to those managed by men. This result may help explain the lower credit application rejection rates for female-managed firm. However, female-managed firms have lower sales per worker compared to their male counterparts (column 4), potentially attributed to factors such as limited business networks and challenges in accessing product or labor markets (Campos et al., 2019; Gonzalez-Uribe and Ouafaa, 2022).[20]

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[19]Female-managed firms are smaller and it could be that they rely on personal assets to secure finance, biasing our estimations. We test whether our results hold for larger firms, that is, those with capital value above the sample median. We find that our results continue to hold even in this restricted sample of larger firms (Table A.6 in the Appendix).

[20]Our results are broadly consistent across alternative samples of firms, that is, (i) those that apply for credit; (ii) those whose credit application are rejected; and (iii) those that get the loans. Results are available upon request.

Table 3: Gender differences in risk appetite and performance

	Leverage	Profits/ Revenue	TFP	Log(Sales/ Worker)
	(1)	(2)	(3)	(4)
A. All countries				
Female	0.005	0.144	0.002	-0.112
	[0.049]	[0.048]***	[0.017]	[0.035]***
Obs	21,411	21,411	21,411	21,411
R2	0.026	0.034	0.865	0.165
B. By social perceptions about women				
Female in less traditional countries	0.02	0.141	-0.019	-0.148
	[0.069]	[0.069]**	[0.025]	[0.042]***
Female in more traditional countries	-0.01	0.147	0.023	-0.076
	[0.064]	[0.064]**	[0.021]	[0.058]
Obs	21,411	21,411	21,411	21411
R2	0.026	0.034	0.865	0.166

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: The sample includes 61 countries, of which 28 are classified as more traditional and 33 as less-traditional. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Despite female-managed firms being comparably risky and productive, and in fact more profitable than their male counterparts, they operate with lower credit levels, indicating potential sub-optimal credit allocation. The reasons for this could stem from either demand-side constraints, where women-managed firms request lower credit amounts, or supply-side barriers, such as explicit or implicit discrimination by loan officers in allocating credit to these firms. While our data does not allow for precise identification of the source of sub-optimal credit allocation,[21] it suggests a potential misallocation of capital, particularly when considering the higher profitability and no significant differences in TFP for females compared to male-managed firms. Consequently, we now examine the relative efficiency of capital utilization in female-managed firms.

3.2 Capital Misallocation

Drawing on extant literature, we present firm-level empirical indicators of capital misallocation. Notably, these indicators are at the firm-level, in contrast to widely known misallocation metrics (e.g. Restuccia and Rogerson, 2017; Hsieh and Klenow, 2009; Duranton et al., 2016, 2015b) that are aggregated following the same concept. Specifically, misallocation indicators at the level of a unit of analysis can be aggregated to construct meaningful misallocation metrics that allow for benchmarking allocative inefficiency relative, for instance, by gender, location, or sector. Our conceptual discussion of misallocation indicators at the firm-level is followed by a presentation of estimation results on gender-based differences in misallocation.

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[21]The WBES survey instrument does not have information on the differences between the requested versus actual approved credit amount.

3.2.1 Firm-level empirical indicators of capital misallocation

We use two alternative empirical indicators of capital misallocation. Our first indicator follows Morazzoni and Sy (2022) in computing the average return to capital at the firm level. Morazzoni and Sy (2022) conceptualize this measure of capital misallocation by modeling an economy with heterogeneous firms that differ in their productivity level and produce a homogeneous good according to a strictly increasing and concave production function in capital and labor. In the absence of distortions, a unique allocation of labor and capital across firms would maximize total output (Restuccia and Rogerson, 2017). Misallocation arises if the flow of inputs to firms is not in accordance with their productivity. In this context, differences in the average product of inputs, capital in our case, are an empirical indicator of the misallocation of resources across firms (Hsieh and Klenow, 2009):

$$ arpk_{it} = ln(\frac{Y_{it}}{K_{it}}), \tag{3} $$

where Y_{it} and K_{it} are revenues and the value of capital of firm i observed in year t. If female-managed firms operate with sub-optimally lower levels of capital, we should observe a higher average return of capital for them compared to male-managed firms.

As an alternative, we follow Ranasinghe (2024) who propose a model of monopolistic competition with heterogeneous firms that differ in productivity and the distortions they face. In an economy without distortions, resources flow to where productivity is the highest until the marginal return of an input is equalized across firms. Therefore, an indicator of capital distortions at the firm level is obtained from the optimality conditions in use of labor and capital:

$$ 1 + \kappa_{ist} = \frac{\alpha_s}{1 - \alpha_s} \frac{W_{ist}}{K_{ist}} \tag{4} $$

where α_s is the share of sector s in the total economy, and W_{ist} and K_{ist} are the wage bill and value of capital of firm i in sector s and year t. Lower levels of capital for firms managed by women would imply a higher value of this capital misallocation measure.

We follow Ranasinghe (2024) in using a fixed value for α_s for the entire manufacturing industry but allowing the value of α_s to differ by country. We define α_s as the average value of the ratio of capital over revenues in the manufacturing sector in each country using the earliest year of data.

To infer the extent of differences in capital misallocation for female-managed firms relative to their male counterparts, we estimate model 1 using the logarithm of the average return to capital measure proposed by Morazzoni and Sy (2022) (equation 3), *arpk* hereafter, and the measure based on the marginal revenue product of capital proposed by Ranasinghe (2024) (equation 4), $1+\kappa$, as outcome variables.[22]

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[22]Figure A.1 in the Appendix shows that the two empirical indicators of capital misallocation are positively correlated.

