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Gender gaps and poverty traps in México's Labor Markets

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Abstract

This research evaluated the existence and magnitude of different gender gap dimensions in the Mexican labor markets using a cross-section database from 2018. We also analyze how narrowing these gender gaps can contribute to reduce poverty levels in Mexico. Our results rejected the existence of a gender gap between formal and informal occupations in Mexico. This represents new evidence for the literature that has widely documented the existence of this kind of gender gap due to an over-representation of women in the informal sector. On the other hand, we confirmed that the country has a significant gender gap in terms of labor force participation. In fact, Mexico is the Latin American country with the lowest female labor participation in the whole region. We also find that the likelihood of mothers having a job decreases even more when they have young children, while their time spent in unpaid work tends to increase. Finally, we showed that poor mothers are less likely to have a job than non-poor mothers. This is also new evidence for the literature which usually documents the opposite dynamic. We argue that these findings represent a poverty trap for Mexico that the country needs to overcome. The lack of participation of mothers in the labor market is reinforcing the poverty situation of their households. Therefore, we suggest that the Mexican government should reinstate the subsidized childcare program that was cancelled in 2019 and target it to non-working mothers living in poverty conditions. This will help them to join the labor market and in some cases their earnings will be the determinant for the whole household to live above the national poverty lines.

Keywords: gender gaps, informality, labor force participation, multidimensional poverty

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1. INTRODUCTION

This research focused on studying the different types of gender gaps that exist in the labor markets and how narrowing them could help to reduce poverty levels in Mexico. In particular, we focus on two dimensions of gender gaps that have been widely documented by other researchers. The first dimension that we studied was the gender gap between formal and informal jobs. There is a consensus which indicates that in most countries women are more likely to participate in informal occupations. In addition, it has been identified that informality is one of the main factors preventing Mexico to reduce poverty considerably. Therefore, analyzing this gender gap was highly relevant to identify possible strategies to reduce poverty in Mexico. The second dimension that we studied was the gender gap in terms of labor force participation. Researchers have found that women are also more likely to remain at home doing domestic work while men are usually participating in the labour market. Therefore, increasing female labor participation could be another possible strategy to reduce poverty in Mexico.

Considering this context, the objective of this research was to identify fundamental questions on this topic that need to be answered. First, test if in fact, Mexican women are more likely to work in the informal sector. Also, analyze which are the gender gaps present in Mexico's labor markets and what are the factors driving these gaps. Finally, deepen in how could the government help to narrow these gender gaps and if this could contribute to alleviate poverty in the country. This research seeks to provide initial evidence to answer these questions. However, in some cases they were only partially solved. Therefore, we hope that this study will inspire further research that will help to complement our results.

In the next section we discuss the consensus which points out the existence of a gender gap in labor markets where women are more likely to work in the informal sector while men tend to be employed in the formal sector. Surprisingly, our initial results indicate that Mexico is an outlier of this theory because we did not find a relevant gender gap in this dimension. On the other hand, our results showed that Mexico has a huge gender gap in terms of female labor participation, which becomes more pronounced when women have young children. Our main argument to explain these results is that the Mexican labor markets have not yet surpassed their initial phase of development so they still have to implement policies to increase female workforce participation. Consequently, we argue that when Mexico succeeds in increasing female participation, the gender gap between formal and informal occupations will appear since the majority of the workforce will be absorbed by the informal sector.

We then proceeded to analyze the factors affecting the lack of female labor participation in the country. Our results find a children penalty in Mexico which illustrates that when a woman has children her chances of working are negatively affected. In addition, we found that their chances of having a job are further reduced when their children under 5 years old. This indicates that a childcare policy could be effective in increasing female labour participation. However, we also decided to analyze if this childcare policy could be useful to reduce poverty in Mexico.

The theory on this topic indicates that women living in poverty are more likely to work than women not living in poverty because they need to have an extra income for their household. However, our results show evidence that contradicts this theory. We found that in Mexico women living in poverty are less likely to have a job than women who are living in poverty. In addition, we find that the likelihood of poor women having a job are even lower when they have children under five years old. We argue that this is a poverty trap that the country needs to overcome. The lack of participation of women in the labor market is reinforcing the poverty situation of their households. Therefore, we suggest that the country should implement a policy of subsidized childcare which should be targeted to poor women who are not participating in the labor market. Our main argument is that the implementation of this policy will help women to get a job and bring an additional income to their households, which in some cases will raise their family's average income to live above the national poverty lines.

The research is divided into 10 sections. In Section 2 we present the research problem, where we also explain the methodology to measure multidimensional poverty as well as possible strategies to reduce poverty in Mexico. Section 3 presents a literature review explaining the four dimensions of gender gaps as well as its main causes and consequences. In Section 4 we make an explanation of our database and the control variables implemented in the regression. In Section 5 we present our empirical strategy and the results we obtained. For practical purposes, we divided this section into different stages so the reader can easily follow and understand the results. Each of the stages presents the hypothesis, the description of the dependent variable, the gender gap dimension to be evaluated, as well as the econometric model employed. Section 6 discusses the policy implications of our results where we argue that Mexico should implement a subsidized childcare program to increase female labor force participation. Section 7 presents the limitations of the study, unsolved questions, and research topics that could be interesting to analyze in the future. In Section 8 we highlight and summarize the final remarks of the research. In Section 9 we present the list of references and in Section 10 we include the appendix.

2. RESEARCH PROBLEM

Mexico is a country that still has much to do in their fight against poverty. The most recent data indicates that more than 52.4 million people in Mexico are living in poverty conditions, which represents about 42% of the total population (CONEVAL, 2019). To address this problem, the country has developed sophisticated methodologies to measure poverty and implemented numerous social programs. However, the government has failed to significantly reduce poverty levels in recent decades. In this section we will give critical information about the current poverty situation in Mexico and how the country is measuring it. In addition, we will discuss two ways in which Mexico could reduce poverty levels by narrowing gender gaps in the labor market.

Multidimensional poverty

We will start by giving a general explanation of the multidimensional measurement of poverty that Mexico established for the first time more than 10 years ago. This pioneer methodology to measure poverty has allowed the Mexican government to detect more precisely not only the number of people living in poverty but also the specific problems that they are facing. The standard poverty measurements usually base their estimations on nothing more than people's income levels. However, poverty is a multidimensional phenomenon, and this type of measurement does not allow us to take into account other relevant aspects.

According to the United Nations (2015), three perspectives should be considered when assessing if an individual is living in poverty: (1) whether their income is below a poverty line, (2) whether they possess the necessary basic services, and (3) whether they have sufficient basic capabilities to function in society. Nevertheless, it is worth emphasizing that even before the UN recommendations, Mexico was the first country to implement an official methodology to measure poverty using a multidimensional approach, using not only people's income, but also the fulfillment of their social needs (CONEVAL, 2011).

The Mexican institution that developed this methodology is the National Council for the Evaluation of the Social Development Policy (CONEVAL), which is also in charge of monitoring poverty levels in Mexico. In general terms, this institution established two sets of variables to measure poverty using the multidimensional approach: (1) the national poverty lines and (2) the fulfillment of social rights.

The poverty lines are divided into two different categories: extreme poverty line & moderate poverty line. The guideline is simple, CONEVAL calculates the minimum income necessary to consider that a person is not living in poverty, differentiating them between those living in urban or rural areas. According to CONEVAL's criteria, people are below the poverty line if their monthly income divided by the number of household members is less than the one established by the institution. They consider that an individual is below the moderate poverty line if their income does not let them afford the price of the basic food basket plus the non-food basket. Moreover, people is below the extreme poverty line if they cannot even buy the basic food basket with their income. Table 1 presents the current values of the poverty lines in Mexican pesos:

Table 1. Poverty lines in Mexico		
<i>Classification</i>	Urban areas	Rural areas
Moderate poverty line	MXN 1,921.74	MXN 1,202.80
Extreme poverty line	MXN 874.63	MXN 613.80

Made by the author based on CONEVAL (2012)

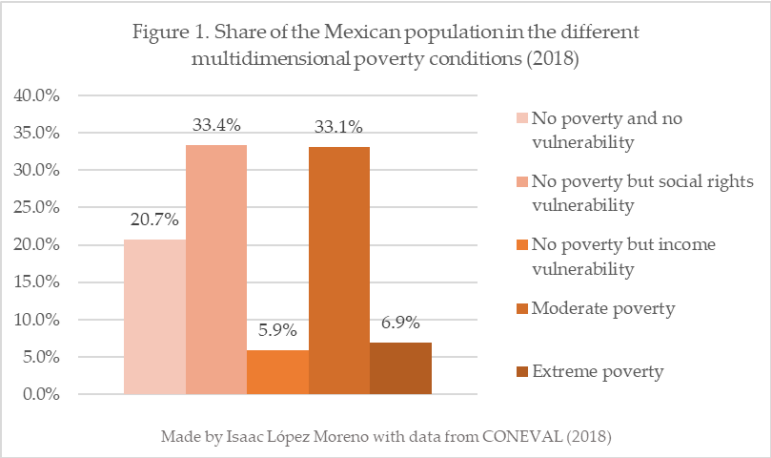
The second set of variables to complete the multidimensional poverty measurement is the one related to the fulfillment of social rights. CONEVAL established six different social deprivations of people living in poverty: (1) Lack of access to social security, (2) Educational backwardness, (3) Lack of access to medical services, (4) Lack of access to a healthy and varied diet, (5) Housing in bad conditions (i.e. laminate or cardboard roofs) and (6) Lack of access to public services (i.e. water, electricity). Based on these indicators, they developed the quadrant to measure multidimensional poverty, which is presented in Table 2. It can be observed that they establish five different categories to classify people's social and economic situation: extreme poverty, moderate poverty, no poverty but income vulnerability, no poverty but social rights vulnerability, as well as no poverty and no vulnerability.

Table 2. Multidimensional measurement of poverty in Mexico

Population with incomes above the moderate poverty line	No poverty and no vulnerability	No poverty but social rights vulnerability	No poverty but social rights vulnerability	No poverty but social rights vulnerability	No poverty but social rights vulnerability	No poverty but social rights vulnerability	No poverty but social rights vulnerability
Population with incomes above the extreme poverty line but below the moderate poverty line	No poverty but income vulnerability	Moderate poverty	Moderate poverty	Moderate poverty	Moderate poverty	Moderate poverty	Moderate poverty
Population with incomes below the extreme poverty line	No poverty but income vulnerability	Moderate poverty	Moderate poverty	Extreme poverty	Extreme poverty	Extreme poverty	Extreme poverty
	0	1	2	3	4	5	6
Lack of social rights							

Made by the author based on CONEVAL (2012)

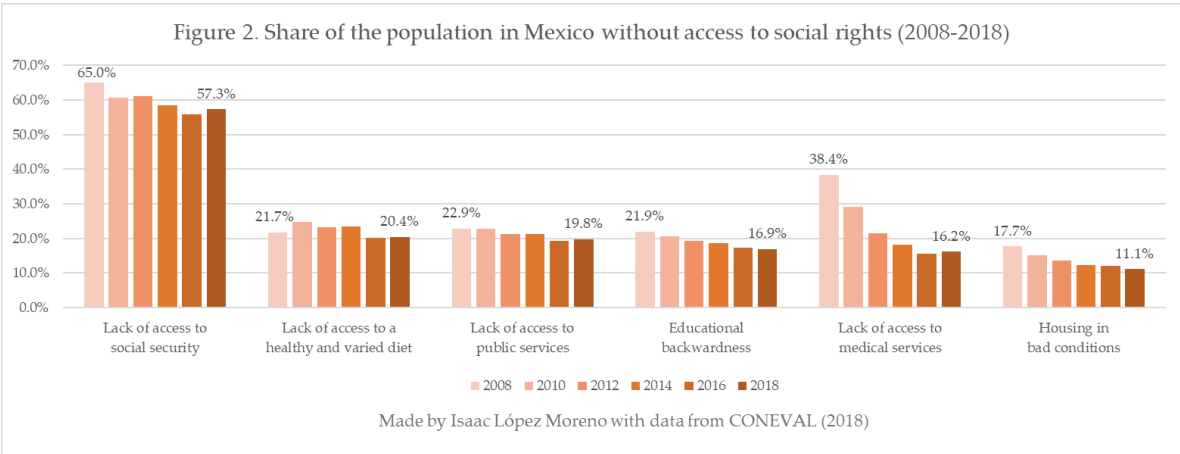
Since 2008 CONEVAL has been using this methodology to measure multidimensional poverty and they presents their results every two years. The most recent dataset is from 2018, and it indicates that 40% of the population in Mexico lives in poverty. Figure 1 shows the percentage of the population that is situated in one of the five categories of the multidimensional measurement of poverty. As we can observe, almost 7% of the population lives in extreme poverty, while 33% live in moderate poverty.



