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Financial Inclusion and Women Entrepreneurship: Evidence from Mexico

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FINANCIAL INCLUSION AND WOMEN ENTREPRENEURSHIP: EVIDENCE FROM MEXICO

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By Fozan Fareed, Mabel Gabriel, Patrick Lenain and Julien Reynaud

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ABSTRACT/RÉSUMÉ

Financial Inclusion and Women Entrepreneurship: Evidence from Mexico

Financial inclusion and women entrepreneurship concern policymakers because of their impact on job creation, economic growth and women empowerment. Women in Mexico do engage in paid work but many of them work in the informal sector because they lack opportunities to work in the formal sector. Moreover, financial exclusion rate in Mexico remains the highest amongst OECD countries, affecting women in particular. This paper uses an individual-based panel dataset over the period 2009-2015 to examine the determinants of women entrepreneurship in Mexico and to determine the relationship between women entrepreneurship and financial inclusion across informal and formal work and across economic sectors. The results suggest that financial inclusion is positively linked with entrepreneurship and it can open up economic opportunities for women entrepreneurs. Various financial access points like banking branches, POS terminals, banking agents, ATMs and microfinance banks can be a gateway to the use of additional financial services which can allow businesses development through access to credit facilities. However, the positive relationship between women entrepreneurship and financial inclusion does not hold for women entrepreneurs working in the informal sector or women working in the commerce sector, highlighting lower entry barriers, including financial, in the informal sector and problems pertaining to financial illiteracy. Results also highlight that the probability of a women being an entrepreneur in the informal sector is higher than in the formal sector. Education, age, income, marital status (married or divorced), and income level at the municipality level are amongst other significant determinants which are positively linked with women entrepreneurship. The results also highlight the existence of gender disparity in the status of entrepreneurship across formal and informal work in Mexico. On average, women are about 56% less likely to be entrepreneurs in the formal sector and 63% more likely to be entrepreneurs in the informal sector, as compared to men, after taking into account other relevant individual and municipality level characteristics that are important in explaining entrepreneurship.

This Working Paper relates to the 2017 *OECD Economic Survey of Mexico*
(www.oecd.org/eco/surveys/economic-survey-mexico.htm).

JEL classification: F14, F23, F68, L16, O24

Keywords: Financial inclusion, women entrepreneurship, financial access, informality, SMEs, financial exclusion

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Inclusion financière et entrepreneuriat féminin : témoignages du Mexique

L'inclusion financière et l'entrepreneuriat féminin concernent les décideurs en raison de leur impact sur la création d'emplois, la croissance économique et l'autonomisation des femmes. Les femmes au Mexique s'engagent dans un travail rémunéré, mais bon nombre d'entre elles travaillent dans le secteur informel parce qu'elles n'ont pas les moyens de travailler dans le secteur formel. En outre, le taux d'exclusion financière au Mexique reste le plus élevé parmi les pays de l'OCDE, ce qui touche les femmes en particulier. Cet article utilise un ensemble de données sur les tableaux individuels au cours de la période 2009-2015 pour examiner les déterminants de l'entrepreneuriat féminin au Mexique et déterminer la relation entre l'esprit d'entreprise féminin et l'inclusion financière dans le travail informel et formel et dans les secteurs économiques. Les résultats suggèrent que l'inclusion financière est liée positivement à l'esprit d'entreprise et qu'elle peut ouvrir des opportunités économiques aux femmes entrepreneurs. Les différents points d'accès financiers, tels que les succursales bancaires, les terminaux POS, les agents bancaires, les guichets automatiques et les banques de microfinance peuvent être une porte d'entrée à l'utilisation de services financiers supplémentaires qui peuvent permettre le développement des entreprises par l'accès aux facilités de crédit. Cependant, la relation positive entre l'esprit d'entreprise féminin et l'inclusion financière ne tient pas aux femmes entrepreneurs travaillant dans le secteur informel ou les femmes travaillant dans le secteur du commerce, en soulignant les obstacles à l'entrée, y compris financiers, dans le secteur informel et les problèmes liés à l'analphabétisme financier. Les résultats soulignent également que la probabilité qu'une femme soit un entrepreneur dans le secteur informel soit plus élevée que dans le secteur formel. L'éducation, l'âge, le revenu, l'état matrimonial (marié ou divorcé) et le niveau de revenu au niveau de la municipalité sont parmi d'autres déterminants importants qui sont positivement liés à l'entrepreneuriat féminin. Les résultats mettent également en évidence l'existence d'une disparité entre les sexes dans le statut de l'entrepreneuriat dans le travail formel et informel au Mexique. En moyenne, les femmes sont environ 56% moins susceptibles d'être des entrepreneurs dans le secteur formel et 63% de plus susceptibles d'être des entrepreneurs dans le secteur informel par rapport aux hommes, après avoir pris en compte d'autres caractéristiques individuelles et municipales pertinentes qui sont importantes dans expliquant l'esprit d'entreprise.

Ce Document de travail se rapporte à l'Étude économique de l'OCDE du Mexique, 2017.
(www.oecd.org/fr/eco/etudes/etude-economique-mexique.htm).

JEL Classification: F14, F23, F68, L16, O24

Mots clés : Intégration financière, entrepreneuriat féminin, accès financier, informel, PME, exclusion financière

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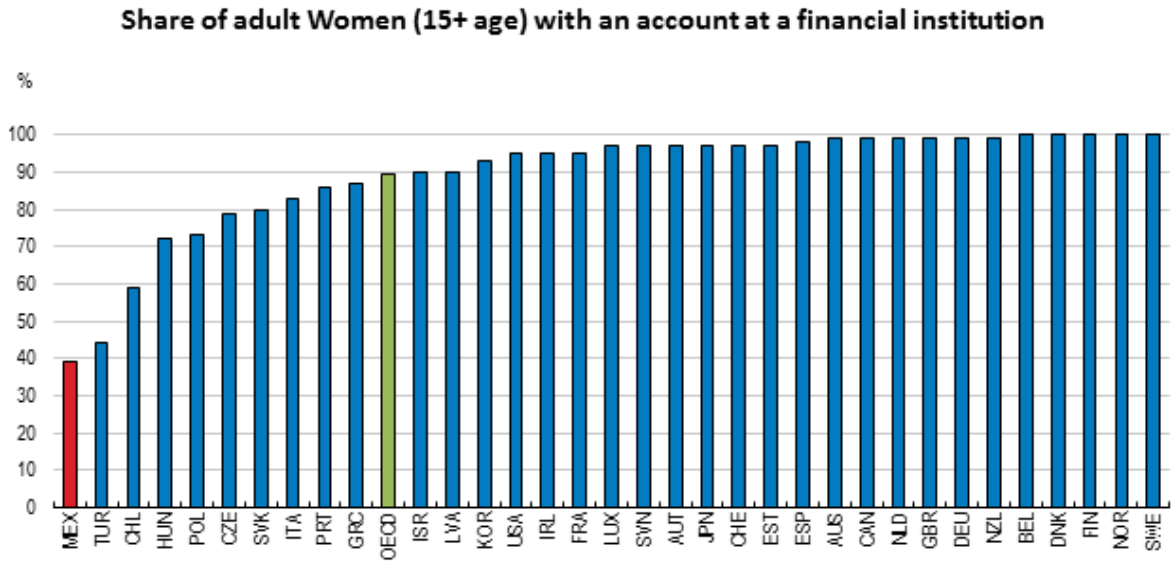
FINANCIAL INCLUSION AND WOMEN ENTREPRENEURSHIP: EVIDENCE FROM MEXICO

Fozan Fareed, Mabel Gabriel, Patrick Lenain and Julien Reynaud[1]

Financial inclusion is considered a key enabler of economic growth and poverty reduction. The term financial inclusion is broadly defined as the access to and use of formal financial services by households and firms, those without such access are financially excluded. Having access to financial services allows firms to invest and households to smooth their consumption and build capital over time, which leads to improvement in the business environment as well as in people's livelihoods. But in itself, having access to financial services does not guarantee firms and households can actually use them. The literature on access to finance typically disregard this issue and tend to mix access with the actual distribution of credit. Being able to manage an official bank account can be a challenge for firms and workers in the informal sector. In this paper, we focus on a strict dimension of financial access, i.e. whether entrepreneurs have access to financial services such as like banking branches, POS terminals, banking agents, ATMs, etc.

Around 2 billion adults across the globe remain unbanked and women remain more financially excluded than men, especially in developing countries (World Bank, 2014; Ghosh and Vinod, 2017). This is the case in Mexico where the share of women with an account at a financial institution is the lowest amongst all OECD countries (Figure 1).

Figure 1. Financial inclusion for women in Mexico is the lowest amongst OECD countries



Source: World Bank Global Findex Database (2014).

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When women in Mexico engage in paid work, many of them work in the informal sector because they lack opportunities to work in the formal sector. Women-owned businesses could be a key source of job creation, innovation, and a way to address inequalities, given the gender gap in labor participation in Mexico. However, women represent less than 3% of formal employers and only 25% of formal self-employed. Women also have lower earnings than men and rarely own large businesses (OECD, ILO, et al. 2014). The issues faced by women entrepreneurs are similar to those faced by entrepreneurs in general and largely centred on access to financial products and markets as well as the climate for doing business. Nonetheless, many characteristics of women entrepreneurs and of their enterprises differ from those of men, and therefore require specific policy interventions.

Figure 2. Women represent a low share of employers and entrepreneurs



Note: Data for AUS, MEX, NZL data refer to 2015.

Source: OECD Entrepreneurship at a Glance 2016.

Financial constraints are considered as one of the biggest challenges for entrepreneurs, especially in developing countries (World Bank, 2014) but there is limited empirical evidence on the relationship between financial inclusion and entrepreneurship. This paper investigates empirically the link between women entrepreneurship and financial inclusion across economic sectors, across areas (urban or rural) and across informal and formal work in Mexico. It is important to note that the existing literature about the impact of financial inclusion and access to finance, summarized in the next section, does not really examine the effects of increased access to financial services on the labour market channel and entrepreneurship.

The rest of the paper is structured as follows: Section two reviews the existing literature on the impact of access to finance at the macro level as well as at the micro level. Section three presents the definition of entrepreneurs and financial inclusion which has been used in this paper. This section also offers an overview of Mexico's financial inclusion and entrepreneurship landscape, providing stylized facts about

the recent state of financial inclusion and entrepreneurship in Mexico across regions, across gender and across economic sectors. Moreover, this section presents the details of a financial inclusion index (FII) which we developed to measure the state of financial inclusion in Mexico. Section four then presents the econometric analysis aiming at examining the key determinants of women entrepreneurship and investigating its link with financial inclusion. Section five concludes.

Related Literature

There is a vast amount of literature focusing on the impact of financial inclusion or broader access to financial services on development and economic growth. A sheer part of this research on the macroeconomic level shows that broader access to financial services, or financial development in general, is not only positively correlated but also causally related to growth (Honohan, 2004; Clarke, Xu and Zou, 2006; Beck, Demirgüç-Kunt and Levine, 2007; Pasali, 2013; Cull, Ehrbeck, and Holle, 2014). These empirical investigations show that financial development leads to economic growth and helps in reducing poverty and income inequality. However, the micro level evidence showing this relationship is slightly more limited and provides mixed evidence about the impact of access to financial services. Some research suggests that financial inclusion does have a positive impact on economic growth and household consumption, women empowerment, self-employment, income and wellbeing (Karlan and Zinman, 2010; Bauchet et al. 2011; Bruhn and Love 2011). Yet, many others fail to find some impact (Ashraf and Karlan, 2010; Crepon, Devoto, Duflo and Pariente, 2011; Banerjee, Duflo, Glennerster and Kinnan, 2013). It is important to note that a majority of this evidence at the microeconomic level relies on field experiments, which are at times quite limited in scope. A summary of the existing literature on the impact of financial inclusion and access to finance is provided in the table below.