3.2.2 Base results

The results in Panel A of Table 4 suggest that female-managed firms have 15% higher *arpk* than their male counterparts (column 1), a figure comparable to 12% for the United States (Morazzoni and Sy, 2022). The gender difference in the average return to capital is explained by more traditional countries, where women-managed firms have a 23% higher return to capital compared to men-managed firms (Panel B). In less traditional countries, the estimated coefficient is positive and smaller, but not statistically significant. These results may be interpreted as a sign of capital misallocation for women-managed firms. Said differently, female-managed firms could potentially benefit from increased levels of capital to align their relative returns with those of male-managed firms in the same industry. By comparison, there is no evidence of gender differences in the empirical indicator of labor market misallocation, measured as the logarithm of the average return of labor (Appendix Table A.7). Furthermore, the coefficient on the alternative indicator of capital misallocation, $1+\kappa$, is also positive, although not statistically significant this time (column 2).

Table 4: Capital misallocation by gender

	All firms		Firms with debt	
	log(arpk)	$1+\kappa$	log(arpk)	$1+\kappa$
	(1)	(2)	(3)	(4)
A. All countries				
Female	0.137	0.067	0.146	0.141
	[0.056]**	[0.093]	[0.103]	[0.101]
Obs	21,411	21,411	3,222	3,222
R2	0.181	0.109	0.257	0.231
B. By social perceptions about women				
Female in less traditional countries	0.045	0.033	0.012	0.029
	[0.093]	[0.115]	[0.110]	[0.099]
Female in more traditional countries	0.23	0.102	0.485	0.423
	[0.070]***	[0.162]	[0.242]**	[0.253]*
Obs	21,411	21,411	3,222	3,222
R2	0.181	0.109	0.26	0.235

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: The sample includes 61 countries, of which 28 are classified as more traditional and 33 as less-traditional. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

The finding that female-managed firms receive loans of lower value compared to similar male-managed firms despite being more profitable on average may partly explain the higher *arpk* in firms managed by women. If this were indeed the case, then capital misallocation would appear stronger in firms that apply for and receive credit. In fact, this appears to be particularly true for traditional countries using both indicators of misallocation (Columns 3 and 4 in Panel B of Table 4), where the coefficients are larger and significant compared to the full sample. [23] These results suggest that reducing gender bias in accessing loans of higher value would have broader ramifications for capital misallocation.

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[23]We check the robustness of our results across different samples by restricting to (i) firms that apply for credit; and (ii) those that apply but the credit application was rejected. We confirm evidence of gender-based capital misallocation using both measures in more traditional countries across all samples. Results are available upon request.

To examine the relationship between capital misallocation and credit received by firms, we go a step further and estimate an expanded version of model 1, including the logarithm of the value of debt and its interaction with the manager's gender as a regressor.[24] Results in Table 5 show a statistically significant coefficient on the female dummy in more traditional countries, confirming again that on average there is a gender-driven misallocation of capital in countries with more restrictive social and cultural norms (columns 2 and 5). Importantly, a negative coefficient on the interaction of the female dummy with the debt (or the value of credit received by the firm) indicates that this association is statistically significant and stronger, especially in traditional countries (columns 2 and 5 of Table 5). Being able to borrow more can relax the credit constraint of firms and reduce capital misallocation for female-managed firms compared to male-managed firms in more traditional countries. These results underscore the importance of accessing finance to reduce gender-driven capital misallocation, particularly in traditional countries.

Table 5: Relationship between capital misallocation and gender gaps in debt

	log(arpk)			$1+\kappa$		
	All	More traditional	Less traditional	All	More traditional	Less traditional
	(1)	(2)	(3)	(4)	(5)	(6)
Female	1.061	2.026	0.217	1.069	2.079	-0.195
	[0.550]*	[0.690]***	[0.503]	[0.683]	[0.856]**	[0.522]
Log(debt)	-0.0285	-0.0364	-0.0246	-0.0185	-0.00321	-0.0454
	[0.0208]	[0.0378]	[0.0242]	[0.0193]	[0.0217]	[0.0236]*
Female x Log(debt)	-0.0859	-0.169	-0.0188	-0.0867	-0.175	0.0191
	[0.0458]*	[0.0584]***	[0.0433]	[0.0563]	[0.0674]**	[0.0431]
Obs	3,222	1,334	1,888	3,222	1,334	1,888
R2	0.264	0.339	0.27	0.238	0.307	0.249

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: The sample includes 61 countries, of which 28 are classified as more traditional and 33 as less-traditional. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

3.3 Robustness Checks

Our estimations illustrate gender gaps in access to credit. This section offers some robustness checks for our key results.

3.3.1 Considering endogeneity

Estimating the causal effects of the gender of the top manager on a firm's access to finance and performance is challenging in a cross-country setting. We try to address endogeneity concerns, albeit partially, by relying on information on the gender of firms' owners available in WBES. The identifying assumption is that the gender composition of firm ownership does not directly impact decisions on access to credit in formal firms with five plus employees, and that its effect on firm

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[24]To ease interpretation, we estimate separate models for more and less traditional countries instead of triple interactions.

performance and credit worthiness is mediated indirectly through the gender of the top manager.[25] We use an indicator of whether the majority of a firm's owners are women as an instrument for two reasons:[26] *first*, female ownership does not necessarily reflect the participation of women in the decision-making process, especially in firms with many owners (Piras et al., 2013). *Second*, the gender composition of the owners is not expected to be established or influenced as a consequence of the credit worthiness or perceived formal finance needs of the firm, given that owners are likely announced prior to loan applications.

In our sample, 11% of the firms have majority female owners.[27] First stage estimations reported in Panel A of the Appendix Table A.8 shows that the correlation between female ownership and female management is positive and statistically strong, while the second stage estimates in Panel A of Table A.9, broadly confirm the findings from our base regressions, with some nuances. On the extensive margin, female-managed firms are more likely to apply for credit but their credit applications have similar likelihood of being rejected relative to their male counterparts. On the intensive margin, female-managed firms receive lower credit amounts despite being more profitable than male-managed firms and not being riskier. The positive coefficients for *arpk* and $1+\kappa$ point to the gender-driven capital misallocation although the estimate is statistically significant for $1+\kappa$ only.

