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# AN APPROXIMATION OF THE GENDER GAP IN MEXICO'S FINANCIAL MARKET: EVIDENCE FROM CREDIT MICRODATA OF MSME'S BUSINESSES

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# Abstract

Using microdata laboratory from the 2021 National Survey of Business Financing (ENAFIN) by the National Banking and Securities Commission (CNBV) and the National Institute of Statistics and Geography (INEGI) [1], this article analyzes the key drivers of gender gaps in access to credit for Mexican companies. This research examines the difference in credit demand, approval rates, and credit terms for female- and male-owned firms.

The findings show, on average, a gender gap of 5 percentage points difference in the probability of getting credit for a women-owned firm compared to their male counterparts. The result by year corresponds to a gender gap of 5.2, 4.5, and 8.3 percentage points in access to finance in the years 2019, 2020, and 2021, respectively. These results shown that credit relaxing requirements during COVID-19 helped to close the gender gap, but after relaxation gap continue growing.

The results also reveal that male-owned firms experience lower credit rejection rates. However, at the intensive margin, female-led firms are extended less credit with higher interest rates and higher commission requests, which is evidence of credit constraints. Since this is not a permanent outcome in the long term, the outcome must be taken as a reference estimation.

Terms and women's credit requirements are, however, considered too excessive and discourage women from seeking loans. This research discovers that financial services acceptance, such as insurance or card purchases, impacts access to funding and increases financing possibilities for businesses owned by women.

The findings show that when income, asset turnover, and female-owned business labor productivity rise for firms, their access to credit becomes unrelated to their endowments, suggesting that statistical or taste-based discrimination is not behind credit terms but that implicit biases are.

These findings underscore the need for public policies to promote financial inclusion to help close the financial gender gap. The findings of this study would contribute to public and private sector efforts to close gender gaps in the financial system.


[1] Las conclusiones y opiniones expresadas en este proyecto de investigación son responsabilidad exclusiva del autor y no son parte de las estadísticas y posiciones oficiales del SNIEG, ni del INEGI.

# Contents

# 1 Introduction

Financial inclusion in terms of the capacity to access and use good quality financial products and services is vital for the economic development. Financial capital access is crucial for financing necessary investments, achieving profitability, and enabling business expansion (Marlow and Patton, 2005). This is especially true for the micro, small, and medium-sized businesses, MSME's (Beck and Demirguc-Kunt, 2006). For the majority of MSME's, the most significant source of external funding is bank loans, and a breakdown of the lending procedure can significantly soften their growth (Berger and Udell, 2002).

This study connects gender discrimination to access to credit to determine the drivers of the gap in credit access of credit market loans. The results would enhance the efficiency of the banking system to reduce the financial constraints of women-owned MSME's and raise financial inclusion.

While it seems that female entrepreneurs are confronted with gender-related barriers in attempting to secure funds, this issue is challenging to identify and define causality due to the numerous variables involved (Aristei and Gallo, 2016; Ongena and Popov, 2016). This issue provides an opportunity to uncover the rationale for the interest relationship.

Existing literature consistently identifies that female-owned businesses are less active in the financial markets and have worse credit conditions, including greater collateral and adverse interest rates (Carter and Shaw 2006; Coleman and Robb 2009). The aim of this paper is to build on the analysis and investigate if these results are consistent with Mexico MSME's context.

The analysis focuses in MSME's on examining the entire range of businesses that borrow from banks to start up or grow their businesses using credit.

One of the key assumptions of this article is that on average MSME's are controlled by one director, and due to the ENAFIN microdata we can identify the gender of the decision maker. Since most of the data available for MSME's are established firms without any financial history and only some with, we can assume that bank officers should not rely on unseen factors such as the personality of the entrepreneur and the characteristics of the business. Therefore, gender could be a significant variable to explain the interest gap.

This article brings to light access to credit for women entrepreneurs and verifies if there

is a gender gap of some sort using information related to the business nature, the entrepreneur's capital, the loan request and conditions, and the entrepreneur's characteristics.

International evidence indicates that fewer women-owned businesses are involved in financing (Andrade and Prado, 2020; Aristei and Gallo, 2016; Caglayan et al., 2022; Hewa-Wellalage et al., 2022; Instituto Mexicano para la Competitividad, 2021). Also, female owner entrepreneurs have better credit history, better profitability, and better financial and labor productivity (Morazzoni and Sy, 2022).

However, female-owned businesses find it more difficult to get funding, generating the gap under the argument that female businesswomen are less capable or efficient, a taste-based discrimination. But that is not the only explanation for the gap, it can also be generated from statistical discrimination, where judgments regarding women in general are made using information about the group, or by unconscious biases that influence women's decision.

Also, this gap could be a result of both the demand and supply sides (Aristei and Gallo, 2016; Beck et al., 2018; Galli and Rossi, 2016; Moro et al., 2017; Ongena and Popov, 2016; Robb and Wolken, 2002). On the one hand, women-owned firms may simply request less credit, or alternatively, there may be barriers preventing them from requesting it.

The gender gap in business operation and firm ownership persist. In 2021, the Mexican Institute for Competitiveness (IMCO) reported that women held an average of 13% of seats on the boards of companies listed on the debt market, and only 4% had women in overall management. Andrade and Prado (2020) found that seven out of ten women-owned enterprises seeking bank loans are rejected, and three out of ten face extreme financial difficulties.

The objective of this article is to provide an approximation of the gender gap in access to finance for MSME's in Mexico and what drives these discrepancies. This analysis is based on information from the 2021 National Survey of Business Financing (ENAFIN), which provides data of firms' knowledge of financial institutions and authorities, firms' access and conditions of credit applications, as well as use of other products and services offered by financial entities.

The observation unit is the business, which allows for the detection of individual characteristics, such as the sex of the decision-maker and the proportion of females on the board. The information obtained in the survey makes it the appropriate source for the study of the gender disparities in finance access among women-owned businesses in Mexico. This study will contribute

to research on the gender gap in access to finance by estimating the gap and analyzing some of its determinants. The method for this study takes advantage of heterogeneity in data on firm characteristics, women's presence in ownership and decision-making, and other characteristics that will be addressed.

The Mexican literature is not extensive because the public data needed to reach solid conclusions is scarce. Nonetheless, with limitations aside, this article is an attempt to approximate the gender disparity in financing access of MSME's in Mexico. Despite the limitations, Huidobro (2023) quantifies the gender gap in access to financing in Mexico and concludes that female-headed all-type firms have a 9.6 percentage point gap compared to men-headed firms with identical characteristics.

To perform the analysis, this paper employs econometric methods in the guise of probit and OLS regression models in an attempt to measure the likelihood of credit access and the stringency of credit terms, respectively. The models can control for firm-level characteristics such as size, industry, revenue from sales, asset turnover, and productivity of workers and owner-level characteristics such as gender.

In addition, decomposition methods, i.e., the Blinder-Oaxaca decomposition, are employed to separate the proportion of the gender gap that is attributable to observable characteristics from the proportion attributable to unexplained factors, possibly capturing implicit biases or structural impediments. Year-fixed effects and robustness tests are included to account for time-varying shocks, particularly those resulting from the COVID-19 pandemic.

The findings indicate that women-owned businesses lack access to finance due to the demand side and by the perception that the majority of requirements are requested in order to obtain funds. Results indicate that women-owned businesses request much lower funding, which is consistent with literature explaining that female entrepreneurs request lower funding to avoid losing ownership of their businesses. The gap continues to be negative even when controlled by variables such as business size, age, and fiscal environment.

Usage of other financial services, such as payment card acceptance or coverage by insurance, and business behavior-related variables, such as having a debt policy and information on the financial sector institutions, is positively related to access to finance and operates in increasing the gap. Despite women-owned businesses having higher levels of efficiency, liquidity, labor

productivity, and financial performance, the positive gap is not reduced.

The conclusions of this article may be used for public policy recommendations in order to encourage women's business to expand their financial services and improve their utilization of financial services.

The rest of the article follows this order: the second part holds the literature review with the main results of women-owned businesses and their access to capital; the third part holds the data used of the ENAFIN and corresponding descriptive statistics; the fourth part holds the methodology of estimation methods; the fifth part holds the results; finally, the last part holds the conclusions.

# 2 Literature Review

The literature on the financing gap suggests that the potential explanations for disparities affecting female-owned businesses may lie on both the demand and supply sides (Aristei and Gallo, 2016; Beck et al., 2018; Galli and Rossi, 2016; Moro et al., 2017; Ongena and Popov, 2016; Robb and Wolken, 2002). Women may apply for financing less frequently than men or may face rejection more often, even when their characteristics and application rates do not differ from those of their male counterparts (Basiglio et al., 2022).

Empirical research highlights factors related to the demand channel of the credit market. Women are less likely to apply for loans due to the behavioral expectation that their applications will be rejected (Moro et al., 2017). Ongena and Popov (2016) found that female-owned businesses are less likely to apply for bank credit, due to concerns about rejection. This fear may lead them to seek alternative financing sources, which could explain the lower levels of bank credit observed in female-owned businesses (Galli and Rossi, 2016; Moro et al., 2017; Robb and Wolken, 2002p).

Additionally, factors related to the supply channel of credit market explain the gap in access to financing by women-owned businesses (Coleman, 2000). Alesina et al. (2013) found that female borrowers pay higher credit rates compared to men, although they do not exhibit riskier behavior. This may be attributed to statistical discrimination, where lenders use unobservable risk factors in their decision-making. Conversely, Ongena and Popov (2016) report no differences in interest rates or loan conditions between male and female borrowers. Moro et al. (2017) and Asiedu et al. (2012) also found no significant gender differences in their studies of small businesses in the EU

and U.S.

Other research indicates that women are sometimes denied credit or discouraged by less favorable financing conditions, such as high collateral requirements or higher interest rates (Riding and Brown, 2011). Deeds et al. (1995) argue that such conditions force women to seek internal capital, explaining why their financing strategies are often more conservative. Both demand and supply channels create disadvantages for women and contribute to the financial sector gap (Neider, 1987; Riding and Brown, 2011).

Theories of market discrimination offer additional explanations for these gender differentials. Becker (1957) introduced the concept of taste-based discrimination, where lenders may avoid dealing with certain groups due to cultural biases, even at the cost of efficiency. Gender-based taste discrimination results in reduced credit availability or higher rejection rates for female borrowers, even when other factors are equal.

Phelps (1972) proposed statistical discrimination, where lenders use characteristics like gender as proxies for unobservable traits such as creditworthiness. Bellucci et al. (2010) suggest that statistical discrimination arises due to the scarcity of data on female-owned businesses. This leads to a vicious circle where creditworthy women entrepreneurs cannot secure funding, lowering the perceived quality of women-owned businesses.

Additionally, Bertrand et al. (2005) highlighted implicit biases—unconscious discrimination that occurs when lenders make decisions based on unintentional attitudes or stereotypes. These biases increase the likelihood of women being treated unfairly in credit evaluations, contributing to the gender gap in lending.

This article explores these theories to examine whether women entrepreneurs face more obstacles in obtaining credit. We rule out demand-side explanations by focusing on firms that have already applied for loans, as in the studies of Jiménez et al. (2017) and Huidobro (2023).

Some studies suggest that women-owned businesses face more difficulties in securing bank loans (Riding and Brown, 2011; Stoner, 1990). Montoya et al. (2020) found that female loan applications are 18.3% less likely to be approved than male applications, though Watson et al. (2017) found no evidence of active discrimination against female entrepreneurs in Australia.

Despite these findings, financial institutions generally do not actively discriminate against women-owned businesses. Loan evaluations focus on factors like credit history, financial state-

ments, and collateral, which are standard across institutions. Financial institutions aim to minimize costs and maximize income from interest, rather than treat female entrepreneurs differently.

However, there remains an unjust allocation of credit in underdeveloped countries, where women-owned businesses receive smaller loans and face worse credit conditions (intensive margin). In Mexico, regulatory programs like the MiPyMe's Woman Program aim to improve financial inclusion for women, though fiscal constraints have hindered their full implementation (Secretaría de Economía, 2024). The Women Export MX Program connects female-led businesses with international markets, helping them access export opportunities (Secretaría de Economía, 2020).

While some progress has been made, the lack of resources has limited the effectiveness of these programs. The lack of funding and support for women-owned businesses continues to prevent significant improvements in financial inclusion.

The evidence on gender differences in risk-taking is mixed. While some studies suggest women are more conservative in financial decision-making (Deeds et al., 1995; Masters and Meir, 1988), others find little or no difference in risk aversion between genders (Eckel and Grossman, 2008).

Women-owned businesses are generally smaller and more labor-intensive, which reduces their access to capital (Kallenberg and Leicht, 2017; Loscocco and Robinson, 1991). The lack of assets to serve as collateral limits their ability to secure loans. Abor and Biekpe (2006) found that the capital structure of women-owned businesses in Ghana is influenced by company characteristics and the owner's education, age, and gender.

