Bank credit, microfinance and female ownership: Are women more disadvantaged than men?

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ABSTRACT

Using a comprehensive dataset on unlisted firms in 22 developing countries this paper analyses the relationship between gender, microfinance and access to bank credit. Using heckprobit to control sample selection bias, we reveal evidence of discrimination against female-owned and female-led firms. Also, we find that a mechanism for microfinance to empower women is facilitating loan applications and loan approvals for female-owned firms. Our paper highlights the importance of addressing gender discrimination in the credit market in order to facilitate the development of female-owned firms.

JEL classification: G21; G29; J71

Keywords: Female Ownership; Bank Credit; unlisted firms; heckprobit; developing countries

1. Introduction

Global development institutions assert that if women have access to "high-quality financial services", they would achieve greater gender equity (Isaac, 2014), which is a United Nations Sustainable Development Goal. Our study contributes to the debate on the potential gender gap in access finance, in terms of credit applications, approvals and loan terms. Also, we investigate microfinance moderating role in the gender gap when finance is concerned.

Gender-based discrimination in the credit market may be the result of taste-based discrimination or statistical discrimination (Han, 2004). Taste-based discrimination may arise due to the prejudicial preferences of lenders (Cavalluzzo, Cavalluzzo, & Wolken, 2002). In the male-dominated financial system, the restriction to credit access is higher for females than males (Aterido, Beck, & Iacovone, 2013). Statistical discrimination arises as a result of information opaqueness and lack of information about a borrower's creditworthiness. In this situation, lenders apply group stereotypes to individual borrowers in the loan process (Wellalage & Locke, 2017).

While cross-country studies tend to report gender discrimination in the credit market, especially for women as owner/managers (see Aristei & Gallo, 2016; Chaudhuri, Sasidharan, & Raj, 2018; Muravyev, Talavera, & Schäfer, 2009), other studies (see Moro, Wisniewski, & Mantovani, 2017; Pham & Talavera, 2018) suggest the gender gap is the result of the behavioural differences of female borrowers rather than discrimination per se (Beck & Brown, 2011). Extent research highlights that demand and supply sides of the credit market. From the demand side, using World Bank Enterprises Surveys Aristei and Gallo (2016), find that female-owned firms credit demand is less than male-owned firms. Similarly, using 17 countries data from World Bank Enterprise Surveys, Ongena and Popov (2016) report that in high gender bias countries, female business owners are more likely to opt-out of the loan application process. A significant number of those credit market demand gaps can be attributed to women being (or feeling) less financially literate and less risk-tolerant (Meyll & Pauls, 2019). On the supply side, Aristei and Gallo (2016) report regardless of low credit demand, women-led firms have a significantly higher probability to face credit rejection. In similar vein, Beck, Behr, and Madestam (2018) report that this effect is more significant when loan officers have little or no prior exposure to female borrowers. Similarly, Italy based study finds that female managed firms are received unfavourable interest rates from banks when loan applications are approved

(Alesina, Lotti, & Mistrulli, 2013). Apart from credit market discrimination, female-owned firms also face cultural barriers (Chaudhuri et al., 2018), institutional rigidities (Armitage, Hou, Liu, & Wang, 2020) and firm size and profitability limitations (Wellalage & Locke, 2017), which limits to their credit access. Overall, prior empirical studies have yielded contradictory results and the question of whether female-owned and firms are, in fact, discriminated against when attempting to obtain credit from formal financing institutions remains open to debate (See Aterido et al., 2013; Cavalluzzo et al., 2002; Moro et al., 2017; Pham & Talavera, 2018).