Table 1. Summary of Related Literature

Study	Region	Type of Analysis	Financial Inclusion Indicator (s)	Development Indicators (Dependant Var.)	Effect
Angelucci, Karlan and Zinman (2015)	Mexico	Randomized Control Trial: Average Intent-to-Treat Effects with OLS Equations	Expansion of group lending by Compartamos Banco	Well-being (Level of Happiness, trust etc.)	+
				Business Growth	+
				Female household decision power	+
				Profit	0
				Household Income & Household Consumption	0
Augsburg et al. (2015)	Bosnia and Herzegovina	Randomized Control Trial: Comparison of means using OLS	Microcredit	Household Income	0
				Consumption	0
				Business Creation and Survival	+
				Enterprise Profits	0
Samargandi et al. (2015)	52 Middle Income Countries	Pooled mean group estimator in a dynamic heterogeneous panel setting (1980-2008)	Financial Development	Economic Growth	+ (Inverted U shaped relationship)

Bruhn and Love, 2014	**Mexico**	**Regressions using Difference in Difference strategy (2000-2004)**	**Financial Access (Microfinance branch expansion)**	**Entrepreneurial activity** **Employment** **Income levels**	**+ (informal businesses for men)** **+ (only for women)** **+**
Brune et al. (2013)	**Malawi**	**Randomized Field Experiment**	**Commitment Savings**	**Business Investment** **Business Output**	**+** **+**
Karlan and Zinman (2011)	**Manila**	**Randomized Control Trial: Intention-to-treat (ITT) estimates. OLS Regressions**	**Microcredit**	**Subjective Well-being** **Profits**	**0** **+ (For Male only)**
Crepon, Devoto, Duflo and Pariente (2011)	**Moroco**	**Randomized Control Trial: Intent-to-treat (ITT) estimates**	**Microcredit**	**New business creation** **Health** **Education** **Women Empowerment** **Poverty** **Business Sales** **Savings**	**0** **0** **0** **0** **0** **+** **+**
Dupas and Robinson (2011)	**Kenya**	**Randomized Control Trial: Intent-to-treat (ITT) estimates**	**Microsaving**	**Labor Supply (Number of hours worked per day)** **Business Investment** **Income**	**0** **+** **+**
Attanasio et al. (2011)	**Mongolia**	**Randomized Field Experiment: Intent to Treat Estimates**	**Access to group credit**	**Food Consumption** **Entrepreneurship** **Income**	**+** **+** **0**
Banerjee, Duflo, Glennerster and Kinnan (2010)	**Hyderabad, India**	**Randomized Control Trial: Intent-to-treat (ITT) estimates**	**Microcredit through Group Lending**	**Health** **Education** **Women Empowerment** **Business Profit and Investment** **Business Creation**	**0** **0** **0** **+** **0**
Karlan and Zinman (2010)	**South Africa**	**Randomized Control Trial : Intention-to-treat (ITT) and treatment-on-the-treated (TOT) effects**	**Access to credit**	**Well-being** **Food consumption** **Economic self-sufficiency** **Overall Health** **Level of Stress** **Income**	**+** **+** **+** **+** **+** **+**

Bianchi (2010)	**Cross Country Analysis- 46 countries**	**Ordered Probit Regressions (Data: 1981-2000)**	**Financial Development**	**Job Satisfaction of Entrepreneurs**	**+**
Lluss´a (2009)	**Cross Country Analysis: 41 countries**	**Probit Regression (Data: 2001- 2004)**	**Financial Development**	**Need based Entrepreneurship** **Bridging Gender Gap in Entrepreneurship**	**+** **0**
Beck, Demirgüç-Kunt and Levine (2007)	**Cross Country Analysis: 72 countries**	**Generalized-methods-of-moments (GMM) panel estimator (1960- 2005)**	**Financial Development**	**Income Inequality** **Poverty**	**-** **-**
Clarke, Xu and Zou (2006)	**Cross Country Analysis: 83 countries**	**OLS and 2SLS (Data: 1960-1995)**	**Financial Development**	**Income Inequality (Gini Coefficient)**	**-**
Burgess and Pande (2005)	**India**	**OLS Regression (State level Panel Data 1961-2000)**	**Financial Access (Rural Branch Expansion)**	**Poverty** **Economic Growth (Total per capita output)**	**-** **+**

Source: Author's collection.

Various determinants of entrepreneurship which are found in the literature mainly include three groups of variables: institutional, sociological and demographic factors. Institutions which play a role in determining entrepreneurship are financial institutions, political institutions and legal institutions. Dysfunction of these institutions is likely to reduce the probability of a person being an entrepreneur. Entrepreneurs who are excluded from using financial services such as credit, cheques and transfer services from the formal financial institutions are more likely to turn to informal institutions which offer these services at a much higher price. Without having access to financial services, potential entrepreneurs are trapped and forced to take a job rather than creating one themselves (Banerjee and Newman, 1993). Moreover, the impact of financial inclusion on the labour market channel through entrepreneurship, using micro data, has never been explored in its entirety before and this is the area in which this paper brings in value to the existing literature.

Assessment of Mexico's Entrepreneurship and Financial Inclusion Landscape

This section presents the definitions of key concepts such as entrepreneurs and financial inclusion which have been used in this paper. Furthermore, this section discusses the linkage between financial inclusion and entrepreneurship and offers a panoramic view of the state of entrepreneurship and financial inclusion in Mexico.

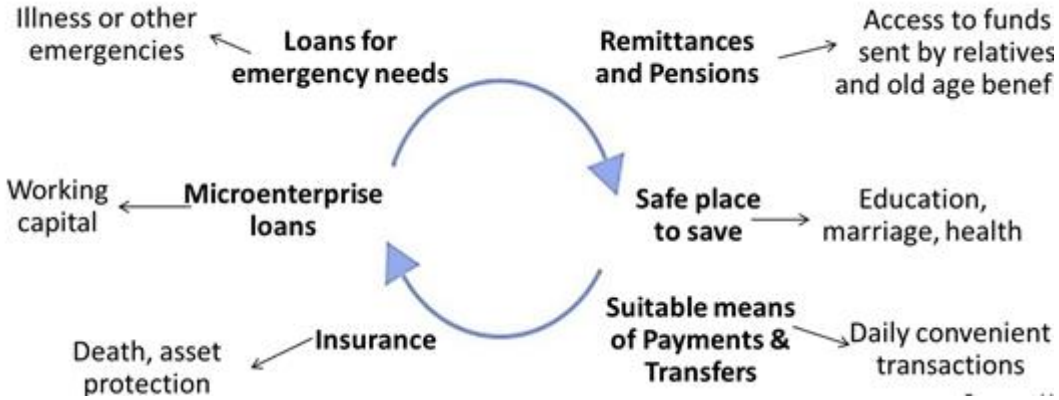
Definition of Key Concepts: Financial Inclusion and Entrepreneurs

Financial inclusion is a multifaceted concept and it is important to note that there is still no universally accepted definition of financial inclusion or financial exclusion. Various dimensions of financial inclusion include banking accounts, savings, personal and business loans, insurance, remittances and transfers. The term financial inclusion was initially applied in the early 1990s and it was referred to as the access to bank branches in the context of liberalization of the financial sectors (Demirguc-Kunt and Klapper, 2012). But,

over the years, many scholars, policymakers and international organizations have developed several definitions because of the evolving nature of various dimensions of financial inclusion.

Entrepreneurship is also considered as one of the most important factors to enhance economic growth. Recent literature highlights that entrepreneurial activity does not only lead to sustained economic growth and a persistent rise in living standards by carrying out innovations and enhancing competition, but it can also reduce income inequality and even promote social fairness and justice (OECD, 2016). On the other hand, financial inclusion is also considered important due to its impact on economic growth. In presence of financial exclusion, small and medium enterprises usually face financial constraints as a barrier to grow. Different dimensions of financial inclusion help individuals and businesses through different ways in their everyday life. Figure 3 below provides an overview of these different dimensions of financial inclusion showing how access to different financial services like credit, means of savings, insurance, remittances, means of payments etc. can help individuals as well as businesses in their daily life and in case of emergencies.

Figure 3. Different dimensions of financial inclusion



Source: Helmes (2006)

In Mexico, the National Council for Financial Inclusion (CONAIF) defines financial inclusion as "the access and the usage of formal financial services under a proper regulation that will guarantee consumer protection and promote financial education to improve the financial capabilities of all population segments". For the purpose of measuring financial inclusion, some of the indicators which will be used in this paper include a financial inclusion index (FII) and various indicators of financial access, e.g. bank branches per 10,000 adults, point of sale (POS) terminals per 10,000 adults, banking agents per 10,000 adults, access points per 10,000 adults, and ATMs per 10,000 adults. These indicators are discussed in further detail in section four.

On the other hand, the term entrepreneurs is approximated by the number of self-employed, i.e. people owning or co-owning a micro-firm or a small and medium enterprise (SME). These businesses can operate with multiple employees or with the entrepreneur being the only worker in the business. This paper uses the same definition of micro firms and SMEs that has been used by the Mexican National Survey of Occupation and Employment (ENOE) as provided in Table 2 below.

Table 2. Classification of firms by number of employees in selected sectors

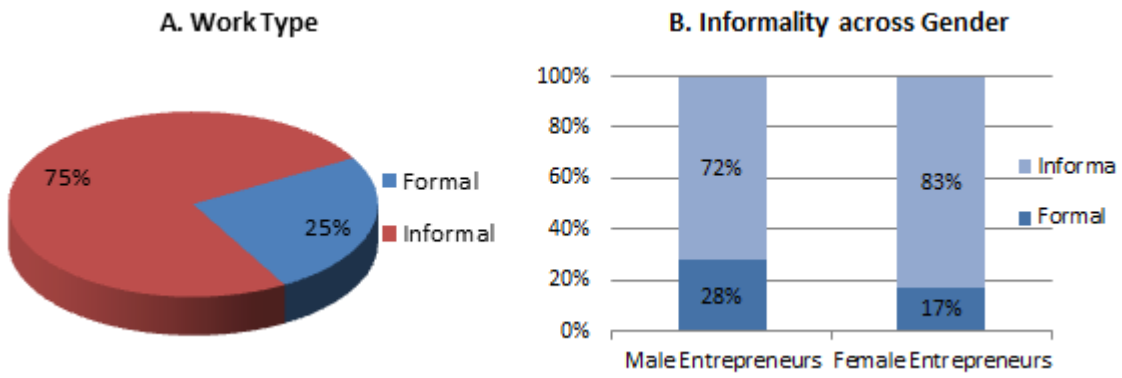
	Industry	Commerce	Services
Micro firm	0-10	0-10	0-10
Small firm	11-50	11-30	11-50
Medium sized firm	51-250	31-100	51-100

Source: ENOE, INEGI.

Stylized Facts about Women Entrepreneurship in Mexico

Based on the definition of entrepreneurs that is being used in this paper, 21% of the active population in Mexico is entrepreneur, and women represent about 44% of those entrepreneurs, which is relatively high compared to other OECD countries. Active population here refers to people who are working, either as employees, employers, entrepreneurs or working without a pay. Three out of four entrepreneurs work in the informal sector and there are more women entrepreneurs in the informal sector as compared to men entrepreneurs (Figure 4).