In Mexico, women own more than 25% of MSMEs, with 70% of them registered as sole proprietorships (ENAFIN data). These businesses often face challenges accessing financing due to a lack of formal business education and limited collateral (Coleman, 2000, 2002).

Due to limited data on credit applications, approvals, and denials, this study does not provide causal evidence. However, it offers insights into the variables contributing to the credit gap for women entrepreneurs in Mexico.

International studies suggest that women are often more reliable borrowers, though these findings may not apply universally (Huidobro, 2023). Cultural attitudes and traditional gender roles in rural areas contribute to taste-based discrimination, exacerbating the financial barriers women face (Alesina and Giuliano, 2010).

Another factor contributing to the credit gap is the lack of a credit history, particularly in MSMEs, which are often new and lack assets for collateral. Banks frequently deny loans due to insufficient financial information (Ang, 1992; Berger and Udell, 1995). This article analyzes the relationship between financial and labor productivity in credit acceptance rates.

The financial gap is influenced by a combination of factors, and this paper aims to distinguish the effects of gender on borrowing decisions. It controls for firm characteristics such as size, business nature, tax regime, and the owner's education, age, and gender.

The heterogeneity of women-led enterprises presents challenges in research. However, international organizations provide useful definitions, such as businesses where at least 51% of ownership is held by women or where women control management decisions.

This article uses ENAFIN data to identify firms with female leadership, focusing on those with more than 50% female ownership in the managing board. It defines three categories of female-led businesses: 1) majority female ownership (weak definition), 2) female-led businesses (neutral definition), and 3) the interaction of both for the strongest influence (strong definition). The results presented in this article will focus on the strong definition.

# 3 Data and Descriptive statistics

The target population of the ENAFIN 2021 survey includes firms with six or more employees to classify them as micro, small, medium, and large. The data allows to specify the firms engaged in construction, manufacturing, trade (both wholesale and retail), and private non-financial services, including transport.

The survey allows one to identify which firms operate in locations with populations of 50,000 or more, and classify them across broad economic sectors according to the North American Industrial Classification System (SCIAN) 2018:

- **Industry:** Includes construction and manufacturing activities.
- **Trade:** Covers wholesale and retail trade activities.
- **Services:** Encompasses all private non-financial services, including transport.

Furthermore, the ENAFIN 2021 survey provides a classification of firms by size based on the number of employees presented in Table 1, providing a vital framework for analyzing economic dynamics. This stratification categorizes businesses into four distinct groups: micro, small, medium, and large, with specific thresholds tailored to the different sectors that allow a nuanced understanding of the economic landscape.

| **Firm Size** | **Industry** | **Trade** | **Services** |
|---|---|---|---|
| Large | 251 or more | 101 or more | 101 or more |
| Medium | 51 to 250 | 31 to 100 | 51 to 100 |
| Small | 11 to 50 | 11 to 30 | 11 to 50 |
| Micro | 6 to 10 | 6 to 10 | 6 to 10 |

Table 1: Firm Classification by Employee Range and Sector

Source: National Survey of Business Financing (ENAFIN) 2021 - Link to source.

Firms of varying sizes exhibit distinct behavioral patterns, face unique operational challenges, and contribute differently to economic development. Micro and small enterprises are often characterized by greater agility and innovation capacity; however, they frequently encounter significant constraints in accessing credit and essential resources. Conversely, medium and large firms typically benefit from economies of scale and enhanced financial stability, yet they may exhibit structural rigidity that limits their responsiveness to dynamic market conditions.

This size-based classification enables differentiated analyses that help identify unique patterns and disparities both within and across sectors. The findings suggest that policies designed to improve access to financing should consider firm size as a critical factor. This article explores the heterogeneity of the business ecosystem across firm sizes and sectors, emphasizing its importance for promoting inclusive and sustainable economic development within Mexico's productive landscape.

The ENAFIN 2021 has national coverage, focusing on localities with populations of 50,000 or more. However, the recovered sample distribution presented in Table 2 shows key facts of the distribution of the firm size, locality, and sector of economic activity that are the majority in the sample.

| | Total | Large | Medium | Small | Micro |
|---|---|---|---|---|---|
| **Total** | 3,563 | 473 | 462 | 1,178 | 1,450 |
| | (100%) | (13.3%) | (13.0%) | (33.1%) | (40.7%) |
| **Rural** | 1,531 | 200 | 185 | 487 | 659 |
| | (42.9%) | (13.1%) | (12.1%) | (31.8%) | (43.0%) |
| Construction | 179 | 9 | 27 | 101 | 42 |
| | (5.0%) | (5.0%) | (15.1%) | (56.4%) | (23.5%) |
| Manufacturing | 344 | 35 | 40 | 112 | 157 |
| | (9.6%) | (10.2%) | (11.6%) | (32.6%) | (45.6%) |
| Trade | 369 | 55 | 66 | 86 | 162 |
| | (10.4%) | (14.9%) | (17.9%) | (23.3%) | (43.9%) |
| Services | 639 | 101 | 52 | 188 | 298 |
| | (17.9%) | (15.8%) | (8.1%) | (29.4%) | (46.6%) |
| **Urban** | 2,032 | 273 | 277 | 691 | 791 |
| | (57.1%) | (13.4%) | (13.6%) | (34.0%) | (38.9%) |
| Construction | 250 | 9 | 56 | 135 | 50 |
| | (7.0%) | (3.6%) | (22.4%) | (54.0%) | (20.0%) |
| Manufacturing | 497 | 59 | 68 | 184 | 186 |
| | (13.9%) | (11.9%) | (13.7%) | (37.0%) | (37.4%) |
| Trade | 482 | 84 | 89 | 122 | 187 |
| | (13.5%) | (17.4%) | (18.5%) | (25.3%) | (38.8%) |
| Services | 803 | 121 | 64 | 250 | 368 |
| | (22.5%) | (15.1%) | (8.0%) | (31.1%) | (45.8%) |

Table 2: Sample Distribution by Locality, Sector, and Firm Size

Source: National Survey of Business Financing (ENAFIN) 2021 - Link to source.

Table 2 shows that micro-sized firms constitute the majority of the sample, accounting for 40.7%, followed by small firms at 33.1%, while medium and large firms represent smaller proportions, at 13.0% and 13.3%, respectively. This distribution underscores the predominance of smaller firms in the dataset, reflecting Mexico's firm landscape and the structure of the Mexican economy focused on MiPyMe's businesses.

In addition, the data reveal that in rural localities, micro-firms dominate, comprising 43.0% of the sample, while large firms form a minimal share (13.1%). However, for urban localities, the distribution remains similar but with slightly higher proportions of medium and large firms with the services sector leading with 22.5% of the total sample, which aligns with the economic concentration in urban areas.

The representative sample framework covers 280,489 firms, detailed in Table 3. This data highlight a strong concentration of firms in urban areas with populations exceeding 500,000 (55.9%). By sector, services dominate, accounting for more than half of the total firms (52.7%), reflecting the country's transition towards a service-oriented economy. The manufacturing sector, comprising 15.9% of firms, indicates a substantial industrial base, whereas trade (27.2%) demonstrates robust commercial activity. The construction sector's smaller share (4.2%) likely mirrors its project-based and often temporary nature.

| Category | Number of Firms |
|---|---|
| **Total** | 280,489 |
| | (100%) |
| **By Locality:** | |
| Rural | 123,628 |
| | (44.1%) |
| Urban | 156,861 |
| | (55.9%) |
| **By Sector:** | |
| Construction | 11,652 |
| | (4.2%) |
| Manufacturing | 44,708 |
| | (15.9%) |
| Trade | 76,181 |
| | (27.2%) |
| Services | 147,948 |
| | (52.7%) |

Table 3: Population Framework by Locality and Sector

Source: National Survey of Business Financing (ENAFIN) 2021 - Link to source.

# 4 Estimation Method

This analysis is guided by two central hypotheses: (1) women are less likely to obtain credit for their business activities, and (2) women are less likely to receive credit amounts that adequately meet the scale of their business needs. The primary objective of this article is to identify and explain the underlying factors contributing to these disparities, examining whether gender-based differences exist in the credit market and, if so, determining the key drivers of such inequalities.

To address these questions, the analysis employs a probability model that incorporates a range of firm-specific and borrower-related characteristics to assess gender gaps in credit access. Given the binary nature of the dependent variable—whether or not credit was obtained—a logistic regression model is used to estimate marginal effects. This model includes variables capturing structural characteristics at the firm level, such as firm size, sector of activity, tax regime, legal form, and the age and educational attainment of the principal decision-maker.

The analysis also considers the extent to which firms rely on internal financing sources. Variables reflecting the use of personal capital, factoring arrangements, and financial reserves serve as proxies for internal resource dependency and provide insights into firms' financial behavior. In addition, indicators related to the ownership of financial products—such as deposit accounts, credit cards, and insurance—are included to approximate a firm's level of integration into the formal financial system and its potential capacity to apply for external credit.

Moreover, the model captures behavioral and managerial practices relevant to financial decision-making, including debt management strategies, sales forecasting, long-term planning, separation of personal and business finances, and the firm's familiarity with financial institutions and regulatory authorities. These dimensions influence lenders' perceptions of creditworthiness and play a critical role in determining firms' access to credit (Huidobro, 2024).

Borrower-specific variables, such as the entrepreneur's age and level of education, are also included to assess how personal characteristics affect credit access. These variables help illuminate the mechanisms that may disadvantage women-led enterprises in securing external financing and contribute to gender disparities among Mexico's micro, small, and medium-sized enterprises (MiPyMEs). Additionally, the model incorporates proxies for operational efficiency, liquidity, labor productivity, and financial performance.

To complement the logistic regression analysis, a Oaxaca-Blinder decomposition is employed to quantify the gender gap in credit access. This method distinguishes between differences that are attributable to observable characteristics and those due to unobservable factors. While the logistic regressions identify correlations at the extensive margin (i.e., whether credit is accessed), the decomposition technique estimates the gap at the intensive margin, capturing disparities in the amount of credit obtained.

## 4.1 Selection of Independent Variables

The selection of independent variables for the logistic estimation is guided by empirical studies on the determinants of credit access. They capture firm attributes, financial behavior, and individual attributes of the entrepreneurs that influence the probability of access to credit.

Firm size is also a significant determinant of credit access since large firms will tend to have older and longer financial histories and also collateral access (Beck and Demirguc-Kunt, 2006). Small, medium and large business are included to control for firm size differences in credit constraints (micro firms as a reference group).

Business experience also affects creditworthiness since more experience firms will be more stable and hence will have greater access to finance (Berger and Udell, 2002). The model controls for 5-10 years, 10-20 years, and over 20 years of firm existence (0-5 years as a reference group).

The type of business is also important, as industries vary in capital intensity and risk. We add business activity to capture financing requirements that are specific to industry. The structure of ownership can also matter for financing, and we control whether the firm is entrepreneur-managed or affiliated because these can determine access to alternative sources of finance.

The personal characteristics of entrepreneurs are bound to affect credit decisions since lenders would be inclined to examine the profile of the decision maker (Muravyev et al., 2009). We include age 41-50, age 51-65, and age above 65 to see if older entrepreneurs, who would be more experienced and better off financially, would have a greater chance of being approved for credit (18-40 years as a reference group).

Another important variable is education since higher financial literacy will increase credit access (Demirguc-Kunt et al., 2013). The model controls for medium education and high education (basic education as a reference group).

Financial inclusion variables such as the utilization of the internet and technology packages are included to capture the adoption of technology, which can be utilized to conduct financial transactions and creditworthiness. Similarly, having a bank account and a credit card indicates dealing with the formal financial sector and increases the likelihood of credit availability. The dichotomous variable indicating whether companies maintain distinct accounts identifies financial discipline, and insurance has been included to understand if risk management practices affect credit availability.

Financial well-being of firms is one of the main determinants of credit approval (Marlow and Patton, 2005). Business profit, business assets, and contributions are controlled for to reflect financial well-being. Alternative finance in the form of factoring and level of debt is also controlled for since they have an impact on firms' new credit access.

Strategic financial management methods, such as goal setting and sales forecasting, are also incorporated to capture whether companies that have formal financial planning are more inclined to obtain credit. Institutional expertise encompasses exposure to the financial system that may affect companies' chances of undertaking credit application processes. The model also includes proxies of behavior, efficiency, liquidity, labor productivity and financial performance and will be discussed in section 5.1 and 5.4, respectively.

All of these variables account for a complete model that captures the likelihood of access

to credit. Business size, experience in industry, financial stability, and management's plans all affect lenders' risk and creditworthiness judgments. Including individual variables like education and age further enhances the accuracy of the model by introducing decision-maker traits that may influence financial conduct.

The model can accurately estimate the probability of credit applications in 2019, 2020 and 2021 to find the financing decision drivers of the gender gap. The model is limited to identifying correlations between explanatory variables and variables of interest. Thus, no causal conclusions must be drawn from the results presented in this article.

## 4.2 Selection Bias

Credit access is determined by multiple characteristics of the borrower and the business, as well as the structure of the financial system. So, credit granting depends on the specific legal requirements established by each institution to offer financial credit.

