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GENDER IDENTITY AND VIOLENCE: FEMALE LABOR FORCE PARTICIPATION DECISIONS

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There is no sense to make out of the absent ones.
No honor to be upheld, no great destiny lost.
And yet, as humans, we need a truth worth living and dying for.
As a humble dedication,
I remember those whose fatum was to meet us at the finish line,
those whose dreams and aspirations intertwined with ours.
We were all as unworthy and, in consequence, equally worthy.
With all my love,
I remember you and that each word I write is ours.

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Summary

Persistent gender inequalities endure within labor markets, where women grapple with challenges including reduced compensation, lower engagement levels, and occupational divisions. These disparities stem from a variety of factors, encompassing bias, restricted access to opportunities, and deeply entrenched gender norms. Grasping the intricacies of these determinants enables us to formulate apt policies.

This study is rooted in the intricate interplay of gender identity, gender violence, and women's integration into the labor force within the unique backdrop of Mexico. Its primary objective is to shed light on the relationship between societal norms and female labor force participation. This is achieved by delving into how norms shape women's self-perception and by scrutinizing the impact of violence, which men employ to reinforce their perceptions of women's roles. The central hypothesis suggests that despite its negative connotations, gender violence might paradoxically enhance women's participation in the labor force. Conversely, conventional gender role beliefs are expected to be counteractive, potentially dissuading women from entering the workforce.

Grounded in well-established theoretical frameworks, including insights from figures like George Akerlof and Rachel Kranton, the study suggests that adhering to conventional gender norms could hinder women's labor participation due to potential discomfort arising from nonconformity. Conversely, the relationship between violence and labor engagement is complex, contingent on factors like the extent of discomfort women experience due to societal norms and the empowerment derived from work. This study seeks to untangle the intricate dynamics at play by drawing from prior research that highlights the detrimental impact of traditional perspectives and the potential positive influence of violence on labor participation. Ultimately, by shedding light on these aspects, the study aims to enhance our understanding of how the interplay between gender identity and violence shapes women's participation in the labor force.

To achieve this, the study proposes the utilization of several instrumental variables to move beyond mere correlation and instead strive to uncover the causal effect of gender identity and violence on female labor force participation. Appropriate instrumental variables have been identified, and their impact aligns with the previously stated hypothesis. This investigation follows a methodology that seeks to address concerns related to reverse causality and omitted variable issues, and it represents a pioneering effort within the context of Mexico.

Contents

1 Introduction **3**

2 Background **7**

2.1 Theoretical Framework 7

2.1.1 Unitary Household Model 7

2.1.2 Bargaining Models 8

2.1.3 Gender Identity Model 9

2.1.4 Violence models 12

2.2 Empirical Literature Review 13

2.2.1 Gender Identity 13

2.2.2 Gender Violence 15

3 Material and Methods **17**

3.1 Data 17

3.2 Exploratory Analysis 22

3.2.1 Sample of working-age women 22

3.2.2 Subsample of women who have never received economic violence 29

3.2.3 Subsample of women who have never received either economic or sexual violence 29

3.3 Empirical Model and Identification Strategy 30

3.3.1 Probit model 30

3.3.2 Instrumental variables discussion 33

3.3.3 IV model on the sample of working-age women 40

3.3.4 IV model on the subsample of women who have never received economic violence 46

3.3.5 IV model on the subsample of women who have never received either economic or sexual violence 50

3.3.6 IV model on the sample considering LFP in last 12m 52

4 Conclusions **55**

A Appendix: ENDIREH database **57**

A.1 Gender Role Questions (ENDIREH 2016) 57

A.2 Gender Role Questions (ENDIREH 2021) 58

B Appendix: Other data sources **59**

C Appendix: Exploratory Analysis Complements **61**

D Appendix: Alternative Models and Tests **71**

Bibliography **79**

List of Tables **84**

List of Figures **85**

1. Introduction

Gender disparities in global labor markets persist, giving rise to numerous challenges for women, as emphasized in the report by OECD (2012): women are confronted with lower full-time employment rates, a higher likelihood of occupying lower-paid positions, and barriers to career progression. These disparities give rise to gender pay gaps, contributing to an increased risk of women facing poverty later in their lives. Comprehending the underlying causes of these disparities is essential for safeguarding women's well-being and quality of life.