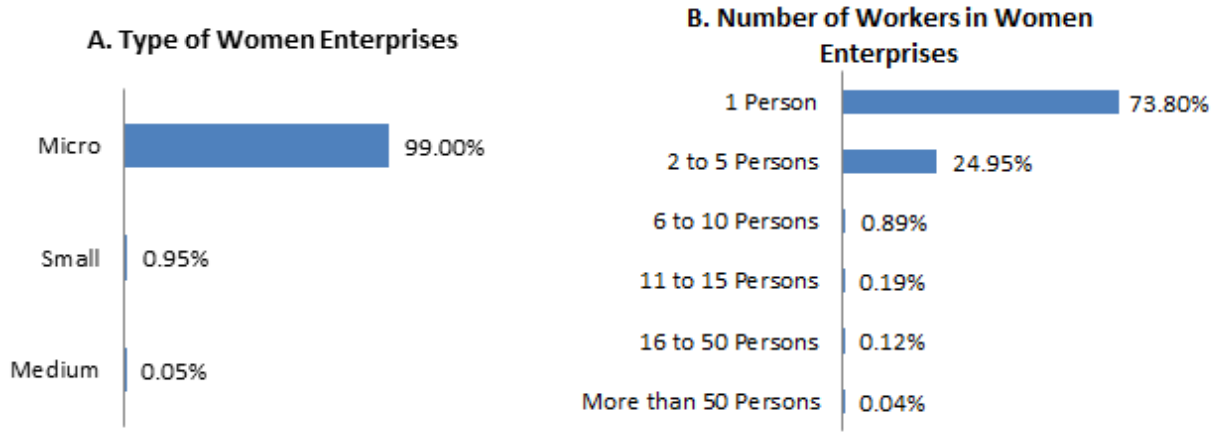
Figure 4. Informality and gender shares of Mexican entrepreneurs in 2015



Source: ENOE, INEGI.

Almost all women entrepreneurs belong to micro firms and approximately 99% of these women led enterprises have 5 or less workers (Figure 5). Furthermore, the average monthly income of women entrepreneurs is about 45% less as compared to men entrepreneurs (ENOE, 2015).

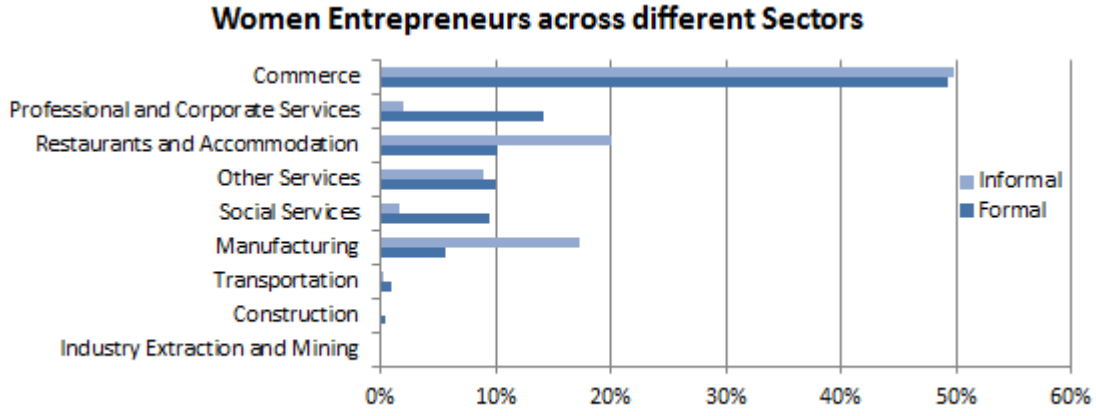
Figure 5. Women entrepreneurs mostly belong to micro-firms and have 5 or less employees in 2015



Source: ENOE, INEGI.

Almost half of the women entrepreneurs work in the commerce sector. The other prominent sectors where women entrepreneurs work are restaurants and accommodations, services and manufacturing, respectively. The distribution of sectors where women entrepreneurs work informally is different as compared to where women work formally. This has been highlighted in Figure 6 below. There are more women entrepreneurs working informally in the manufacturing and restaurants and accommodations sectors as compared to the formal sector. Conversely, in case of services, most of the women entrepreneurs work in the formal sector as compared to the informal sector.

Figure 6. Women entrepreneurs mostly work in commerce and services sectors in 2015



Source: ENOE, INEGI.

The concentration of women entrepreneurs also varies geographically across the Mexican states and it is quite different from that of men entrepreneurs. The state of Oaxaca, followed by Guerrero and Nayarit, has the highest percentage of women entrepreneurs and the majority of the women entrepreneurs in these areas work informally. States which are located in the South of Mexico have a higher poverty rate and where informal women entrepreneurs are mostly concentrated. The maps below depict the presence of

women entrepreneurs as compared to men entrepreneurs and provide an overview of the states where most of the women entrepreneurs work informally.

Figure 7. Share of women entrepreneurs across states in 2015



Note: Numbers in parenthesis show the percentage of states that belong to each category.
Source: ENOE, INEGI.

Figure 8. Share of men entrepreneurs across states in 2015



Note: Numbers in parenthesis show the percentage of states that belong to each category.

Source: ENOE, INEGI.

Figure 9. Share of informal women entrepreneurs across states in 2015



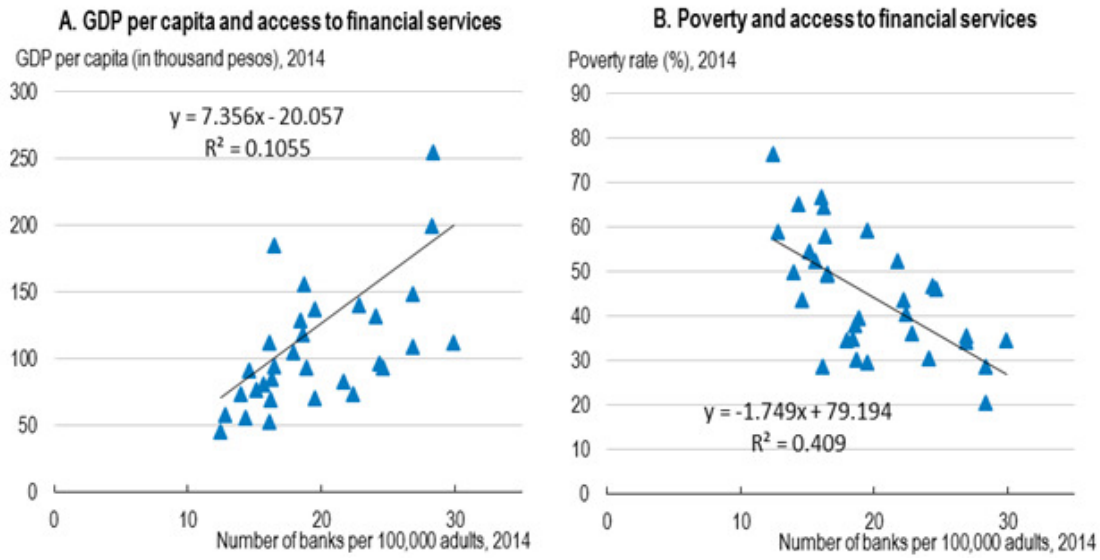
Note: Numbers in parenthesis show the percentage of states that belong to each category.

Source: ENOE, INEGI.

Panorama of Financial Inclusion in Mexico

The following scatter plots, using state level data from Mexico, show that access to finance and GDP are positively correlated and access to finance and poverty are negatively correlated (Figure 10).

Figure 10. Access to finance as a key enabler of growth and poverty reduction in Mexico



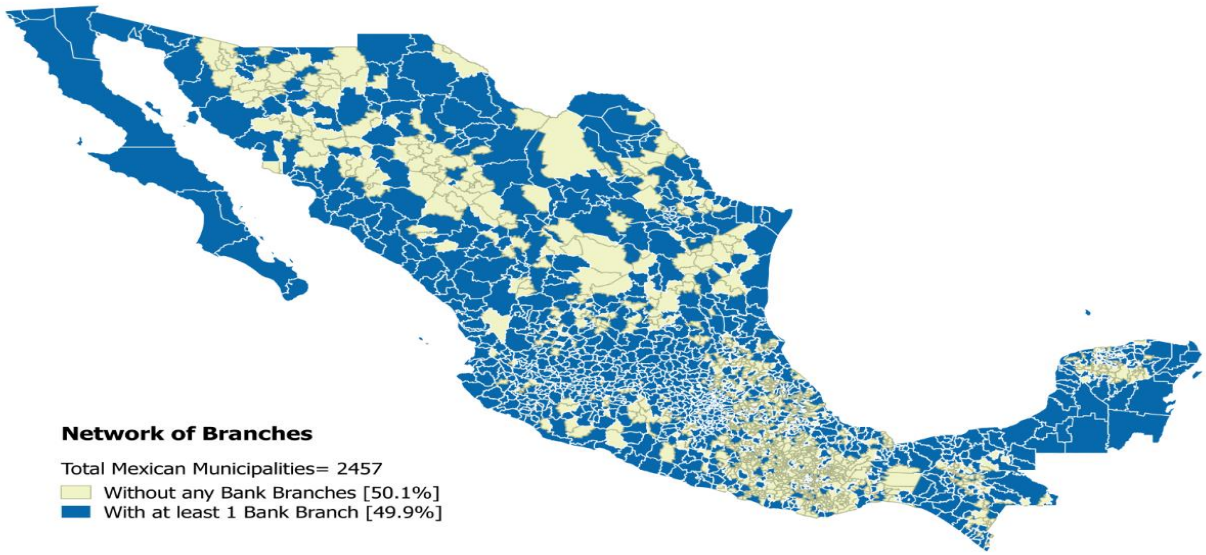
Source: CNBV, Coneval, and INEGI 2014

The following sections provide a detailed overview of the current state of financial inclusion in Mexico by looking at the supply and demand side of financial inclusion.

Stylized facts from the Supply Side and the Financial Inclusion Index (FII)

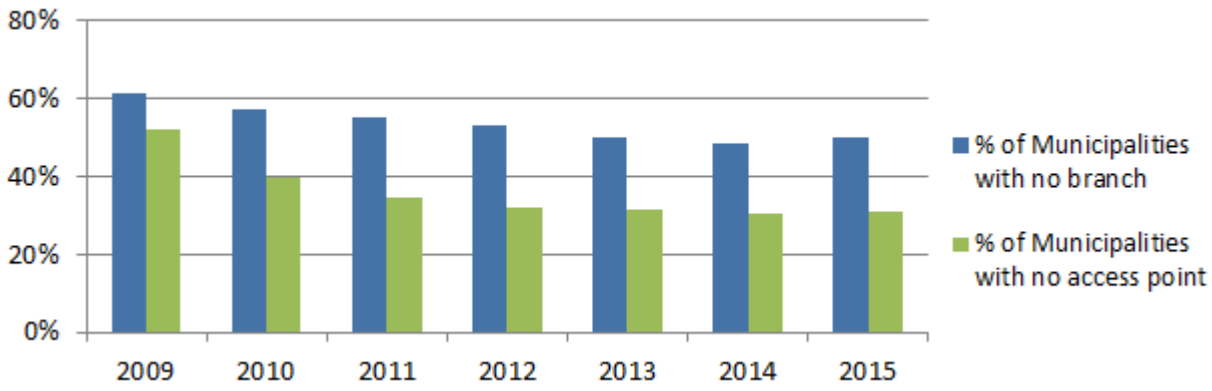
Mexico has shown a clear focus on financial inclusion by developing a national financial inclusion body and introducing crucial financial reforms in 2009-2010 and 2014. However, despite all these actions over the last years, there exist larger gaps in financial inclusion across regions. Figure 11 and 12 below show that half of the municipalities have no banking branches while 31% of the 2,457 municipalities have no formal financial access points i.e. no bank branches, no banking agents and no automated teller machines (ATM).