The selection bias problem arises because the characteristics of the entire population, particularly those who do not receive financial credit, are not considered. The selection bias problem arises because the observed credit is not representative of the entire firm population, influencing the probability estimation obtained in the study.

Since not all firms meet loan acceptance requirements, a biased sample is generated only with those who meet the credit eligibility criteria, and businesses who were unable to access credit are excluded. Without a correction, the estimators will be biased because the analysis would focus only on those who receive credit and ignore the characteristics of firms that did not have a credit acceptance. The next section explains the Heckman correction that solves this issue.

## 4.3 Heckman Correction (1979)

This paper employs the method proposed by Heckman (1979) to examine the differences in financing conditions faced by male and female-led enterprises without ignoring the selection bias. The two-step sample selection model combines a selection equation and an outcome equation.

In the first stage, the model estimates whether a business has access to financing:

$$\mathbf{Y_{credit-approval}} = \begin{cases} 0 & \text{if no financing is obtained} \\ 1 & \text{if financing is obtained} \end{cases}$$

In the second stage, the model estimates the credit conditions for businesses that have a funding:

$$\mathbf{Y_{credit-conditions}} = \begin{cases} - & \text{if no financing is obtained} \\ 0 & \text{if financing is obtained but no credit approval} \\ x & \text{if financing is obtained and credit approval} \end{cases}$$

The analysis controls for several factors including firm size, industry sector, company age, fiscal regime, and the characteristics of the business leader. Internal resources financing, ownership of other financial products, and credit history issues are included. Also, this analysis is done for the strong definition of the participation of women.

The first stage contains the selection equation. A logistic regression of the probability of observation in the sample is estimated to determine the probability that a firm receives credit above a certain threshold (latent variable $s_i^*$), which determines the probability of being included in the sample for the outcome equation.

The unit of observation is the firm and is indexed with *i*. Therefore, the model is:

$$F_i^* = \gamma \cdot \mathbf{Z_i} + u_i \tag{1}$$

where the latent variable $F_i^*$ indicates the probability of receiving credit, $\mathbf{Z_i}$ is a vector of explanatory variables of the selection equation that includes the borrowers and businesses characteristics explained in section 4.1. Also, $\mathbf{Z_i}$ includes a complementary set of variables that determine knowledge of financial services and institutions. These variables have impact in the probability of access to credit (extensive margin), but no on the conditions if the application is accepted (intensive margin). The coefficient $\gamma$ is the vector of parameters estimated and $u_i$ is the error term.

The underlying relationship is modeled through $F^*$, which, although not directly observ-

able, allows for the observation of whether firms actually receive financing through credit, and can be expressed as:

$$F_i = \begin{cases} 1 & \text{if } F_i^* > 0 \\ 0 & \text{if } F_i^* \leq 0 \end{cases} \tag{2}$$

As a probability equation (Wooldridge, 2008):

$$\mathbb{P}(F_i = 1) = \mathbb{P}(\gamma \cdot \mathbf{Z_i} + u_i \geq 0) \tag{3}$$

This is estimated using a logistic regression, which specifies the conditional probability with measure $\mathbb{P}$ defined by the standard normal cumulative distribution function.

To ensure that the probability of convergence is strictly between zero and one for the parameters of $\mathbf{Z_i}$, the probability equation should be represented by integrals (Wooldridge, 2008):

$$\mathbb{P} = \Phi\left(\gamma \cdot Z_i\right) = \int_{-\infty}^{\gamma \cdot Z_i} \phi(x)\, dx \tag{4}$$

Once this selection probability is estimated, the inverse Mills ratio ($\lambda$) is calculated to capture the selection bias by adjusting for the probability of observing credit approval for firms that met the eligibility criteria.

The parameter $\lambda$ is a function of the expected value of the errors in the selection equation and is calculated as:

$$\lambda = \frac{\phi(\gamma \cdot \mathbf{Z_i})}{\Phi(\gamma \cdot \mathbf{Z_i})} \tag{5}$$

where $\phi(\cdot)$ and $\Phi(\cdot)$ are the standard normal density and cumulative distribution functions, respectively.

In the second stage, the outcome equation is specified and applied only to the selected sample. This equation focuses on firms with credit financing and introduces the correction term for selection bias calculated in the previous stage. The outcome variable is the credit conditions for those who receive a credit approval, adjusted for the explanatory factors that affect the amount of credit approved. The outcome equation estimates the intensive margin and is expressed as:

$$Y_i = \beta \cdot \mathbf{X_i} + \lambda \cdot \delta + \varepsilon_\mathbf{i} \tag{6}$$

where $Y_i$ represents the variables of interest, $\mathbf{X_i}$ is the vector of explanatory variables for the outcome equation, $\beta$ represents the vector of parameters to be estimated, $\lambda$ is the correction term by selection bias derived from the selection equation, and $\delta$ is the coefficient for $\lambda$, which measures the effect of selection bias on the outcome equation. The error term $\varepsilon_i$ captures the effect of unobserved factors on the corresponding variable of interest.

Without loss of generality, it is assumed that the correlation between the error terms is nonzero, reflecting the existence of selection bias in the observed sample, allowing to appropriately capture the effect of selection bias through $\lambda$.

The set $Y_i$ is the value of a particular characteristic of a credit for the $i$-th observation. This article focus on the loan amount, term, commission, guarantee, and interest rate. All these variables play a significant role in the ultimate cost and terms of a loan. The amount of the loan defines the amount of money lent, the term defines the time of repayment, the commission may be used for administrative purposes, the guarantee covers the loan, and the interest rate defines the cost of borrowing.

The set $\mathbf{X_i}$ is a subset of $\mathbf{Z_i}$ which is a set of characteristics of the company and its leader (size, age, tax regime, legal structure, education, and age). Also, $\mathbf{X_i}$ contains a set of variables capturing financing from own resources (use of own resources, capital contributions, factoring, and financial reserves).

Both contain a set of variables capturing the ownership of financial products by the company (deposit accounts, acceptance of cards, and insurance), a set of variables to capture the company's financial behavior (debt strategy, sales forecasts, long-term goals, and management of separate accounts). However, $\mathbf{Z_i}$ includes a set of variables that capture knowledge about financial sector authorities, which is excluded from $\mathbf{X_i}$ since these variables have impact in the probability of access to credit (extensive margin), but no on the conditions if the application is accepted (intensive margin).

By estimating the Heckman model using maximum likelihood estimation (MLE), both the selection and outcome equations can be interpreted simultaneously (Wooldridge, 2008).

The estimators are efficient and consistent given that the MLE maximizes the probability of observing the selected data under the assumption that the error terms in both equations are correlated, allowing for an accurate correction of selection bias and incorporating all available

information from the selected sample.

A key assumption is that the error terms $u_i$ and $\varepsilon_i$ follow a bivariate normal distribution with zero means and constant variance to ensure robustness.

Thus, this article identifies the determinants of the probability of obtaining credit, considering that borrower and business characteristics may vary depending on credit conditions. Therefore, the model equations are:

$$\text{Selection Equation:} \quad F_i = \mathbb{P}(\gamma \cdot \mathbf{Z_i} + u_i \geq 0 \tag{7}$$

$$\text{Outcome Equation:} \quad Y_i = \beta \cdot \mathbf{X_i} + \lambda \cdot \delta + \varepsilon_\mathbf{i} \tag{8}$$

Section 5 presents the results of the estimations and its marginal effects. The interpretation of the marginal effects refers to the marginal change in the probability that a firm has access to financing as a result of changes in the value of the explanatory variable.

## 4.4 Oaxaca-Blinder Decomposition (1973)

This article uses the Oaxaca-Blinder decomposition (1973) to measure the gender gap in access to financial credit for women-led firms. This method allows us to identify how much of the difference in average outcomes between two groups is due to differences in explanatory variables, and how much is due to differences in the magnitude of the regression coefficients, as well as their interaction.

The aim is to first determine how much of the difference in the probability of accessing credit and in its conditions can be explained by differences in borrower and business characteristics between men and women. This estimation also reveals how much of the gap can be attributed to differences in the coefficients of the estimated models.

Accordingly, the analysis applies the Oaxaca-Blinder decomposition to key credit condition variables, such as loan amount, term, commission, guarantee, and interest rate. This article presents an approximation of the credit gap within the financial system.

Following Jann (2008), the difference between men ($M$) and women ($W$) for an average

outcome variable for a gender-led firm ($\overline{Y}_{g,i}$) can be expressed as:

$$\Delta\overline{Y}_{g,i} = \overline{Y}_{M,i} - \overline{Y}_{W,i} \tag{9}$$

Thus, the linear model is:

$$Y_{g,i} = \hat{\beta}_{g,i} \cdot X_{g,i} + \epsilon_{g,i} \quad \text{with} \quad g \in \{M, W\} \quad \text{and} \quad E(\epsilon_{g,i}) = 0 \tag{10}$$

where $X_{g,i}$ is the vector that contains the mean values of the explanatory variables for firm *i* with leader with gender *g*, $\hat{\beta}_{g,i}$ is the vector of estimated regression coefficients, and $\epsilon_{g,i}$ is the error. Without loss of generality, the key assumptions are $E(\hat{\beta}_{g,i}) = \beta_{g,i}$ and $E(\epsilon_{g,i}) = 0$ by assumption.

The mean outcome difference in a credit interest variable can be expressed as the difference in the linear prediction at the gender-level means of the predictors, $\Delta\overline{Y}_{g,i}$, and can be expressed as:

$$\Delta\overline{Y}_{g,i} = \overline{Y}_{M,i} - \overline{Y}_{W,i} = \hat{\beta}_{M,i} \cdot \overline{\mathbf{X}}_{M,i} - \hat{\beta}_{W,i} \cdot \overline{\mathbf{X}}_{W,i} \tag{11}$$

The Oaxaca-Blinder "three-fold" decomposition allows us to split $\Delta\overline{Y}_{g,i}$ into three components, where the difference in average outcomes is taken into account with respect to the women-led firms reference vector of coefficients (Hlavac, 2022).

To identify the contribution of group differences to the overall outcome difference, the outcome difference (11) can be rearranged into three parts as follows (Winsborough and Dickinson, 1971; Jones and Kelley, 1984; Daymont and Andrisani, 1984):

$$\Delta\overline{Y}_{g,i} = \underbrace{(\overline{\mathbf{X}}_{M,i} - \overline{\mathbf{X}}_{W,i})'\hat{\beta}_{W,i}}_{\text{Endowments effect}} + \underbrace{\overline{\mathbf{X}}'_{W,i}(\hat{\beta}_{M,i} - \hat{\beta}_{W,i})}_{\text{Coefficients effect}} + \underbrace{(\overline{\mathbf{X}}_{M,i} - \overline{\mathbf{X}}_{W,i})'(\hat{\beta}_{M,i} - \hat{\beta}_{W,i})}_{\text{Interaction effect}} \tag{12}$$

The first component $(\overline{\mathbf{X}}_{M,i} - \overline{\mathbf{X}}_{W,i})'\hat{\beta}_{W,i}$ amounts to the part of the differential that is due to group differences in the predictors (the "endowments effect"). The second component $\overline{\mathbf{X}}'_{W,i}(\hat{\beta}_{M,i} - \hat{\beta}_{W,i})$ measures the contribution of differences in the coefficients. The third component $(\overline{\mathbf{X}}_{M,i} - \overline{\mathbf{X}}_{W,i})'(\hat{\beta}_{M,i} - \hat{\beta}_{W,i})$ is an interaction term that take into account the fact that differences in endowments and coefficients exist simultaneously between the two groups.

Decomposition (12) is formulated from the viewpoint of women-led firms. That is, the

group differences in the predictors are weighted by the coefficients of women-led businesses to determine the endowments effect. The endowments component measures the expected change in women-led firms mean outcome, if women-led firms had men-led firms predictor levels.

For the second component that accounts for the coefficients effects, the differences in coefficients are weighted by women-led firms predictor levels. That is, the second component measures the expected change in women-led businesses mean outcome, if women-led businesses had men-led businesses coefficients. The Oaxaca-Blinder decomposition complements the analysis by providing a deeper understanding of gender inequalities in financial inclusion for women-led firms.

To ensure robustness, it is essential to identify the main factors that determine credit access and its conditions, and it is necessary to analyze how much of the credit gap can be explained by differences in borrowers and business characteristics, and how much is due to the value of these characteristics. The next section presents the results and the insights obtained from both estimation methods.

# 5 Results

## 5.1 Logistic Regression Results

Using a logistic regression model, this paper estimates the probability that firms will seek and receive credit in 2019, 2020, and 2021, also includes a historical analysis for years before this period. The coefficients indicate how different independent variables influence these probabilities. A positive and significant coefficient means that the variable increases the likelihood of the outcome, while a negative and significant coefficient means a decrease in likelihood. Table 4 has two columns of dependent variables, the first representing the historical probability of any credit request and the second the historical probability of any credit granted throughout business life for years that are not 2019, 2020, or 2021.