All this information allows us to dimension the magnitude of the problem and is also useful to understand that in Mexico there are two channels through which multidimensional poverty can be reduced. One of them is through the reduction of social deprivations. In other words, achieving that the greatest number of people have access to each of the six social rights. The second one is through an increase of household income, which would allow families to live above the national poverty lines. The purpose of this research is to explore how narrowing gender gaps in the labor market could help reduce poverty levels in Mexico, whether through the income channel or the social deprivation channel.

Social Deprivation Channel: Informality

We will begin by discussing the problem of social deprivations in Mexico. As we explained earlier, one of the channels by which Mexico could decrease its poverty levels is by facilitating the access to the six social rights established by CONEVAL. Consequently, it is relevant to highlight that since Mexico adopted the multidimensional poverty measurement, the social right that fewer people have access to is social security. In Figure 2 it can be observed that in 2018 more than half of the population did not have access to social security.



This evidence shows that one of the greatest challenges to reduce poverty in Mexico is to ensure that the majority of the population have access to social security. Generally, people who do not have access to social security are those who have informal jobs that do not provide them with the labor benefits established by law. Therefore, designing policies that help people to get a formal job will contribute to reduce their vulnerability and would also generate a considerable reduction in the number of people living in poverty.

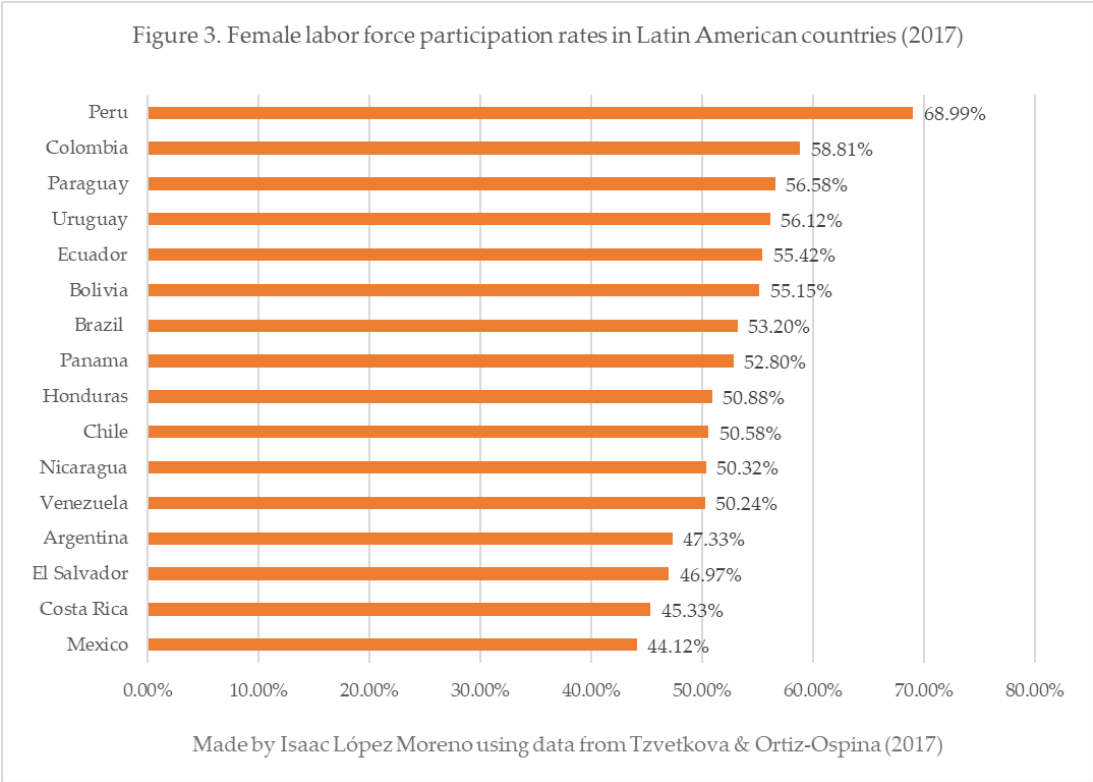
Later on we will explain that researchers who study informality often find a gender gap in this sector of the economy. However, we consider relevant to explain the main theory which indicates that usually there is a higher number of men with a formal job while most of the women are participating in the informal sector.

All this information suggests that if more women have access to formal jobs, poverty levels in Mexico would be reduced. This is in line with Chen et al. (2005) which states that supporting female in the informal economy is a key pathway to reduce poverty. Therefore, we decided to study the gender gaps in the informal sector and how this could be affecting poverty levels in Mexico.

Income Channel: Labor Force Participation

As explained above, the second channel by which Mexico could decrease its poverty levels is through an increase in the average household income. One of the most effective ways to achieve this goal is by facilitating that women participate in the labor market. Unfortunately, there are still many households where the man is in charge of working while the woman is in charge of domestic duties.

In Figure 3 it is shown that Mexico is the Latin American country with the lowest female labor participation rate in the whole region. The statistics show that more than half of women in Mexico do not have a job. This is surprising to us and it demonstrates that Mexico is a country that has failed to integrate women into the labor markets.



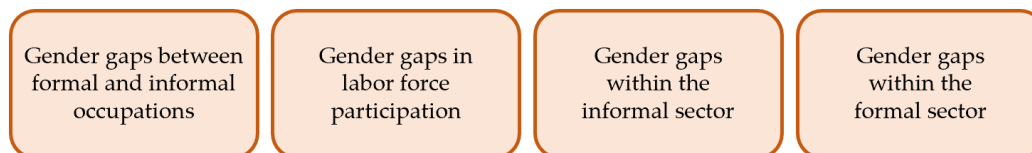
On the other hand, we consider that reducing this gender gap also represents a significant opportunity to reduce poverty through the income channel. This is because if the government implements policies that help women participate in labour markets, their earnings would help to raise average household incomes and in some cases the whole family would live above the national poverty lines. This is also in line with Chen et al. (2005) which explained that if women were not contributing to the household income, around 17% of the households in Peru would be living below the national poverty lines.

Considering that this issue has not received much attention in Mexico and that there is little research with empirical evidence on this topic, we decided to study gender gaps in labor force participation in more detail. This will allow us to identify some of the reasons for the lack of female participation in labor markets and identify policies to narrow this gap.

3. PREVIOUS RESEARCH

In this section we present a compilation of studies related to gender gaps in labour markets. After an extensive literature review, we consider that it was necessary to classify them in four different dimensions so we can better illustrate each of them. Figure 4 shows the four different categories. This section is dedicated to explain the characteristics for each of these gender gaps,

Figure 4. The four dimensions of gender gaps in labor markets



Made by Isaac López Moreno

Gender gaps between formal and informal occupations

In this section we present a literature review related to the empirical studies that has documented a link between women and informal occupations. To do so, we start by explaining the current debates around informality, especially the lack of consensus to define it and measure it properly. Then we discuss the main factors that usually determine whether a person has a formal or informal job. Finally, we focus on presenting the reasons that the literature has found to argue that women are more likely to have informal jobs.

We will start by explaining that there is still a debate about how to define informality and whether access to social security is the best way to measure it. Chen (2012) offers a good compilation of the four dominant schools of thought around the debate of informality. The Dualist school argues that informality is the result of a mismatch between growth rates of population and modern industrial employment. Also, as a product of the asymmetries between people's skills and the job opportunities available. (International Labour Office, 1972; Hart, 1973). The Structuralist school considers that informality is a result of capitalist practices to reduce labor costs and increase the competitiveness of large companies. (Moser, 1978; Castells & Portes, 1989). The Legalist school defines informality as all companies, workers, and activities that operate outside of regulatory frameworks and avoid the costs of formal registration (De Soto, 1989). Finally, the voluntarist school argues that being informal is a rational decision where individuals do a cost-benefit analysis to decide whether to participate in the formal or informal sector (Maloney, 2004).

On the other hand, there is still a debate on how to measure informality properly. Acar & Tansel (2014) offered a good explanation about the two most common ways to measure informality which are consistent with the international guidelines established by the International Labor Organization. The "Enterprise Definition" consists of measuring informality based on company characteristics rather than on workers. Under this definition, workers are informal if they are employees in small firms (with less than 10 workers), as well as if they are self-employees or unpaid employees. On the other hand, the "Legal Definition" measures informality based on workers' characteristics rather than firms. Under this definition, those workers without access to social security are considered informal no matter if they are working in big or small firms. Most of the studies discussed in this research are based on the legal definition of informality which is measured by differentiating between people with and without access to social security. This is justified if we consider that 'access to social security' is one of the indicators used in Mexico to measure multidimensional poverty.

We will now proceed to discuss the drivers of informality. Several studies have identified different elements that increase the probability of a person to participate in the informal sector, and therefore, not having access to social security. Perry et al. (2007) offered a good compilation of them. In general terms, socio-demographic characteristics such as gender, educational level, age, or rural-urban population as well as firm characteristics such as size or sector of the company are some of the most common variables used to predict people's economic situation. In this section we will discuss these characteristics, especially because then we will use them as control variables in the empirical section to assess whether gender gaps persist even when all these other elements are also considered in the regressions.

The literature has documented that in Latin America low educational levels make people more likely to be part of the informal sector and have lower average incomes (Funkhouser, 1996; Ochoa & Ordoñez, 2004; Gasparini & Tornarolli, 2009). In addition, (Cunningham, 2007) studied people's occupation across their life cycle in Mexico, Brazil, and Argentina and showed that people in the 25-40 age range are more likely to be employed in the formal sector.

Bonnet et al. (2019) explained that in the emerging countries around 83% of the rural population work in informal occupations, while 51% of the people living in urban areas are part of the informal sector. They also showed that 93% of the people working in agricultural activities are informal, while 67% in industrial activities and 55% in the service sector are also informal. In addition, Losby & Edgcomb (2002) showed that people working in manufacturing or the construction sector are more likely to be informal.

It is also well-known that while big companies are more likely to be part of the formal economy, small firms tend to perform in the informal sector. The literature has shown that micro and small enterprises are less likely to be part of the formal sector because of the government excessive regulations (e.g. De Soto, 1989), the high entry costs (Auriol & Warlters, 2005) as well as the tax burden (Cebula, 1997; Giles & Tedds, 2002).

Finally, the literature has documented that those women who participate in the labor market tend to do it in the informal sector which generates a gender gap between formal and informal employment. This gap can be explained because of different reasons. For example, Carr (1996) showed that having children make women more likely to join the informal sector. In addition, Chen, Vanek, & Carr (2004) explain that women tend to take this decision because they are looking for flexible work schedules that allow them to increase their household income while they continue taking care of their children. As a complement to this theory, Sabates-Wheeler & Kabeer (2003) explained that the current arrangements of most of the labor markets are based on the old family role model where men have access to jobs in the formal sector with higher earnings and better labor benefits because they were the main support for their wife and children and provide the whole household income. All this factor leads to a gender gap where women tend to participate more in the informal sector while men tend to participate more in the formal sector.