Our study contributes empirical evidence to a growing literature on the gender gap in credit access. Prior studies have primarily focused on the likelihood of obtaining bank loan approvals or differences in loan terms (see Cavalluzzo et al., 2002; Chen, Huang, & Ye, 2020). One exception is Pham and Talavera (2018), who look at credit loan applications, credit approvals and loan terms within a single country. Our large sample from 22 developing countries extends the insights offered by Pham and Talavera (2018) and, to the best of our knowledge, is the first paper to examine how microfinance plays a mediating role in the relationship between gender and access to bank finance. Although microfinance is becoming an increasingly important source of finance for female business owners in developing economies (Bruton, Khavul, & Chavez, 2011; Islam, Nguyen, & Smyth, 2015), to date, minimal research attention has been paid to its capacity to affect access to bank finance. We control the selection bias in our study, which is a common methodological shortcoming in credit access studies. In our sample, a loan characteristic is only observable if the banks approved the loan, which raises the issue of selection bias. Although few studies control their selection biases (see Aristei & Gallo, 2016; Cavalluzzo et al., 2002; Pham & Talavera, 2018), they acknowledge the difficulties of finding appropriate instruments. We address this difficulty by providing alternative instruments in accounting for firm level and institutional characteristics. This is important because selection bias can lead to severely biased results.

2. Data

This study utilises firm level data from Enterprise surveys from the World Bank (see http://www.enterprisesurveys.org) in 2017/2018 version. The World Bank, 2017/2018 Enterprise Surveys incorporate interviews with business owners and top managers from enterprises from January 2017 through December 2018. A number of recent studies use World Bank Enterprise Surveys data to study the effect of the business environment and ownership on firm growth. Using subjective, firm-level data on the business environment, some of these studies show the importance of finance, corruption, and property rights on firm growth (See (Aterido et al., 2013). Others examine the relationship between the owners' characteristics on firm growth (Wellalage, Fernandez, & Thrikawala, 2020). Most recently, several papers have analysed the gender impact on firm financing using cross country data from World Bank Enterprise Surveys (Aristei & Gallo, 2016; Ongena & Popov, 2016; Wellalage & Locke, 2017). However, more research is needed to identify the gender impact of firm financing.

Our study sample includes unlisted firms from 22 developing countries. The full sample of data provides information about 13759 unlisted firms, of which 26% (3617) have female owners. Table 1 shows there is a statistically significant difference in the mean and median value in two groups. On average, firms with female owners show slightly higher credit demands. However, women are less likely to apply for formal credit. The presence of loan applicants among male-owned firms (24.16%) is higher than among female-owned firms (21.64%). Subsequently, male-owned firms are more likely to obtain loans from formal financial institutions than female-owned firms. The loan approval rate for female-owned firms is lower (36.44%) than for male-owned firms (39.25%). Approximately 28% of female-owned firms pledged collateral to obtain their recent bank loans compared to 24% of male-owned firms. Female-owned firms are less likely to obtain long term loans (mean = 0.7488) compared to male-owned firms (mean = 0.7727). This suggests that although female-owned firms do

receive loans, their loan conditions are not as favourable. The median test revealed that there is a statistically significant difference in median credit demands, the credit applies, loan approval, pledged collateral and obtained loan term loans between male and female groups.

<< Insert Table 1 in here>>

3. Methodology

This study employed a probit model with sample selection, which assumes that an underlying relationship exists between credit access and gender (Van de Ven & Van Praag, 1981). Our (i) credit application, (ii) credit approval and (iii) credit term models are as follows:

3.1. Credit Application

This part of our analysis focuses on possible differences between credit applications made by female and male business owners for banks.

$$Probit(Credit\_Apply_{ic} = 1) = \propto_c + (\alpha + \beta Female_{ic} + \beta MF_{ic} + \beta Female_{ic} * MF_{ic} + \gamma X_{ic} + \mu Y_{ic} + \varepsilon_{ic}) \quad (1)$$

$$Probit(Credit\_Need_{ic} = 1) = \propto_c + (\alpha + \beta Female_{ic} + \beta MF_{ic} + \beta Female_{ic} * MF_{ic} + \gamma X_{ic} + \mu Y_{ic} + \partial_1 Sales\_Increase_{ic} + \partial_2 Crime_{ic} + \varepsilon_{ic}) \quad (2)$$