When interacting the indicator of female-managed firms with that of more traditional countries, estimations in Panel B of the Appendix Table A.9 confirms our previous results, that is, the observed disparity in the intensive margin of credit allocation is amplified in more traditional countries (although estimates are statistically insignificant); and the gender-driven capital misallocation is heightened in more traditional countries, as suggested by the large and statistically significant coefficients on both the empirical indicators of capital misallocation.

3.3.2 Sensitivity to COVID-19 shock

There is evidence showing that women-led businesses in countries more severely affected by the COVID-19 shock were disproportionately hit compared with businesses led by men. Moreover, women-led businesses were less likely to have received some forms of public support (Torres et al., 2021). To avoid our results being influenced by the pandemic, we exclude from the sample observations from 2020 to 2023. Our results with respect to gender differences in credit access at extensive and intensive margins and capital misallocation remain fairly robust (Tables A.10 and A.11 in the Appendix).

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[25]In related research, Fernando et al. (2020) use the gender distribution of board members as an instrument for the gender composition of firms' management, although boards are expected to have a direct incidence on firms' decisions, for instance, about risk taking behaviors.

[26]We also considered Bartik-style instruments such as those used in Flabbi et al. (2019) and Sieweke et al. (2023). However, we refrain from using this option because several countries in our sample have only one year of data (see Table A.2 for our sample composition by country and year) which does not allow us to construct shift-share Bartik-type instruments. In addition, Lewbel (2012, 2018) methodology that provides an estimator for models containing an endogenous regressor when no outside instruments or other such information are available is less suitable for our specification because several of our dependent variables as well as the endogenous variable are discrete. This may possibly alter the factor structure of the error required for implementing the Lewbel's technique (Baum and Lewbel, 2019).

[27]For 2,589 firms, we do not have information on the gender composition of owners.

3.3.3 Sample representativeness

Given that our estimations are data demanding, we nevertheless dropped a large number of observations. To ensure that we do not draw conclusions based on smaller samples from some countries, we re-estimate our models excluding from the sample countries having fewer than 50 observations.[28] Estimates remain qualitatively similar although they are statistically weaker in some cases (Tables A.12 and A.13 in the Appendix).

3.3.4 Threshold for classifying traditional countries

Our classification of countries in more or less traditional categories is based on the median value of the WVS social perception measure. We re-estimate our models using a different threshold based on terciles of the social and cultural norms measure. We define more traditional countries as those that have a social perception measure above the 66th percentile of the cross-country social perceptions measure distribution. Our results are fairly robust to this alternative threshold (Tables A.14 and A.15 in the Appendix).[29]

3.3.5 Alternative measures of gender and social norms

Given that social norms are an important driver of female economic outcomes and gender inequalities (Bussolo et al., 2024), we use the female labor force participation (FLFP) rate in 2007 to classify countries on their traditionality. As social norms constrain women's economic choices (Jayachandran, 2021), our use of the female labor force participation measure represents an outcome-based proxy for social norms, in contrast to the value-based indicator from WVS. An advantage of using FLFP over WVS is that it is consistently available for all the countries in our sample from the World Development Indicators and encapsulates many aspects of social norms. As expected, the measure of gender norms from WVS and FLFP are highly correlated (see Appendix Figure A.2). It is therefore not surprising that repeating our estimations yields results that are broadly consistent with using the WVS to classify countries as more or less traditional (Panel A of Tables A.16 and A.17 in the Appendix).[30]

In addition, we use information from Women, Business and the Law (WBL) (World Bank, 2024). WBL measures many aspects of laws and policies critical for women's economic empowerment, including laws and regulations related to women's agency and freedom of movement, protection against workplace discrimination based on gender, mandates of equal remuneration for women and men for work of equal value, constraints to a woman's ability to start and run a business, among others. Panels B and C of the Appendix Tables A.16 and A.17 present results when using the WBL index and the entrepreneurship component of the WBL index to classify countries in more or less traditional.[31] When using the WBL index and the component relating to entrepreneurship, the

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[28]Ideally, the minimum sample size should possibly be 100, however, due to constraints on sample size for firms reporting loan amount, we use a lower threshold.

[29]Using this threshold, the number of more traditional countries is 20 while the remaining 41 countries are classified as less traditional.

[30]When using FLFP, the number of more traditional countries is 28 while the remaining 33 countries are classified as less traditional.

[31]When using the WBL index, 32 countries are classified as more traditional and 29 as less traditional, although the figures are 52 and 9 when using the entrepreneurship component. This unbalanced division in the latter is explained by

directions of the estimates broadly align with our base results, although they are weaker in statistical significance. We believe that this difference in results may be related to the fact WBL indicators reflect the *de jure* situation, whereas WVS and FLFP capture *de facto* realities. In particular, the aggregated WBL index captures several dimensions of gender that are not directly related to access to credit for women-led firms.

4. Conclusions

Using firm-level data for manufacturing firms in 61 countries, we show that female-managed firms are not credit constraint on the extensive margin: they are equally likely to apply for credit as their male counterparts and face lower rates of credit rejection and a higher likelihood of opening credit lines. This may be explained in part by the fact that female-managed firms are not any riskier or less productive than their male counterparts. In fact, they are more profitable in our sample of formal firms with over 5 employees, suggesting the possibility of a strong selection of more capable women as managers. However, women-managed firms receive lower levels of credit either because they apply for lower amounts or are granted less than they request. Our analysis suggests that these disparities are more pronounced in traditional countries, indicating that social norms may play a significant role. Our research also provides suggestive evidence of capital misallocation driven by gender differences in credit amounts received.