Figure 11. Half of the Mexican municipalities are without any bank branch



Source: CNBV, 2015

Figure 12. Financially excluded municipalities over time



Source: CNBV, 2015

Financial inclusion is a multifaceted concept including dimensions such as bank accounts, credit, savings, insurance, remittances, and transfers, among others. The literature on financial inclusion lacks a

comprehensive indicator that can be used to gauge financial inclusion or exclusion in an economy. Some of the indicators that are generally used in the literature to gauge the level of financial inclusion include 'the number of bank accounts per 10,000 adults', 'the number of banking units or ATMs per 10,000 adults' or 'the number of loans or credit product per 10,000 adults'. In order to better understand the current status of financial inclusion in Mexico, a dynamic Financial Inclusion Index (FII) is built using data from the National Banking and Securities Commission (CNBV) on financial inclusion indicators regarding availability and usage of different financial services at the municipality level.

The Financial Inclusion Index takes into account five such dimensions: i) accessibility of financial services, ii) depth of credit services, iii) concentration of checking accounts, iv) concentration of non-checking accounts, and v) usage of financial channels. Accessibility of financial services is measured by the total number of access points per 10,000 adults, including branches, banking agents and ATMs. Depth of credit services is based on the number of credit products per 10,000 adults in each municipality; these credit products include personal loans, group loans, nominal loans, automobile loans, housing loans and consumer durables loans. Concentration of checking accounts refers to all types of checking banking accounts per 10,000 adults in each municipality while concentration of non-checking accounts refers to all types of non-checking banking accounts per 10,000 adults in each municipality. Finally, usage of financial channels is measured by the number of transactions carried out using ATMs and cellular service per 10,000 adults in each municipality.

For each of the abovementioned financial inclusion dimension, an individual index is created for each municipality using the following formula.

$$D_{im} = \frac{A_{im} - Min_i}{Max_i - Min_i}$$

Where Dim is the index for indicator i for municipality m. Aim is the actual value of indicator I for municipality m. Mini is the minimum value of indicator I and Maxi is the maximum value of indicator I.

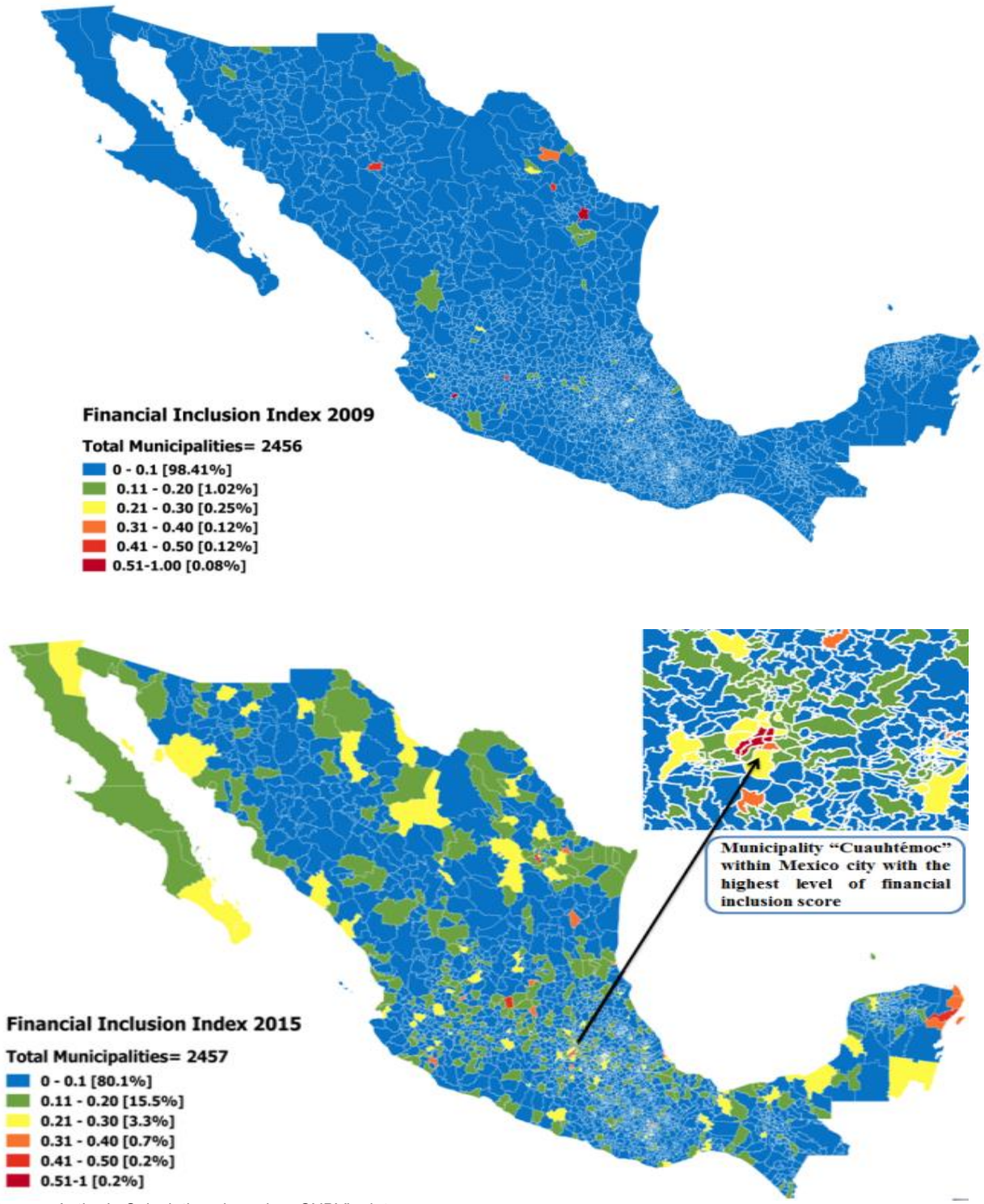
The Financial Inclusion Index is the simple equally weighted average of the dimension indices, normalized to range between 0 and 1, where 0 refers to the lowest level of financial inclusion.

$$FII = \sum_{i=1}^{n} WiDi$$

Allocation of weights is complex and a number of papers that have attempted to calculate composite indices assign equal weights to all variables and dimensions. This is the case for those indices proposed by Sarma (2008) as well as Chakravarty and Pal (2010). As a result, each normalized variable is implicitly considered as constituting a specific dimension (Amidžić et al., 2014).

Results from the Financial Inclusion Index are shown in Figure 13 highlighting that the state of financial inclusion has improved considerably from 2009 to 2015, although the current level of financial exclusion still remains high. According to the 2015 FII, 80% of the municipalities have a score close to 0, meaning that financial exclusion remains quite high. Municipality 'Cuauhtemoc', in the capital Mexico City, has the highest value of financial inclusion index highlighting that the level of financial inclusion in this municipality remains the highest as compared to the rest of the municipalities in Mexico.

Figure 13. Results of the Financial Inclusion Index 2009 and 2015

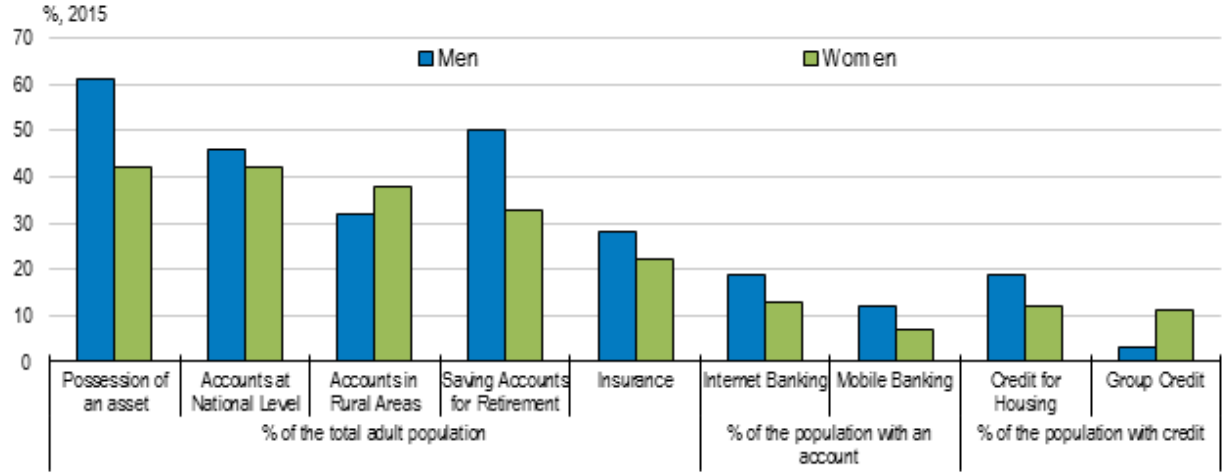


Source: Author's Calculations based on CNBV's data.

Note: Data in parenthesis represents the distribution of municipalities.

The National Financial Inclusion Survey (ENIF for its acronym in Spanish) was conducted in 2012 and then in 2015. This survey provides information on the usage of financial services, i.e. the demand side. The results of the survey highlight that there are some large gaps across gender in the usage of financial services. At the national level, men have more bank accounts than women and they use internet banking and mobile banking more. Moreover, some striking differences are visible in the indicators pertaining to ownership of an asset, having a retirement savings account and usage of insurance services, where women tend to be more financially excluded than men. On the other hand, women in rural areas seem to have more banking accounts as compared to men and they are also the main users of group loans (Figure 14). Progress in the percentage of women with a saving account in rural areas should be noted, rising from 19% of women in 2012 to 38% in 2015, while for men this increase was from 26% in 2012 to 32% in 2015. This positive increase seems to be partly linked to the government initiative *Programa Integral de Inclusión Financiera* launched in 2014 which provides financial education, credit, programmed savings, insurance and other products and services to beneficiaries of social programs, the vast majority of whom are women (CONAIF, 2016). One factor that might explain the gender gap in insurance and savings account for retirement is the higher labour force participation of men compared to women, as in many cases, employees receive these as part of employment benefits. This represents a higher poverty risk for women at old ages.

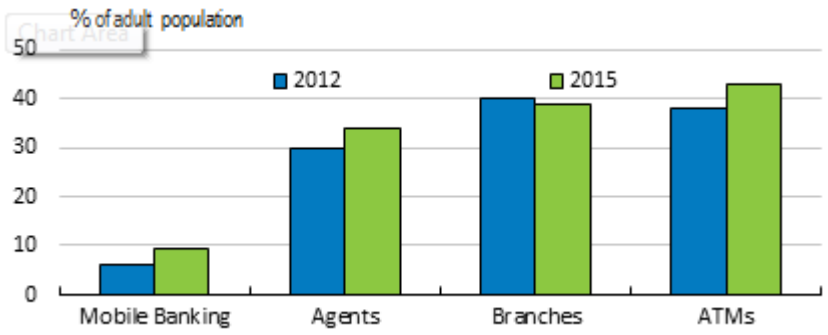
Figure 14. Gender gaps in financial inclusion



Source: ENIF, 2015

The usage of various financial access points, i.e. banking agents, ATMs and mobile banking, has shown slight increase from 2012 to 2015, except from banking branches which fell down by 1%. Figure 15 below shows the different formal financial channels that are being used to get financial services and how the usage of these channels has changed over time.

Figure 15. Usage of various financial access points



Source: ENIF, 2012 and 2015

The usage of informal financial services like credit and savings represents a high share of all credit and savings in Mexico. Regarding credit, 46% of the adult population reports not having a credit, 25% use only informal credit systems, while 16% use only formal credit and 13% use both forms of credit, i.e. formal as well as informal. The main sources of informal financial services include family, friends, savings associations and pawn shops. Overall more men use credit services, and men use informal credit more than women. Ongena and Popov (2015) show that women have less access to informal credit as compared to men in developing countries. Similarly, for savings, 32.4% of the adult population saves only informally as compared to 15.1% who save only formally. Women save slightly more than men using informal channels. The usage of formal and informal credit and savings across gender is summarized in the table below.