Equation 1 is the main equation of the credit application, and Equation 2 is the sample selection equation. Equation 2 considers the selection of firms which report that credit is needed. To address selection bias, we use *Sales_Increase* and *Crime* variables in the selection equation, which affect the credit need but which do not affect the decision to apply for credit

3.2. Credit Approval

This part of our analysis focuses on possible differences between the credit approval rates of female and male business owners by formal financial institutions.

$$Probit(Credit\_Aproval_{ic} = 1) = \propto_c + (\propto_i + \beta Female_{ic} + \beta MF_{ic} + \beta Female_{ic} * \beta MF_{ic} + \gamma X_{ic} + \mu Y_{ic} + \varepsilon_{it}) \quad (3)$$

$$Probit(Credit\_Apply_{ic} = 1) = \propto_c + (\propto_i + \beta Female\_Own_{ic} + \beta MF_{ic} + \beta Female_{ic} * \beta MF_{ic} + \gamma X_{ic} + \mu Y_{ic} + \partial_1 Trade\_Credit_{ic} + \partial_2 Infromal\_Credit_{ic} + \varepsilon_{it}) \quad (4)$$

In Equation 3, $Credit\_Aproval_{ic}$ takes the value of one if a credit application is approved by a bank or other formal financial institution, and zero otherwise. Equation 4 considers the selection of firms which report that an application for credit is lodged. We use two types of informal finance proxies, such as trade credits (*Trade_Credit)* and credit from friends and family (*Informal_Credit)* as an instrument.

3.3 Credit term

This part of our analysis focuses on possible differences in the loan terms issued by banks between female and male business owners. We consider two credit terms: (i) Loan to collateral ratio and (ii) Loan duration;

$$Probit(Collateral_{ic} = 1) = \propto_c + (\propto_i + \beta Female_{ic} + \beta MF_{ic} + \beta Female_{ic} * \beta MF_{ic} + \gamma X_{ic} + \mu Y_{ic} \varepsilon_{it}) \quad (5a)$$

$$Probit(Duration_{ic} = 1) = \propto_c + (\propto_i + \beta Female_{ic} + \beta MF_{ic} + \beta Female_{ic} * \beta MF_{ic} + \gamma X_{ic} + \mu Y_{ic} + \varepsilon_{it}) \quad (5b)$$

$$Probit\left(Credit_{Aproval_{ic}} = 1\right) = \propto_c + (\propto_i + \beta Female_{Own_{ic}} + \beta MF_{ic} + \beta Female_{ic} * \beta MF_{ic} + \gamma X_{ic} + \mu Y_{ic} + \partial_2 Snr\_Mgr\_Time_{ic} + \varepsilon_{it}) \quad (6)$$

Equation 5a, $Collateral_{ic}$ takes the value of one if the bank required collateral, and zero otherwise. Equation 5b, $Duration_{ic}$ takes the value of one if the loan duration is more than 60 months (> 5 years), and zero otherwise. We used senior manager time spent on dealing

with regulations (*Snr_Mgr_Time*) and firms making informal payments to public officials to get things done (*Bribes)* as an instrument.

We cluster the standard errors by country, where *vce* (cluster country) accommodates and adjusts for the correlation of observations within values of the country. Observations from the same country are likely to be more similar; therefore, the country-level cluster is appropriate.

4. Results

4.1 Heckprobit results of credit apply, credit approval, loan terms and female owners

Table 2 reports the heckprobit regression results of credit access and female owners. Our results show that firms with female owners are less likely to apply for formal loans compared to their male counterparts. In particular, the marginal effects show that firms with female owners have approximately 2.5% less probability respectively to apply for bank loans, which supports the findings of other studies (see Le & Stefańczyk, 2018; Moro et al., 2017).