The findings of this research have important implications for policymakers and the development community more broadly.

First, the results highlight the need for policy makers to prioritize gender-inclusive approaches in financing strategies. While female-managed firms do not face credit constraints on the extensive margin, they receive lower credit amounts on the intensive margin, indicating the presence of credit constraints. In fact, many financial products do not consider gender-specific constraints or risk preferences and therefore are de facto biased against women-led firms. For instance, peer-to-peer lending platforms have been shown to replicate gender bias (Chen et al., 2020). Policy makers and Development Finance Institutions (DFI) can encourage financial institutions to design targeted financial products and services that specifically cater to the needs of women entrepreneurs. Innovative approaches include alternative credit scoring (Alibhai et al., 2022), insurance for short-term loan repayment suspensions (Ubfal, 2023), and disbursing loans into digital savings accounts labeled for women's businesses (Riley, 2024).

Second, given the relatively lower sales per worker among female-led firms, compared to their productivity or profits, women entrepreneurs can specifically benefit from enhanced access to markets and technology, for instance, by encouraging them to enter male-dominated sectors through the use of role models (World Bank, 2022) and by combining access to digital marketplaces with digital marketing training (Alhorr, 2024). Policymakers can collaborate with local partners to provide such training programs, mentorship, and networking opportunities that empower women

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the very low variability of the entrepreneurship dimension across countries.

entrepreneurs and connect them with markets. In addition, DFIs can play a pivotal role in promoting gender-responsive procurement practices (e.g., "Sourcing2Equal" initiative of the IFC).

Third, the findings highlight the potential for reducing capital misallocation by encouraging financial institutions to adopt fair lending practices and advocating for policy reforms that address the legal and regulatory barriers faced by women entrepreneurs. For example, in the Middle East, legal reforms aimed at enhancing women's economic empowerment, such as amendments to inheritance laws and property rights, have led to several positive outcomes, including improved access to finance for women entrepreneurs (World Bank, 2017). Additionally, gender intelligence training for financial intermediaries, policies such as branch-level targets for lending to women-led firms without requiring a guarantor, and integrating the stories of successful women role models into banks' internal communication and training programs can help mitigate implicit biases (Brock and Haas, 2023; Brock and de Haas, 2021; Alesina et al., 2013). Combining these policies with the collection of sex-disaggregated data (Moylan et al., 2023), which can be used to provide loan officers with factual information about gender discrimination within the loan officer population, can significantly reduce biases and produce better outcomes for women-owned businesses.

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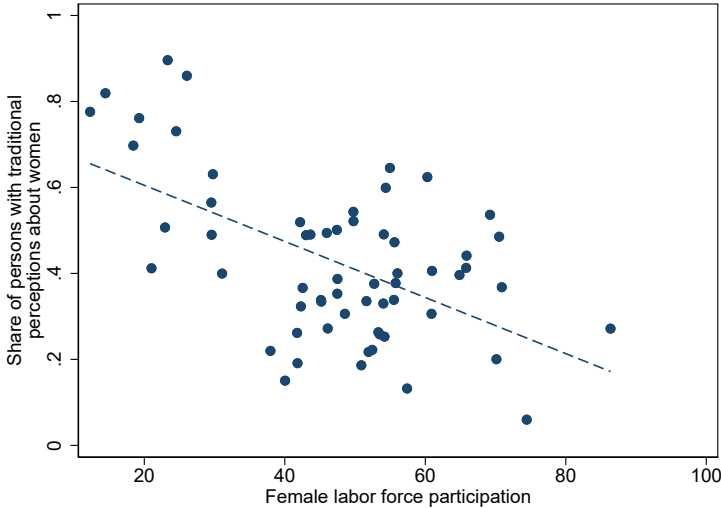
A. Appendix

Figure A.1: Cross-country relationship between capital misallocation measures

R-squared = 0.33
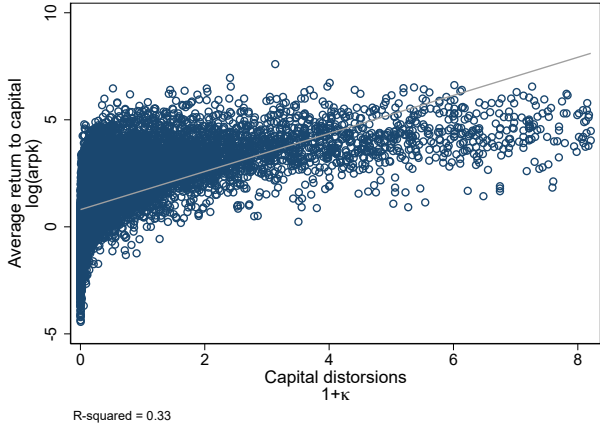
Sources: World Bank Enterprise Surveys.

Figure A.2: Cross-country relationship between traditional perceptions about women and female labor force participation rate

Sources: World Value Surveys and World Development Indicators.