Table 3. Usage of Formal and Informal Credit and Savings

	About Credit			About Savings		
	Overall	Women	Men	Overall	Women	Men
Only Informal	25.4%	23.9%	27.0%	32.4%	33.9%	30.9%
Only Formal	16.4%	16.3%	16.5%	15.1%	14.3%	16.0%
Both	12.6%	12.7%	12.5%	28.9%	27.7%	30.3%
Do not have any credit	45.6%	47.0%	44.0%	23.5%	24.1%	22.8%

Source: ENIF, 2012 and 2015

The Empirical Analysis: Data and the Model

This section presents an econometric analysis aimed at investigating the key determinants of women entrepreneurship and the relationship between financial inclusion and entrepreneurship. Characteristics such as sex, age, marital status, rural versus urban residence, education level, social networks, ethnicity etc. as well as financial, political and legal institutions have been found to influence entrepreneurial behaviour. Other than these characteristics, some might argue that entrepreneurs are different from non-entrepreneurs because of certain attributes like risk taking preferences, attitudes, and other psychological traits but these

attributes are not discussed in this paper. Another important thing to note is that this analysis only focuses on financial products and services which are offered by formal financial institutions.

About the Data

In order to conduct this empirical examination, a panel dataset was constructed using three different sources. First, data from the National Survey of Occupation and Employment (ENOE for its acronym in Spanish) which provides detailed information about the socio-economic characteristics and the labour conditions of individuals on a quarterly basis. This quarterly data from quarter four of 2009 to quarter three of 2015 was pooled. Then, this data was paired with municipality level data from the National Banking and Securities Commission (CNBV for its acronym in Spanish) which provides quarterly information on financial inclusion indicators pertaining to access and usage of financial services. Lastly, the World Bank indicators pertaining to the ease of doing business which show the extent to which the regulatory environment is favourable for starting and operating a business were added. The total sample contains people who fall in the active population category i.e. people that are either working as employees, employers, entrepreneurs or working without pay. The next section describes the variables which are used in the econometric analysis.

Description of Variables

Entrepreneur

This is the dependant variable which is binary. It indicates whether a person is an entrepreneur (1) or not (0). The definition of entrepreneur refers to self-employment i.e. people owning or co-owning a micro-firm or a small and medium enterprise (SME). These businesses can operate with multiple employees or with the entrepreneur being the only worker in the business. This data is from ENOE.

Below is the list of independent variables with their descriptions. It can be argued that there might be some other factors that might influence entrepreneurship, like the perception of entrepreneurial risk and psychological traits of the person[2]. However, due to data limitations, we cannot add these directly as control variables.

Age

This variable measures the age of the respondent in years. The source of this data is ENOE.

Average Monthly Income

Average monthly income measures the respondent's income in current Mexican pesos. The source of this data is ENOE.

Education

Education is a categorical variable which indicates the level of education of the person. It is 0 if the person has "primary or no education," 1 if "secondary education", 2 if "Upper secondary", and 3 if the person has "Master or PhD". The source of this data is ENOE.

2. Check out "OECD (2016), Entrepreneurship at a Glance 2016, OECD Publishing, Paris" for further details.

Gender

Gender is a binary variable with 1 referring to men and 0 referring to women. The source of this data is ENOE.

Economic Sector

This indicator lists the sector of the respondent where he or she is working. Sectors include “agriculture, forestry, hunting and fishing”, "extractive industry and electricity", "manufacturing industry", "construction", "commerce", "restaurants and accommodation services", "transport, storage and communications mail", "professional, financial and corporate services", "social services", "various other services" and "government and international organizations". The source of this data is ENOE.

Informal Work

This variable measures whether the respondent works for the economic unit in the formal sector (0) or the informal sector (1). The source of the definition and data is ENOE.

Urban

This variable presents the location type of the respondent. It is 1 if the respondent lives in an urban area and 0 if he or she lives in rural area. The source of this data is CNBV.

Marital Status

This variable describes the current marital status of the individual. The categories include “in a relationship”, “separated”, “divorced”, “widowed”, “married”, “single”, and “Others/ Do not want to disclose”. The source of this data is ENOE.

Size of Enterprise

This variable indicates the total number of employees in the company where the respondent works. The categories are defined as follows: “1 person", "2-5 persons", "6-10 persons", "11-15 persons", "16-50 persons" and "more than 50 persons". The source of this data is ENOE.

Business Ease Score

This indicator shows the extent to which the regulatory environment is favourable for starting and operating a business in a state. This score ranges from 0 to 1. 0 refers to a state with the most favourable business environment and 1 refers to a state with the least favourable business environment. The source of this data is World Bank.

Financial Inclusion Indicators

In order to measure financial inclusion, the estimated Financial Inclusion Index (FII) has been used along with different other types of indicators for financial access. One of the indicators which is used to measure access to financial services is the number of bank branches per 10,000 adults in the municipality where respondent lives. Other variables that have been used to measure access to finance are ‘number of banking agents per 10,000 adults’ and ‘POS terminal per 10,000 adults’. The source of this data is CNBV.

Income level in the Municipality

This indicator provides the average yearly income of people living in that municipality in Mexican pesos to control for economic activity in the municipality. The source of this data is ENOE.

Employment Rate

This indicator provides the employment rate of the municipality. The source of this data is ENOE.
Descriptive statistics for these variables are provided in Annex A and B.

The Model

In order to examine the determinants of entrepreneurship, a logistic regression model is used. Entrepreneurship is the dependent variable which represents the status of the worker (entrepreneur= 1, otherwise = 0). The term entrepreneurship refers to self-employed people who own or co-own a micro-firm or a small and medium enterprise (SME), as defined in ENOE. The basic regression equation takes the following form.

$$\boldsymbol{Entrepreneurship = \alpha + \beta X + \delta Y + \mu_j + \mu_t + \varepsilon} \qquad (\mathbf{1})$$

X refers to the financial inclusion index. First we estimate the basic model with the financial inclusion index and later on we use different financial access indicators like bank branches, banking agents, POS terminals and ATM machines to establish the relationship of these indicators with entrepreneurship. Y is the matrix of relevant individual level control variables such as income, age, marital status, location, education level, sector, work status, and municipality level control variables such as employment rate, income level and ease of doing business. The term μj refers to the specific characteristics of state j, the term μt refers to the time fixed effects and ε represents the error term. In order to control for the possible error correlation within municipalities, all regressions are estimated by clustering the standard errors at the municipality level. The main coefficient of interest which determines the link between entrepreneurship and financial inclusion index or financial access indicator is β.

Results

The main finding from the analysis shows that financial inclusion is positively linked with women entrepreneurship, meaning financial inclusion opens up economic opportunities for women entrepreneurs. Regression estimate shows that an increase in the financial inclusion index increases the probability of a women being an entrepreneur. The estimates also show that women are about 94% less likely to be entrepreneurs in the formal sector as compared to the informal sector. Moreover, the probability of being an entrepreneur increases as the size of the firm decreases, indicating that more women entrepreneurs are present in micro and small enterprises. On one hand, an increase in education, age or monthly income is positively linked with the probability of a women being an entrepreneur. On the other hand, residing in an urban area does not seem to have a significant effect on women entrepreneurship and the business ease variable along with the employment rate in the municipality are also not significant. However, an increase in income level at the municipality level increases the probability of a women being an entrepreneur – although entrepreneurs usually earn less than other employment categories. The marital status variable indicates that a women being married or being divorced increases the probability of her being an entrepreneur whereas being separated, widowed or single decreases her probability of being an entrepreneur. The estimated coefficients of the determinants of being a women entrepreneur are summarized in Table 4 below.

Table 4. Estimated coefficients for the determinants of being a women entrepreneur

Variables	Women Entrepreneur
Financial Inclusion Index (FII)	0.668***
	(0.165)
Education Level (Base: Primary Education)	
Secondary Education	0.515***
	(0.0209)
Upper Secondary	1.568***
	(0.0318)
Masters or PhD	4.258***
	(0.106)
Age	0.0537***
	(0.0009)
Urban Dummy	0.030
	(0.0311)
Monthly Income (log)	0.156***
	(0.0117)
Business Ease Score	0.0825
	(0.0529)
Informal Dummy	2.754***
	(0.0494)
Marital Status (Base: In a Relationship)	
Separated	-0.204***
	(0.0356)
Divorced	0.366***
	(0.0563)
Widowed	-0.123***
	(0.0423)
Married	0.292***
	(0.0264)
Single	-0.432***
	(0.0300)
Others	0.858
	(0.712)
Size of the Enterprise	-2.573***
	(0.0455)
Employment Rate	-0.206
	(0.353)
Income level in Municipality (log)	0.215***
	(0.0390)
Constant	-1.370***
	(0.511)
Observations	554,659
Wald Statistics	31619.89
Prob > chi2	0.0000
Pseudo R2	0.6440
Standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

Source: Authors calculations

Note: Results for other explanatory variables also included in the specification are not shown

The estimation results also suggest a gender disparity in entrepreneurship status across formal and informal sector in Mexico. In the formal sector, women are about 56% less likely to be entrepreneurs as compared to men. However, in the informal sector, women are about 63% more likely to be entrepreneurs as compared to men, after controlling for other relevant individual and municipality level characteristics that are important in explaining entrepreneurship.

Estimation results using different financial access indicators

Different specifications were estimated using various indicators for financial access and results show a robust positive and significant relationship between most of these indicators and entrepreneurship. These results suggest that different financial access points like bank branches, POS terminals, banking agents and ATMs can be a gateway to the use of additional financial services which can allow businesses development. However, this positive relationship between these financial access indicators and being an entrepreneur does not hold for women entrepreneurs working in the informal sector and in rural areas. The following table provides a summary of the results of the estimated specifications using different indicators of financial inclusion for different segments of the population.

For the overall sample i.e. active women as well as men, financial inclusion and other financial access indicators are positively linked with entrepreneurship. This relationship also holds when we look at men and women separately, as shown in table 5. Similarly, looking at the results across gender for formal sector, we find that financial inclusion index and other financial access indicators are positively linked with entrepreneurship. However, looking at the estimated coefficients across gender for informal sector yields distinct results. Whereas a positive relationship between financial access and entrepreneurship holds for men working in the informal sector or urban areas, in case of women working in the informal sector or urban areas, we fail to find this positive relationship. The explanation of the results pertaining to why there is a positive link between financial inclusion and entrepreneurship for women engaged in formal work and not in informal work is provided in further detail in the section below. However, it is important to note that the difference in the results for men and women engaged in formal sector can be explained by issues pertaining to women empowerment and financial illiteracy. According to the national financial inclusion survey results, more women need permission from their partner and other family members to conduct financial transactions. Likewise, women possess fewer assets as compared to men (ENIF, 2015) and women entrepreneurs earn substantially less income as compared to men entrepreneurs (ENOE, 2015). Moreover, in terms of the purpose of using financial services like credit, savings and banking accounts, there are some prominent gender differences (Figure 16). For example, about 13% of the women entrepreneurs took a loan in order to pay a former debt as compared to only 3% men. Moreover, in terms of usage of savings and credit, women entrepreneurs use these services to cover for educational expenses, health expenses and daily meal expenses slightly more than men. Lastly, it is important to note that women working in the informal sector are more vulnerable to such issues as compared to women working in the formal sector or men in the informal sector.