As we have explained, the literature has consistently found a gender gap between informal and formal occupations. However, the results of our research indicate that this gap is not present in the Mexican labor markets. The interpretation of these results and the theories that could explain them will be discussed in the following sections. Nevertheless, in Figure 6 (included in the appendix) we show that there are no significant differences in this dimension. It can be observed that 77% of men have an informal occupation, while 78% of women are working in the same sector.

Gender gaps in labor force participation.

Some countries have made progress in their quest to transform their labor markets and boost female participation. Razavi et al. (2012) showed that the recent globalization process has increased women's participation in the labor market. However, it is still common to see around the world a considerable number of women who are still staying at home doing non-remunerative work.

Tzvetkova & Ortiz-Ospina (2017) offer a good overview of the main causes that limit or encourage female participation in the labor market. The first reason is related to the fact that women tend to spend a higher amount of time on unremunerated activities. Social norms that assign women the role of taking care of domestic duties still exclude them from participating in labor markets. Following this approach, the authors explained that the number of children per woman also plays a key role in female labor participation because when the fertility rates of a country have decreased, female labor participation tends to increase.

Another relevant reason that reduces the chances of women to participate in the labor market is related to maternity. Pregnancy, childbirth, and postpartum recovery represent a considerable burden on women's health and time which also limits their chances to participate in the labor market. Consequently, other authors have shown how national laws related to maternity leaves generate discrimination against women. Hampel-Milagrosa (2011) showed that employers show discrimination behavior against women because they are required to pay the maternity leave benefits.

The literature has also documented a more elaborated theory which states that the structural transformation of economies can influence changes in female labor participation. Boserup (1970) and Goldin (1994) were the pioneers of this theory which establish a U-shaped relationship between female labor force participation and economic development. They showed that female labor force participation tends to be higher in the poorest and richest countries of the world, while it tends to be lower in middle-income countries. Recent research from Ngai & Olivetti (2015) explains in more detail the mechanisms of this trend. In the initial stage of a country's development process, women tend to get involved in agricultural activities as family workers. The decline of female labor participation starts during the migration process of families from rural to urban areas, where men get involved in industrial activities with higher earnings, and women remain at home doing domestic activities. They argue that in this stage wife employment in manufacturing is taken as a negative reflection on her husband's ability to provide income to his family, which forces them to stay at home. However, when the development process is in its final stage female labor force participation increases because their education is higher and there are more "white-collar employments" in the service sector that does not share the same stigma as factory work or agricultural employment.

Verick (2014) also explained that in some cases female labor participation can be driven by their poverty condition and their attempt to increase household income. This is in line with Chen, Vanek & Carr (2004) which state that poor women are more likely to be employed than non-poor women in most countries. Finally, Jaumotte (2003) explained that the main determinants of female labor participation are the general labor market conditions, the cultural attitudes of the societies, and the female's level of education. Figure 5 (included in the appendix) shows the percentage of men and women who are working or not. There it can be observed the wide differences that exist between both genders. While 82% of men have a job, only 52% of women have one.

Gender gaps within the informal sector

The literature has also documented that even within the informal sector, women tend to get involved in worse jobs than men. Chen, Vanek & Heintz (2006) explained that informality is usually divided into two groups: informal self-employment & informal wage employment. However, they also explain that in developing countries there is greater segmentation that goes beyond the dichotomy between self-employment and wage informality.

In this theory, they argue that men are more likely to have paid informal employments or owning informal businesses that employ more people, while women are more likely to be unpaid family workers or owners of individual businesses who do not hire more people. Therefore, men tend to have better-paid informal jobs while women tend to be concentrated in the more precarious jobs of the multi-segmented informal sector, which means that there is also a gender gap in earnings and occupations within the informal economy. In Figure 7 (included in the appendix) we show the share of the population working in several firm sizes differentiating them by sex. There it can be observed that more than 31% of women are self-employed, while only 15% of men are working on their own. This could be treated as the initial evidence of the over-representation of women in self-employment which is in line with the theory that argues a gender gap within the informal sector.

Gender gaps within the formal sector

Although the number of women who have access to employment in the formal sector has increased over the years, the literature has documented different gender gaps within the formal sector. The first gap within the formal sector is related to the occupations that women have in the companies where they are working. It is a fact that the number of women in management positions is low compared to men. Morrison et al. (1987) as well as other researchers have used the term “glass ceiling” to represent the unobservable barrier that limits women's participation in management positions at large corporations. Hardoy et al. (2017) find empirical evidence to show that childbirth is one of the factors that drive this gap.

The other gap within the formal sector is related to wages. Ortiz-Ospina (2018) presents a good compilation of the main drivers of this gap. He explains that the “adjusted pay gap” is used to compare groups of workers with similar jobs, experience, and education to analyze which factors are contributing to this problem. He explains that the level of education and the working experience is losing relevance to explain wage differences between genders, while the industries and the occupations of the workers have become more relevant. In addition, Goldin (2014) shows how job flexibility is a key determinant for the reduction or persistence of gender wage gaps. She shows that mothers tend to look for jobs that can be compatible with childrearing or other family responsibilities, and shows how these kinds of jobs offer lower earnings per hour. More recently, Goldin & Katz (2016) showed how the pharmacy sector in the US has become a profession with a small gender earnings gap because the technological changes have made that

these occupations have a more flexible working schedule. Finally, another factor that is driving this gender wage gap in this dimension is again the motherhood effect. Kleven et al. (2018) showed that childbirth generates a gender gap in earnings but also in other aspects like labor force participation or promotion to management positions.

List of hypotheses based on the literature review

After this extensive literature review, we established 5 different hypotheses that were evaluated as part of our empirical strategy. Each of them is presented below.

Hypothesis 1: Women are more likely to have an informal job than men with similar characteristics. The literature has documented an over-representation of women in the informal economy. Hence, we decided to test the validity of this theory on Mexico's labor markets.

Hypothesis 2: Women are less likely to have a job than men with similar characteristics. We discussed that researchers have found several factors that still limit female's labor force participation. Therefore, we decided to evaluate the existence of this gender gap in Mexico.

Hypothesis 3: Having children has a negative effect on women's likelihood of having a job, while it increases men's probabilities. One of the most documented factors that affects women's employment status is having children. In addition, it has been documented that having children has the opposite effect for men. Consequently, we decided to evaluate if this is also happening in Mexico.

Hypothesis 4: Women dedicate a higher amount of time doing non-remunerated work compared to men with similar characteristics. Researchers have documented that women tend to spend more time doing domestic work. For that reason, we decided to evaluate this theory in Mexican households.

Hypothesis 5: Poor women are more likely to have a job than non-poor women. Researchers have found evidence to state that in most countries women living in poverty conditions are more likely to have a job because they are looking to have an extra income for their households. Considering this information, we decided to evaluate if this is also a theory in Mexico

4. DATASET DESCRIPTION

In this section we present relevant how we construct the database that was used for this research. We also present a detailed explanation of the control variables that we employed in our regressions. Finally, we present the descriptive statistics of the database.

Every two years the CONEVAL publishes a database with the results of poverty in Mexico. These results are obtained based on the ENIGH database (*Encuesta Nacional de Ingresos y Gastos de los Hogares*) that is a household survey elaborated by INEGI (*Instituto Nacional de Información Estadística y Geográfica*) which is the Mexican institution in charge of publishing all the official statistics of the country. In addition, we followed the methodology and criteria established by CONEVAL to determine if the person has any social deprivation and if they have an average income to live above the national poverty lines. Using this information, they classify each person within the poverty quadrant, and then they publish the results. However, the CONEVAL database excludes relevant information about jobs and household characteristics. Therefore, to conduct these research we had to construct a cross-sectional database using the poverty database from CONEVAL (2018) combined with the original modules of jobs and population from the ENIGH database made by INEGI (2018).

Using this database, we evaluate the existence and the magnitude of gender gaps in labor markets. To do so, we established different hypotheses and test its validity. As you will notice in the next section, we decide to divide our empirical strategy into five different stages because we evaluate several hypotheses considering different scenarios and using different interaction dummies that need to be explained in detail. Therefore, in the next section we will point out the specific hypothesis that was evaluated, the econometric model that was employed, the equation to represent the model as well as the final results. The intention to follow this approach is that the results are not only easy to interpret but also easy to follow. Therefore, this section will only explain in detail the control variables that were used in the different regressions.

As we explained in the literature review, different variables have been identified as relevant to predict the labor situation of a person. Considering that the main goal of our research is to evaluate the existence of a gender gap and its magnitude, we decide to use these variables as controls in the regressions to check if even after including them the gender effect persists. An explanation of these control variables is presented below.

“*Age*” is a continuous variable that takes the value of the age reported by the person at the time of the survey. The “*Age squared*” variable was also used as a control considering that there is no linear relationship between age and employment. A set of dummy variables was also used as a control for other demographic characteristics. “*Rural Area*” takes a value of 1 if the household was located in a rural area and 0 if it was in an urban area. “*Indigenous speaker*” takes a value of one if the person reported speaking a native language and 0 otherwise, while “*Disability*” takes a value of 1 if a person has any kind of physical or mental disability and 0 otherwise. “*Size of the household*” shows the number of people living in the same household.

We also include two categorical variables in our analysis. “*Level of education*” is a variable that shows the last degree of study that was completed by each person. It takes a value of “0” if the person does not have any studies at all, “1” for kindergarten, “2” for elementary school, “3” for middle school, “4” for high school, “5” for people who finished the teacher-training college to become an elementary school teacher, “6” for people who finished a technical career, “7” for undergraduates, “8” for people who finished a master's degree, and “9” for people with PhDs.

In addition, *“firm size”* is a variable that takes a value of “1” if there is only one employee, “2” if the company has between 2-5 employees, “3” for companies between 6-10 people, “4” for those between 11 to 15 employees, “5” if the firm has between 16 to 20 people, “6” if its between 21 to 20 people, “7” for those with 31 to 50 employees, “8” if the company has between 51 to 100 employees, “9” if it is between 101 to 250 people, “10 if it has 251 to 500 employees and “11” if it has more than 501.

The descriptive statistics of all the variables used in this study are presented in Table 3. We divide them into 3 groups. First, the different dependent variables that we used in the different stages of our empirical strategy. Second, the control variables that we included in the models. Finally, the variables that we used to measure the different dimensions of gender gaps in Mexico.

Table 3 - Descriptive Statistics					
	Obs	Mean	Std. Dev.	Min	Max
<i>Dependent Variables</i>					
Informal	136,586	0.781	0.413	0	1
Job	204,106	0.669	0.471	0	1
Job with social security	136,586	0.219	0.413	0	1
Unpaid work - Childcare or eldercare	57,433	23.188	19.949	0	99
Unpaid work - Domestic activities	152,708	16.641	14.712	0	99
<i>Control variables</i>					
Age	281,501	31.969	21.236	0	110
Age squared	281,501	1472.974	1650.282	0	12100
Rural Area	281,360	0.402	0.490	0	1
Indigenous	268,981	0.071	0.257	0	1
Discapacity	281,360	0.079	0.269	0	1
Size of the household	281,360	4.012	1.709	1	19
Level of education	269,119	3.085	1.848	0	9
Size of the firm	137,215	3.555	2.946	1	11
<i>Gender gap variables</i>					
Women (Compared to men)	281,501	0.506	0.500	0	1
Mothers (Compared to fathers)	117,557	0.568	0.495	0	1
Mothers with children under 15 years old (Compared to fathers with children under 15)	77,140	0.554	0.497	0	1
Mothers with children under 5 years old (Compared to fathers with children under 5)	39,063	0.549	0.498	0	1
Mothers (Compared to women without children)	104,716	0.637	0.481	0	1
Fathers (Compared to men without children)	99,523	0.511	0.500	0	1
Poor women (Compared to non-poor women)	142,205	0.405	0.491	0	1
Poor mothers (Compared to non-poor mothers)	66,790	0.400	0.490	0	1
Poor mothers with children under 15 years old (Compared to non-poor mothers with children under 15)	42,697	0.436	0.496	0	1
Poor mothers with children under 5 years old (Compared to non-poor mothers with children under 5)	21,440	0.471	0.499	0	1

5. EMPIRICAL STRATEGY & RESULTS

This section presents the results from different regressions that evaluate the existence and the magnitude of gender gaps in the Mexican labor markets considering different dimensions. The results will be presented in different stages with the intention that our empirical strategy and the results can be understood and interpreted easily.