Table A.1: Variables definition

Variable	Definition	Level of variation	Source
Female	Indicator taking the value 1 when the top manager of a firm is a woman and 0 otherwise.	Firm	WBES 2008-2023
Manager experience	Experience of the top manager (in years) working in the industry where a firm is located.	Firm	WBES 2008-2023
Age of the firm	Three categories indicating the age of a firm: younger than years, between 10 and 19 years of age, and 20 or more years.	Firm	WBES 2008-2023
Legal status	Six categories indicating the legal status of a firm: shareholding company with shares traded in the stock market, shareholding company with non-traded shares or shares traded privately, sole proprietorship, partnership, limited partnership, and other.	Firm	WBES 2008-2023
Ownership type	Percentage of a firm that is privately owned by domestic or foreign individuals, companies or organizations.	Firm	WBES 2008-2023
Size	Three categories indicating the size of a firm based on number of permanent full-time employees in last fiscal year: less than 10 employees, between 10 and 99 employees, 100 or more employees.	Firm	WBES 2008-2023
Export	Indicator taking the value 1 when the values of a firm's sales that were exported directly or indirectly in the last fiscal year is positive and 0 otherwise.	Firm	WBES 2008-2023
Financial audit	Indicator taking the value 1 when a firm had its annual financial statements checked and certified by external auditors in the last fiscal year and 0 otherwise.	Firm	WBES 2008-2023
Credit application	Indicator taking the value 1 when a firm applied for new loans/lines of credit in last fiscal year and 0 otherwise.	Firm	WBES 2008-2023
Credit rejection	Indicator taking the value 1 when the most recent application for a line of credit or loan was rejected (conditional on credit application) and 0 otherwise.	Firm	WBES 2008-2023
Credit constraint	Indicator taking the value 1 when the most recent application for a line of credit or loan was rejected (conditional on credit application) or the firm did not apply because interest rates were not favorable, collateral requirements were too high or size of loan and maturity were insufficient and 0 when the firm received a loan (conditional on application) or did not apply because it did not need it.	Firm	WBES 2008-2023
Has debt	Indicator taking the value 1 when the total outstanding balance of all open lines of credit and loans of a firm is positive and 0 otherwise.	Firm	WBES 2008-2023
Log(Debt)	Logarithm of the total outstanding balance of all open lines of credit and loans held by a firm (conditional on having debt) (in 2019 USD).	Firm	WBES 2008-2023
Capital	Value of all the machinery, vehicles, and equipment a firm uses (in 2019 USD).	Firm	WBES 2008-2023

Table A.1 (cont): Variables definition

Variable	Definition	Level of variation	Source
Leverage	Ratio between the value of the total outstanding balance of all open lines of credit and loans held by a firm (in 2019 USD) and the value of capital the same firm has (in 2019 USD). This variable is expressed as standard deviations from each country's mean value.	Firm	WBES 2008-2023
Revenue/ Profits	Ratio between the value of sales (in 2019 USD) and value of profits (in 2019 USD) in last fiscal year. The value of profits was obtained as the value of sales minus the total annual cost of raw materials and intermediate goods used in production and annual cost of labor. This variable is expressed as standard deviations from each country's mean value.	Firm	WBES 2008-2023
TFP	Total Factor Productivity estimated from a Cobb-Douglas production function where output is a function of labor, capital, material and a firm's efficiency of production. This measure is available at the WBES website. This variable is expressed as standard deviations from each country's mean value.	Firm	WBES 2008-2023
Log(Sales/ Worker)	Logaritm of the ratio between the value of sales (in 2019 USD) and the number of permanente full-time workers in last fiscal year. This variable is expressed as standard deviations from each country's mean values.	Firm	WBES 2008-2023
Social and cultural norms measure based on social perceptions	Indicator taking the value 1 when the percentage of persons 18 years or older in a country that agrees or strongly agrees with the statement "When jobs are scarce, men should have more right to a job than women" is above the cross-country median value.	Country	WVS of earliest year available
Social and cultural norms measure based on female labor outcomes	Indicator taking the value 1 when the 2007 labor force participation rate of women 15 years and older in a country is above the cross-country median value.	Country	WDI

Sources: World Bank Enterprise Surveys, World Value Surveys and World Development Indicators.

Table A.2: Countries, sample size and years of data

	N	Years		N	Years
Albania	40	2019	Lebanon	191	2013, 2019, 2020
Armenia	100	2008, 2009, 2013, 2020	Macedonia, FYR	47	2008, 2012, 2013, 2019
Bangladesh	737	2013, 2022	Malaysia	109	2015, 2016
Belarus	148	2018, 2019	Mali	25	2010, 2016
Bolivia	20	2017	Moldova	59	2008, 2019
Bosnia and Herzegovina	18	2019	Mongolia	112	2008, 2009, 2013, 2019
Bulgaria	118	2008, 2013, 2019, 2020	Montenegro	35	2019
China	780	2012	Morocco	165	2013, 2014, 2019
Croatia	97	2013, 2019	Netherlands	217	2020, 2021
Cyprus	20	2019	Nicaragua	52	2010, 2011, 2016, 2017
Czechia	200	2013, 2019	Pakistan	823	2013, 2015, 2022
Dominican Republic	13	2011, 2016	Peru	216	2010, 2017, 2018
Ecuador	87	2010, 2017	Philippines	287	2009, 2014, 2015, 2016
Egypt, Arab. Rep.	3,438	2013, 2014, 2016, 2017, 2019, 2020	Romania	230	2008, 2013, 2019
El Salvador	155	2010, 2011, 2016	Russian Federation	599	2008, 2009, 2011, 2012, 2019
Estonia	74	2008, 2013, 2019	Rwanda	62	2019, 2020
Ethiopia	167	2012, 2015	Saudi Arabia	404	2022, 2023
France	495	2020, 2021	Serbia	51	2008, 2013, 2019
Georgia	84	2008, 2013, 2019	Slovenia	90	2013, 2019
Germany	326	2020, 2021, 2022	Spain	468	2020, 2021, 2022
Ghana	107	2013, 2014	Tajikistan	31	2008, 2013, 2019
Greece	199	2018, 2019	Tanzania	45	2013, 2014
Guatemala	115	2010, 2011, 2017, 2018	Tunisia	169	2013, 2014, 2019, 2020
India	5,395	2013, 2014, 2021, 2022	Türkiye	541	2008, 2013, 2014, 2018, 2019
Indonesia	838	2009, 2010, 2015	Uganda	37	2013
Iraq	390	2011, 2022	Ukraine	471	2008, 2013, 2019
Italy	183	2019	Uruguay	53	2010, 2017
Jordan	118	2013, 2014, 2019	Viet Nam	339	2009, 2010, 2014, 2015, 2016
Kazakhstan	391	2008, 2013, 2019	Zambia	114	2013, 2014, 2019, 2020
Kenya	268	2013, 2014, 2018, 2019	Zimbabwe	172	2016, 2017
Kyrgyz Republic	76	2008, 2009, 2013, 2019			

Source: World Bank Enterprise Surveys.