Column II reports the relationship between loan approval and gender and the marginal effects estimated around the mean point. Firms with female owners are less likely to get approval for formal loans compared to male-owned firms. In particular, the marginal effects show that firms with female owners have approximately 0.6% less probability of obtaining approved loans compared to male-owned firms. Overall, our finding supports the argument that discrimination against women exists in obtaining loan approvals. We echo the findings of Chaudhuri et al. (2018) who also find that the likelihood of receiving bank loans in India is lower among female firm owners.

The interaction term on *Female* X *MF* is positive and statistically significant for credit approvals for firms with female owners. Intergroup analysis report that every firm with microfinance loans, we will see 65.93% more credit approval in female-owned firms than in male-owned firms. Intra group analysis shows us, female-owned firms with microfinance loans

lead to 41.95% (65.93 + (-23.98)) more credit approval than female-owned firms without microfinancing.

<< Insert Table 2 in here>>

4.2 Decomposition of the gender gap in access to finance using Blinder–Oaxaca decomposition

We use a modified version of the Blinder–Oaxaca decomposition technique to explain the gender gap in credit access. Our two groups are *female_only* =1 group (this takes the value of one if firms have only female owners) or *female_only* =0 group (this takes the value of zero if firms have male owners in addition to at least one female owner).

The results of the decomposition show that female owners are 4% less likely to apply for loans and have a 4% lower probability of having their loans approved. However, the gender effect is insignificant in terms of loan features such as the requirement for collateral and the duration of loans. In the second panel of the decomposition output, the gender gap is divided into three parts. The first part shows that the mean increase in female owners' loan applications and loan approvals is 0.018 and 0.055 respectively if they had the same characteristics as men. The second term quantifies the change in female owners' loan applications and loan approvals when applying the male group's coefficients to the women's characteristics. The third part is the interaction term that measures the simultaneous effect of differences in endowments and coefficients. Overall, these findings are consistent with our main findings which support the existence of gender-based discrimination in the credit market.

<< Insert Table 3 in here>>

4.3 *Country-level impact determinants*

The impact of gender on firm financing may depend on country-level institutional characteristics. Following Gupta (2018), we use four country-level determinants from Worldwide governance indicator (government effectiveness, regulatory quality, the rule of law

and voice and accountability)[1]. We spilt the sample based on the median value of government effectiveness. The results show that the negative effect of the effect of female ownership on firm financing is more pronounced in countries with low government effectiveness score (Panel A) than high government effectiveness score (Panel B).

<< Insert Table 4 in here>>

4.Conclusion

Using 13,759 firm level observations, we find some evidence for the existence of a gender gap in the credit market. Our finding supports the argument that, in this context, microfinance is an effective tool for promoting women's empowerment. Our study leads to several policy implications. A low probability of loan applications and approvals leads to less credit availability for female-owned/female-led firms. Encouraging female business owners and managers to apply for bank loans is important in the long term. The introduction of bank loans that are designed to promote greater gender equity may work to increase the number of credit applications by female business owners and managers. Also, formal financial institutions need to mitigate implicit biases in the loan application. Strategies may include allocating more time for loan assessments and promoting lending that is based on relationships. Additionally, support and encouragement of the microfinance sector are important to enhance gender equality in credit access. However, recent evidence suggests that when these institutions are more regulated, there is more emphasis on financial performance and less on redressing gender disparities. The formulation of policies that enhance the microfinance sector without introducing heavy regulations is important in this regard.

[1] Worldwide Governance Indicator reports aggregate and individual governance indicators for over 200 countries for six dimensions of governance (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption).

Our study has limitations, some of which may be possible avenues for future research. In this paper, we contribute to the firm-level empirical research on gender and firm financing. Although our study considers some country-level characteristics, we cannot control all related factors. Future research can build on the findings we have presented here to confirm our preliminary evidence.