1st Stage – Probit regressions to capture gender gaps between formal and informal employment

The literature has consistently documented that in most countries there is a gender gap between formal and informal jobs. The theory indicates that in almost all the countries men are more likely to have a formal job while women are more likely to engage in informal occupations. Sabates-Wheeler & Kabeer (2003) explained that men are usually more likely to have a formal job because the current labor markets arrangements are still based on the old family role model where it was established that men should have higher earnings and better labor benefits since they were the main support for their wife and children. On the other hand, Chen et al. (2004) explained that those mothers who participate in the labor market are usually engaged in informal occupations because they offer more flexible work schedules. As we have explained earlier, several studies have provided empirical evidence to support these arguments.

Considering this information, the first stage of our empirical strategy was to test the hypothesis that women are more likely to have informal employment, while men are more likely to have a formal job. To do so, we run several regressions using a probit model that can be represented with the following equation:

$$\begin{aligned} informal = & \beta_1 gen_gap_i + \beta_2 age + \beta_3 age^2 + \beta_4 rural + \beta_5 indigenous + \beta_6 disability \\ & + \beta_7 house_size + \beta_8 educ + \beta_9 firm_size + \varepsilon \end{aligned}$$

The dependent variable used in these regressions is “*informal*” which is a dummy variable that takes a value of 1 if a person has an informal job and 0 if the person has a job with social security. As part of our empirical strategy, we exclude from the sample people who are not working. Moreover, “*gen_gap*” is the variable that we used to capture the gender gap by comparing men and women with similar characteristics in different scenarios, where *i* represents the different comparative scenarios. In the first regression we used the variable “*woman*” that takes a value of 1 if the person is a female and 0 if it is a male. In the second regression we use the variable “*mother*” takes a value of 1 if it is a woman with children, and 0 if it is a man with children. The last two variables compare mothers and fathers with children under 15 years old, as well as mothers and fathers with children under 5 years old. Finally, a group of control variables was also included in the set of regressions.

Table 4 present the results of the regressions that estimate the probabilities of having an informal job in Mexico considering specific gender characteristics. Regressions 1,3,5,7 could make us believe that there is a positive and statistically significant gender effect which illustrates that women are more likely to participate in informal jobs. However, regressions 2,4,6,8 show that when we control for firm size the gender effect is no longer significant in some scenarios while in others it shows just a marginal effect.

Table 4: Probabilities of working in the informal sector considering specific gender characteristics								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman (Compared to man)	0.038*** (0.002)	0.002 (0.002)						
Mothers (Compared to fathers)			0.060*** (0.003)	0.012*** (0.003)				
Mothers with children under 15 (Compared to fathers with children under 15)					0.065*** (0.004)	0.013*** (0.004)		
Mothers with children under 5 (Compared to fathers with children under 5)							0.059*** (0.005)	0.004 (0.005)
<i>Control variables</i>								
Age	-0.022*** (0.000)	-0.017*** (0.000)	-0.014*** (0.001)	-0.013*** (0.001)	-0.012*** (0.001)	-0.012*** (0.001)	-0.014*** (0.002)	-0.014*** (0.002)
Age (Squared)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Rural Areas	0.098*** (0.002)	0.067*** (0.002)	0.106*** (0.003)	0.069*** (0.003)	0.113*** (0.004)	0.077*** (0.004)	0.109*** (0.005)	0.073*** (0.005)
Indigenous speaker	0.097*** (0.003)	0.057*** (0.004)	0.112*** (0.004)	0.067*** (0.005)	0.128*** (0.005)	0.078*** (0.006)	0.131*** (0.008)	0.078*** (0.009)
Disability	0.039*** (0.005)	0.022*** (0.005)	0.037*** (0.007)	0.022*** (0.007)	0.035*** (0.010)	0.018* (0.010)	0.020 (0.017)	0.006 (0.018)
Size of the household	0.002*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.004*** (0.001)	0.002 (0.001)	0.005*** (0.001)	0.002 (0.002)	0.004*** (0.002)
Level of education	-0.044*** (0.001)	-0.028*** (0.001)	-0.051*** (0.001)	-0.033*** (0.001)	-0.054*** (0.001)	-0.037*** (0.001)	-0.052*** (0.002)	-0.037*** (0.001)
Size of the company		-0.053*** (0.000)		-0.056*** (0.001)		-0.060*** (0.001)		-0.061*** (0.001)
Observations	136,586	136,586	82,171	82,171	58,072	58,072	27,930	27,930
Standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Our results indicate that women are not more likely to have an informal job compared to men. This can also be interpreted in the opposite way. Men are not more likely to have a job with social security compared to women. Therefore our results led us to reject this hypothesis and conclude that in Mexico there is no gender gap between formal and informal jobs.

We decided to check if these results were consistent with the data. Therefore, we did a descriptive analysis to validate the results. Figure 5 (included in the appendix) shows the percentage of men and women that are participating in formal or informal jobs, where it can be observed that there is no substantial difference between women and men in terms of formal and informal employment. In addition, we found that Kaplan (2017) also documented that, surprisingly, the employment rates in informal occupations are similar between men and women in Mexico.

In addition, the fact that the control variable "*firm_size*" generated that the gender effect disappeared in the regressions led us to consider that women could be over-represented in small enterprises, which is in line with the theories that point out the existence of gender gap inside the informal sector. Figure 7 (included in the appendix) shows the percentage of women and

men working in firms of different sizes. There it can be observed that women are over-represented in self-employment, which is in line with the literature that has studied gender gaps within the informal sector. In fact, this indicates the potential existence of gender gaps within the informal sector in Mexico. However, this is initial evidence that need to be proved empirically which is outside the scope of this research.

2nd Stage – Probit regressions to capture gender gaps in labor force participation

In the previous stage we found empirical evidence that differs from the consensus that links women to the informal sector. Considering these results, we decided to explore the possibility that another type of gender gap exists in Mexico's labor markets.

The literature has documented that in some countries there is a gender gap in terms of labor force participation. The theory indicates that men are usually participating in the labor market, while women are more likely to stay at home doing domestic duties. Tzvetkova & Ortiz-Ospina (2017) explain different factors that limit women's chances of having a job. One of them is the level of education of women. They explained that countries where women have lower levels of education tend to have lower female participation rates, while those where women have higher skills and qualifications tend to have higher participation rates. In addition, they explained that in some cases social norms and cultural attitudes continue assigning women the role of staying at home because they are in charge of the household. Finally, they argue that pregnancy, childbirth, and postpartum recovery also limit their chances to participate in the labor market.

Considering this information, in the second stage of our empirical strategy we decide to evaluate the hypothesis that women are less likely to have a job than men with similar characteristics. To test the validity of this hypothesis we run different regressions using a probit model that can be represented with the following equation:

$$job = \beta_1 gen_gap_i + \beta_2 age + \beta_3 age^2 + \beta_4 rural + \beta_5 indigenou + \beta_6 disability + \beta_7 house_size + \beta_8 educ + \varepsilon$$

Where “*job*” is a dummy variable takes a value of 1 if a person has a job, no matter if it is formal or informal, while it takes a value of 0 if the person has no job. This variable is restricted for people above 16 years old, which is the legal age to start working in Mexico as well as to be considered part of the economically active population. As we explained previously, the variable “*gen_gap*” represents an interaction dummy that changes depending on each regression in order to capture a potential gender gap by comparing men and women with similar characteristics in different scenarios.

Table 5 present the results of the regressions that estimate the probabilities of having a job in Mexico considering specific gender characteristics. The results showed that even after controlling for different socio-demographic characteristics, women are significantly less likely to participate in the labor market than a man. It also shows that when a woman has children her chances of having a job keep decreasing compared to a man with children. The likelihood decreases even more when the children are under 5 years old. Therefore, the results confirm not only the existence of a gender gap between those who have a job and those who not, but also that this gender gap is aggravated when women have young kids.

Table 5: Probabilities of having a job in Mexico considering specific gender characteristics				
	(1)	(2)	(3)	(4)
Woman (Compared to man)	-0.340*** (0.002)			
Mothers (Compared to fathers)		-0.405*** (0.002)		
Mothers with children under 15 (Compared to fathers with children under 15)			-0.393*** (0.003)	
Mothers with children under 5 (Compared to fathers with children under 5)				-0.466*** (0.004)
<i>Control variables</i>				
Age	0.043*** (0.000)	0.033*** (0.001)	0.030*** (0.001)	0.028*** (0.002)
Age (Squared)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Rural Areas	0.023*** (0.002)	-0.008** (0.003)	-0.027*** (0.003)	-0.033*** (0.004)
Indigenous speaker	0.119*** (0.004)	0.094*** (0.004)	0.071*** (0.004)	0.078*** (0.006)
Disability	-0.170*** (0.004)	-0.120*** (0.006)	-0.097*** (0.010)	-0.050*** (0.018)
Size of the household	-0.009*** (0.001)	-0.012*** (0.001)	-0.006*** (0.001)	-0.003** (0.001)
Level of education	0.008*** (0.001)	0.013*** (0.001)	0.019*** (0.001)	0.026*** (0.001)
Observations	204,106	117,552	77,077	39,002
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				

These results are in line with the literature that has documented how women are affected in different labor outcomes when they have a child. Kleven et al. (2019) showed that women tend to experience a persistent drop in earnings after the birth of their first child, while men's earnings are unaffected. Consequently, Tzvetkova & Ortiz-Ospina (2017) also explained that having a child has a negative impact on women's chances of participating in the labor market.

3rd stage – Probit regressions to capture the children penalty

As we briefly explained in the previous stage, there is a growing literature that has documented how having children affects women's chances of participating in the labor market. Researchers refer to this phenomenon as the "children penalty" or the "motherhood effect". They explained that after childbirth women are less likely to have a job and they tend to assume the main responsibility of taking care of their children. Kleven et al. (2018) & Kahn et al. (2014) have provided empirical evidence of this phenomenon. On the other hand, it has been documented that after childbirth men's likelihood to have a job tends to increase. In this case, the explanation is that men tend to assume the responsibility of providing the income to support the expenses associated with the baby.

The third stage of our empirical strategy has to evaluate these two hypotheses. The first one is that women with children are less likely to have a job. The second one is that men with children are more likely to have a job. To do so, we run several regressions using a probit model that can be represented with the following equation:

$$job_i = \beta_1 gen_gap_i + \beta_2 rural + \beta_3 indigenou + \beta_4 disability + \beta_5 house_size + \beta_6 educ + \beta_7 firm_size_i + \varepsilon$$

In this stage, we evaluate two different job status scenarios that are represented with the sub-index "i". In the first set of regressions, we used the variable "job" as the dependent variable, while in the second set of regressions we used the variable "job_ss" which takes a value of one if the person has a job with social security and 0 if they have a job without social security. It is important to note that in this second set of regressions we excluded the non-working people from the sample. In addition, it should be highlighted that we only used the variable "firm_size" as a control in the regressions using "job_ss" as the dependent variable because people who do not have a job will always have a missing value in the variable "firm_size". Therefore, it makes no sense to include it since the outcome will not vary.

In this stage the variable "gen_gap" was restricted to specific age groups. This was done to compare men and women with or without children in similar age ranges, which allows us to capture more accurately the effect and reduce possible biases in the results. Also, in this case we compare the same genders but differentiating them by their parental status. This approach allows us to capture more accurately how the likelihood of each gender is affected after having a baby.

Table 6.1 shows the probabilities of women to have a job and to have access to social security by differentiating them between those who are mothers and those who are not. Following the same approach, Table 6.2 shows the probabilities of men with children to participate in the labor market and have a formal job compared to a man who has no children. In both cases we exclude the other gender from the sample.