The logistic results presented in Table 4 highlight significant historical determinants of credit request and grant. Businesses led by women exhibit a statistically significant lower likelihood of both applying for and obtaining credit, suggesting a persistent gender gap in credit access over time approximately by 4.3 to 4.9 percentage points.

Firm size is a relevant factor: medium-sized firms are significantly more likely to request and receive credit, while small firms show a weaker but still positive association. Large firms are significantly more likely to receive credit, although not more likely to request it.

Firm seniority shows a strong and consistent effect—firms with 5 to 10 years, 10 to 20 years, and more than 20 years of operation are all significantly more likely to request and be granted credit compared to younger firms. This indicates that historical experience and longevity contribute positively to credit access.

Ownership characteristics also matter. Firms owned by entrepreneurs or related groups (e.g., family businesses) are significantly more likely to both seek and obtain credit, suggesting that these ownership structures are historically associated with greater financial engagement and credibility.

The variables of the digital and financial infrastructure are particularly influential. The use of the Internet is highly positively associated with both credit request and grant. Similarly, ownership of bank accounts, credit cards, and separate business accounts shows significant positive effects. Insurance coverage is among the most significant factors, reinforcing its role in improving creditworthiness.

Some repayment strategies are also relevant: firms that repay using business assets or contributions are significantly more likely to receive and request credit, highlighting the importance of demonstrable repayment capacity.

Long-term financial behavior also plays a role. Goal setting shows a very strong positive association with both outcomes, while sales forecasting is significantly associated with higher chances of credit being granted. Finally, awareness of credit institutions and authorities shows a marginally significant and positive relationship with both requesting and receiving credit, underscoring the role of institutional familiarity in easing access to finance.

The key evidence in Table 5 suggests a persistent negative relationship between women-owned businesses and their ability to obtain credit during the period 2019-2021. The estimator suggests an approximation of the gender gap between 4.5 to 8.3 percentage points. This suggests that such businesses have wide barriers to accessing finance, with structural bias or system failure potentially limiting their access to credit. The consistent long-term nature of such a negative relationship takes into account the need to address long-term trends toward gender imbalance in

financial access.

It is straightforward that the impact of firm age is also crucial in identifying credit access. The firm age coefficients are positive and significant for almost all years except 2020 in credit granted. However, during 2020 and the COVID-19 pandemic, the effect is dampened, indicating possible disruption of the credit market or company priority adjustments (Huidobro, 2024).

The bank account variable consistently shows negative coefficients across all specifications, which may be related to the impact of the COVID-19 pandemic. One possible explanation is that banks' firms were more exposed to formal financial obligations which could have made lenders more cautious during the crisis. Alternatively, it could reflect that informal firms were more likely to seek credit as a coping mechanism during the pandemic, increasing their visibility in the data. Firms with technology-based programs show positive and significant effects, indicating the use of financing to increase credit access for more technology-based firms.

There is a significant negative gap in the reported need for financing among women-owned businesses for all years. This suggests that women-owned businesses are less likely to express a need for credit, possibly applying for financing less often, as shown in Table 4. The results show that the financing gap is larger in 2021 and more significant compared to 2020.

The year 2020 experienced a negative effect on the economy as a result of the COVID-19 health crisis. The effect had repercussions on the financial system and can potentially have narrowed the disparity in access to funding, since banking organizations typically limited their lending. This result is consistent with Bannò et al. (2022), who confirmed that such inequalities can be reduced in a state of crisis.

These results show that the financing access gap is robust to the most restrictive definition of women-owned firms. However, the results will be sensitive to the definition used when calculating this gap. Dutta and Mallick (2022) came with opposite results when altering the share of businesswoman owners against the barrier of access to credit. Thus, policymakers need to ensure that they use a definition that properly measures women-owned businesses impact to examine policies for the financial inclusion of these businesses.

To further investigate whether women respond differently to subjective or behavioral credit constraints, a robustness check was included adding interaction terms between female leadership and variables that reflects perceptions related to credit access. These interactions were added to

the logistic regression model alongside all previous controls to isolate the effect of gender-specific sensitivities to particular credit conditions.

The results in Table 6 show that women-led firms face a significantly lower probability of being granted credit when collateral is not available, with a negative and statistically significant interaction coefficient in the historic model grant variable. This suggests that the lack of guarantees limits access for female-led businesses, possibly reflecting gender disparities in asset ownership or lenders' higher risk perception toward unsecured borrowing by women.

The interaction between women leaders and the absence of income verification is statistically significant and positive in the 2019 model. This indicates that in earlier periods, women benefited more from credit environments where formal income documentation was not required, highlighting that rigid documentation requirements may represent a gendered barrier.

Lastly, the interaction between female leadership and no prior credit history shows a significant negative effect in 2019, suggesting that women without financial history faced an especially pronounced disadvantage in accessing credit. This reinforces concerns that exclusion from the formal financial system can significantly limit credit access.

No other interaction terms were found to be statistically significant. These findings support the hypothesis that certain credit conditions related to documentation, collateral, and prior credit experience have a differentiated and more adverse effect on women-led firms.

| | **Credit Request Historic** | **Credit Granted Historic** |
|---|---|---|
| Women Leader | -0.0433* | -0.0498* |
| | [−0.0934, 0.00684] | [−0.101, 0.000988] |
| Firm Size: Small Business | 0.0464* | 0.0589** |
| | [−0.00163, 0.0943] | [0.0105, 0.107] |
| Firm Size: Medium Business | 0.0955*** | 0.0818*** |
| | [0.0493, 0.142] | [0.0363, 0.127] |
| Firm Size: Large Business | 0.0295 | 0.0657* |
| | [−0.0422, 0.101] | [−0.00509, 0.137] |
| Firm Seniority: 5 to 10 years | 0.116*** | 0.118*** |
| | [0.0379, 0.193] | [0.0374, 0.198] |
| Firm Seniority: 10 to 20 years | 0.178*** | 0.198*** |
| | [0.106, 0.251] | [0.124, 0.272] |
| Firm Seniority: More than 20 years | 0.164*** | 0.199*** |
| | [0.0906, 0.238] | [0.124, 0.274] |
| Tax Regime: Business Activity | 0.00318 | -0.0125 |
| | [−0.0502, 0.0566] | [−0.0658, 0.0409] |
| Owner Type: Entrepreneur | 0.0625** | 0.0738** |
| | [0.000407, 0.125] | [0.0113, 0.136] |
| Owner Type: Related Group | 0.125*** | 0.115*** |
| | [0.0795, 0.171] | [0.0697, 0.161] |
| Owner Age: 41 to 50 years | -0.00357 | -0.0110 |
| | [−0.0600, 0.0528] | [−0.0678, 0.0458] |
| Owner Age: 51 to 65 years | 0.0220 | 0.00923 |
| | [−0.0325, 0.0766] | [−0.0452, 0.0637] |
| Owner Age: Over 65 years | -0.00688 | -0.0177 |
| | [−0.0815, 0.0678] | [−0.0913, 0.0558] |
| Owner Education: Medium Level | -0.0215 | -0.0262 |
| | [−0.0898, 0.0469] | [−0.0949, 0.0424] |
| Owner Education: High Level | -0.0447 | -0.0580* |
| | [−0.109, 0.0198] | [−0.122, 0.00634] |
| Firm Internet Use | 0.142*** | 0.183*** |
| | [0.0772, 0.207] | [0.118, 0.248] |
| Firm Tech Programs Use | -0.0601*** | -0.0615*** |
| | [−0.0994, −0.0207] | [−0.100, −0.0225] |
| Financial Product: Bank Account | 0.0460** | 0.0326* |
| | [0.00714, 0.0848] | [−0.00581, 0.0709] |
| Financial Product: Credit Card | 0.0702*** | 0.0648*** |
| | [0.0255, 0.115] | [0.0204, 0.109] |
| Financial Product: Separated Accounts | 0.0774*** | 0.0570** |
| | [0.0325, 0.122] | [0.0119, 0.102] |
| Financial Product: Insurance | 0.189*** | 0.166*** |
| | [0.113, 0.266] | [0.0914, 0.240] |
| Debt Repayment with Business Profit | 0.0283 | 0.0238 |
| | [−0.0170, 0.0736] | [−0.0209, 0.0684] |
| Debt Repayment with Business Assets | 0.339*** | 0.185*** |
| | [0.187, 0.491] | [0.0528, 0.317] |
| Debt Repayment with Contributions | 0.0975*** | 0.0982*** |
| | [0.0536, 0.141] | [0.0547, 0.142] |
| Debt Repayment with Factoring | -0.00588 | -0.0103 |
| | [−0.0520, 0.0403] | [−0.0563, 0.0356] |
| Debt Repayment with Debt | -0.0255 | -0.0212 |
| | [−0.0711, 0.0202] | [−0.0662, 0.0238] |
| Long-Term Behavior: Sales Forecasting | 0.0338 | 0.0502** |
| | [−0.00845, 0.0761] | [0.00797, 0.0924] |
| Long-Term Behavior: Goals Setting | 0.367*** | 0.311*** |
| | [0.190, 0.543] | [0.134, 0.489] |
| Credit Institutions and Authorities Knowledge | 0.162* | 0.152* |
| | [-0.0303, 0.356] | [-0.0204, 0.323] |
| Population | 280,489 | 280,489 |

Table 4: Historic Logistic Regression Results

Source: Author's estimation with ENAFIN 2021 data.

Note: Micro size business, firm seniority 0 to 5 years, others tax regime (tax incorporation regime, legal entity under the general regime, legal entity with non-profit fines and legal entity registered only with a state or municipal authority), other type of owner (partnership or association of unrelated persons), owner age 18 to 40 years, owner education basic level, other financial products (checks, online banking), no debt repayment and no long-term behaviors are excluded as reference. Confidence intervals are reported in brackets and constructed with robust standard errors. *** significant at 1%, ** at 5% and * at 10%.

| | Credit Granted 2019 | Credit Granted 2020 | Credit Granted 2021 |
|---|---|---|---|
| Women Leader | -0.0527** | -0.0454* | -0.0830*** |
| | [-0.0983, -0.00707] | [-0.0933, 0.00252] | [-0.131, -0.0355] |
| Firm Size: Small Business | 0.0510** | 0.00274 | 0.0563** |
| | [0.00404, 0.0979] | [-0.0437, 0.0491] | [0.00935, 0.103] |
| Firm Size: Medium Business | 0.0544*** | 0.0560*** | 0.0669*** |
| | [0.0185, 0.0902] | [0.0171, 0.0948] | [0.0328, 0.101] |
| Firm Size: Large Business | 0.0733** | 0.0524 | 0.0812*** |
| | [0.0120, 0.135] | [-0.0114, 0.116] | [0.0208, 0.142] |
| Firm Seniority: 5 to 10 years | 0.116*** | 0.0225 | 0.0960** |
| | [0.0333, 0.200] | [-0.0539, 0.0989] | [0.0192, 0.173] |
| Firm Seniority: 10 to 20 years | 0.159*** | 0.0854** | 0.132*** |
| | [0.0800, 0.237] | [0.0153, 0.155] | [0.0610, 0.204] |
| Firm Seniority: More than 20 years | 0.184*** | 0.105*** | 0.148*** |
| | [0.105, 0.263] | [0.0347, 0.175] | [0.0764, 0.219] |
| Tax Regime: Business Activity | 0.0242 | -0.00716 | 0.0170 |
| | [-0.0259, 0.0742] | [-0.0561, 0.0418] | [-0.0254, 0.0593] |
| Owner Type: Entrepreneur | 0.00554 | 0.0423 | 0.0165 |
| | [-0.0527, 0.0638] | [-0.0157, 0.100] | [-0.0340, 0.0670] |
| Owner Type: Related Group | 0.0695*** | 0.0719*** | 0.0721*** |
| | [0.0319, 0.107] | [0.0310, 0.113] | [0.0363, 0.108] |
| Owner Age: 41 to 50 years | 0.00242 | -0.0325 | 0.00701 |
| | [-0.0471, 0.0519] | [-0.0837, 0.0187] | [-0.0399, 0.0539] |
| Owner Age: 51 to 65 years | 0.000171 | -0.0102 | 0.00971 |
| | [-0.0466, 0.0470] | [-0.0583, 0.0380] | [-0.0351, 0.0545] |
| Owner Age: Over 65 years | 0.0122 | -0.00875 | 0.0172 |
| | [-0.0501, 0.0745] | [-0.0735, 0.0560] | [-0.0417, 0.0762] |
| Owner Education: Medium Level | 0.0188 | -0.00624 | 0.0341 |
| | [-0.0451, 0.0827] | [-0.0715, 0.0590] | [-0.0279, 0.0960] |
| Owner Education: High Level | -0.00876 | -0.0359 | 0.0159 |
| | [-0.0688, 0.0513] | [-0.0963, 0.0245] | [-0.0413, 0.0732] |
| Firm Internet Use | 0.181*** | 0.205*** | 0.159*** |
| | [0.113, 0.249] | [0.138, 0.273] | [0.0953, 0.222] |
| Firm Tech Programs Use | 0.181*** | 0.205*** | 0.159*** |
| | [0.113, 0.249] | [0.138, 0.273] | [0.0953, 0.222] |
| Financial Product: Bank Account | -0.0346** | -0.0514*** | -0.0372** |
| | [-0.0670, -0.00215] | [-0.0861, -0.0167] | [-0.0680, -0.00631] |
| Financial Product: Credit Card | 0.0181 | 0.0262 | 0.0172 |
| | [-0.0138, 0.0501] | [-0.00782, 0.0602] | [-0.0128, 0.0471] |
| Financial Product: Insurance | 0.0343* | 0.0330* | 0.0288* |
| | [-0.00146, 0.0701] | [-0.00549, 0.0714] | [-0.00470, 0.0623] |
| Debt Repayment with Business Profit | 0.169*** | 0.154*** | 0.104*** |
| | [0.113, 0.225] | [0.0940, 0.214] | [0.0526, 0.156] |
| Debt Repayment with Business Assets | 0.00979 | 0.0147 | 0.0221 |
| | [-0.0275, 0.0471] | [-0.0250, 0.0544] | [-0.0128, 0.0569] |
| Debt Repayment with Contributions | 0.102** | 0.0981* | 0.0759* |
| | [0.0133, 0.190] | [-0.00506, 0.201] | [-0.00305, 0.155] |
| Debt Repayment with Factoring | 0.0618*** | 0.0928*** | 0.0773*** |
| | [0.0249, 0.0986] | [0.0527, 0.133] | [0.0419, 0.113] |
| Debt Repayment with Debt | 0.00928 | -0.00412 | -0.0348* |
| | [-0.0300, 0.0486] | [-0.0474, 0.0391] | [-0.0720, 0.00231] |
| Long-Term Behavior: Sales Forecasting | -0.00854 | -0.0366* | -0.0145 |
| | [-0.0469, 0.0298] | [-0.0786, 0.00538] | [-0.0507, 0.0216] |
| Long-Term Behavior: Goals Setting | 0.0454** | 0.0140 | -0.000330 |
| | [0.00671, 0.0841] | [-0.0250, 0.0531] | [-0.0360, 0.0353] |
| Credit Institutions and Authorities Knowledge | 0.163* | 0.151* | 0.138 |
| | [-0.0303, 0.356] | [-0.0204, 0.323] | [-0.0329, 0.308] |
| Population | 280,489 | 280,489 | 280,489 |