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Table 1: Descriptive statistics by gender

Variables	Obs (i)	Mean (ii)	Median (iii)	Std (iv)	Obs (v)	Mean (vi)	Std (vii)	Median (viii)	Mean difference (ix)	Median difference (x)
		Male group			Female group					
Credit_Need	10143	.4026	0	.4904	3617	.4123	.4922	0	-.0369***	15.028***
Credit_Apply	10143	.2416	0	.4281	3617	.2164	.4118	0	.0252**	9.789***
Credit_Approved	10143	.3925	0	.4883	3617	.3644	.4813	0	.0281**	9.017**
MF	1014	.0297	0	.1699	3617	.0383	.1920	0	.1504	.1360
Collateral	10016	.2360	0	.4246	3590	.2793	.4487	0	-.0433***	26.678***
Duration	10143	.7727	1	.4190	3617	.7488	.4371	1	.0298***	13.229***
Female_Own	-									
Female_Top	10143	.0413	0	.1990	3617	.4747	.4994	0	-.4333***	338.18***
Family_Own	9977	38.48	0	46.72	3523	49.18	47.35	50	-10.69***	141.78***
Frim_Age	10004	17.08	14	13.80	3596	19.50	15.29	17	-2.42***	94.98***
Small	10143	.4270	0	.4946	3617	.4304	.4952	0	-.0037	.1270
Medium	10143	.3420	0	.4744	3617	.3337	.4715	0	.0083	.8170
Large	10143	.2226	0	.4160	3617	.2294	.4205	0	-.0068	.7190
Sole_Prop	10143	.1847	0	.388	3617	.1067	.3087	0	.0780***	118.27***
Partnership	10143	.1575	0	.364	3617	.1230	.3285	0	.0345***	25.13***
Company	10143	.5990	1	.4901	3617	.6662	.4715	1	-.0672***	51.02***
Exporter	10143	.2600	0	.4387	3617	.2718	.4449	0	-.0116	1.874

Note: *Table 1 reports descriptive statistics by gender, mean difference (t-test) and median difference (Kruskal-Wallis) results of male and female groups. Definitions of abbreviations as follows. Credit_Need=1, if the firm indicates that they need credit, zero otherwise. Credit_Apply=1if the firm apply for credit from the bank, zero otherwise. Credit_Approved=1if firm credit application is approved by the bank, zero otherwise. MF=1if firm borrowed from microfinance institutes, zero otherwise. Collateral=1 if the firm has to pledge collateral to get a bank loan, zero otherwise. Duration=1if loan duration is more than 60 months loan, zero otherwise. Female_Own=1if firm has at least one female owner, amongst the owners of the firm,zero otherwise. Female_Top=1if firm has a female top manager, zero otherwise. Family_Own indicates family ownership*

percentage. Frim_Age indicates the number of years from the date of establishment. Small=1if firm has 5-19 employees. Medium=1if firm has 20-99 employees. Large=1if firm has more than 100 employees. Sole_Prop=1, if the current legal status of the firm is a sole proprietorship. Partnership1, if the current legal status of the firm is a partnership. Company=1 if the current legal status of the firm is a company. Exporter=1if firm directly or indirectly exports goods, zero otherwise.

Table 2: Heckprobit results of credit apply, credit approval, loan terms and female owners