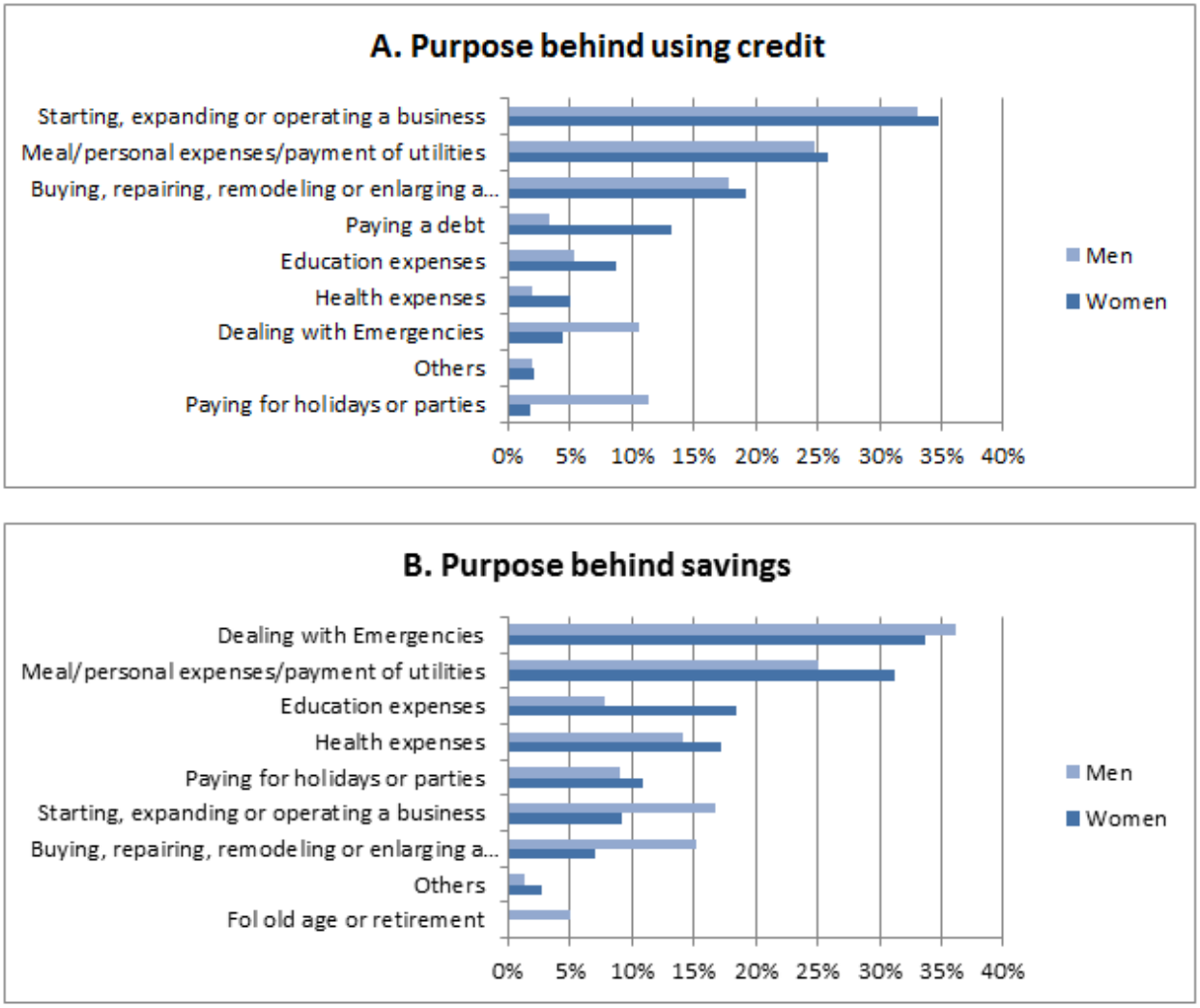
Table 5. Econometric estimations results for different samples: FII coefficient estimate

	Indicators for Financial Inclusion and Financial Access				
	Financial Inclusion Index	**Branches/ 10,000 adults**	**POS terminals/ 10,000 adults**	**Banking Agents/ 10,000 adults**	**ATMs/ 10,000 adults**
Overall Sample (Active Men and Women)	0.97*** (.15)	0.06*** (.01)	0.001*** (.0001)	0.05*** (.009)	0.03*** (.003)
Active Women	0.67** (.16)	0.05*** (.01)	.001*** (.0002)	0.04*** (.01)	0.02*** (.003)
Women in the Formal Sector	0.80*** (.22)	0.09*** (.02)	.001*** (.0003)	0.03** (.01)	0.02*** (.006)
Women in the Informal Sector	0.06 (.16)	-0.003 (.01)	-0.0002 (.0002)	-0.001 (.01)	0.004 (.005)
Women in Urban Areas	0.67*** (.08)	0.06*** (.02)	0.0009*** (.0002)	0.05*** (.01)	0.02*** (.004)
Women in Rural Areas	0.22 (.54)	0.02 (.01)	0.0003 (.001)	-.003 (.01)	-.003 (.01)
Active Men	1.1*** (.18)	0.07*** (.01)	0.002*** (.0002)	0.05*** (.01)	0.03*** (.004)
Men in the Formal Sector	1.39*** (.24)	0.09*** (.02)	0.002*** (.0003)	0.06*** (.01)	0.04*** (.01)
Men in the Informal Sector	0.31*** (.11)	0.03*** (.01)	0.0005*** (0002)	0.009 (.007)	0.01*** (.003)
Men in Urban Areas	1.09*** (.22)	0.10*** (.02)	0.002*** (.0002)	0.08*** (.01)	0.03*** (.01)
Men in Rural Areas	0.87* (.48)	0.02* (.01)	0.006 (.001)	0.0007 (.008)	-0.003 (.01)

Source: Authors calculations.

Note: *** p<0.01, ** p<0.05, * p<0.1.

Figure 16. Reasons for using financial services in 2015



Source: ENIF, INEGI.

Econometric estimation results for women engaged in formal work versus informal work

Financial inclusion indicators are generally positively linked with women entrepreneurship in the formal sector. However, this is not true in case of informal sector. When we segregate women entrepreneurs working in the urban and rural areas with respect to their work status (formal or informal), the positive relationship only holds between financial inclusion and entrepreneurship for women working in the formal sector in urban and rural areas. The financial inclusion indicators do not show a statistically significant positive relationship for women working in the informal sector of urban areas or rural areas. A summary of these results is provided in table 6 below.

Table 6. Econometric estimation results for formal/ informal women in urban/ rural areas: FII coefficient estimate

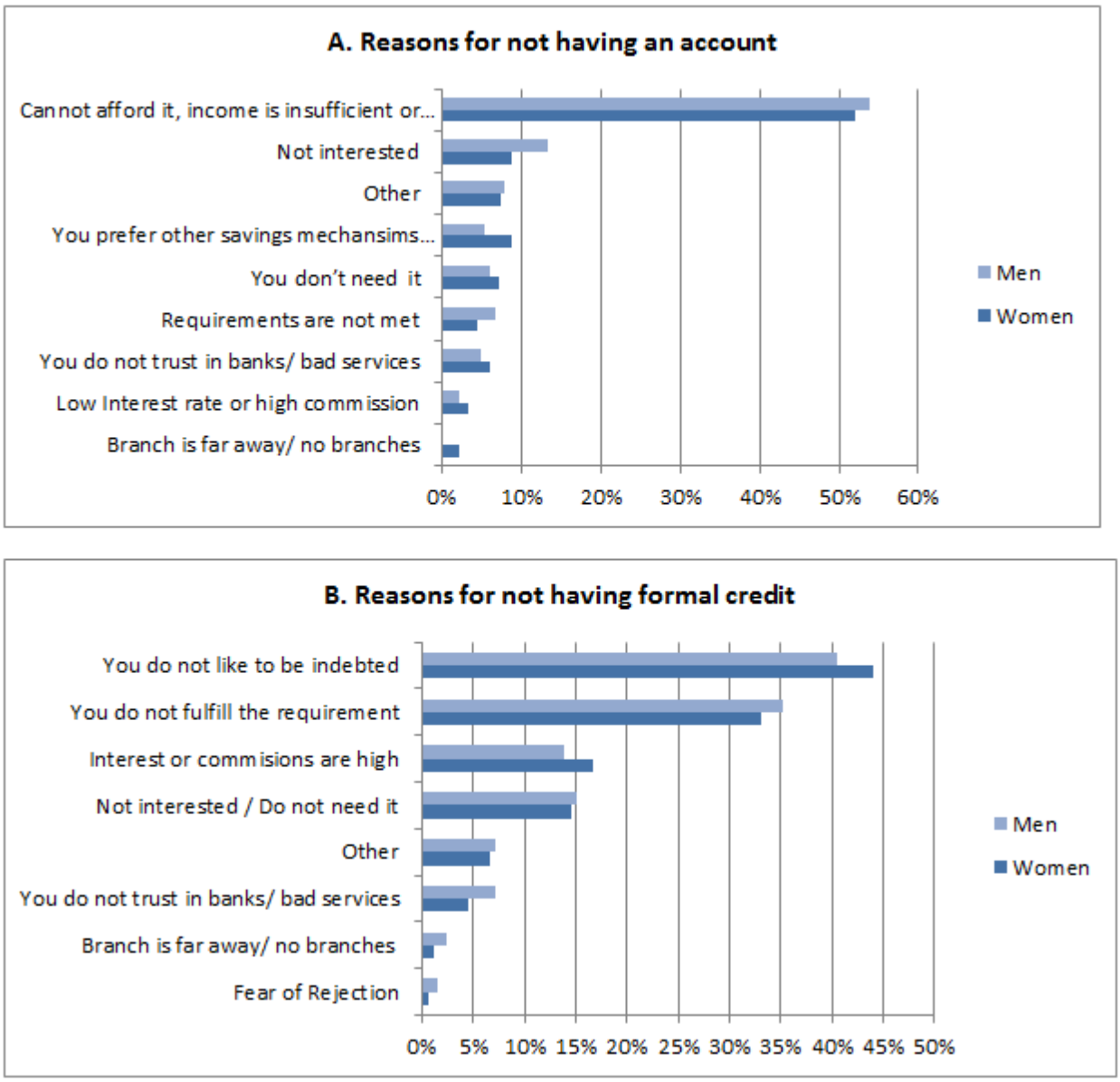
	Urban		Rural	
	FI Indicator	**Branches/ 10,000 adults**	**FI Indicator**	**Branches/ 10,000 adults**
Women in Formal Sector	0.93*** (.21)	0.10*** (.02)	0.71 (0.79)	0.04** (.02)
Women in Informal Sector	0.10 (.15)	-.006 (.01)	-0.96 (.66)	-.01 .02

Source: Authors calculations.

*Note: *** p<0.01, ** p<0.05, * p<0.1.*

This positive association of financial inclusion and financial access with women entrepreneurship in the formal sector but not in the informal sector can be explained by a number of factors. First, as noted above, financial illiteracy might be a major reason why women working in the informal sector, commerce sector and rural areas do not benefit from the access and usage of financial services. Barriers to entry are lower in case of commerce and in other informal sectors as compared to the formal sector and this might be a reason why women with lower financial literacy work in the informal sector and the commerce sector more. This also highlights the need for effective coaching and mentoring of women entrepreneurs, especially in the informal sector. Secondly, numerous documentation requirements to access financial services make the usage of formal financial services less attractive for informal businesses. Moreover, most of the commercial banks do not target micro and small businesses and these businesses do not fulfil the requirements to use financial services from these institutions. High interest rates in case of credit products and stringent account opening requirements make it less attractive for informal businesses to use formal financial channels. Other reasons might include gender biases in credit decisions and a slightly lower demand for financial services in these sectors. Figure 17 below shows different reasons, highlighted by entrepreneurs, for not using formal credit and banking accounts.