Table A.3: Gender gaps in sources of financing for working capital and fixed assets

	All			More traditional			Less traditional		
	Female	Male	Mean diff. test	Female	Male	Mean diff. test	Female	Male	Mean diff. test
Share of working capital financed by:									
Own funds	0.75	0.78	-.027***	0.82	0.83	-0.01	0.69	0.69	0.00
Private or state own banks	0.09	0.09	.01**	0.09	0.07	.022***	0.10	0.12	-.014*
Non bank financial institutions	0.01	0.01	.006***	0.01	0.01	-.002*	0.02	0.01	.012***
Other	0.14	0.13	.01*	0.09	0.10	-0.01	0.18	0.18	0.00
Use more than one source to finance working capital	0.44	0.38	.051***	0.35	0.33	.023*	0.52	0.47	.046**
Share of fixed assets financed by:									
Own funds	0.74	0.76	-0.02	0.86	0.79	.071***	0.65	0.73	-.079***
Private or state own banks	0.12	0.13	-0.01	0.07	0.08	-0.02	0.15	0.17	-0.01
Non bank financial institutions	0.02	0.02	0.00	0.00	0.03	-.024***	0.03	0.01	.015***
Other	0.12	0.09	.027***	0.06	0.09	-.027**	0.15	0.09	.057***
Use more than one source to finance fixed assets	0.11	0.09	.026***	0.07	0.05	.016***	0.15	0.13	0.02

Sources: World Bank Enterprise Surveys. Notes: Non-bank financial institutions include microfinance institutions, credit cooperatives, credit unions and finance companies. Other includes moneylenders, friends and relatives.

Table A.4: Gender gaps in type of institutions granting credit

	Private bank (1)	State own bank (2)	Non-financial institutions (3)
A. All countries			
Female	-0.03	0.033	-0.001
	[0.032]	[0.028]	[0.016]
Obs	3,220	3,220	3,220
R2	0.275	0.294	0.197
B. By social perceptions about women			
Female in less traditional countries	-0.013	-0.01	0.023
	[0.031]	[0.025]	[0.017]
Female in more traditional countries	-0.073	0.141	-0.062
	[0.067]	[0.063]**	[0.034]*
Obs	3,220	3,220	3,220
R2	0.275	0.299	0.201

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.5: Gender gaps in collateral requirements

	Collateral required (1)	Land or buildings (2)	Equipment (3)	Accounts (4)
A. All countries				
Female	-0.032	-0.09	-0.012	-0.003
	[0.044]	[0.056]	[0.049]	[0.035]
Obs	3,204	2,248	2,242	2,242
R2	0.329	0.281	0.302	0.349
B. By social perceptions about women				
Female in less traditional countries	-0.056	-0.111	0.049	0.019
	[0.060]	[0.060]*	[0.066]	[0.051]
Female in more traditional countries	0.026	-0.058	-0.105	-0.036
	[0.038]	[0.094]	[0.068]	[0.039]
Obs	3,204	2,248	2,242	2,242
R2	0.33	0.281	0.304	0.35

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. Outcome variables are an indicator of collateral requirement in the most recent loan (column 1) and indicators of type of collateral required, conditional on being asked for collateral (columns 2, 3 and 4). All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.6: Gender gaps in firm leverage when restricting the sample to large firms

	All countries	By social perceptions about women	
		Less traditional	More traditional
	(1)	(2)	(3)
Female	-0.029	0.01	-0.09
	[0.055]	[0.077]	[0.060]
Obs	11,357	11,357	11,357
R2	0.039	0.039	0.039

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Large firms defined as those having a value of capital above the sample median. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.7: Gender gaps in labor misallocation

	log(arpl)
	(1)
A. All countries	
Female	-0.032
	[0.040]
Obs	21,411
R2	0.149
B. By social perceptions about women	
Female in less traditional countries	-0.065
	[0.052]
Female in more traditional countries	0.001
	[0.060]
Obs	21,411
R2	0.149

Sources: World Bank Enterprise Surveys. Notes: OLS estimates. Non-bank financial institutions include microfinance institutions, credit cooperatives, credit unions and finance companies. Other includes moneylenders, friends and relatives.

Table A.8: First stage IV results for three sub-samples of firms

	All	Applied for credit	Received credit
	(1)	(2)	(3)
A. All countries			
Majority of female owners	0.628	0.512	0.600
	[0.0342]***	[0.0857]***	[0.4685]***
Obs	18,822	3,118	3,153
R2	0.436	0.455	0.448
Underid test	37.03	22.80	27.34
p-value	0.00	0.00	0.00
Weak id test	335.81	76.02	163.99
10%	16.38	16.38	16.38
15%	8.96	8.96	8.96

Sources: World Bank Enterprise Surveys. Notes: First stage of IV estimates. Indicator of female-managed firms and its interaction with the indicator of more traditional countries instrumented by an indicator of Majority of female owners and its interaction with the indicator of more traditional countries. The Underid test shows the Kleibergen-Paap LM statistic and its corresponding p-value and the Weak id test shows the Kleibergen-Paap Wald F statistic and the Stock-Yogo crital values. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.9: Instrumenting female management. Second stage results