	Credit_Apply (I)		*Credit_Approved* (II)		*Collateral* (III)		*Duration*(IV)	
Variable	Probit	Marginal	Probit	Marginal	Probit	Marginal	Probit	Marginal
Female	-.0932** (0390)	-.0249** (.0108)	-.0667* (.0381)	-.0059* (.0033)	.0451 (.0657)	.0132 (.0190)	-.0373 (.0598)	-.0126 (.0201)
MF	-1.681*** (.3445)	-.4808** (.2585)	-1.104*** (2.040)	-.2398 (.1699)	-1.0845*** (.1781)	-.4238*** (.0775)	.7753*** (.1524)	.3060*** (.0637)
FemaleX MF	.1573 (.1382)	.0450 (.0537)	3.037*** (.3807)	.6593** (.6340)	.5399* (.3249)	.2109 (.1305)	-.3422** (.1908)	-.1350** (.0747)
Family_Own	.0018** (.0008)	.0005** (.0003)	-.0006 (.0009)	-.0001 (.0000)	-.0001 (.0008)	-.0001 (.0002)	.0008 (.0007)	.0002 (.0002)
Firm_Age	.0016 (.0013)	.0004 (.0004)	.0057** (.0028)	.0005** (.0002)	-.0015 (.0034)	-.0004 (.0010)	.0032 (.0023)	.0010 (.0008)
Small	.1072 (.2600)	.0286 (.0693)	-.5763*** (.1607)	-.0512** (.0160)	-.1178 (.3146)	-.0345 (.0931)	-.7597*** (.1969)	-.2580*** (.0558)
Medium	.3067 (.2548)	.0818 (.0679)	-.5802*** (.1938)	-.0515** (.0178)	-.1125 (.3184)	.0329 (.0942)	-.6254*** (.1763)	-.2123*** (.0518)
Partnership	.3396** (.1441)	.0906** (.0402)	.2939*** (.0979)	.0261*** (.0008)	-.5130** (.2642)	-.1504 (.0850)	.2828 (.1723)	.0960 (.0604)
Company	.1337 (.1264)	.0356 (.0333)	.2202** (.0919)	.0195** (.0081)	-.1107 (.2208)	-.0324 (.0656)	.0454 (.1806)	.01544 (.0616)
Exporter	.2534*** (.0652)	.0676*** (.0159)	.2210*** (.0919)	.0196*** (.0063)	-.0561 (.0657)	-.0164 (.0190)	-.1598** (.0699)	-.0542 (.0257)
Gender_gap	-1.689 (.2080)	-.3477 (.8752)	-.4728 (.2078)	-.1709 (.8078)	.5589*** (.1951)	(.1017)*** (.3518)	(.7147)** (.3066)	-(.2429) (.1637)
Women_seats	.0145** (.0073)	.0029** (.0061)	.0235 (0378)	.0085 (.0187)	-.0202** (.0095)	-.0037** (.0017)	.0021 (.0087)	.0007 (.0028)
Credit_info	-.0424 (.0839)	-.0087 (.0237)	-.0359 (.1467)	-.0129 (.0187)	-.1505* (.0862)	-.0274* (.0161)	-.2146** (.0865)	-.0729** (.0378)
Doing_business	-.0034 (.0029)	-.0007 (.0015)	-.0016 (.0048)	-.0006 (.0015)	-.0008 (.0050)	-.0001 (.0005)	.0005 (.0035)	.00016 (.0012)
Bank_cap	.0217** (.0085)	.0044* (.0099)	.0114* (.1996)	.0041* (.0064)	-.0137*** (.0051)	-.0025** (.0009)	-.01226 (.0084)	-.0042 (.0032)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Selection equation instruments								
	Need		*Apply*		*Approved*		*Approved*	
Crime	.3415*** (.0484)							
Sales_Increase	-.0156 (.0899)							
Trade_Credit			0020* (.0012)					
Infromal_Credit			-.0064** (.0025)					
Internal_funds					-.0181*** (.0015)		-.0182*** (.0015)	
Snr_Mgr_Time					.0002 (.0021)		.0001 (.0021)	
Wald test	.0000		.0274		.0630		.0591	