Table 5: Logistic Regression Results by Year

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Confidence intervals are reported in brackets and constructed with robust standard errors. *** significant at 1%, ** at 5% and * at 10%.

| | **Credit Request Historic** | **Credit Granted Historic** | **Credit Granted 2019** | **Credit Granted 2020** | **Credit Granted 2021** |
|---|---|---|---|---|---|
| Women * Many Requirements | 0.0701 | 0.0431 | 0.0654 | 0.0596 | 0.0152 |
| | =[-0.0389 0.179] | =[-0.0680 0.154] | =[-0.0296 0.160] | =[-0.0453 0.165] | =[-0.0970 0.127] |
| Women * High Interest Rate | -0.0264 | -0.0513 | -0.0678 | -0.00861 | -0.0667 |
| | =[-0.155 0.102] | =[-0.185 0.0826] | =[-0.175 0.0396] | =[-0.133 0.115] | =[-0.190 0.0565] |
| Women * Unaffordable Payment Conditions | 0.000969 | -0.0137 | -0.0335 | -0.0468 | -0.0498 |
| | =[-0.102 0.104] | =[-0.118 0.0910] | =[-0.130 0.0633] | =[-0.149 0.0555] | =[-0.154 0.0543] |
| Women * No Income Verification | 0.0427 | 0.0913 | 0.120** | 0.0419 | 0.0734 |
| | =[-0.0945 0.180] | =[-0.0488 0.231] | =[0.000240 0.240] | =[-0.0775 0.161] | =[-0.0611 0.208] |
| Women * Limited Payment Capacity | 0.0525 | 0.0728 | 0.00929 | 0.0399 | 0.00288 |
| | =[-0.0570 0.162] | =[-0.0386 0.184] | =[-0.0900 0.109] | =[-0.0626 0.142] | =[-0.109 0.114] |
| Women * Many Procedures | -0.0516 | -0.000755 | 0.0205 | -0.0453 | -0.0410 |
| | =[-0.158 0.0544] | =[-0.106 0.105] | =[-0.0739 0.115] | =[-0.153 0.0622] | =[-0.148 0.0659] |
| Women * No Credit Institution | -0.0215 | 0.0239 | -0.0544 | -0.0190 | -0.128 |
| | =[-0.178 0.135] | =[-0.138 0.185] | =[-0.213 0.104] | =[-0.155 0.117] | =[-0.328 0.0726] |
| Women * No History | -0.0343 | -0.0878 | -0.127** | -0.0723 | -0.0515 |
| | =[-0.165 0.0967] | =[-0.217 0.0416] | =[-0.252 -0.00134] | =[-0.188 0.0437] | =[-0.177 0.0735] |
| Women * Bad History | 0.0555 | 0.0332 | 0.0978 | 0.0599 | 0.0337 |
| | =[-0.122 0.233] | =[-0.147 0.213] | =[-0.0439 0.240] | =[-0.103 0.223] | =[-0.164 0.232] |
| Women * No Collateral | -0.108 | -0.155** | -0.0896 | -0.111 | -0.0669 |
| | =[-0.247 0.0315] | =[-0.297 -0.0128] | =[-0.245 0.0659] | =[-0.253 0.0322] | =[-0.224 0.0902] |
| Women * No Seniority | 0.0675 | 0.109 | 0.0239 | 0.118* | 0.0847 |
| | =[-0.0952 0.230] | =[-0.0570 0.276] | =[-0.143 0.191] | =[-0.0149 0.252] | =[-0.0681 0.237] |
| Population | 280,489 | 280,489 | 280,489 | 280,489 | 280,489 |

Table 6: Logistic Regression Results including Women Behavior

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Confidence intervals are reported in brackets and constructed with robust standard errors. *** significant at 1%, ** at 5% and * at 10%.

## 5.2 Heckman Model (1979) Results

Heckman two-step selection model has been applied to analyze discriminatory patterns in credit terms provided to firms along the intensive margin between 2019 and 2021. The approach addresses the issue of sample selection bias by taking into account that all firms do not have an equal chance of getting credit and that the decision to seek and acquire credit is not random.

With this method, we condition on the likelihood that differences in credit terms and firm performance could come from heterogeneity between granted and non-granted credit applicants. Heckman correction is important because it allows us to incorporate the profile of women-owned firms which are not taking credit, thereby capturing their characteristics in the estimates.

This matters since their exclusion would bias the results and lessen the magnitude of disparities. By controlling for selection bias, we are able to determine that performance differentials for women- and men-owned businesses which we observe are representative not only of the situation of those who be granted by a credit, but of the overall population of entrepreneurs who may have structural barriers receiving credit.

The analysis focuses in credit conditions, such as, loan amount, term, commission, collateral, and interest rate. The results reveal persistent asymmetries in lending conditions based on firm-level attributes, including gender of leadership, firm size, seniority, owner demographics, and financial behaviors, thus suggesting differentiated access to credit terms depending on firm profiles.

Table 7 shows that in 2019 firms led by women were charged with higher interest rates, by approximately 6.5 percentage points. Small businesses paid higher rates with a 9.2 percentage point increase, while medium-sized firms were also subject to a higher rate of 6.8 percentage points. Medium-sized firms received loans with significantly lower collateral requirements. Long-term behaviors, particularly goal setting, were rewarded with significantly higher loan amounts with marginal higher commissions.

Table 8 shows that in 2020 the interest rate gap for women-led firms was no longer statistically significant, but older business owners (over 65 years) were charged higher rates. Firms under the business activity tax regime faced significantly higher collateral requirements. Owners with medium education paid significantly lower commissions, while highly educated owners received

significantly larger loan amounts. Firms using insurance services were charged lower interest rates with lower loan amount granted.

Table 9 shows that in 2021 women-led firms faces significantly lower loan amounts and lower commissions. Across firm sizes, all categories were associated with higher commissions. Older and more senior firms also paid higher commissions. Firms engaged in repayment using factoring or contributions were penalized with higher commissions but with lower collateral requirements. Sales forecasting and goal setting are associated with lower commissions, both statistically significant.

In conclusion, the analysis uncovers specific and consistent credit patterns during the period 2019 to 2021. In particular, the cost of borrowing (interest rate and commissions) and terms (amount, collateral, and term) varied significantly for women-led businesses, small and medium firm size, and those employing different financial tools and repayment strategies. These disparities highlight the importance of disaggregated firm-level analysis to detect selection-driven inequalities in financial access.

| | Loan Amount (Natural Log) | Term (Months) | Commission (Opening %) | Collateral (Over loan %) | Interest Rate (Annual %) |
|---|---|---|---|---|---|
| Women Leader | -1.466 | 3.809 | -0.386 | 32.15 | 6.534** |
| | (1.010) | (6.794) | (1.361) | (56.15) | (3.132) |
| Firm Size: Small Business | -0.404 | -2.207 | 3.097 | 49.97 | 9.210** |
| | (0.636) | (5.274) | (3.427) | (39.88) | (4.481) |
| Firm Size: Medium Business | 0.197 | -1.453 | 3.354 | -48.34* | 6.766** |
| | (0.635) | (4.672) | (2.081) | (28.30) | (2.968) |
| Firm Size: Large Business | -0.439 | -14.51* | 3.772 | 72.30 | 6.580 |
| | (0.816) | (8.372) | (4.566) | (50.78) | (5.784) |
| Firm Seniority: 10 to 20 years | -0.0187 | -8.298 | 5.994 | 39.12 | 13.15* |
| | (1.114) | (10.24) | (4.956) | (59.71) | (6.994) |
| Firm Seniority: 20 to 30 years | -0.156 | -4.699 | 8.627 | 36.74 | 17.28* |
| | (1.403) | (13.31) | (7.334) | (74.69) | (9.638) |
| Firm Seniority: 30 to 40 years | -0.699 | -4.838 | 9.093 | 12.86 | 20.42* |
| | (1.563) | (15.43) | (7.509) | (80.97) | (10.59) |
| Tax Regime: Business Activity | 0.172 | -1.276 | 2.359 | 11.06 | 3.102 |
| | (0.460) | (4.900) | (1.815) | (42.15) | (2.468) |
| Owner Type: Entrepreneur | 0.214 | 7.437 | 0.545 | -6.599 | -1.393 |
| | (0.464) | (5.283) | (1.196) | (39.89) | (2.338) |
| Owner Type: Related Group | -0.249 | -3.378 | 3.061 | -9.137 | 6.100 |
| | (0.685) | (6.398) | (2.926) | (27.71) | (3.984) |
| Owner Age: 41 to 50 years | 0.0859 | 1.787 | 2.275 | 26.69 | 1.260 |
| | (0.351) | (3.517) | (1.741) | (18.09) | (2.402) |
| Owner Age: 51 to 65 years | 0.480 | 1.975 | 0.521 | -4.370 | -0.0238 |
| | (0.384) | (3.844) | (0.829) | (18.79) | (2.032) |
| Owner Age: Over 65 years | 0.926 | -6.560 | 1.066 | 34.05 | -2.924 |
| | (0.569) | (4.773) | (1.411) | (22.38) | (2.512) |
| Owner Education: Medium Level | -0.679 | 1.564 | 0.698 | -13.48 | -0.197 |
| | (0.603) | (5.301) | (1.460) | (27.27) | (4.056) |
| Owner Education: High Level | -0.221 | 4.732 | 0.425 | -18.75 | -2.396 |
| | (0.526) | (4.188) | (1.093) | (22.49) | (3.494) |
| Financial Product: Bank Account | 0.481 | -5.388 | 9.041 | -118.2 | 19.80* |
| | (1.544) | (13.94) | (7.885) | (88.01) | (10.90) |
| Financial Product: Credit Card | -0.00361 | 2.217 | -0.358 | 13.62 | -0.406 |
| | (0.344) | (4.565) | (0.757) | (15.25) | (1.553) |
| Financial Product: Insurance | 0.125 | -3.352 | 1.712 | 0.792 | 2.803 |
| | (0.401) | (3.218) | (1.335) | (20.06) | (2.017) |
| Debt Repayment with Business Profit | -0.240 | 0.261* | -1.121 | 11.88 | 0.108 |
| | (-0.72) | (1.76) | (-1.22) | (0.95) | (0.86) |
| Debt Repayment with Business Assets | -1.615 | -2.015** | 6.723 | -59.55 | 0.788 |
| | (-0.86) | (-2.16) | (1.10) | (-0.58) | (0.95) |
| Debt Repayment with Contributions | -0.00807 | -0.252 | -0.0500 | 30.82* | 0.0971 |
| | (-0.02) | (-1.40) | (-0.11) | (1.78) | (0.59) |
| Debt Repayment with Factoring | -1.124 | -10.84 | 4.470 | -32.18 | 8.629 |
| | (0.956) | (7.429) | (4.146) | (47.56) | (5.495) |
| Debt Repayment with Debt | -0.254 | -9.312 | 2.915 | -30.69 | 7.813** |
| | (0.598) | (6.114) | (2.589) | (25.11) | (3.896) |
| Long-Term Behavior: Sales Forecasting | -0.00733 | 8.389* | 0.788 | 20.92 | -0.763 |
| | (0.337) | (4.431) | (0.874) | (14.92) | (1.740) |
| Long-Term Behavior: Goals Setting | 0.772*** | 4.521 | 0.899* | 17.21 | 0.172 |
| | (0.297) | (3.365) | (0.462) | (12.30) | (1.355) |
| Mills Ratio | 0.533 | 5.405 | -6.911 | 33.30 | -16.82** |
| | (1.245) | (10.54) | (5.841) | (62.47) | (8.169) |
| Population | 46,418 | 46,418 | 46,418 | 12,015 | 46,418 |