	Credit application	Credit rejection	Log(debt)	Leverage	Profits/ Revenue	log(arpk)	1+κ
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. All countries							
Female	0.08	-0.072	-0.574	0.034	0.234	0.132	0.34
	[0.048]*	[0.058]	[0.352]*	[0.099]	[0.079]***	[0.208]	[0.184]*
Obs	18,824	3,118	3,153	18,824	18,824	3,153	3,153
R2	0.224	0.386	0.398	0.021	0.044	0.362	0.271
B. By social perceptions about women							
Female in less traditional countries	0.058	-0.002	-0.392	0.018	0.205	-0.266	0.119
	[0.069]	[0.073]	[0.349]	[0.133]	[0.117]*	[0.218]	[0.183]
Female in more traditional countries	0.105	-0.163	-0.929	0.053	0.267	0.723	0.666
	[0.065]	[0.081]**	[0.716]	[0.136]	[0.092]***	[0.357]**	[0.383]*
Obs	18,824	3,118	3,153	18,824	18,824	3,153	3,153

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: Second stage of IV estimates. Indicator of female-managed firms and its interaction with the indicator of more traditional countries instrumented by an indicator of Majority of female owners and its interaction with the indicator of more traditional countries. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.10: Gender gaps in credit access, risk, profitability, and capital misallocation when excluding pandemic and post-pandemic years

	Credit application	Credit rejection	Log(debt)	Leverage	Profits/ Revenue	log(arpk)	1+κ
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. All countries							
Female	0.041	-0.048	-0.736	-0.047	0.16	0.152	0.132
	[0.025]	[0.038]	[0.226]***	[0.051]	[0.054]***	[0.134]	[0.137]
Obs	13,079	1,233	1,918	13,079	13,079	1,918	1,918
R2	0.222	0.475	0.39	0.039	0.037	0.29	0.249
B. By social perceptions about women							
Female in less traditional countries	0.021	-0.014	-0.708	-0.068	0.163	-0.037	-0.041
	[0.037]	[0.051]	[0.219]***	[0.065]	[0.074]**	[0.131]	[0.134]
Female in more traditional countries	0.06	-0.104	-0.791	-0.027	0.157	0.529	0.478
	[0.031]*	[0.055]*	[0.449]*	[0.071]	[0.075]**	[0.261]**	[0.300]
Obs	13,079	1,233	1,918	13,079	13,079	1,918	1,918
R2	0.223	0.477	0.39	0.039	0.037	0.295	0.253

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.11: Relationship between gender gaps in debt level and capital misallocation when excluding pandemic and post-pandemic years

	log(arpk)		$1+\kappa$	
	More traditional (1)	Less traditional (2)	More traditional (3)	Less traditional (4)
Female	2.261	0.565	2.396	0.109
	[0.676]***	[0.582]	[0.860]**	[0.488]
Log(debt)	-0.00699	-0.00369	0.00456	-0.0312
	[0.0299]	[0.0239]	[0.0215]	[0.0193]
Female x Log(debt)	-0.187	-0.0577	-0.200	-0.0160
	[0.0567]***	[0.0502]	[0.0652]***	[0.0350]
Obs	891	1,027	891	1,027
R2	0.382	0.302	0.331	0.272

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.12: Gender gaps in credit access, risk, profitability, and capital misallocation when excluding countries with less than 50 observations

	Credit application (1)	Credit rejection (2)	Log(debt) (3)	Leverage (4)	Profits/ Revenue (5)	log(arpk) (6)	$1+\kappa$ (7)
A. All countries							
Female	0.039	-0.036	-0.665	-0.039	0.155	0.1	0.107
	[0.027]	[0.041]	[0.240]***	[0.054]	[0.054]***	[0.124]	[0.133]
Obs	12,661	1,172	1,815	12,661	12,661	1,815	1,815
R2	0.236	0.472	0.387	0.041	0.038	0.311	0.256
B. By social perceptions about women							
Female in less traditional countries	0.011	-0.006	-0.727	-0.074	0.165	-0.035	0.033
	[0.042]	[0.056]	[0.212]***	[0.065]	[0.076]**	[0.133]	[0.115]
Female in more traditional countries	0.066	-0.085	-0.532	-0.005	0.145	0.387	0.266
	[0.033]*	[0.055]	[0.522]	[0.076]	[0.075]*	[0.232]	[0.339]
Obs	12,661	1,172	1,815	12,661	12,661	1,815	1,815
R2	0.237	0.473	0.387	0.041	0.038	0.314	0.257

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.13: Relationship between gender gaps in debt level and capital misallocation when excluding countries with less than 50 observations

	log(arpk)		$1+\kappa$	
	More traditional (1)	Less traditional (2)	More traditional (3)	Less traditional (4)
Female	2.061	0.686	1.943	0.318
	[0.695]***	[0.507]	[1.059]*	[0.488]
Log(debt)	-0.0138	-0.0156	0.00591	-0.0367
	[0.0298]	[0.0209]	[0.0247]	[0.0193]*
Female x Log(debt)	-0.172	-0.0685	-0.163	-0.0274
	[0.0564]***	[0.0437]	[0.0785]*	[0.0369]
Obs	861	954	861	954
R2	0.357	0.337	0.218	0.289

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.14: Gender gaps in credit access, risk, profitability, and capital misallocation when changing the threshold from median to tercile

	Credit application (1)	Credit rejection (2)	Log(debt) (3)	Leverage (4)	Profits/ Revenue (5)	log(arpk) (6)	$1+\kappa$ (7)
Female in less traditional countries	0.038	-0.04	-0.499	0.034	0.121	0.003	0.021
	[0.030]	[0.026]	[0.207]**	[0.060]	[0.061]*	[0.099]	[0.074]
Female in more traditional countries	0.013	-0.116	-0.856	-0.027	0.229	0.748	0.542
	[0.023]	[0.053]**	[0.592]	[0.079]	[0.072]***	[0.366]**	[0.391]
Obs	21411	3144	3222	21411	21411	3222	3222
R2	0.228	0.363	0.3	0.022	0.024	0.25	0.217