Rubalcava et al. (2009) show that when women have greater control over household budgets, there is a significant positive effect on essential expenditures such as food, health, and education. This suggests that increased female labor force participation benefits not only the country's GDP (Halim et al., 2023) but also households. Additionally, when women anticipate active participation in the workforce, it can reduce desired fertility rates and increase investments in their human capital (Jensen, 2012). Thus, by addressing gender disparities in labor markets, a positive ripple effect could be created at the individual, household, and national levels.

As the OECD (2012) emphasizes, the gender pay gap remains a pressing issue, with women being paid less than men, particularly among top earners. While this gap has narrowed in some countries since the beginning of the century, progress has slowed in recent years, and notable wage differences persist in various nations. Factors such as shorter working hours, part-time employment, and occupation choices contribute to this disparity. Still, as they do not account for the entirety of the gap, unobserved factors also play a role.

On one hand, mothers often favor part-time jobs to balance work and family commitments. Nonetheless, they rarely serve as a pathway to full-time employment, resulting in long-term part-time work for many women. On the other, there is segregation across occupations that accounts for different outcomes in the labor market. For example, women's representation in top corporate positions remains alarmingly low. Conversely, informal non-agricultural employment presents a contrasting picture, with women displaying higher participation rates than men in numerous countries worldwide. However, within this sector, women tend to be disproportionately concentrated in domestic and family roles, placing them at an elevated risk of poverty and limiting their prospects for upward mobility. Additionally, the specialization in these roles intensifies when women become mothers. The impact of domestic responsibilities hampers women's engagement in paid employ-

ment and contributes to the wage gap. These vulnerable women often rely heavily on their partners and families for financial support, further exacerbating their economic challenges.

In light of these influential factors that result in the wage gap, it is unsurprising that women may refrain from participating in the labor market. Despite some advancements in narrowing gender disparities in global labor force participation (LFP), women consistently have lower participation rates than their male counterparts, particularly in regions such as South Asia, the Middle East, and North Africa. Women, especially those with limited educational attainment and who have children, encounter significant barriers when seeking paid employment.

The 20th century marked a notable rise in women's LFP rates, primarily influenced by the increased involvement of married women. However, progress in women's labor force participation has decelerated or even halted in recent years across many countries. Moreover, the relationship between GDP per capita and female labor force participation takes the form of a U-shaped curve, wherein the highest rates of female LFP are observed in both the poorest and wealthiest nations. Conversely, countries with average income levels tend to exhibit lower rates of female labor force participation (Ortiz-Ospina & Tzvetkova, 2017a).

According to the OECD, the disparity in labor force participation between men and women is particularly striking in Mexico. Not only does the female LFP rate fall behind international standards, but it also lags behind the rates observed for their male counterparts. While the participation rate for working-age men in Mexico closely aligns with the global average, hovering around 80% since the 1990s, the percentage of female participation has followed a slow upward trend. Starting at approximately 35% in the 1990s, it has steadily increased to nearly 50% in 2019, mirroring the international pattern. Mexico has gradually converged towards the worldwide mean trend (World Bank, 2022), but it ranks as the second-lowest performing country when comparing its female LFP rate against other OECD countries (which share similar living standards, economic structures, and policy frameworks). Its participation rate for women aged 20 to 64 of 52% falls notably below the mean female participation rate of 68.5% observed among OECD countries (OECD, 2023a).

Conducting a comprehensive analysis of the factors influencing the gender gap in labor force participation is paramount, as underscored earlier, in ensuring the welfare of women. A crucial aspect to consider in this context is the mentioned tendency of women to primarily engage in unpaid care work, crucially influencing their time allocation. When the opportunity cost associated with unpaid work is heightened, the distribution of care work becomes more equitable between genders or more compatible with participation in the labor market, and a notable surge in female LFP is observed. Therefore, factors such as improvements in maternal health, lower fertility rates, the presence of childcare and family-oriented policies, the advent of labor-saving durables (such as washing machines or vacuum cleaners), and, importantly, more progressive social norms have been

documented to contribute to higher participation rates (Ortiz-Ospina & Tzvetkova, 2017b).