We will start by highlighting the most relevant results from Table 6.1. The first three regressions show a negative and statistically significant children effect. These results show that women with children are less likely to have a job compared to women without children. It can also be seen that this effect decreases as the age range increases. The children's effect on women between 40 and 49 is considerably lower than the effect observed in the other two age groups. The logical explanation for these results could be that in that age group (40-49) children are older enough to attend school, which encourages more women to take a job. However, there may be other factors that could be driving this effect. As we explained the next of regressions considered “job_ss” as the dependent variable. In this case the results were similar to those we obtained in the 1st stage. As it can be observed, being a mother is not a relevant characteristic that generates a gap between having a formal or informal job in Mexico. Therefore, these results suggest that in the case of Mexico the children's effect does not influence a decision between having a formal or informal job. The results reinforce the theory that having a baby may be influencing that women choose not to participate in the labor market at all.

Table 6.1: Probabilities of having a job in Mexico comparing women with and without children by age groups						
	Having a job			Having a job with social security		
	(1) 20/29 years old	(2) 30/39 years old	(3) 40/49 years old	(4) 20/29 years old	(5) 30/39 years old	(6) 40/49 years old
Mothers (Compared to women without children)	-0.117*** (0.007)	-0.108*** (0.009)	-0.019** (0.010)	0.008 (0.009)	-0.019* (0.010)	0.000 (0.010)
<i>Control variables</i>						
Rural Areas	-0.060*** (0.007)	-0.053*** (0.007)	-0.049*** (0.008)	-0.075*** (0.009)	-0.085*** (0.008)	-0.078*** (0.008)
Indigenous speaker	0.103*** (0.014)	0.120*** (0.011)	0.150*** (0.011)	-0.099*** (0.016)	-0.061*** (0.015)	-0.051*** (0.014)
Discapacity	-0.211*** (0.022)	-0.187*** (0.023)	-0.130*** (0.016)	-0.030 (0.031)	-0.014 (0.029)	-0.016 (0.017)
Size of the household	-0.001 (0.002)	-0.010*** (0.002)	-0.024*** (0.002)	-0.005** (0.002)	-0.001 (0.002)	-0.004* (0.003)
Level of education	0.012*** (0.002)	0.046*** (0.002)	0.038*** (0.002)	0.028*** (0.002)	0.043*** (0.002)	0.041*** (0.002)
Size of the firm				0.065*** (0.001)	0.064*** (0.001)	0.060*** (0.001)
Observations	22,264	20,367	19,281	11,803	13,105	12,472
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1						

Now we will proceed to analyze the men's results which are presented in Table 6.2. As you can observe the set of regressions shows an opposite effect to the one obtained by women since in the case of men having a child has a positive effect. The results show that men with children are more likely to work than men without children. It can be observed that the age group where the effect is strongest is among men aged 20-29. This could be explained if we consider the evidence that in some cases men in this age group choose to stop studying and get a job when they have a child. Finally, the results also show that men with children are more likely to have a formal job, although in this case the effect is smaller.

	Having a job			Having a job with social security		
	(1)	(2)	(3)	(4)	(5)	(6)
	20/29 years old	30/39 years old	40/49 years old	20/29 years old	30/39 years old	40/49 years old
Fathers (Compared to man without children)	0.144*** (0.004)	0.066*** (0.004)	0.066*** (0.005)	0.038*** (0.007)	0.017** (0.008)	0.033*** (0.008)
<i>Control variables</i>						
Rural Areas	0.027*** (0.004)	0.010*** (0.002)	0.008*** (0.003)	-0.095*** (0.007)	-0.088*** (0.007)	-0.079*** (0.007)
Indigenous speaker	0.055*** (0.007)	0.015*** (0.003)	0.019*** (0.003)	-0.076*** (0.012)	-0.096*** (0.012)	-0.065*** (0.012)
Discapacity	-0.355*** (0.020)	-0.209*** (0.016)	-0.176*** (0.012)	-0.048** (0.022)	-0.006 (0.022)	-0.048*** (0.014)
Size of the household	-0.010*** (0.001)	-0.005*** (0.001)	-0.004*** (0.001)	-0.010*** (0.002)	-0.010*** (0.002)	-0.007*** (0.002)
Level of education	-0.026*** (0.001)	0.001** (0.001)	0.002*** (0.001)	0.023*** (0.002)	0.034*** (0.002)	0.035*** (0.002)
Size of the firm				0.065*** (0.001)	0.067*** (0.001)	0.065*** (0.001)
Observations	21,864	18,851	18,262	18,254	17,545	17,009
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1						

4th stage – OLS regressions to capture gender gaps in non-remunerative work

The literature has also documented that women tend to spend more time on unpaid work than men. Samman et al. (2016), Miranda (2011) & Sayer (2005) are just some of the researchers that have provided empirical evidence to support this argument. There is also consensus around this topic, so the interests of researchers lie in analyzing which factors reduce them or exacerbate them.

In this stage we evaluate the hypothesis that women dedicate a higher amount of time doing non-remunerated work compared to men. To do so, we run OLS regressions that can be represented with the following equation:

$$hours_unpaid_i = \beta_0 + \beta_1 gen_gap_i + \beta_2 age + \beta_3 age^2 + \beta_4 rural + \beta_5 indigenous + \beta_6 disability + \beta_7 house_size + \beta_8 educ + \beta_9 firm_size + \varepsilon$$

Where "hours_unpaid" is a continuous variable that captures the number of hours per week spent in unremunerated activities. In this case, we evaluate two different kinds of activities which are represented with the sub-index "i". In the first set of regressions we capture the hours spent in taking care of children or elderly people. Meanwhile, in the second set of regressions we capture the hours spent in other domestic activities.

Table 7 shows how much time men and women with similar characteristics dedicate to non-remunerative work. The results show that the gender effect persists, and females spend more time doing unpaid work compare to males. However, the most relevant aspect of this stage is that we find a children effect again. It can be observed that in the first set of regressions the gender gap in non-remunerative work is aggravated among women with children, especially those with children under 5 years old. These results confirm the hypothesis that women dedicate more time to unpaid work than men. In addition, it suggests that after having children this gap is stronger because they assume the responsibility of taking care of the baby.

Table 7: Hours dedicated to non-remunerative work								
	Hours spent on taking care of children or elderly people				Hours spent on domestic activities			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Woman (Compared to man)	9.780*** (0.179)				11.194*** (0.071)			
Mothers (Compared to fathers)		10.872*** (0.202)				13.407*** (0.102)		
Mothers with children under 15 (Compared to fathers with children under 15)			11.920*** (0.223)				13.236*** (0.119)	
Mothers with children under 5 (Compared to fathers with children under 5)				15.019*** (0.298)				12.783*** (0.170)
<i>Control variables</i>								
Age	0.240*** (0.033)	-0.820*** (0.049)	-0.818*** (0.081)	-0.648*** (0.121)	0.382*** (0.011)	0.249*** (0.022)	0.337*** (0.041)	0.511*** (0.066)
Age (squared)	-0.004*** (0.000)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.002)	-0.003*** (0.000)	-0.002*** (0.000)	-0.003*** (0.001)	-0.006*** (0.001)
Rural areas	-1.184*** (0.191)	-1.104*** (0.214)	-1.158*** (0.236)	-1.088*** (0.312)	1.200*** (0.076)	1.639*** (0.107)	1.666*** (0.124)	1.486*** (0.176)
Indigenous speaker	-1.332*** (0.296)	-1.593*** (0.327)	-1.455*** (0.362)	-1.566*** (0.475)	-0.189 (0.124)	-0.188 (0.170)	-0.143 (0.200)	0.024 (0.286)
Discapacity	1.300*** (0.435)	1.439*** (0.508)	1.643** (0.688)	0.888 (1.017)	-0.402*** (0.154)	-0.237 (0.227)	0.151 (0.344)	0.207 (0.594)
Size of the household	-0.620*** (0.053)	-0.390*** (0.062)	-0.413*** (0.070)	-0.479*** (0.090)	0.013 (0.021)	-0.033 (0.033)	-0.059 (0.038)	-0.146*** (0.052)
Level of education	0.282*** (0.054)	0.606*** (0.060)	0.660*** (0.067)	0.637*** (0.089)	-0.500*** (0.021)	-0.415*** (0.030)	-0.485*** (0.035)	-0.509*** (0.050)
Size of the firm	-0.096*** (0.032)	-0.172*** (0.035)	-0.132*** (0.038)	-0.199*** (0.050)	-0.377*** (0.013)	-0.427*** (0.017)	-0.400*** (0.019)	-0.393*** (0.027)
Constant	14.382*** (0.746)	36.687*** (1.082)	35.393*** (1.514)	30.876*** (2.085)	1.366*** (0.268)	3.403*** (0.533)	2.257*** (0.793)	0.602 (1.141)
Observations	34,529	26,904	22,408	13,038	89,301	52,460	36,643	16,850
R-squared	0.097	0.145	0.156	0.199	0.269	0.282	0.287	0.285
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1								

5th stage – Probit regressions to capture the dynamics of poor women in labor force participation

At this point we have found that there is no gender gap between formal and informal workers in Mexico. We have also confirmed that there is a gender gap in labor force participation and that there is a children's effect that exacerbates this gap. In this stage we wanted to evaluate if poor mothers are more or less likely to have a job compared to non-poor mothers.

This is relevant if we consider that there are two possible scenarios. In one of them, non-poor mothers are not participating in the labor market because their couple is earning enough income for their family. Making an intervention in this scenario would not have significant effects on poverty reduction since households where women do not work are not in poverty conditions. In the other scenario, mothers who are not participating in the labor market are poor and they are not participating in the labor market even though their partner's income is not enough to ensure that their family does not live in poverty conditions. In this scenario, making an intervention would have significant effects on reducing poverty since the additional income that these women would obtain for working could help many households to have sufficient income to live above the poverty line.

Verick (2014) argues that poor women are more likely to participate in the labor markets since they need to bring extra income to their households. Bravo (2004) shows that in the case of Peru, poor women participate in the labor market more intensively than non-poor women. This argument is reinforced by Chen et al. (2004) which stated that in most countries poor women are more likely to be employed than non-poor women. However, they argue that the Latin-American countries are the exception to this rule because in 6 out of 9 countries of the region poor women have lower labor force participation rates than non-poor women. Unfortunately, they do not explain if Mexico is part of this group.

Considering the information described above, we decided to evaluate the hypothesis that poor women are more likely to have a job than non-poor women. To do so, we run different probit regressions that can be represented with the following equation:

$$job = \beta_1 poor_women_i + \beta_2 age + \beta_3 age + \beta_4 rural + \beta_5 indigenus + \beta_6 disability + \beta_7 household_size + \beta_8 education + \varepsilon$$

Where “*job*” is a dummy variable that takes a value of 1 if people have a job and 0 if they do not have a job. In addition, the variable “*poor_women*” captures the likelihood of having a job between poor and non-poor women with similar characteristics. The results are presented in Table 8.

All regressions show a negative and significant effect, which made us reject the hypothesis that that poor women are more likely to have a job than non-poor women. As you can observe, in the next regressions we restricted the sample to mothers with children of similar ages. It can be observed that when children are younger, poor mothers are even less likely to have a job. In Figure 8 (included in the appendix) we show the labor status of women in Mexico depending on their parental status and its poverty conditions. It can be observed that only 47% of poor women in Mexico have a job, while more than 55% of non-poor women are participating in the labor market. Moreover, it can be observed that 56% of poor mothers with children under 5 years old do not have a job in Mexico, while less than 43% of non-poor mothers with children of similar ages are unemployed. This helps to capture a poverty trap in Mexico, where poor mothers are not participating in the labor market even when they are living in poverty conditions.