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. More traditional countries are those having a social perception measure above the 66th percentile of the cross-country social perceptions measure distribution. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.15: Relationship between gender gaps in debt level and capital misallocation when changing the threshold from median to tercile

	log(arpk)		$1+\kappa$	
	More traditional (1)	Less traditional (2)	More traditional (3)	Less traditional (4)
Female	1.291	0.603	2.113	0.0210
	[0.746]*	[0.595]	[0.944]**	[0.411]
Log(debt)	-0.0635	0.0189	-0.00129	-0.0297
	[0.0353]*	[0.0224]	[0.0201]	[0.0203]
Female x Log(debt)	-0.0871	-0.0516	-0.176	-0.000919
	[0.0491]*	[0.0517]	[0.0696]**	[0.0340]
Obs	652	2,570	652	2,570
R2	0.382	0.237	0.476	0.203

Sources: World Bank Enterprise Surveys and World Value Surveys. Notes: OLS estimates. More traditional countries are those having a social perception measure above the 66th percentile of the cross-country social perceptions measure distribution. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.16: Gender gaps in credit access, risk, profitability, and capital misallocation using FLFP rate and WBL index as proxies for social norms

	Credit application (1)	Credit rejection (2)	Log(debt) (3)	Leverage (4)	Profits/ Revenue (5)	log(arpk) (6)	$1+\kappa$ (7)
A. FLFP rate							
Female in less traditional countries	0.033	-0.102	-0.485	-0.02	0.151	0.019	-0.036
	[0.037]	[0.035]***	[0.162]***	[0.044]	[0.077]*	[0.106]	[0.053]
Female in more traditional countries	0.027	-0.019	-0.491	0.025	0.138	0.237	0.266
	[0.025]	[0.036]	[0.292]*	[0.075]	[0.059]**	[0.156]	[0.149]*
Obs	21,411	3,144	3,222	21411	21411	3222	3222
R2	0.233	0.383	0.398	0.026	0.034	0.257	0.234
B. WBL index							
Female in less traditional countries	0.013	-0.038	-0.554	0.012	0.195	0.075	0.063
	[0.033]	[0.031]	[0.215]**	[0.068]	[0.074]**	[0.130]	[0.093]
Female in more traditional countries	0.048	-0.089	-0.573	0.015	0.117	0.261	0.22
	[0.027]*	[0.038]**	[0.441]	[0.066]	[0.057]**	[0.184]	[0.225]
Obs	21411	3144	3222	21411	21411	3222	3222
R2	0.228	0.363	0.299	0.022	0.024	0.244	0.214
C. Entrepreneurship dimension of WBL							
Female in less traditional countries	-0.034	-0.084	-0.426	-0.042	0.272	-0.149	-0.005
	[0.026]	[0.051]	[0.241]*	[0.087]	[0.105]**	[0.156]	[0.107]
Female in more traditional countries	0.043	-0.051	-0.599	0.025	0.133	0.211	0.143
	[0.025]*	[0.028]*	[0.253]**	[0.055]	[0.051]**	[0.128]	[0.120]
Obs	21411	3144	3222	21411	21411	3222	3222
R2	0.229	0.363	0.299	0.022	0.024	0.246	0.214

Sources: World Bank Enterprise Surveys, World Development Indicators, and Women, Business and the Law. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. For the model of credit application rejection, controls also include firm leverage. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.

Table A.17: Relationship between gender gaps in debt level and capital misallocation using FLFP rate and WBL index as proxies for social norms

	log(arpk)		$1+\kappa$	
	More traditional (1)	Less traditional (2)	More traditional (3)	Less traditional (4)
A. FLFP rate				
Female	1.261	0.693	1.633	0.0631
	[0.622]*	[0.698]	[0.930]*	[0.346]
Log(debt)	-0.0267	-0.0429	-0.00932	-0.0378
	[0.0314]	[0.0233]*	[0.0271]	[0.0170]**
Female x Log(debt)	-0.0964	-0.0675	-0.123	-0.0142
	[0.0489]*	[0.0604]	[0.0769]	[0.0290]
Obs	2,096	1,126	2,096	1,126
R2	0.268	0.342	0.254	0.347
B. WBL index				
Female	1.374	0.921	1.419	0.677
	[0.784]*	[0.783]	[0.850]	[0.862]
Log(debt)	-0.0195	0.00708	-0.00674	-0.0179
	[0.0366]	[0.0213]	[0.0219]	[0.0213]
Female x Log(debt)	-0.113	-0.0746	-0.119	-0.0553
	[0.0669]*	[0.0633]	[0.0664]*	[0.0719]
Obs	1,400	1,822	1,400	1,822
R2	0.311	0.211	0.270	0.215
C. Entrepreneurship dimension of WBL				
Female	1.286	-1.027	1.292	-0.666
	[0.565]**	[0.891]	[0.739]*	[0.367]
Log(debt)	-0.00364	-0.0435	-0.00135	-0.0510
	[0.0264]	[0.0413]	[0.0199]	[0.0401]
Female x Log(debt)	-0.103	0.0791	-0.108	0.0613
	[0.0470]**	[0.0747]	[0.0608]*	[0.0346]
Obs	2,576	646	2,576	646
R2	0.262	0.299	0.235	0.166

Sources: World Bank Enterprise Surveys, World Development Indicators, and Women, Business and the Law. Notes: OLS estimates. All models control for manager experience, indicators of firm age, legal status, size, whether the firm exports, whether it has financial statements certified by external auditors, the percentage of the firm that is privately owned, and industry, country, and year fixed effects. Standard errors are clustered at the country level. *** significant at 1%, ** at 5%, * at 10%.