Prob > chi2								
Observations	13365	13365	12540	12540	11493	11493	11578	11578

Note: *Table 2 reports heckprobit results and marginal effects estimated around means points also reported. In all regressions, 13 industry dummies are included. Credit_Need=1, if the firm indicates that they need credit, zero otherwise. Credit_Apply=1if the firm apply for credit from the bank, zero otherwise. Credit_Approved=, if firm credit application is approved by the bank, zero otherwise. MF=1if firm borrowed from microfinance institutes, zero otherwise. Collateral=1 if the firm has to pledge collateral to get a bank loan, zero otherwise. Duration=1if loan duration is more than 60 months loan, zero otherwise. Female_Own=1if firm has at least one female owner, amongst the owners of the firm, zero otherwise. Female_Top=1if firm has a female top manager, zero otherwise. Family_Own indicates family ownership percentage. Frim_Age indicates the number of years from the date of establishment. Small=1if firm has 5-19 employees. Medium=1if firm has 20-99 employees. Large=1if firm has more than 100 employees. Sole_Prop=1, if the current legal status of the firm is a sole proprietorship. Partnership1, if the current legal status of the firm is a partnership. Company=1 if the current legal status of the firm is a company. Exporter=1if firm directly or indirectly exports goods, zero otherwise Crime and Sales_Increase are two instrumental variables in "Need" selection equation. The Crime variable takes the value of one if the firm experienced losses as a result of crime over the last three months, and zero otherwise. Sales_Increase takes the value of one if the firm expected to increase sales next year, and zero otherwise. Trade_Credit and Informal_Credit are the two instrumental variables in "Apply" selection equation. Trade_Credit variable takes the value of one if firms have a loan from a supplier of credit. Informal_Credit variable takes the value of one if firms have a loan from informal lenders, such as credit from moneylenders and credit from friends and family. Internal_funds and Snr_Mgr_Time are the two instrumental variables in "Approved" equation. Internal_funds variable takes the value of one if firms have internal funds, and Snr_Mgr_Time indicates a high percentage of senior manager time spent on dealing with regulations. * Significant at 10% level, **Significant at 5% level, ***Significant at 1% level.*

Table 3: Blinder-Oaxaca decomposition of gender discrimination in credit

	Female as owners			
Differential	*Credit_Apply* (coefficient)	*Credit_Approved* (coefficient)	*Collateral* (coefficient)	*Duration* (coefficient)
Prediction (male)	.230(.004)***	.377(.004)***	.251(.004)***	.760(.004)***
Prediction (female only)	.189(.011)***	.337(.013)***	.250(.012)***	.769(.012)***
Difference	.041(.011)***	.040(013)***	.001(.013)	-.009(.012)
Decomposition				
Endowment	.018(.008)**	.055(.010)***	.036(.009)***	-.022(.009)**
Coefficients	.017(.012)	.002 (.013)	-.024(.013)**	.007(.012)
Interaction	.006 (.008)	-.018(.010)*	-.011(.009)	.005(.009)
No'of observations	13365	13365	13219	13365

Note: *In all specifications, we included controlled variables as same as heckprobit regression. Figures in parentheses are standard errors. Credit_Need=1, if the firm indicates that they need credit, zero otherwise. Credit_Apply=1if the firm apply for credit from the bank, zero otherwise. Credit_Approved=1if firm credit application is approved by the bank, zero otherwise.* Significant at 10% level, **Significant at 5% level, ***Significant at 1% level.*

Table 4: Country-level impact on gender and financing relationship

	Panel A- low government effectiveness score							
	Credit_Apply (I)		*Credit_Approved* (II)		*Collateral* (III)		*Duration* (IV)	
Variable	Probit	Marginal	Probit	Marginal	Probit	Marginal	Probit	Marginal
Female	-.0786*** (.069)	-.0194** (.0235)	-.1136** (.0724)	-.0171* (.0117)	.0316 (.1221)	.0041 (.0152)	-.1976*** (.0743)	-.0166** (.0395)
MF	.2081 (.1763)	.0515 (.0446)	-.1940 (.1888)	-.0293 (.0299)	-.6205*** (.2305)	-.0815** (.0380)	-.4221 (.4471)	-.0355 (.4338)
FemaleX MF	.1921 (.1194)	.0475* (.0290)	-.2025** (.1130)	-.0306** (.0173)	-.4143** (.2245)	-.0544 (.0358)	.7241*** (.1183)	.0609*** (.0729)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Selection equation instruments								
	Need		*Apply*		*Approved*		*Approved*	
Crime	.1828							