Table 8: Probabilities of poor women having a job				
	(1)	(2)	(3)	(4)
Poor women (Compared to non-poor women)	-0.056*** (0.004)			
Poor mothers (Compared to non-poor mothers)		-0.051*** (0.004)		
Poor mothers with children under 15 years old (Compared to non-poor mothers with children under 15 years old)			-0.087*** (0.005)	
Poor mothers with children under 5 years old (Compared to non-poor mothers with children under 5 years old)				-0.098*** (0.007)
<i>Control variables</i>				
Age	0.039*** (0.000)	0.040*** (0.001)	0.044*** (0.002)	0.039*** (0.003)
Age (Squared)	-0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)
Rural Areas	-0.025*** (0.003)	-0.044*** (0.004)	-0.063*** (0.005)	-0.069*** (0.007)
Indigenous speaker	0.172*** (0.006)	0.157*** (0.007)	0.160*** (0.008)	0.165*** (0.012)
Disability	-0.077*** (0.006)	-0.067*** (0.008)	-0.024 (0.016)	0.023 (0.029)
Size of the household	-0.013*** (0.001)	-0.014*** (0.001)	-0.006*** (0.002)	0.002 (0.002)
Level of education	0.023*** (0.001)	0.025*** (0.001)	0.032*** (0.002)	0.039*** (0.002)
Observations	104,607	66,736	42,643	21,386
Standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

The results suggest that a policy intervention targeted to poor mothers who are not participating in the labor market could be useful to reduce poverty in the country since the additional income they can provide could be determinant for some households to live above the national poverty lines. In Figure 9 (included in the appendix) we showed the poverty conditions in households depending on the employment status of both parents. It can be observed that 51.3% of people in households where only the father works are living in poverty conditions. On the other hand, just 39% of people in households where both father and mother work are living in poverty conditions. This can be considered as initial evidence that those households where father and mother work are less likely to live in poverty conditions.

Summary of results

The results obtained in this section rejected the existence of a gender gap between formal and informal occupations. These results contrast with the empirical evidence where a gender gap is often found due to an over-representation of women in the informal sector. On the other hand, the results confirmed the existence of a gender gap in terms of labor force participation. We also documented that the likelihood of women participating in the labor market is even lower when they have a child, especially if it is under five years old. Therefore, we documented a children's effect where women with children are less likely to participate in the labor market and they tend to increase their time spent on unpaid work. Finally, we showed that poor mothers are less likely to participate in the labor market.

As we mentioned above, this research discarded the current existence of a gender gap between formal and informal jobs in Mexico. The results suggest that the main gender gap in Mexico is still related to the fact that many women are not even participating in the labor market yet. However, our theory is that if Mexico implements policies to increase women's participation in the labor market, the next problem that will arise is that this gender gap between formal and informal jobs will appear, since mothers in poverty who enter the labor market will be more likely to work in the informal sector. In the next section we will analyze the public policy implications of these results and how they could help Mexico transform its labor markets, reduce gender gaps, and promote poverty alleviation in the country.

Our results suggest that a policy intervention targeted to mothers living in poverty that help them to join the labor market could be useful to reduce poverty levels in the country. This can be explained if we consider that the additional income earned by those mothers who are currently not working could help to increase the average income of these households and allow their whole family to live above the national poverty lines.

6. POLICY IMPLICATIONS

Our research has shown that in Mexico there is no gender gap between formal and informal employment. We showed that women are not over-represented in the informal sector. Instead, a considerable number of women have not even joined the labor market. This has led to a significant gender gap in terms of female labor participation. In fact, the most recent statistics show that Mexico is the country with the lowest rate of female labor participation in Latin America. We have also confirmed the existence of a children's effect that exacerbates this gap. Women in Mexico are less likely to participate in the labor market when they have children, especially if they are under 5 years old. Unfortunately, we have also confirmed that Mexico is a country where it is common for many women and mothers not to participate in the labor market even when they are living in poverty conditions.

All these results show the necessity to make visible the obstacles that women face to participate in the labor market. Consequently, in this section we have decided to focus on studying the public policy implications of our results. To do so, we conducted an extensive literature review about specific public policies and their contribution to improve the situation in Mexico of poor mothers and their children.

Several studies have shown that supporting women in informality is useful to alleviate poverty. Sethuraman (1998) explained the links between gender, informality, and poverty where women tend to be over-represented in the informal sector and with lower incomes than men. Therefore, some families who depend on women's contribution to household income are more likely to live in poverty. In line with this argument, Chen et al. (2005) explained that supporting female in the informal economy is a key pathway to reduce poverty and gender inequality.

Even though we agree with this perspective, this research argues that in the case of Mexico the government should start by formulating policies to promote female participation in the labor markets. It has already been shown that there is a significant gender gap in terms of labor participation in Mexico, which deepens for women with children, especially when they are under 5 years old. This highlights the importance of government intervention in this aspect. Therefore, this section is devoted to analyze policies that are useful to increase female labor participation. Particularly, we focused on conducting a literature review related to the different kinds of childcare programs and their main benefits and disadvantages.

We believe that it is appropriate to start by describing the main terms used in the debate about childcare programs. First, it is relevant to explain that researchers tend to classify childcare in different categories. The term "maternal care" is used when the mother takes care of her child. On the other hand, "informal care" or "unpaid care" is used when other family members or friends take care of the child for free or for a low cost. Finally, "formal childcare" is used for professional childcare centers.

In addition, it is important to mention that governments have implemented different modalities of childcare programs. In one of them, governments have chosen to build childcare facilities and operate them directly. Another approach is childcare subsidies, where the government pays directly to childcare centers for their services. In other cases, governments have chosen to implement a voucher system where parents receive money directly from the government so they can decide between enrolling their children in formal childcare or opt for maternal or informal care (Konings, 2010). Finally, the tax credit scheme consists of parents paying for the childcare services and start an application process to ask for a partial refund of the payment (Nicholls & Simm, 2003). All these modalities have the final objective of reducing childcare costs and allows more people to access these services, but they all lead to different results.

We will now proceed to explain the context of childcare programs in Mexico. Until 2018 the Mexican government was using a subsidized program that was given directly to specific childcare centers. However, in 2019 the new Mexican government decided to stop financing subsidized program of childcare facilities and decided to implement a “voucher” program instead. (AP News, 2019). The government's based this decision on evidence that suggests possible acts of corruption in the program. For example, the Federal Supreme Audit Office found discretionary treatment in the allocation of childcare facilities, improper charges, and ‘ghost’ children (Presidency of Mexico, 2019).

Clara Torres, last director of the childcare program, confirmed that there was corruption in the program (El Universal, 2019). However, she explained that the corruption mechanism was not led by the people responsible for the childcare centers, but by government officials in charge of coordinating and supervising the program. In addition, the new federal government documented the existence of 80,000 ghost children enrolled in the program (Radio Formula, 2019).

Another disadvantage explained by the current government was that the previous program was not focused on serving the most vulnerable population. Consequently, they established that the new voucher program would give priority to indigenous children, children with disabilities, and families without access to social security (Presidency of Mexico, 2019).

As a summary, it should be said that due to all the program irregularities and the suspected acts of corruption, the current government decided to change the operational rules and give money directly to the parents instead of giving it to the childcare centers. This was done to eliminate intermediaries, reducing corruption, providing support to the most vulnerable children, and giving families the right to decide the type of child care they feel is most appropriate.

Although the government's reasons may be well-founded, some organizations have opposed the government's initiative. For example, after the government announced changes to the child care program, organizations like OXFAM, Save The Children, and GIRE asked the government to reconsider the changes to the program's operating rules (Save The Children, 2019). These organizations explained that this measure does not guarantee that children will be enrolled in childcare, since given the conditions of poverty in most of the recipient households, parents may choose to use the money in other aspects of daily life, which could have a long-term impact on

the children's integral development (Aristegui Noticias, 2019). In fact, it has been documented that 1 out of 3 children stopped attending their childcare because of the changes in the operational rules and the reduction of funds to the program (Forbes Mexico, 2019). Due to these changes, childcare centers have been forced to raise their fees while others had to close permanently. (Sin Embargo, 2020).

Finally, it should be mentioned that in 2019 the opposition party PAN obtained a court resolution which indicates that the childcare program should use the operational rules where childcare centers receive the resources and not the parents (El Economista, 2019). However, the government has maintained its position to continue with its voucher program, so there are signs of a legal battle that will continue in the coming years.

All this information was collected to show the current debate that exists in Mexico about how they should operate the childcare program. On the one hand, the position of the current government is to give the money directly to the parents in order to reduce corruption. On the other hand, opposition parties and NGOs have proposed that the previous scheme should be maintained and that new mechanisms should be established to reduce corruption.

We will now proceed to discuss the empirical evidence that has been documented about childcare programs around the world. We will start by discussing the voucher system promoted by the new federal government of Mexico. There are different views about the voucher scheme in childcare programs but generally the conclusion is that it is not an effective policy. Viitanen (2007) provided experimental evidence about the effects of the voucher system in Finland. He found that in a market with universal provision of public childcare, a voucher system did not have negative effects on labor force participation. However, Jaumotte (2003) explained that the voucher system generates an income effect that may just lead to a reduction in female labor supply. Vancoppenolle et al. (2015) documented the disappointing results of the childcare voucher scheme implemented by Belgium due to a bad policy design that did not identify the needs and demands of the target group properly. Finally, Konings (2010) documented that voucher schemes in the UK are mainly used by middle-income families and that a reform needs to be made to have a more progressive program.

The empirical evidence of voucher schemes identifies different challenges that raise doubts about its effectiveness. One of them is that voucher schemes need to have a good policy design where the target population and their needs are identified correctly. Another one, that could be even more relevant for the Mexican context, is that the voucher scheme could not be useful in promoting women's participation in the labor market because in some cases the money obtained would be enough for a mother to decide to stay at home. In addition, the scheme established by the new government of Mexico could lead not only to mothers not participating in the labor market but also to children no longer attending childcare centers.

On the other hand, there is extensive literature about the positive effects of implementing government-subsidized childcare to increase female labor participation. For example, Gelbach (2002) finds evidence of causality from childcare programs to increase female labor participation

in the US. In addition, Chevalier & Viitanen (2002) confirmed a Granger-causality that illustrates how the lack of childcare programs limits women's participation in labor markets. Finally, Bick (2011) showed that the lack of subsidized childcare in Germany represented a barrier for females to participate in the labor market and it tends to reduce fertility rates.

Berger & Black (1992) provide empirical evidence on the effects of childcare subsidies in female labor participation. They find that single mothers who were benefited from childcare subsidies were more likely to have a job, but it had a marginal effect on the total of hours worked. On the other hand, more recent studies have found that childcare subsidies can also be beneficial for women to engage in full-time jobs. Jaumotte (2003) explained that childcare programs are a strong policy that tends to stimulate full-time employment rather than part-time occupations. Consequently, Givord & Marbot (2015) showed that a sharp increase in childcare subsidies in France helped one-child mothers to have full-time jobs.

The literature has also documented how childcare programs can help to reduce poverty not only for mothers but also for their children. Penn (2004) stresses out the importance of providing childcare to mitigate childhood poverty and promote Early Childhood Development. Samman et al (2016) also explained that childcare facilities help females not losing the opportunity of generating an additional income for the household. This is in line with Saraceno (2011) who explained that mothers' labor market participation is one of the most important ways to protect children from living in poverty conditions since they will be living in households with two income sources. Also, she explained that childcare programs help to prevent potential inequalities in the cognitive development of children. Finally, Contreras et al. (2012) explained that from 2005 to 2007 there was an increase of 240% of childcare centers in Chile which helped to increase female labor participation rates and calculated that household income which benefits from the subsidy increased by 8% per capita. However, they explained that the program did not have a significant effect in reducing poverty because mothers who used the childcare subsidies came from middle-class households. This is a good example to show how important it is for childcare subsidy policies to have a better targeting design if their objective is not only to increase female labor participation rates but also to reduce poverty.