Table 7: Intensive Margin Differences by Gender in 2019

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

| | Loan Amount (Natural Log) | Term (Months) | Commission (Opening %) | Collateral (Over loan %) | Interest Rate (Annual %) |
|---|---|---|---|---|---|
| Women Leader | -0.908 | 6.410 | 1.005 | 20.50 | 7.668 |
| | (0.740) | (4.412) | (2.556) | (43.33) | (6.454) |
| Firm Size: Small Business | -0.0537 | -1.936 | 0.778 | -6.310 | -0.122 |
| | (0.375) | (3.673) | (0.660) | (21.15) | (2.080) |
| Firm Size: Medium Business | -0.158 | 2.991 | 0.522 | -14.35 | -0.305 |
| | (0.477) | (4.461) | (0.943) | (16.82) | (3.926) |
| Firm Size: Large Business | 0.0188 | -10.38 | 0.772 | 18.26 | -5.731 |
| | (0.665) | (8.428) | (1.362) | (29.75) | (4.944) |
| Firm Seniority: 10 to 20 years | -0.243 | -0.562 | 0.341 | 20.50 | -1.549 |
| | (0.488) | (4.014) | (1.045) | (22.49) | (2.694) |
| Firm Seniority: 20 to 30 years | -0.557 | 3.516 | 0.214 | 22.01 | -0.875 |
| | (0.694) | (6.286) | (1.658) | (27.32) | (6.546) |
| Firm Seniority: 30 to 40 years | -0.760 | 1.057 | 0.0955 | -1.224 | -1.016 |
| | (0.774) | (6.995) | (1.817) | (26.52) | (7.484) |
| Tax Regime: Business Activity | 0.238 | -2.901 | 1.311* | 64.24*** | -0.0820 |
| | (0.307) | (3.650) | (0.685) | (21.42) | (1.915) |
| Owner Type: Entrepreneur | -0.588 | 7.133 | -1.312 | -55.60* | -1.025 |
| | (0.490) | (5.264) | (1.159) | (29.86) | (3.286) |
| Owner Type: Related Group | -0.907 | 0.420 | 0.120 | 7.125 | -2.103 |
| | (0.551) | (5.608) | (1.321) | (21.09) | (5.169) |
| Owner Age: 41 to 50 years | 0.358 | -1.568 | 0.733 | 10.44 | 0.407 |
| | (0.355) | (3.417) | (0.613) | (16.66) | (2.813) |
| Owner Age: 51 to 65 years | -0.0341 | -2.455 | 0.327 | 7.502 | -0.120 |
| | (0.294) | (3.197) | (0.486) | (16.64) | (1.726) |
| Owner Age: Over 65 years | -0.0666 | -5.245 | -0.0826 | 3.396 | -3.893* |
| | (0.433) | (4.279) | (0.537) | (23.21) | (2.263) |
| Owner Education: Medium Level | 0.514 | 1.846 | -1.505* | 5.596 | -3.189 |
| | (0.415) | (3.423) | (0.811) | (22.40) | (2.936) |
| Owner Education: High Level | 0.822** | 0.880 | -0.852 | 1.769 | -3.427 |
| | (0.384) | (3.515) | (0.841) | (18.93) | (3.172) |
| Financial Product: Internet Use | -1.131 | -6.319 | -1.774 | -28.04 | -5.171 |
| | (1.402) | (14.15) | (3.420) | (46.08) | (14.27) |
| Financial Product: Tech Programs | 0.0944 | -1.784 | -0.00604 | -19.91 | 1.158 |
| | (0.404) | (4.047) | (1.041) | (16.99) | (3.604) |
| Financial Product: Bank Account | -0.328 | 5.044 | 0.596 | -0.672 | -1.158 |
| | (0.295) | (3.802) | (0.639) | (14.96) | (2.384) |
| Financial Product: Credit Card | -0.309 | -2.794 | 0.400 | 9.795 | -1.619 |
| | (0.290) | (3.378) | (0.760) | (15.69) | (2.804) |
| Financial Product: Insurance | -1.889* | -4.097 | 0.0144 | 42.25 | -4.041 |
| | (1.101) | (10.37) | (2.516) | (35.44) | (10.66) |
| Debt Repayment with Business Profit | -0.166 | 3.882 | 0.837 | 29.51* | 2.761 |
| | (0.247) | (3.909) | (0.704) | (15.79) | (2.018) |
| Debt Repayment with Business Assets | -0.839 | 0.336 | 0.0272 | -17.49 | -4.345 |
| | (0.764) | (8.585) | (1.564) | (20.89) | (6.849) |
| Debt Repayment with Contributions | -0.725 | -3.705 | -0.0849 | 18.35 | -2.367 |
| | (0.631) | (6.975) | (1.274) | (19.74) | (6.591) |
| Debt Repayment with Factoring | -0.0204 | 2.369 | -0.406 | -13.98 | -1.514 |
| | (0.267) | (3.285) | (0.557) | (15.24) | (1.734) |
| Debt Repayment with Debt | 0.554 | 5.840 | 0.694 | 4.163 | 2.814 |
| | (0.357) | (3.719) | (0.701) | (11.93) | (2.986) |
| Long-Term Behavior: Sales Forecasting | 0.471*** | 2.183* | -0.0576 | 0.524 | 0.659** |
| | (0.0638) | (1.164) | (0.0861) | (2.322) | (0.278) |
| Long-Term Behavior: Goals Setting | -0.0519 | -1.885 | 0.266 | -15.74 | 2.938 |
| | (0.282) | (3.121) | (0.493) | (11.70) | (1.870) |
| Mills Ratio | 1.635 | 2.296 | -0.322 | -17.40 | 3.673 |
| | (1.116) | (10.68) | (2.704) | (35.11) | (11.69) |
| Population | 51,626 | 51,626 | 51,626 | 11,753 | 51,626 |

Table 8: Intensive Margin Differences by Gender in 2020

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

| | Loan Amount (Natural Log) | Term (Months) | Commission (Opening %) | Collateral (Over loan %) | Interest Rate (Annual %) |
|---|---|---|---|---|---|
| Women Leader | -2.105* | -0.633 | -2.817*** | 12.29 | -4.574 |
| | (1.262) | (8.388) | (1.042) | (33.25) | (6.101) |
| Firm Size: Small Business | 42.15 | -412.4 | 152.4* | -31.15 | 0.362 |
| | (56.77) | (562.8) | (83.78) | (31.55) | (5.877) |
| Firm Size: Medium Business | 50.83 | -485.8 | 181.1* | -29.56 | 1.808 |
| | (67.41) | (667.7) | (99.50) | (24.80) | (6.159) |
| Firm Size: Large Business | 60.74 | -607.5 | 218.8* | -18.53 | -3.286 |
| | (81.93) | (811.5) | (120.9) | (37.55) | (8.226) |
| Firm Seniority: 10 to 20 years | 72.50 | -698.6 | 257.0* | -0.813 | 2.204 |
| | (96.81) | (958.3) | (142.2) | (57.73) | (9.220) |
| Firm Seniority: 20 to 30 years | 100.2 | -969.1 | 354.3* | -20.17 | 2.226 |
| | (133.6) | (1322.1) | (196.4) | (74.13) | (12.43) |
| Firm Seniority: 30 to 40 years | 111.9 | -1079.2 | 396.0* | -54.81 | 2.990 |
| | (149.0) | (1475.9) | (219.3) | (81.88) | (13.74) |
| Tax Regime: Business Activity | 13.11 | -132.0 | 45.96* | -5.015 | -2.018 |
| | (17.22) | (170.0) | (25.29) | (24.53) | (3.894) |
| Owner Type: Entrepreneur | 12.17 | -107.7 | 44.55* | -0.352 | 0.157 |
| | (16.51) | (164.4) | (24.56) | (31.09) | (3.949) |
| Owner Type: Related Group | 54.28 | -527.2 | 194.3* | -13.13 | 0.982 |
| | (72.71) | (720.1) | (107.4) | (28.75) | (6.588) |
| Owner Age: 41 to 50 years | 5.123 | -54.96 | 20.37* | 33.48* | 2.839 |
| | (7.024) | (70.07) | (10.47) | (17.28) | (2.003) |
| Owner Age: 51 to 65 years | 6.847 | -79.00 | 26.66* | 12.60 | 3.095 |
| | (9.773) | (97.02) | (14.45) | (18.74) | (2.009) |
| Owner Age: Over 65 years | 12.66 | -135.1 | 47.45* | 16.82 | 2.211 |
| | (17.32) | (172.0) | (25.93) | (31.23) | (2.773) |
| Owner Education: Medium Level | 24.82 | -252.4 | 91.78* | 21.40 | 3.322 |
| | (34.26) | (339.4) | (50.57) | (37.06) | (3.710) |
| Owner Education: High Level | 11.43 | -118.1 | 43.88* | 16.57 | 2.139 |
| | (15.92) | (158.3) | (23.71) | (22.00) | (2.303) |
| Financial Product: Internet Use | 119.7 | -1173.8 | 426.6* | -127.6 | 4.521 |
| | (160.2) | (1584.4) | (235.9) | (78.25) | (14.89) |
| Financial Product: Tech Programs | -28.65 | 273.0 | -98.97* | -0.222 | -1.915 |
| | (37.54) | (371.2) | (55.17) | (14.86) | (3.322) |
| Financial Product: Bank Account | 12.73 | -125.3 | 46.54* | -14.78 | 0.806 |
| | (17.24) | (171.4) | (25.56) | (9.494) | (1.864) |
| Financial Product: Credit Card | 21.43 | -213.1 | 78.05* | -5.477 | -0.405 |
| | (29.02) | (287.2) | (42.80) | (12.36) | (2.878) |
| Financial Product: Insurance | 4.310 | -41.23 | 16.89* | 12.26 | 0.101 |
| | (6.039) | (60.34) | (8.804) | (11.40) | (1.696) |
| Debt Repayment with Business Profit | 78.12 | -770.0 | 279.4* | -38.08 | 2.933 |
| | (105.2) | (1041.9) | (155.3) | (48.49) | (9.381) |
| Debt Repayment with Business Assets | 16.79 | -159.6 | 59.10* | 9.205 | 3.842 |
| | (22.16) | (220.1) | (32.94) | (16.17) | (2.367) |
| Debt Repayment with Contributions | 56.43 | -567.8 | 203.4* | -59.00* | -1.672 |
| | (76.65) | (758.7) | (113.0) | (32.46) | (6.964) |
| Debt Repayment with Factoring | 58.56 | -572.3 | 208.9* | -61.95** | 1.725 |
| | (78.00) | (771.5) | (115.3) | (28.39) | (7.404) |
| Debt Repayment with Debt | 0.654 | 5.740 | 0.794 | 28.61 | -0.545 |
| | (0.357) | (3.719) | (0.701) | (17.95) | (3.823) |
| Long-Term Behavior: Sales Forecasting | -26.85 | 261.0 | -94.52* | 8.189 | 0.348 |
| | (35.28) | (347.7) | (52.05) | (13.09) | (2.274) |
| Long-Term Behavior: Goals Setting | -10.64 | 106.8 | -39.41* | 58.22 | -4.188 |
| | (14.59) | (144.9) | (21.74) | (53.33) | (12.14) |
| Mills Ratio | -101.6 | 995.1 | -363.5* | 346.5 | -2.966 |
| | (136.4) | (1350.3) | (201.1) | (260.9) | (55.04) |
| Population | 39,472 | 39,472 | 39,472 | 8,921 | 39,472 |

Table 9: Intensive Margin Differences by Gender in 2021

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

## 5.3 Oaxaca-Blinder Decomposition (1973) Results

The Oaxaca-Blinder decomposition identifies considerable gender disparity in the provision of credit to firm managers during the analyzed years. This technique enables the decomposition of differences in intesive margin credit conditions to obtain a better understanding of the structure of credit access and the terms for male and female-led firms that receive financing.