In this context, the influence of violence and gender role beliefs in shaping identity is crucial in women's LFP. The report by Gonzalez et al. (2020) highlights that societal norms and expectations play an essential role in shaping individuals' economic behavior in Mexico. Notably, these norms frequently manifest as expectations for women to engage in care work.

Building upon the gender identity model proposed by Akerlof and Kranton (2000), our objective is to contribute to the existing literature that examines the determinants of female labor force participation, focusing on social norms. We adopt a dual approach in analyzing these gender prescriptions: first, by considering women's self-reported beliefs that reflect their own understanding of gender roles, and second, by considering the severity of the violence they have experienced, which reflects men's gender role beliefs. We firmly believe in the importance of distinguishing between women's personal beliefs and the external pressures they face. This differentiation is crucial, particularly in light of the widespread prevalence of gender-based violence in Mexico. Such violence markedly compounds the obstacles women encounter when making decisions regarding their labor force participation. By examining these factors, we seek to shed light on the complex interplay between gender identity, expressed as women's beliefs and as men's violence, and female labor force participation.

The research questions guiding this study are as follows: What is the effect of gender identity on women's labor force participation in Mexico? What is the impact of the severity of received gender violence on women's labor force participation in Mexico? Is there a differentiated effect by type of violence?

We hypothesize that gender violence will significantly and positively affect female labor force participation. In contrast, traditional gender role beliefs negatively influence women's labor force participation. In light of theoretical considerations shaped by the model of Akerlof and Kranton (2000), it is expected that traditional gender role beliefs would dampen female LFP, as women may experience a sense of disutility when diverging from prevailing gender norms. On the other hand, the impact of violence on LFP is contingent upon several critical factors, including the magnitude of disutility women face due to their beliefs and the extent to which they derive utility from their participation in the workforce. Therefore, this model only points to the relevance of these factors and the direction of the relation with the first one.

Drawing from empirical literature, we can infer a general direction for the relationship between these variables and their interplay. The seminal studies by Fortin (2005) and Fortin (2015) provide supporting evidence that traditional views negatively impact female LFP. Additionally, considering the endogenous nature of the relationship, as discussed in the works of Bhattacharya (2015), Fajardo-Gonzalez (2021), and Gedikli et al. (2023), it is plausible to anticipate a positive effect of violence on LFP. They argue that the reason is that women seek to have financial self-reliance.

However, women who experience violence are also more likely to be subject to rent extraction and have limited control over how their income is spent.

Incorporating this insight into our identity model suggests that experiencing violence provides an additional sense of utility beyond that derived from mere employment. In other words, the value of engaging in work increases when one faces violence compared to when no such violence is experienced.

Addressing the gender gap in labor force participation and understanding the dynamics between gender identity, violence, and economic decision-making is crucial for informing evidence-based policies and promoting gender equality in Mexico's labor market. Moreover, the post-pandemic context adds further urgency to this issue, considering the alarming prevalence of violence against women in the country. By investigating the factors that have a greater cost on women's work decisions, we can pave the way for targeted interventions and strategies aimed at reducing gender disparities and fostering a more inclusive and equitable society.

In line with this approach, we address these issues in a structured manner. In Chapter 2, we provide the necessary background and theoretical framework for analyzing female labor force participation (FLFP). We review relevant literature on labor participation decisions, highlighting the growing importance of examining these decisions through a gender lens. We also introduce Akerlof and Kranton's identity model, which will serve as the foundation for our analysis. Afterward, we focus on the existing literature regarding the impact of violence and beliefs on FLFP. We discuss studies that consider the issue of endogeneity and those that do not, providing a comprehensive understanding of the current knowledge in this area.

Moving on to Chapter 3, we present the data utilized in our research, which is based on the ENDIREH survey. This survey aims to measure the prevalence of violence against women and their gender role beliefs. We provide a detailed description of the data organization and any modifications made. Additionally, since we work with three different samples, we characterize each to ensure a comprehensive analysis. We proceed to present our models and their corresponding results. Then, we outline the methodology employed and showcase the outcomes obtained from our analyses.