It is also important to address a critical concern related to childcare policies and their effects on children's health and cognitive development. The President of Mexico and the designers of the voucher program have reiterated that families should have the freedom to choose what kind of childcare is more appropriate for their children. At some point, they have suggested that families who benefit from this government program should give the money to the children's grandparents so that they can take care of the children (Milenio, 2019). This represented an explicit invitation by the government for families not to enroll their children in a professional childcare center but to take them with a family member, which is known as "informal care".

Considering this information, now we will discuss the empirical evidence about the long-term effects of children not attending professional childcare. Barnett (1995) offers a good insight into this topic. His research analyzed 36 studies of childhood programs and their effects on children's cognitive development, socialization skills, and school outcomes. He concluded that early

childhood programs produce significant short-term effects on children's IQ (Intelligence quotient), as well as long-term effects on cognitive development and academic benefits, especially for disadvantaged children. However, he explains that the results depend on the quality of the program. For example, less-educated staff members, large classes, few staff members, and poor supervision are some of the factors that reduce the desired benefits from these programs. More recent research made by Herbst & Tekin (2010) studied the association between the recipients of childcare subsidies and their school performance. They documented that children using childcare subsidies had lower results in their reading and math tests as well as greater behavior problems. They argued that these poorer outcomes were because subsidized children were more likely to be enrolled in low-quality childcare centers.

Meyers et al. (2003) also explain the inequality in early childhood for poor children. He argues that they have a "triple disadvantage" because they are living in a low-income household, they are less likely to be enrolled in professional childcare centers, and even if they do, they are more likely to receive low-quality childcare programs. There is more research that analyzes this issue in-depth, but the main idea is that it is necessary to work on these issues to reduce the disparities that, unfortunately, start at a very early age and generate short and long term effects on children. This is in line with Anderson & Levine (2000), who analyzed the childcare decisions of women with different skills and find that least-skilled women tend to use more 'unpaid' or 'informal' childcare. As we explained earlier, different NGOs have pointed out that a similar pattern could happen in Mexico, where poor families will choose informal child care with their grandparents, another family member, or maybe some friend.

The empirical evidence that we have discussed suggests that childcare subsidies help children to have access to professional childcare instead of informal care. However, the main challenge is that those children have access to good quality childcare in order to have a positive effect on children's cognitive development. Now, we will proceed to explain which are the challenges for childcare programs to be effective in their pursuit of increasing female labor participation.

First, we should say that the evidence suggests that childcare subsidies are more effective in increasing female labor participation than voucher programs. However, these programs also have different issues that need to be improved. A study from Jaumotte (2003) explained different aspects that reduce the effectiveness of childcare subsidies to increase female labor participation. One of them is that, in some cases, the beneficiaries of the childcare program are already working mothers. As they were already working, the effectiveness of the program to boost female labor participation is lower. The other one is that, in other cases, childcare subsidies are mainly used by mothers who were paying for private childcare and they switch to the subsidized childcare provided by the government. This shows that a subsidized childcare program must be well-targeted so that the main beneficiaries are non-working women living in poverty and that they were not taking their kids to any professional childcare.

After this extensive literature review, we suggest that the Mexican government should reinstate the childcare subsidy program instead of using the voucher scheme. However, we argue that implementing a subsidized childcare program is just the initial step that the country needs to take

in order to transform its labor market and diminish the barriers for women to have a job. We consider that it is relevant to point out that there are more steps that Mexico will need to take to have a deeper development of its labor markets. In fact, the current context of Mexico and the empirical evidence on this topic leads us to believe that when the country narrows its gender gap in labor participation, a new gender gap will appear between formal and informal jobs.

Meagher (2010) explains that there is a debate to reconsider if female participation in the labor market contributes to their empowerment or to reinforce their impoverishment. She calls this phenomenon the “empowerment trap”. She argues that those women who participate in the labor market tend to do it in the informal economy, where they are concentrated in low-skill or low-income occupations which represents another poverty trap for women. This is in line with the literature that points out the existence of a gender gap within the informal sector.

This explanation has the purpose of illustrating that a well-designed subsidized childcare program is only the first step that Mexico should take to reduce gender gaps in terms of female labor participation. However, additional measures will be required to reduce gender gaps in the other three dimensions. This means, reducing gender gaps between the formal and informal sectors where women are often over-represented in the informal sector. Also, reducing the gender gaps in the informal sector, where women are usually working in jobs with lower wages and worse working conditions. Finally, reducing the gender gap in the formal sector where women have difficulties in holding management positions in private and public organizations. Unfortunately, discussing measures that could be useful to reduce gender gaps in these other dimensions are outside the scope of this research. However, we hope that they serve as a reference to inspire future studies that could be focused on proposing policies to reduce these other dimensions of gender gaps in the labor markets.

In conclusion, we would like to point out that our research suggests that the government should return to the previous childcare subsidy program instead of using the voucher scheme. This is justified if we consider that the evidence shows how subsidized childcare programs are more effective in increasing female labor participation and contributes to the cognitive development of children. However, it is important to develop a well-designed policy that meets different criteria. The first one is that it will be necessary to develop mechanisms to reduce the corruption that has been documented in previous years. The second is that the program needs to be targeted to non-working mothers who are living in poverty. The third is that the program should establish mechanisms for beneficiary women to enter the labor market. The final one is that the program should be subject to constant improvement in order to provide good quality childcare. Meeting these requirements will help to increase the effectiveness of this public policy.

Returning to the previous program and designing mechanisms to make it more effective would have several positive results. First, it would reduce the gender gap in terms of female labor participation. Second, it would help reduce the inequalities experienced by disadvantaged children so that they have better cognitive development. Finally, this policy would benefit many low-income households, where mothers would provide an additional income that could be the main factor that helps them to live above the poverty line.

7. LIMITATIONS & FUTURE RESEARCH

A major limitation of this study is that it did not directly study the phenomenon of informality in Mexico and possible strategies to reduce it. In fact, this study only discarded that this phenomenon was caused by gender issues. As we mentioned at the beginning, informality is the main obstacle for Mexico to reduce its multidimensional poverty indicators. We believe that more research is needed to analyze the factors that make informality a persistent problem in Mexico as well as possible policies that could help more people having access to social security.

Another main limitation of this study is that it was not possible to evaluate empirically the existence and magnitude of the 4 different types of gender gaps in the labor markets. As you could notice, our study discarded the existence of a gender gap between formal and informal occupations and confirmed that there is a gender gap in female labor participation. From there, we decided to focus on factors affecting female labor participation and possible policies that could help them to get a job. Unfortunately, this research did not empirically assess the existence of gender gaps within the informal sector nor within the formal sector.

The main limitation to evaluate these two dimensions was that the poverty databases published by the CONEVAL present income data at a household level. This means that they do not differentiate between the income provided by each household member. This situation is a great limitation for our study since we do not have information on income differentiated by sex. This prevented us from empirically evaluating the possible existence of an income gap between men and women who are part of the same sector, whether formal or informal. A future research topic could be to analyze these two dimensions, study their causes and consequences, as well as possible policies to narrow the gaps. To do so, it is necessary to use the original income database from ENIGH where the income is not integrated by household but instead it is possible to identify the income of each person. In addition, it would be necessary to design an empirical strategy different from the one we use. Considering all these elements, we decided to leave it as an interesting project that could be done in future research. However, our research already gave some insights about the possible existence of a gender gap within the informal sector. As it can be observed in Figure 7 (included in the appendix), the data indicates an over-representation of women in self-employment. However, more aspects should be taken into account to confirm or reject the existence of these two dimensions.

It should also be mentioned that our research only focused on analyzing one of the reasons that discourage women from having a job. We documented a children's effect that limits female labor participation and discussed the effectiveness of childcare programs to reduce it. However, there are other factors, like social norms or gender discrimination, that should be analyzed in more detail.

We also had some limitations to provide valuable information for the design of a more effective government-subsidized childcare policy. One of our intentions was to identify strategic geographical areas in Mexico where there is a high percentage of non-working mothers living in poverty. This would help to identify specific geographic areas where the location of a childcare center could be more effective. However, the CONEVAL poverty database that we used for this study only includes information at the state level.

From our perspective it would be useless to identify states where there is a high percentage of non-working mothers living in poverty. We believe that it would be more useful to have the information at the municipal level. Because of this limitation, we had to leave this aspect out of the research. However, the CONEVAL publishes a poverty database at the municipal level every 10 years, being 2020 the year the survey will be raised. Future research could take advantage of this information to locate specific municipalities where non-working mothers are living in poverty. Locating these municipalities would be useful as it would help to delimit specific geographical areas where subsidies should be established for these mothers to take their children to the childcare facility and to enter the labor market. This was part of our initial intentions but since we did not count on disaggregated data at a municipal level, we considered that it was better to wait for the CONEVAL to publish this new database.

Finally, it is necessary to have a more extensive discussion about mechanisms to make the policy of subsidized childcare more effective. As we said, these policies should be well-targeted to the target group (non-working mothers living in poverty) but they also need mechanisms to bring women into the labor market. One possible mechanism could be the implementation of subsidies conditioned to women's employment status. But since many aspects need to be taken into account to make a good policy design, we think we should leave it out of the research. Finally, one of the most challenging topics is to ensure that the program has mechanisms to reduce the corruption that has been documented in recent years. This is probably one of the most complex issues, and it requires an extensive analysis that is currently out of the scope of this research.

We consider that there is not enough attention from researchers to analyze gender gaps in Mexico. Our research provides interesting evidence but there are still several avenues for further studies on this topic. We truly hope that this study will serve as inspiration for future researchers to explore the remaining issues.

8. CONCLUSIONS

Our research had the objective of evaluating the existence and magnitude of different gender gaps in the Mexican labor markets. Our results led us to reject the hypothesis that in Mexico there is a gender gap between formal and informal occupations. On the other hand, we confirm the existence of a gender gap in terms of labor force participation. In fact, we showed that México is the Latin American country with the lowest female labor participation rate in the region. This represents new evidence for the literature as the existence of a gender gap between formal and informal work in different countries has been widely documented.

Our main argument to explain these results is that Mexico has different barriers that limit women's chances to a job and segregate them to have a role just as caretakers of their households. Consequently, we consider that when Mexico implement policies to increase female labor participation, the gender gap between formal and informal occupation will appear. This is because the theories indicate that women will tend to get involved in the informal sector. When that happens, Mexico will need to implement more policies to reduce this new gender gap.

We also decide to study more in-depth some of the causes of the gender gap in labor force participation. One of our main findings is that the effect of having children makes this gender gap even more severe. The results indicate that while having a child negatively affects women's chances of having a job, it has a positive effect on men. Furthermore, we found that this negative effect on mothers is even greater when the children are under 5 years old.

In addition, we decide to evaluate the theory which indicates that poor women are usually looking for additional income sources, and therefore, they are more likely to be employed than non-poor women. However, we also had to reject this hypothesis. Our results indicate that poor women are less likely to be employed, and their likelihood of having a job is even lower when they are mothers, especially of young children. These findings also represent new evidence for the literature, because it shows that many women and mothers in Mexico are not working even when they are living in poverty conditions.

These results also showed the need for a government intervention to design policies to encourage women, especially mothers, to enter the labor market. Considering this information, we decide to analyze the policy implications of these results. We started explaining that in 2019 the Mexican government eliminated the subsidy system for childcare facilities and adopted a voucher scheme. We made an extensive literature review to analyze the effectiveness of both childcare programs based on research that has studied their implementation in other countries.

The empirical evidence indicates that subsidized childcare programs are more effective to increase female labor participation. As we explained, the literature indicates that the voucher scheme only generates an income effect that does not encourage women to obtain a job. In fact, we explained that, because of the poverty conditions in Mexico, it is probable that the money provided by the government will not be used by the family to enroll their children in a

professional childcare center but instead it will be used for other household expenses. We also discuss the evidence that points out the long-term effects of children who do not attend formal childcare centers and how they tend to have lower school performance. Therefore, we concluded that the subsidy system is also more effective to prevent inequalities in the cognitive development of children.