A key distinction in the results lies between the non-adjusted and adjusted estimations. The former values reflect raw average differences and the latter results incorporate Heckman correction presented in section 5.2 to control for selection bias in loan approval. In this analysis, we rely on the adjusted results because they offer a more accurate depiction of disparities in credit terms by accounting for potential selection bias into receiving a loan.

Table 10 shows that in 2019 a significant gender disparity is observed in commission charges, where women-led firms paid 118.3 percentage points more in opening commission compared to men, a difference that is statistically significant at the 1% level. This disparity is largely driven by differences in coefficients rather than endowments. Other components such as loan amount, collateral, and interest rate show differences in magnitude but do not reach statistical significance. The term variable shows a negative gap of 25.2 months for women-led firms, but this is not statistically significant.

Table 11 shows that in 2020 the only statistically significant difference occurs in the term variable, where women-led firms had longer terms by 42.9 months, significant at the 10% level. The large negative gap in interest rate (34.4 percentage points) and in commission (13.4 points) are not statistically significant and thus cannot be interpreted as robust differences. Other credit conditions show no significant differences once selection bias is corrected.

Table 12 shows that in 2021 no statistically significant gap was observed in any component in the adjusted analysis. Women-led firms received less favorable collateral conditions, although the gap is not statistically significant. Loan amount, term, and collateral show very large numerical differences, but none of them reach statistical significance under the adjusted model.

The results reveal that gender differences in credit conditions persist but are highly specific to particular dimensions and years. Commission charges appear as the most recurrent and statistically significant disparity, although the direction and magnitude of the gap vary over time. Once

selection bias is taken into account, many raw differences disappear, emphasizing the relevance of using adjusted models to analyze credit access disparities.

| | (1) Loan Amount (Ten Thousand) | (2) Term (Months) | (3) Commission (Opening %) | (4) Collateral (Over loan %) | (5) Interest Rate (Annual %) |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 104.9*** | 28.05*** | 3.295*** | 90.90*** | 12.97*** |
| | (3.98) | (18.02) | (12.30) | (15.49) | (21.56) |
| Women Leader | 119.2* | 27.76*** | 8.723** | 96.33*** | 16.99*** |
| | (1.80) | (10.00) | (2.15) | (3.58) | (6.39) |
| Difference | -14.31 | 0.299 | -5.428 | -5.434 | -4.026 |
| | (-0.20) | (0.09) | (-1.34) | (-0.20) | (-1.48) |
| **Adjusted** | | | | | |
| Men Leader | 100.5 | 32.28*** | 0.668 | 116.1*** | 5.758 |
| | (0.43) | (3.53) | (0.34) | (4.11) | (1.02) |
| Women Leader | -846.7 | 57.47*** | -117.6*** | 76.54*** | 2.494 |
| | (-1.22) | (2.91) | (-3.03) | (2.77) | (0.11) |
| Difference | 947.2 | -25.19 | 118.3*** | 39.57 | 3.264 |
| | (1.29) | (-1.16) | (3.05) | (1.00) | (0.14) |
| Endowments | 38.10 | -0.439 | 3.597 | -14.91 | 2.682 |
| | (0.29) | (-0.11) | (0.17) | (-0.49) | (0.60) |
| Coefficients | 896.1 | -23.88 | 118.4*** | 51.55 | 2.392 |
| | (1.20) | (-1.07) | (3.06) | (1.06) | (0.10) |
| Interaction | 13.04 | -0.867 | -3.691 | 2.924 | -1.810 |
| | (0.09) | (-0.20) | (-0.17) | (0.08) | (-0.41) |
| Population | 46,418 | 46,418 | 26,097 | 12,015 | 46,418 |

Table 10: Intensive Margin Differences by Gender in 2019

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

| | (1) Loan Amount (Ten Thousand) | (2) Term (Months) | (3) Commission (Opening %) | (4) Collateral (Over loan %) | (5) Interest Rate (Annual %) |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 68.47** | 26.31*** | 3.695*** | 96.80*** | 14.39*** |
| | (2.49) | (19.54) | (10.24) | (17.63) | (21.83) |
| Women Leader | 65.11 | 24.82*** | 5.108*** | 82.05*** | 14.80*** |
| | (1.50) | (12.48) | (4.94) | (4.11) | (8.51) |
| Difference | 3.363 | 1.495 | -1.413 | 14.75 | -0.410 |
| | (0.07) | (0.62) | (-1.29) | (0.71) | (-0.22) |
| **Adjusted** | | | | | |
| Men Leader | 15.78 | 27.28*** | 1.889 | 86.01*** | 20.41 |
| | (0.09) | (3.18) | (0.19) | (5.36) | (1.08) |
| Women Leader | -756.7 | 70.16*** | 15.27* | 96.43*** | 54.80** |
| | (-1.44) | (3.22) | (1.82) | (4.93) | (2.44) |
| Difference | 772.5 | -42.88* | -13.38 | -10.42 | -34.40 |
| | (1.40) | (-1.83) | (-1.04) | (-0.41) | (-1.17) |
| Endowments | 138.4 | -3.549 | -2.140 | -26.52 | -0.941 |
| | (1.10) | (-0.69) | (-1.29) | (-1.24) | (-0.22) |
| Coefficients | 695.2 | -42.57* | -13.88 | -9.934 | -31.94 |
| | (1.23) | (-1.75) | (-0.94) | (-0.28) | (-1.00) |
| Interaction | -61.12 | 3.236 | 2.640 | 26.03 | -1.522 |
| | (-0.46) | (0.57) | (0.86) | (0.90) | (-0.28) |
| Population | 51,626 | 51,626 | 25,340 | 11,753 | 43,975 |

Table 11: Intensive Margin Differences by Gender in 2020

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

| | (1) Loan Amount (Ten Thousand) | (2) Term (Months) | (3) Commission (Opening %) | (4) Collateral (Over loan %) | (5) Interest Rate (Annual %) |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 192.2*** | 25.12*** | 3.428*** | 92.71*** | 14.68*** |
| | (3.18) | (13.81) | (9.98) | (22.02) | (23.01) |
| Women Leader | 212.9** | 24.01*** | 7.099*** | 58.84*** | 14.22*** |
| | (2.15) | (6.09) | (3.52) | (5.96) | (6.06) |
| Difference | -20.67 | 1.117 | -3.671* | 33.87*** | 0.459 |
| | (-0.18) | (0.26) | (-1.79) | (3.15) | (0.19) |
| **Adjusted** | | | | | |
| Men Leader | 34580.9 | 770.0 | -89.20 | -3315.2 | 830.7 |
| | (0.78) | (0.62) | (-0.32) | (-0.70) | (0.98) |
| Women Leader | -696.7 | -21.72 | -11.00*** | 43.80*** | 32.44 |
| | (-0.93) | (-0.76) | (-3.02) | (3.97) | (1.48) |
| Difference | 35277.6 | 791.7 | -78.20 | -3359.0 | 798.2 |
| | (0.79) | (0.64) | (-0.28) | (-0.71) | (0.94) |
| Endowments | 162.9 | 11.51 | 2.107 | 11.81 | -6.565 |
| | (0.86) | (1.50) | (0.56) | (1.05) | (-1.19) |
| Coefficients | 43636.2 | 977.4 | -90.36 | -6192.7 | 972.3 |
| | (0.78) | (0.63) | (-0.29) | (-0.71) | (0.94) |
| Interaction | -8521.5 | -197.2 | 10.05 | 2821.8 | -167.6 |
| | (-0.70) | (-0.60) | (0.24) | (0.69) | (-0.76) |
| Population | 39,472 | 39,472 | 20,242 | 8,921 | 32,012 |

Table 12: Intensive Margin Differences by Gender in 2021

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors
are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

## 5.4 Assets Efficiency, Liquidity, Financial Performance and Labor Productivity

International research reveals a positive relationship between access to financing and assets efficiency, liquidity, financial performance and labor productivity since they are connected to business growth and have been found to be connected to the availability of financing. Effectively functioning firms have better access to financial resources, better manage of their cash flows and have higher levels of profitability, which gives them more opportunity to access to better financial instruments and better loan conditions (Bull, 2007; Walsh, 2003; Hsieh and Klenow, 2009; Nagler and Naudé,2014).

This subsection analyzes the effects of asset efficiency, liquidity, financial performance, and labor productivity on both the intensive and extensive margins, to gain better insights into other factors that may increase or reduce gender disparities in access to finance. It also discusses additional channels that may help explain the financing gap between male- and female-owned firms.

The ENAFIN dataset allows for the identification of strong literature-based proxies to an-

alyze these channels. Given that the evidence reveals heterogeneity in both the intensive and extensive margins, these results enhance our understanding of how access to finance is influenced by efficiency indicators. They also provide clearer guidance on where public policies should focus to reduce gender-based financing gaps.

This paper examines four areas of business through the use of the following constructed variables:

1. Asset Turnover (Bull, 2007): This measure indicates how efficiently assets generate total income. Using ENAFIN data it is defined as:

$$\text{Asset Turnover} = \frac{\text{Total Income}}{\text{Total Assets}}$$

2. Liquidity (Bull, 2007): This measure shows the company's ability to handle resource outflows. Using ENAFIN data it is defined as:

$$\text{Liquidity} = \frac{\text{Total Income}}{\text{Total Expenses}}$$

3. Financial Performance (Walsh, 2003): This ratio measures how much of the revenue is converted into profit. Using ENAFIN data it is defined as:

$$\text{Financial Performance} = \frac{\text{Profit}}{\text{Total Income}}$$

4. Labor Productivity (Hsieh & Klenow, 2009; Nagler & Naudé,2014): This ratio measures how much revenue is produced, on average, by each employee. Using ENAFIN data it is defined as:

$$\text{Labor Productivity} = \frac{\text{Total Income}}{\text{Total Employees}}$$

5. Financial - Labor Productivity ratio: This measures how much financial performance represents, on average, for labor productivity. Using (3) and (4) it is defined as:

$$\text{Financial - Labor Productivity ratio} = \frac{\text{Financial Performance}}{\text{Labor Productivity}}$$

The Oaxaca-Blinder decomposition presented in Table 13 shows significant gender differences in key business performance indicators. This section also relies on the adjusted outcomes that includes the selection bias correction using the Heckman model presented in section 5.2.

According to the analysis, women-owned firms have better results with respect to male-owned firms in financial performance and labor-financial ratio performance. Both gaps are largely explained by endowments, suggesting that differences in observable characteristics, such as firm size, owner's education, and access to financial services, may contribute substantially to the performance gap.

In terms of financial performance, male-owned firms lag behind by 0.96 percentage points, a difference that is significant at the 1% level. A similarly large and significant gap exists in labor-financial performance as male-owned firms lag behind by 0.77 points.

However, instead of better financial performance of women-owned firms, a difference in labor productivity is also large and statistically significant, where women-owned firms have 0.46 percentage points lower in work productivity. Also, differences in asset turnover and liquidity growth rates are not statistically significant.

The results confirm robust and statistically significant gender differences in financial performance, labor productivity, and labor-financial performance ratio after eliminating the confounding effects of selection bias.

This finding points to structural problems faced by women entrepreneurs in the process of accessing and managing vital financial and productive resources. This highlights the importance of taking into account selection mechanisms when assessing gender gaps and refers to persistent obstacles blocking the development prospects of women-owned enterprises.

| | (1) Asset Turnover | (2) Liquidity (Growth Rate) | (3) Financial Performance | (4) Labor Productivity | (5) Labor-Financial Performance |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 0.928*** | 0.210*** | -5.762*** | 6.037*** | -0.445*** |
| | (13.98) | (10.42) | (-63.24) | (163.07) | (-8.96) |
| Women Leader | 0.640*** | 0.205*** | -4.576*** | 5.466*** | 0.182* |
| | (3.95) | (4.35) | (-23.88) | (60.40) | (1.65) |
| Difference | 0.287 | 0.00484 | -1.185*** | 0.570*** | -0.627*** |
| | (1.64) | (0.09) | (-5.59) | (5.83) | (-5.17) |
| **Adjusted** | | | | | |
| Men Leader | 0.940*** | 0.211*** | -5.753*** | 6.037*** | -0.440*** |
| | (14.07) | (10.04) | (-65.18) | (162.28) | (-9.13) |
| Women Leader | 0.547** | 0.186* | -4.795*** | 5.582*** | 0.327* |
| | (2.28) | (1.80) | (-16.63) | (37.22) | (1.69) |
| Difference | 0.393 | 0.0247 | -0.958*** | 0.455*** | -0.767*** |
| | (1.58) | (0.23) | (-3.18) | (2.95) | (-3.85) |
| Endowments | -0.165 | 0.00285 | -0.681*** | 0.156 | -0.495*** |
| | (-1.06) | (0.05) | (-3.59) | (1.57) | (-3.83) |
| Coefficients | 0.377 | 0.00637 | -0.230 | 0.238 | -0.350* |
| | (1.51) | (0.06) | (-0.81) | (1.56) | (-1.88) |
| Interaction | 0.182 | 0.0155 | -0.0470 | 0.0609 | 0.0782 |
| | (1.16) | (0.25) | (-0.28) | (0.62) | (0.73) |
| Population | 201,631 | 201,631 | 201,631 | 201,631 | 201,631 |

Table 13: Financial and Productivity Differences by Gender

Source: Author's estimation with ENAFIN 2021 data.
Note: Same controls included as in Table 4. Robust standard errors
are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

This thesis also measure credit access likelihood through a logistic model of regression with interaction terms for gender and performance variables. The model holds constant firm- and owner-specific characteristics to isolate the financial and productivity indicator effects from credit access, with particular interest in heterogeneity in these effects for women's firms.