Lastly, in Chapter 4, we offer a comprehensive summary of our main findings and discuss their significance in the context of gender identity and violence's impact on FLFP.

2. Background

2.1. Theoretical Framework

2.1.1. Unitary Household Model

The canonical model used to analyze labor market supply was proposed by Hicks in 1946. The individual maximize their utility by means of allocating their time endowment between labor and consumption (*i.e.* leisure time in the simplest model). Their utility function U satisfies the standard assumptions (quasi-concavity and continuity) and takes their consumption of commodities and hours worked as arguments. It should be noted that this function varies across individuals; therefore, it is conditional on their observed and unobserved characteristics. Furthermore, the budget constraint is given by the equality between expenditures (px, price times the quantity consumed of the goods) and earnings ($wh + y$, assuming a fixed rate compensation w per hour worked h and the existence of non-labor income, y.)

The solution to this constrained optimization problem determines the hours worked, if any. An interior solution is characterized by the equality between the real wage $\left(\frac{w}{p}\right)$ and the negative of the marginal rate of substitution $\left(-\frac{\partial U/\partial h}{\partial U/\partial x}\right)$. The individual's reservation wage w^*, the minimum wage that makes him indifferent between working and not doing so, can be found by evaluating the MRS at $h = 0$. Finally, if the marginal value of the individual's time is less than their reservation wage, we have a corner solution, and the individual does not participate in the labor market.

This analysis can be extended further to Becker's Standard Household Specialization Model from 1974 and 1981. It considers that the utility each individual receives depends on the other household members' work time and that the budget constraint is given at the household level (*i.e.* the sum of expenditures equals the sum of earnings, the resources are pooled). There usually are many solutions to this problem of maximizing multiple utility functions, so to narrow them down, Becker assumes that the household's utility function is the same as the head's (Pencavel, 1986).

It is worth mentioning that even though the second model is considered an extension of the single-person model, household production is not mentioned in the latter (as the standard approach is the allocation of time between leisure and paid work).

As Pollak (2003) —a steadfast critic of the unitary household model—posits, Becker's model

implies that either all household members' preferences are the same or that the head is a benevolent dictator (who acts on behalf of everyone, giving their utility a positive weight). The mechanism through which household consumption is decided becomes an automatic alignment of other members' utilities with the bundles that maximize the head's utility, which, as already stated, treats others' utilities as externalities as well.

Another consequence of this model is that comparative advantages of household members, *i.e.* relative productivity in tasks such as market work or household production, determine labor force participation. Thence, payments obtained in the labor market are weighted against preferences and skills needed for stay-at-home activities for each person. Women's wages tend to be lower than men's, and they have historically specialized in child-rearing and home production. Therefore women participate less in the labor market than men to obtain the best outcome for the household (Ehrenberg & Smith, 2017). It is important to stress that, as per the first explained implication, the head of the household (in most cases, the man) is the one who evaluates these comparative advantages to decide time allocation.

2.1.2. Bargaining Models

In contrast with the neoclassical understanding of the decision-making process within the household, Pollak (2003) explains that since the early '80s, cooperative bargaining models have been proposed as an alternative (such as Manser and Brown (1980) and McElroy and Horney (1981)), in order to capture that households are not unitary and have complex dynamics. Each member has a utility function, and they bargain to decide their time allocation. There are default payments each party receives if an agreement is not reached (also known as "threat point"; for example, in marriages, it can be thought of as the utility they receive from divorcing or a non-cooperative equilibrium). Hence, other than the market prices of labor and commodities and budget restriction, the power balance inside the household (as determined by whom receives a higher utility in the threat point) influences who gets the most utility and labor decisions at the equilibrium solution.

It is important to note that cooperative bargaining models only relax the shared preferences assumption, and negotiation occurs to mediate between the different utility functions. In non-cooperative models, other assumptions are weakened, such as Pareto efficiency, income pooling, and enforceable and binding contracts; on the other hand, individual production decisions can be made, and information can be asymmetric between household members (Agarwal, 1997).