Figure 17. Reasons for not using financial services in 2015



Source: ENIF, INEGI.

Econometric estimation results for different economic sectors

Four out of every five women entrepreneurs work in the informal sector and about half of the women entrepreneurs work in the commerce sector. So, looking at different sectors separately for women working in the formal sector and the informal sector is important and yields interesting results. The commerce sector stands out from the rest as it shows a negative association between women entrepreneurship and financial inclusion indicators in the informal sector. This can be explained by the fact that women working in commerce sector, especially in informal sector, earn less income on average and have less education as compared to women working in other sectors. On the other hand, for women entrepreneurs working in the services sectors, the financial inclusion indicators are generally positive and significant in the formal as

well as in the informal sector. A summary of the results for all the sectors with respect to formal and informal status is provided in the table below which advocates for a positive relationship between financial inclusion and entrepreneurship for most of the economic sectors in the formal sector.

Table 7. Econometric estimation results for formal and informal women by economic sector with different indicators

Sector Name	FI Indicator		Branches/ 10000 adults	
	Formal Women	Informal Women	Formal Women	Informal Women
Manufacturing	0.87	0.51	.10**	0.25
	(.67)	(.44)	(.04)	(.02)
Construction	1.3	3,7	0.12	0.20
	(1.01)	(4.2)	(.10)	(.32)
Commerce	-0.17	-0.46**	-0.02	-0.05**
	(.26)	(.22)	(.02)	(.02)
Restaurants and Accommodation	0.84**	0.10	0.08**	0.01
	(.33)	(.19)	(.03)	(.02)
Transport and Communication	1.5	3.17	0.25**	0.38
	(.95)	(2.6)	(.09)	(.30)
Professional, Financial and Corporate Services	0.62	1.4**	0.06*	0.09
	(.38)	(.69)	(.03)	(.07)
Social Services	1.2***	0.16	.09***	0.18
	(.37)	(2.3)	(.03)	(.21)
Other Services	0.49	0.41	0.08**	0.01
	(0.34)	(.61)	(.03)	(.04)

Source: Authors calculations.

Note: *** p<0.01, ** p<0.05, * p<0.1.

Regression results for microfinance banks and development banks

In order to single out the relationship between access to financial services provided by development and microfinance banks with entrepreneurship, we estimated a number of specifications by reducing the sample to different sub-populations. The estimation results show a positive and significant relationship between financial access through microfinance banks and entrepreneurship, especially for men and women

working in the formal sector. However, these results do not advocate for a positive and significant relationship of development banks on entrepreneurship, except in case of women in the formal sector. The results show that development banks and microfinance banks both tend to favour women in the formal sector. The results for different population segments are summarized in the table below.

Table 8. Econometric estimation results for microfinance banks and development banks: FII coefficient estimate

	Microfinance Banks (Branches/ 10,000 adults)	Development Banks (Branches/ 10,000 adults)
Overall	0.06 (0.05)	-0.02 (0.06)
Active Women	0.10* (.07)	0.004 (.06)
Women in the informal sector	-0.07 (.07)	-0.02 (.09)
Women in the formal sector	0.35*** (.11)	0.22* (.13)
Active Men	0.06 (.06)	-0.02 (.10)
Men in the informal sector	-0.002 (.06)	0.005 (.09)
Men in the formal sector	0.21** (0.10)	-0.15 (.14)

Source: Authors calculations

Note: *** p<0.01, ** p<0.05, * p<0.12.

Robustness Checks

In case of econometric logit models, the Wald test provides the test for the significance of explanatory variables in our model. The p value of the test in table 4 suggests that the overall model is a good fit. Moreover, the value of the Pseudo R2 also indicates a very good predictive ability of the model. In order to check for the significance of the financial inclusion indicator in our model, we conducted the likelihood ratio test. This is a hypothesis test which compares the goodness-of-fit of two models i.e. an unconstrained model with all the parameters and a constrained model with a fewer parameters (Casella and Berger, 2001). In our case, the constrained model is the one without the financial inclusion indicator and the unconstrained model is the one with all the explanatory variables including the financial inclusion indicator. The likelihood ratio test estimates the two models and compares the fit of one model to another. Having less explanatory variables most of the times makes the model fit less, but the likelihood ratio test assesses whether the observed difference in the model fit is statistically significant or not. The result of this test highlights that the difference between these two models is significant and the model with the financial inclusion indicator fits the data significantly better. Similarly, another test 'Akaike information criterion (AIC)' test is conducted to check for the significance of our model. The result of this test advocates that the models including the financial inclusion indicators fit the data better. Lastly, we predicted the probability of women being an entrepreneur using the list of independent variables in our model. Then we calculated the percentage of women whose entrepreneurship status has been predicted accurately by the model. Using different thresholds for probabilities, we find that the predictive ability of the model, i.e. the goodness of fit, is very high and accurate predictions go as high as 91% of the total sample.

Regression Results using the National Financial Inclusion Survey of 2015

A nationally representative financial inclusion survey called ENIF was conducted in 2012 and 2015 and we used this cross sectional data to determine the link between financial inclusion and entrepreneurship. Although it is important to note that this dataset has some shortcomings. First, only 251 Municipalities out of a total of 2,457 have been covered in the sample. Using the municipality level indicators for financial inclusion or access to financial services is therefore problematic and introduces a strong selection bias. Second, there is no data on the formal and informal work status of individuals and there is no information available pertaining to the economic sector of individual's activities. Lastly, there is no information on the size of the firm.

We use a logit model, with similar specifications, as in equation (1). The sample includes a total of 4,378 observations which includes the total active population. The dependant variable is binary i.e. takes the value of 1 if the person is an entrepreneur and 0 if not an entrepreneur. We use the similar set of control variables as used in the benchmark except for some of the variables which are not available in this dataset, e.g. status of work (formal or informal), economic sector and size of the firm. On the other hand, this survey has an additional variable which contains information pertaining to the type of banking account that the respondent has. Using this variable allows us to check if having a formal banking account is associated with entrepreneurship in any way.

The regression results, reported in Annex D, show that the financial inclusion index and the access indicators are not significant i.e. we do not find a positive link between financial inclusion and women entrepreneurship. But again, only 251 municipalities out of a total of 2,457 have been covered and the survey only reports formal sector workers, which might be the reason why we do not find a positive relationship.

Conclusion

In this paper, we have investigated the determinants of women entrepreneurship in Mexico using micro-level data from 2009 to 2015. Although part of the issues faced by women entrepreneurs are similar to those faced by men, many characteristics of women entrepreneurs and their enterprises differ from those of men and thus require specific policy interventions. Our results showed that financial inclusion is positively linked with women entrepreneurship and it can open up economic opportunities for them. We found that various financial access points like banking branches, POS terminals, banking agents, ATMs and microfinance banks are positively linked with women entrepreneurship. Other than financial inclusion indicators, an increase in education, age, income and income level at the municipality level increase the chances of women becoming entrepreneurs. Marital status of women also has a significant effect on the probability of being an entrepreneur; being divorced or married increases this probability. Results also highlight that the probability of a women being an entrepreneur in the informal sector is significantly higher than in the formal sector and this probability increases as the size of the firm decreases, indicating that more women entrepreneurs are present in micro-enterprises. The results also show a clear gender gap in case of the entrepreneurship status across formal and informal work in Mexico. After controlling for individual level and municipality level characteristics, our results showed that women are about 56% less likely to be entrepreneurs in the formal sector and 63% more likely to be entrepreneurs in the informal sector, as compared to men.

Another important finding is that the positive relationship between women entrepreneurship and the financial inclusion index and other access indicators does not hold for women entrepreneurs working in the informal sector, rural areas or women who work in the commerce sector. This can be explained by the high level of financial illiteracy in these market segments. Another explanation might be related to administrative requirements for informal businesses to access formal financial services.

Mexico has shown a clear focus on financial inclusion with the development of a national financial inclusion body and various financial reforms. The authorities' focus is welcome as large gaps remain in terms of access and usage of financial services across regions and across gender. This paper has shown empirically that financial inclusion index and other financial access indicators are key determinants of women entrepreneurship. The high level of financial exclusion in Mexico is hampering the entrepreneurial environment, especially for women, and some of the measures to promote women entrepreneurship could include fostering a gender neutral legal framework for businesses, enforcing equal access to financial services for men and women entrepreneurs, and pairing targeted financing schemes with other measures such as financial literacy, professional trainings and increased access to support programs.

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ANNEXES

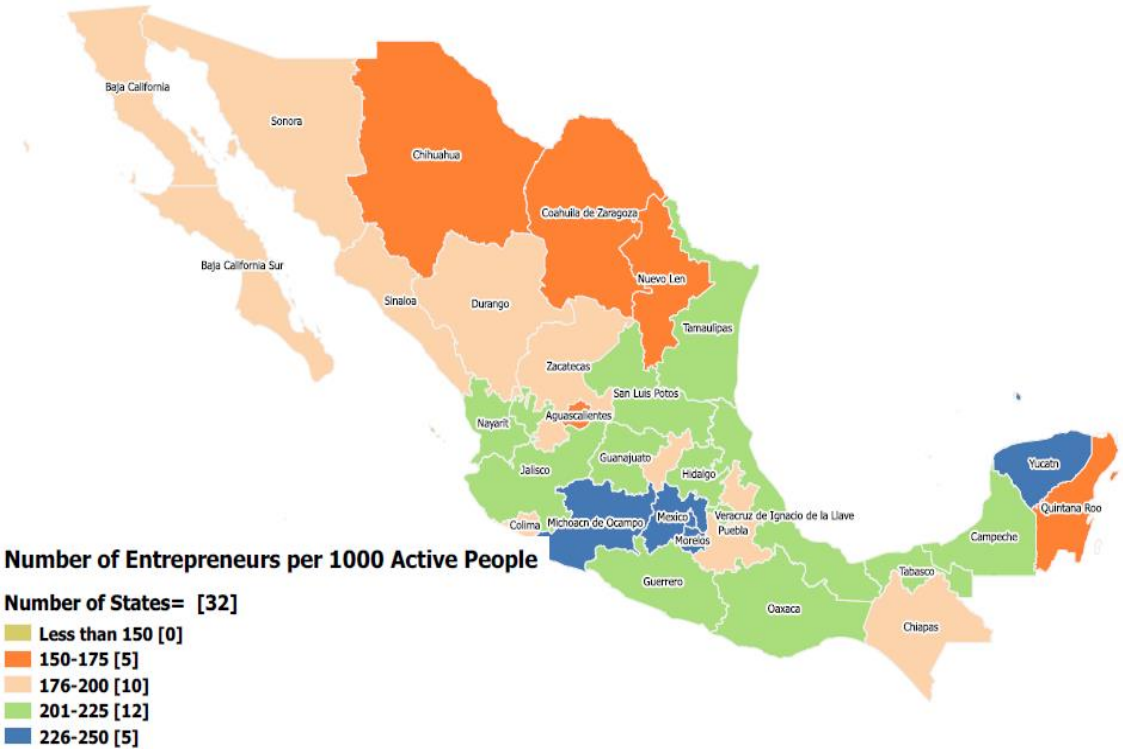
Annex A: Source and Coverage of Variables