So far, our research suggests that the government should reconsider its strategy and return to the subsidy scheme but with a better policy design. We also explain that further research is needed on the proper design of this policy, but we provide initial information that might be of interest to policymakers. We identified the need for mechanisms to reduce corruption in the program and to ensure that it starts by targeting non-working mothers living in poverty. We argue that a well-designed policy could help decrease poverty levels in Mexico since mothers will be more likely to have a job and in some cases they will bring an additional income to their households that could be the determining factor for their family to live above the national poverty lines.

We will like to conclude by saying that all these findings represent a poverty trap for Mexico that the country must overcome. The lack of participation of women in the labor market is reinforcing the poverty situation of their households. It is necessary to analyze more in detail the causes of this gap and design policies to reduce the current barriers that are limiting female labor participation. Implementing a subsidized childcare program should be only the first step from a broader strategy to narrow gender gaps in Mexico and reduce poverty levels in the country.

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10. APPENDIX

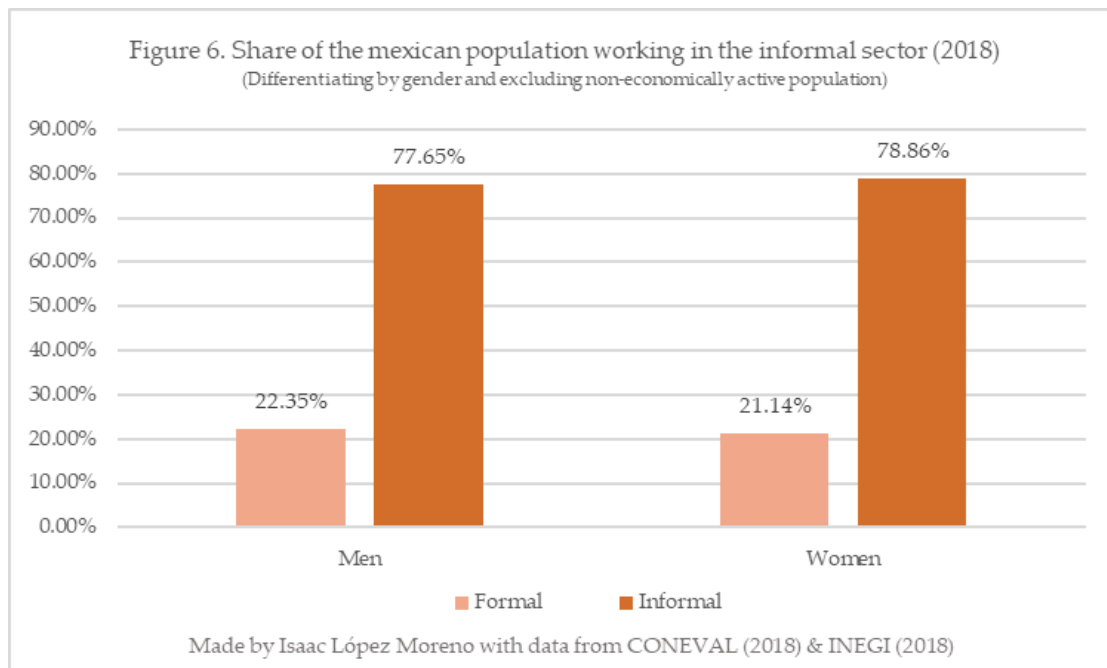
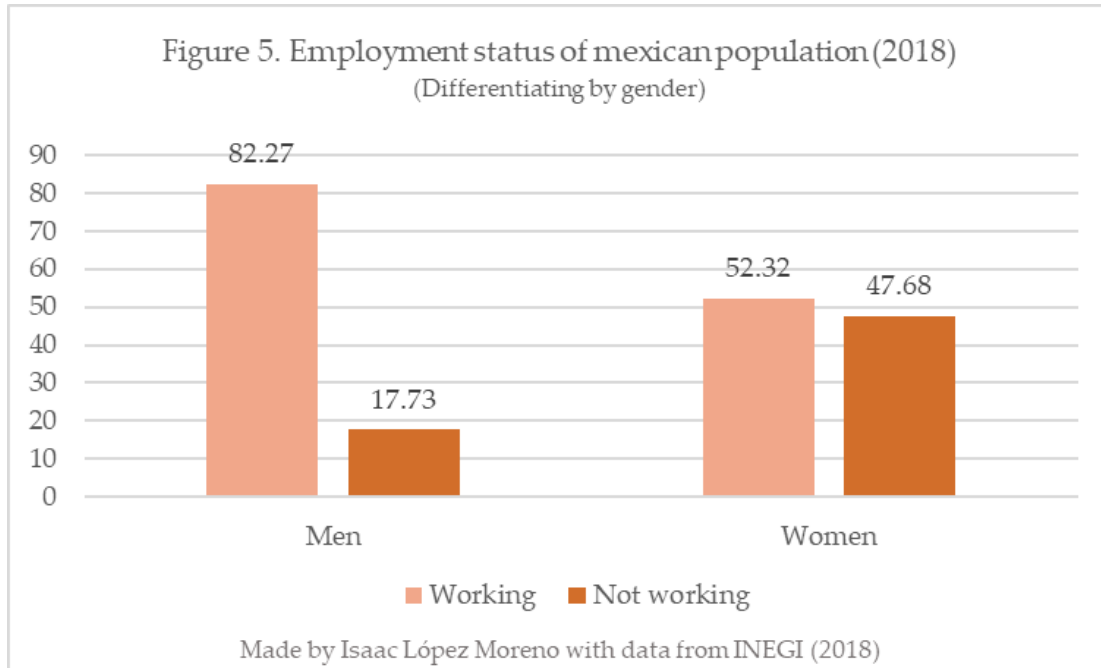
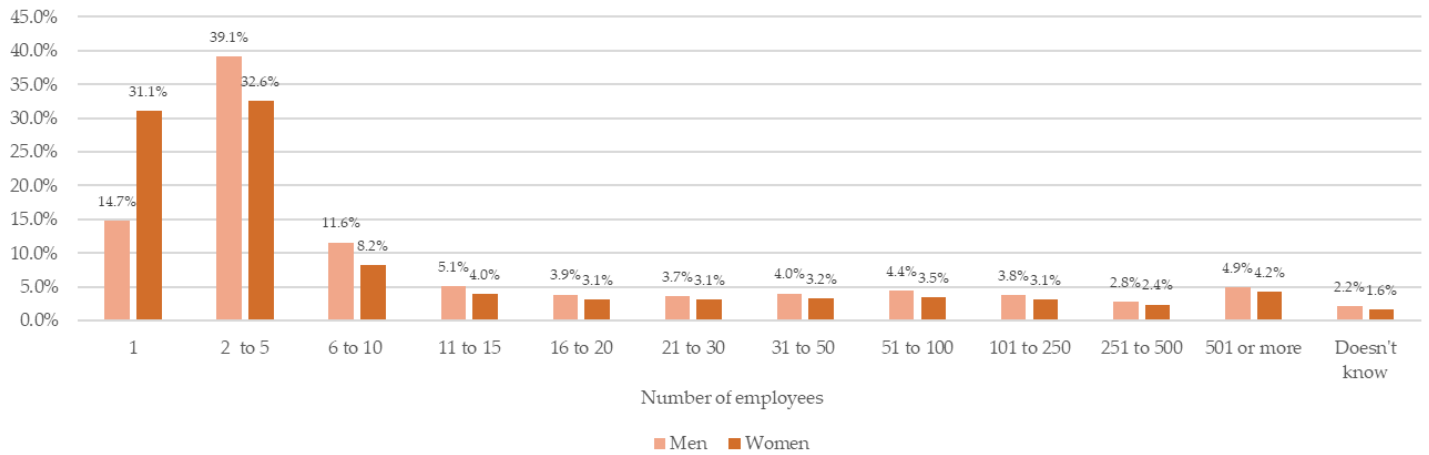
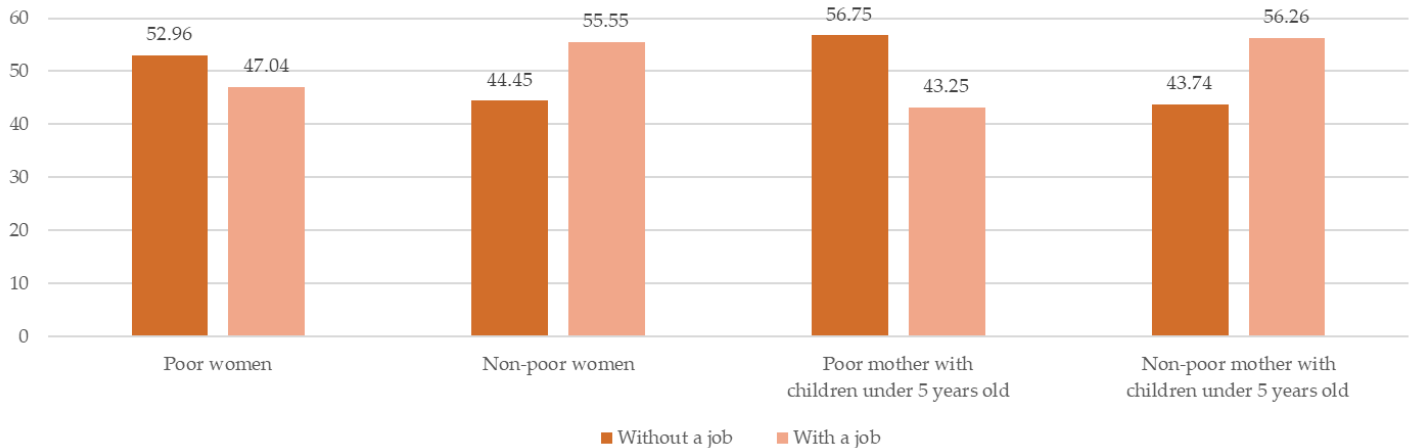


Figure 7. Share of the Mexican population working in different firm sizes (2018)



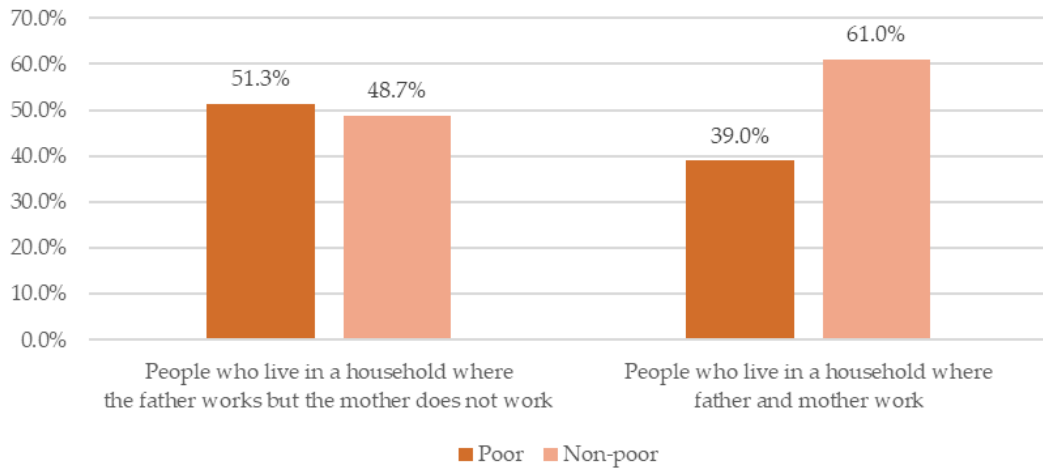
Made by Isaac López Moreno with data from INEGI (2018)

Figure 8. Labor status of women in Mexico (2018)
(Depending on poverty conditions and parental status)



Made by Isaac López Moreno with data from CONEVAL (2018) & INEGI (2018)

Figure 9. Poverty conditions in households depending on the employment status of both parents.
(Mexico, 2018)



Made by Isaac López Moreno with data from INEGI (2018)