	(.2100)							
Sales_Increase	.1064 (.0107)***							
Trade_Credit			.0041** (.0018)					
Infromal_Credit			-.0036*** (.0012)					
Internal_funds					-.0186*** (.0026)		-.0185*** (.1127)	
Snr_Mgr_Time					-.0050 (.0036)		-.0049 (.0033)	
Wald test Prob > chi2	.0081		.0000		.0452		.0591	
Observations	8892	8892	8895	8895	8707	8707	8707	8707
	Panel B- high government effectiveness score							
	Credit_Apply (I)		*Credit_Approved* (II)		*Collateral* (III)		*Duration*(IV)	
Variable	Probit	Marginal	Probit	Marginal	Probit	Marginal	Probit	Marginal
Female	-.1111 (.3431)	-.0148 (.0195)	.0158 (.1751)	.0019 (.0193)	.1874** (.0820)	.0338* (.0187)	.1708*** (.0300)	.0681*** (.0117)
MF	.0322 (.4379)	.0043 (.0581)	-.0984 (.1016)	-.0118 (.0811)	-.3923 (.4440)	-.0709 (.0646)	-.9642*** (.3454)	-.3845*** (.1402)
FemaleX MF	-.3789*** (.4077)	-.0507 (.0459)	-.5630*** (.1589)	-.0676 (.2358)	5.026*** (.2851)	.9086** (.3212)	1.092** (.5161)	.4355** (.2091)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Selection equation instruments								
	Need		*Apply*		*Approved*		*Approved*	
Crime	.2236 (.1656)							
Sales_Increase	.26700*** (.1130)							
Trade_Credit			.0029 (.0025)					
Infromal_Credit			-.0058 (.0092)					
Internal_funds					-.0107*** (.0011)		-.0108*** (.0013)	
Snr_Mgr_Time					-.0033 (.0027)		-.0039 (.0025)	
Wald test Prob > chi2	.0002		.0885		.0429		.0103	
Observations	4473	4473	4470	4470	4657	4657	4657	4657

Note: *Table 4 Panel A reports heckprobit results and marginal effects estimated around means points of firms with low government effectiveness score and Panel B reports heckprobit results and marginal effects estimated around means points of firms of high government effectiveness score. Also, in all regressions, 13 industry dummies and control variables are included (same as baseline regression). Credit_Need=1, if the firm indicates that they need credit, zero otherwise. Credit_Apply=1if the firm apply credit from the bank, zero otherwise. Credit_Approved=1if firm credit application is approved by the bank, zero otherwise. MF=1if firm borrowed from microfinance institutes, zero otherwise. Collateral=1 if the firm has to pledge collateral to get a bank loan, zero otherwise. Duration=1if loan duration is more than 60 months loan, zero otherwise. Female =1if firm has at least one female owner, amongst the owners of the firm, zero otherwise. Crime and Sales_Increase are two instrumental variables in "Need" selection equation. The Crime variable takes the value of one if the firm experienced losses as a result of crime over the last three months, and zero otherwise. Sales_Increase takes the value of one if the firm expected to increase sales next year, and zero otherwise. Trade_Credit and Informal_Credit are the two instrumental variables in "Apply" selection equation. Trade_Credit variable takes the value of one if firms have a loan from a supplier of credit. Informal_Credit variable takes the value of one if firms have a loan from informal lenders, such as credit from moneylenders and credit from friends and family. Internal_funds and Snr_Mgr_Time are the two instrumental variables in "Approved" equation. Internal_funds variable takes the value of one if firms have internal funds, and Snr_Mgr_Time indicates a high percentage of senior manager time spent on dealing with regulations. * Significant at 10% level, **Significant at 5% level, ***Significant at 1% level.*