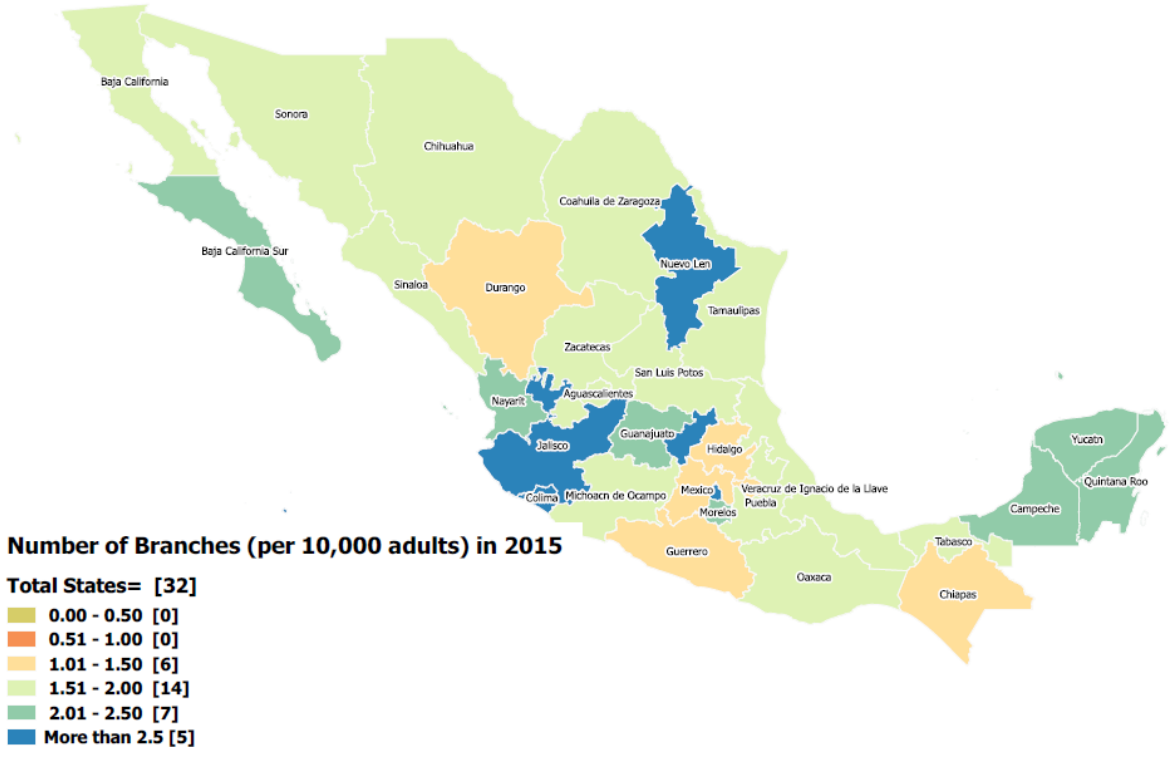
Variable Name	Source	Coverage
Individual Level Variables		
Employment Status: Entrepreneur (Binary)	ENOE	2009-15
Gender	ENOE	2009-15
Marital Status	ENOE	2009-15
Size of Enterprise	ENOE	2009-15
Education	ENOE	2009-15
Age	ENOE	2009-15
Sector	ENOE	2009-15
Monthly Income	ENOE	2009-15
Urban/ Rural	ENOE	2009-15
Formal/ Informal	ENOE	2009-15
Business Type	ENOE	2009-15
Municipality Level Variables		
Financial Inclusion Index	CNBV	2009-15
Branches per 10,000 adults	CNBV	2009-15
POS per 10,000 adults	CNBV	2010-15
Banking Agents per 10,000 adults	CNBV	2010-15
Credit per 10,000 adults	CNBV	2010-15
Accounts per 10,000 adults	CNBV	2009-15
Employment Rate	ENOE	2009-15
Income Level in the Municipality	ENOE	2009-15
State Level Variables		
Business Ease Score	World Bank	2010, 2012, 2014

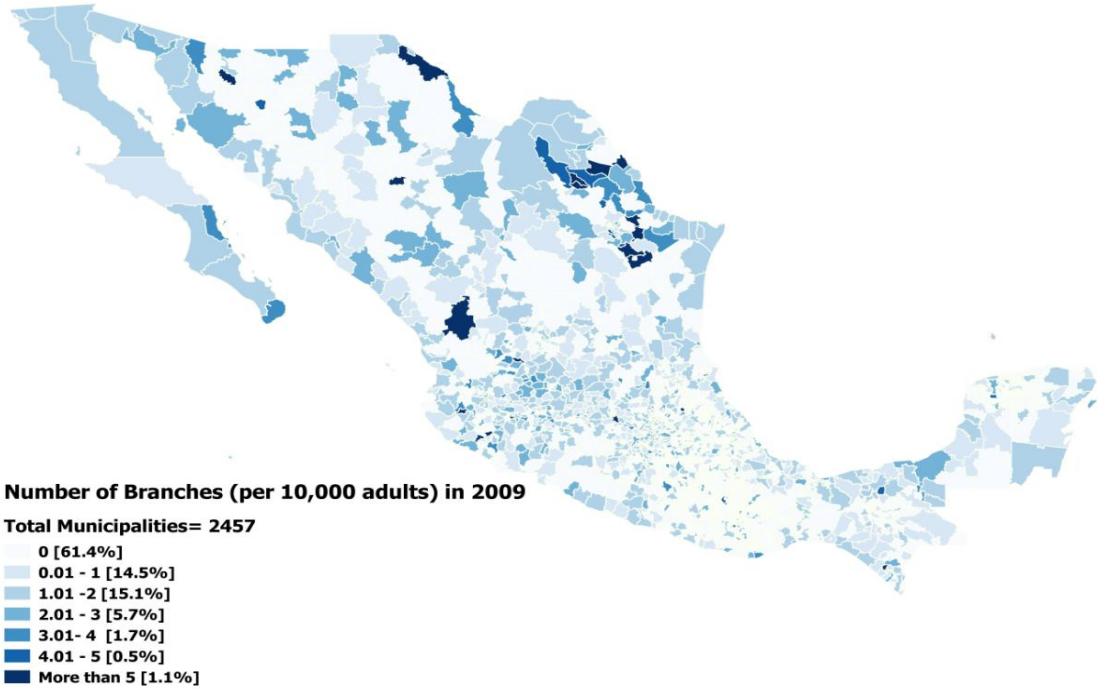
Annex B: Descriptive Statistics

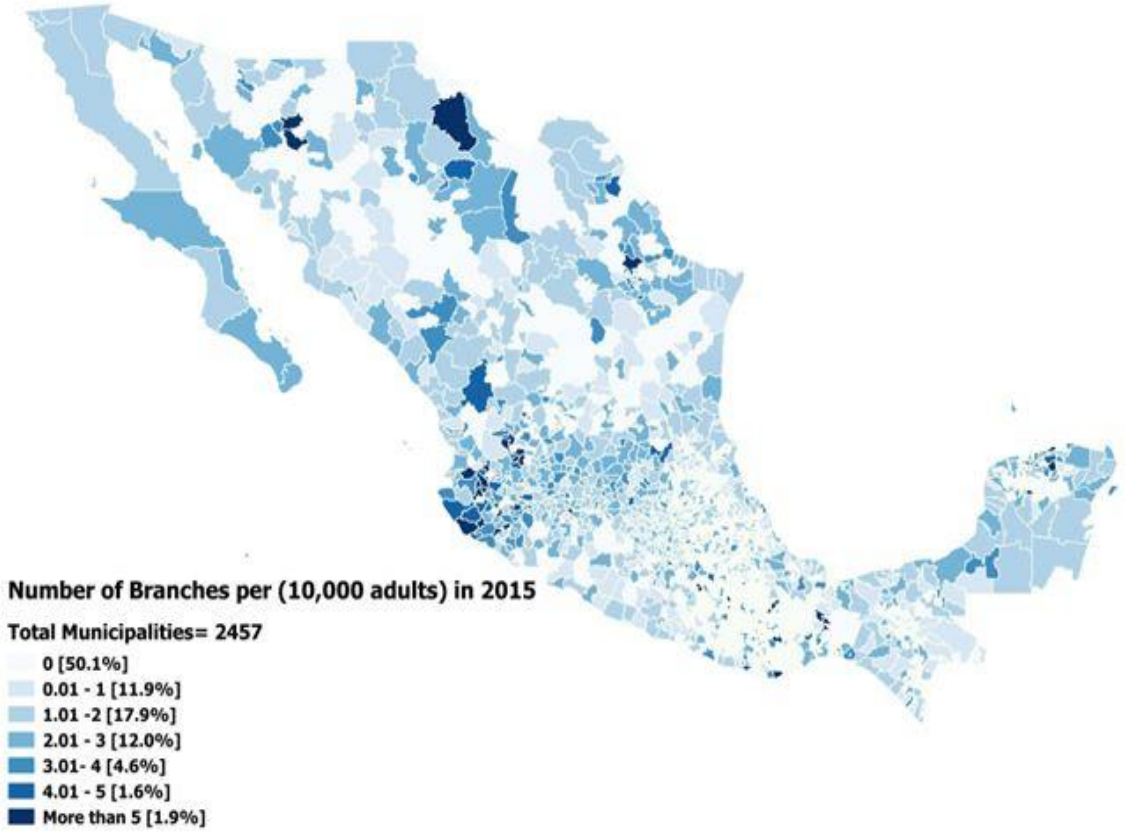
Variable	Observations	Mean	Std. Dev.	Min	Max
Entrepreneur	**4,025,391**	**0.207**	**0.405**	**0**	**1**
Gender	4,025,391	0.608	0.488	0	1
Marital Status	**4,025,391**	**4.53**	**1.695**	**1**	**9**
Total Employees	3,862,076	3.255	1.919	1	6
Education	**4,025,391**	**1.186**	**0.860**	**0**	**3**
Age	4,025,391	38.197	14.228	12	98
Sector	**4,002,684**	**5.845**	**3.005**	**1**	**11**
Income	4,025,391	3925.23	5266.952	0	900000
Urban	**4,025,391**	**0.842**	**0.207**	**0**	**1**
Informal	4,025,391	0.265	0.441	0	1
Financial Inclusion Index	**4,025,391**	**0.156**	**0.108**	**0**	**1**
Branches per 10,000 adults	4,025,391	2.065	1.227	0	72.84
POS terminals/ 10,000 adults	**1,356,750**	**82.442**	**67.780**	**0**	**539.24**
Credit Score Indicator	3,520,525	.064	.066	0	1
Checking Accounts Score Indicator	**4,025,391**	**.077**	**.077**	**0**	**1**
Non- Checking Accounts Indicator	4,025,391	.056	.049	0	1
Income Level at Municipality	**4,025,391**	**25930.43**	**8713.021**	**0**	**73365**
Employment Rate	4,025,391	0.951	0.023	0.5	1
Business Ease Score	**1,464,484**	**1.115**	**.494**	**.09**	**2.22**

Annex C: Maps on Entrepreneurship and Financial Inclusion






Number of Branches (per 10,000 adults) in 2009
Total Municipalities= 2457
0 [61.4%]
0.01 - 1 [14.5%]
1.01 -2 [15.1%]
2.01 - 3 [5.7%]
3.01- 4 [1.7%]
4.01 - 5 [0.5%]
More than 5 [1.1%]


Number of Branches per (10,000 adults) in 2015
Total Municipalities= 2457
0 [50.1%]
0.01 - 1 [11.9%]
1.01 -2 [17.9%]
2.01 - 3 [12.0%]
3.01- 4 [4.6%]
4.01 - 5 [1.6%]
More than 5 [1.9%]

Annex D: Regression results for Women from National Financial Inclusion Survey (ENIF)

	Regressions with different Financial Inclusion Indicators	Active Women
1	Financial Inclusion Index	-0.64 (0.59)
2	Branches/ 10,000 adults	0.016 (0.06)
3	Savings Account	0.07 (0.15)

Source: Authors calculations.
*Note: *** p<0.01, ** p<0.05, * p<0.1.*