Table 14 shows that in 2020, financially better performing female-owned firms were significantly less likely to get credit (2.3 percentage points), and there was also a statistically significant negative impact of labor productivity on credit access (2.3 to 3.2 percentage points). The interaction between women and financial performance suggests a significant negative impact in 2020 of 5.1 percentage points, which means that financially better performance of female-owned firms had lower credit access probabilities compared to male-owned firms.

Similarly, the interaction term for women-labor productivity is significant over the historical period, especially in 2020, indicating that higher labor productivity was associated with lower availability of credit for women-owned enterprises. This negative correlation between women-owned firms' access to credit and labor productivity shows the structural challenges of women-owned firms.

No other significant impacts were observed in 2021. Therefore, the credit constraints based

on performance were extremely prominent in 2020 but received relief afterward.

The gender-firm performance interaction indicates statistically significant credit limitations for women's businesses, particularly in 2020. These results highlight the way the gender gap in credit is expressed in terms of firm-based performance measures, which was characterized by robust negative correlations with key performance measures.

| | (1) Credit Request Historic | (2) Credit Granted Historic | (3) Credit Granted 2019 | (4) Credit Granted 2020 | (5) Credit Granted 2021 |
|---|---|---|---|---|---|
| **Women * Asset Turnover** | -0.00854 | -0.00660 | -0.00447 | 0.00173 | -0.00855 |
| | =[-0.0300 0.0129] | =[-0.0299 0.0167] | =[-0.0249 0.0160] | =[-0.0180 0.0215] | =[-0.0283 0.0112] |
| **Women * Liquidity** | 0.000279 | 0.0269 | -0.0142 | -0.00940 | -0.0168 |
| | =[-0.0714 0.0720] | =[-0.0416 0.0954] | =[-0.0740 0.0457] | =[-0.0738 0.0550] | =[-0.0792 0.0457] |
| **Women * Financial Performance** | -0.0235* | -0.0233* | -0.0182 | -0.0514** | -0.00677 |
| | =[-0.0479 0.00101] | =[-0.0488 0.00212] | =[-0.0453 0.00885] | =[-0.0907 -0.0122] | =[-0.0328 0.0192] |
| **Women * Labor Productivity** | -0.0292** | -0.0321** | -0.0248* | -0.0550*** | -0.0120 |
| | =[-0.0540 -0.00434] | =[-0.0578 -0.00635] | =[-0.0519 0.00242] | =[-0.0958 -0.0142] | =[-0.0376 0.0137] |
| **Women * Labor Productivity and Financial Performance** | 0.0326* | 0.0225 | 0.00456 | 0.0514** | -0.00699 |
| | =[-0.00406 0.0692] | =[-0.0151 0.0602] | =[-0.0335 0.0426] | =[0.00321 0.0996] | =[-0.0469 0.0329] |
| Population | 280,489 | 280,489 | 280,489 | 280,489 | 280,489 |

Table 14: Logistic Regression Results including Women Financial and Productivity

Source: Author's estimation with ENAFIN 2021 data.

Note: Same controls included as in Table 4. Robust standard errors are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

This section includes a Oaxaca-Blinder decomposition to identify considerable gender disparity in the provision of credit for firm managers over the analyzed years in the credit conditions controlling also by the variables: asset turnover, liquidity, financial performance, labor productivity, and financial-labor productivity ratio.

Table 15 shows that in 2019 women-led firms were significantly disadvantaged in loan amount and in commission charges. The interaction component in commission suggests systemic differences in pricing unrelated to firm or manager characteristics. However, the collateral condition for women-led firms remains more favorable.

Table 16 shows that in 2020, no statistically significant differences were observed in the adjusted results, except for the endowment and interaction components of collateral: women-led firms had worse collateral conditions due to differences in observable characteristics.

Table 17 shows that in 2021 a significant negative gap in loan amount was found for women-led firms. The decomposition shows that this disparity is largely driven by coefficients and endowments, indicating structural differences and provides clues that not only the firm profile was taken into account for the credit granting.

In conclusion, results consistently indicate that women-led firms face unequal credit conditions. The greatest disparities were observed in 2019 and 2021, particularly in loan amounts and collateral requirements. These findings reveal that credit allocation mechanisms differ not only by performance and that these differences are not fully explained by observable characteristics.

| | (1) Loan Amount (Ten Thousand) | (2) Term (Months) | (3) Commission (Opening %) | (4) Collateral (Over loan %) | (5) Interest Rate (Annual %) |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 102.1*** | 28.19*** | 3.281*** | 93.45*** | 13.20*** |
| | (3.96) | (18.49) | (12.58) | (12.78) | (21.95) |
| Women Leader | 140.8* | 26.75*** | 10.20** | 80.88*** | 16.17*** |
| | (1.75) | (8.06) | (2.06) | (3.76) | (5.22) |
| Difference | -38.73 | 1.440 | -6.915 | 12.57 | -2.971 |
| | (-0.46) | (0.39) | (-1.40) | (0.55) | (-0.94) |
| **Adjusted** | | | | | |
| Men Leader | 110.9 | 33.20*** | 0.465 | 125.6*** | 5.118 |
| | (0.45) | (3.50) | (0.23) | (3.87) | (0.87) |
| Women Leader | -1865.8* | -1.632 | 7.759 | 101.4*** | -29.42 |
| | (-1.75) | (-0.04) | (1.61) | (5.13) | (-0.57) |
| Difference | 1976.7* | 34.83 | -7.294 | 24.23 | 34.54 |
| | (1.81) | (0.81) | (-1.39) | (0.64) | (0.67) |
| Endowments | -3176.8* | 107.5 | 22.16*** | -37.85* | 85.53 |
| | (-1.70) | (1.39) | (4.53) | (-1.87) | (1.15) |
| Coefficients | 1912.8* | 42.44 | -4.012 | -52.66 | 36.33 |
| | (1.72) | (0.97) | (-0.80) | (-0.68) | (0.70) |
| Interaction | 3240.7* | -115.1 | -25.44*** | 114.7** | -87.33 |
| | (1.73) | (-1.49) | (-4.98) | (1.99) | (-1.18) |
| Population | 46,418 | 46,418 | 26,097 | 12,015 | 46,418 |

Table 15: Intensive Margin Differences by Gender in 2019

Source: Author's estimation with ENAFIN 2021 data.
Note: Model controls includes asset turnover, liquidity, financial performance, labor productivity financial-labor productivity ratio and same controls as in Table 4. Robust standard errors are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

| | (1) Loan Amount (Ten Thousand) | (2) Term (Months) | (3) Commission (Opening %) | (4) Collateral (Over loan %) | (5) Interest Rate (Annual %) |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 66.45** | 26.55*** | 3.821*** | 98.41*** | 14.69*** |
| | (2.48) | (20.18) | (9.89) | (16.71) | (21.23) |
| Women Leader | 75.52 | 23.26*** | 4.709*** | 66.84*** | 13.31*** |
| | (1.41) | (10.74) | (6.13) | (4.57) | (8.50) |
| Difference | -9.077 | 3.293 | -0.888 | 31.57** | 1.376 |
| | (-0.15) | (1.30) | (-1.03) | (2.00) | (0.80) |
| **Adjusted** | | | | | |
| Men Leader | 31.73 | 27.74*** | 1.275 | 84.62*** | 22.37 |
| | (0.20) | (3.33) | (0.10) | (4.93) | (0.95) |
| Women Leader | -3082.8 | -89.16 | 11.49*** | 99.30*** | -180.7 |
| | (-0.95) | (-0.93) | (8.69) | (5.99) | (-1.40) |
| Difference | 3114.6 | 116.9 | -10.21 | -14.68 | 203.1 |
| | (0.96) | (1.22) | (-0.83) | (-0.62) | (1.54) |
| Endowments | 871.5 | 33.88 | 0.276 | -42.93** | 46.19 |
| | (0.80) | (0.95) | (0.13) | (-2.44) | (1.06) |
| Coefficients | 3046.1 | 128.1 | -12.56 | -43.23 | 204.6 |
| | (0.94) | (1.33) | (-0.68) | (-1.07) | (1.53) |
| Interaction | -803.0 | -45.08 | 2.064 | 71.49** | -47.71 |
| | (-0.74) | (-1.26) | (0.30) | (2.08) | (-1.04) |
| Population | 51,626 | 51,626 | 25,340 | 11,753 | 43,975 |

Table 16: Intensive Margin Differences by Gender in 2020

Source: Author's estimation with ENAFIN 2021 data.
Note: Model controls includes asset turnover, liquidity, financial performance, labor productivity financial-labor productivity ratio and same controls as in Table 4. Robust standard errors are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

| | (1) Loan Amount (Ten Thousand) | (2) Term (Months) | (3) Commission (Opening %) | (4) Collateral (Over loan %) | (5) Interest Rate (Annual %) |
|---|---|---|---|---|---|
| **Non Adjusted** | | | | | |
| Men Leader | 189.3*** | 25.26*** | 3.426*** | 91.44*** | 14.77*** |
| | (3.30) | (15.03) | (9.10) | (12.17) | (21.57) |
| Women Leader | 235.1** | 22.90*** | 7.266*** | 59.83*** | 13.61*** |
| | (1.98) | (3.14) | (3.47) | (4.23) | (5.83) |
| Difference | -45.79 | 2.361 | -3.840* | 31.61** | 1.154 |
| | (-0.35) | (0.32) | (-1.80) | (1.97) | (0.47) |
| **Adjusted** | | | | | |
| Men Leader | 32697.0 | 726.0 | -82.43 | -3608.8 | 777.1 |
| | (0.78) | (0.62) | (-0.32) | (-0.79) | (0.98) |
| Women Leader | 11.32*** | -17959.2 | 2.458 | 59.83*** | -57.87*** |
| | (9.30) | (-0.34) | (1.01) | (4.23) | (-7.37) |
| Difference | -109.94*** | 18685.3 | -84.89 | -3668.7 | 835.0 |
| | (-8.54) | (0.36) | (-0.33) | (-0.81) | (1.05) |
| Endowments | -50.28*** | 8026.2 | 1.312 | 4.681 | -20.52** |
| | (-4.43) | (0.35) | (0.53) | (0.33) | (-2.39) |
| Coefficients | -108.49*** | 19033.5 | -122.0 | -6976.0 | 1059.3 |
| | (-8.14) | (0.36) | (-0.34) | (-0.81) | (1.02) |
| Interaction | 48.83*** | -8374.4 | 35.83 | 3302.6 | -203.8 |
| | (4.39) | (-0.36) | (0.34) | (0.77) | (-0.76) |
| Population | 39,472 | 39,472 | 20,242 | 8,921 | 32,012 |

Table 17: Intensive Margin Differences by Gender in 2021

Source: Author's estimation with ENAFIN 2021 data.
Note: Model controls includes asset turnover, liquidity, financial performance, labor productivity financial-labor productivity ratio and same controls as in Table 4. Robust standard errors are reported in parentheses. *** significant at 1%, ** at 5% and * at 10%.

# 6 Conclusions

This thesis found some determinants of access to business credit in 2019-2021. The findings are that in addition to the gender of the owner, the size, the seniority, the owner type, the behavior regarding debt, and long-term business planning are significant determinants of credit accessibility.

Interestingly, medium-sized firms are more likely to access credit compared to micro businesses. Older businesses are also more likely to obtain credit. In addition, firms with software use and bank account holding have the best prospects of having their credit requests approved, pointing to the role of financial technology in expanding access to credit.

Women entrepreneurs have lower likelihood of approval for credit and worse credit conditions. This reflects the existence of structural barriers, such as limited access to credit networks as a root that may causes this gap.

Results indicate that the gender gap is not generated only due to observed characteristics of the owners, but also by an outcome of institutional barriers discourage women from obtaining credit.

Male entrepreneurs have more favorable credit conditions such as higher loan amount, lower interest rate and lower collateral demands; however, these results are not consistent over the analyzed period. This implies that there is significant gender disparity in the provision of credit and that male firms are being extended more favorable terms even if they have the same or even worse firm-level performance.

The financial performance of women entrepreneurs are not worse relative to male-owned businesses, but the relatively poorer access to financial market may affect women-owned firms in the long term. The findings show the existence of gender disparity in credit access, and set it as a constrain factor of women-owned firms' growth and development.

This thesis recommends targeted intervention by policymakers to limit disparities in the financial market. This analysis promotes financial inclusion with a vision of creating equality of opportunity at the business front and improving opportunities for women business owners.

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