If we accept that household separation is not the only possible threat, a third bargaining model emerges, where cooperation and independence coexist as game solutions. In the "separate spheres" model (Pollak, 2003), the threat is an inefficient non-cooperative equilibrium, in which there could be domestic violence or its menace, for example. Therefore, the solution depends on the resources

each member commands within the marriage rather than on the power balance should the marriage end. This model considers that social norms play a role in determining which activities are assigned to each member (because the provision of public goods for the household reflects gender norms) instead of preferences or productivity differences.

Nevertheless, there are complexly intertwined factors that affect the threat point. Agarwal (1997) argued that most of these models do not explore them further than income differences between men and women. She undertook the task of describing said intra-household factors, as well as their relative weights and the role of social norms. Argawal did not propose a game-theoretic model, but she did an analytical description, a comprehensive explanation of quantitative and qualitative factors that might affect this bargaining power. She stressed that incorporating social norms into a model is difficult but that bargaining models provide a valuable framework to analyze gendered household dynamics.

The introduction of gender and social norms in the analysis of the household opens the path to discuss domestic violence. As mentioned before, command over resources within the household makes for a higher threat point. Therefore, a consequence of this model is that female labor force participation and greater relative wages should increase women's bargaining power and makes them less prone to violence. It would be expected, following this model, that women who work suffer less domestic violence than those who do not.

2.1.3. Gender Identity Model

As we argued previously, using bargaining models to capture household dynamics enabled Economics to discuss the relationship between gender norms, domestic violence, and female labor force participation. Nonetheless, as we will discuss in the review of the empirical literature, this only allows for a correlation approach or a specific direction of causality. The reason is that domestic violence is incorporated into the analysis via the threat point: it is an undesirable outcome that can be avoided if the balance is sufficiently in favor of women. Labor force participation and relative wages are the most relevant economic factors that have a bearing on it.

In contrast, we are interested in exploring the effects of gender norms, enforced either as beliefs or as violence against women (not just domestic violence), on labor force participation. This means we need a more general framework that allows for other types of violence and does not rely only on power dynamics between married couples, as we wish to examine what happens with women in general. As gender beliefs and violence will be the central explanatory variables of our analysis, Akerlof and Kranton's 2000 Identity Model is particularly useful. Its starting point is that individuals benefit from actions and characteristics that align with their identity and obtain disutility if they act against it. We emphasize that this notion of identity comes from social categories people

ascribe themselves and others to. Not only does it affect the utility they get from their actions, but also from others' actions because they can either threaten or reaffirm their own sense of self.

Identity, as Akerlof and Kranton (2000) retrieved from psychological theory, plays this role because people experience anxiety when their internalized rules are broken, disrupting their sense of unity (because their superego is developed following these rules). Even though the existence of a unitary sense of self has not been experimentally verified, the authors recapitulate some experiments that provide evidence in favor of a change in behavior given an arbitrary categorization of individuals.

In such a way, the first building block for an identity-based utility function is a set of given social categories $\mathbf{C}$ to which each individual j maps everyone in the population. For our purposes, it is sufficient to postulate the groups "male" and "female", [1] so that all individuals assign themselves and others to either of them. This group assignment can be denoted as c_j for person j. Furthermore, to link behavior and people's characteristics with these categories, we also need to postulate a set of prescriptions $\mathbf{P}$, which can be thought of as a list that shapes the ideal of each category. In other words, $\mathbf{P}$ establishes which actions are appropriate according to the category people belong to (Akerlof & Kranton, 2000). Returning to the aforementioned "male" and "female" categories, we need not make an exhaustive list of prescriptions for each gender. However, we advance the hypothesis that participation in the labor market is considered, in general, a male prescription in Mexico's context and, as non-participation is linked with household work for women, that the appropriate behavior for females is not to participate.

These categories and prescriptions interact with the course of action everyone takes, meaning that others' actions in conjunction with the corresponding prescriptions are taken as an externality for the individual's sense of self. Therefore, identity for person j is a function of their own actions, a_j, characteristics, ϵ_j, and others' actions, a_{-j}. It relies on the match between the prescriptions given j's category assignment and j's characteristics and the set of actions taken. This means that if we denote everybody's actions as $a = (a_j, a_{-j})$, identity is a function such that $I_j = I_j(a|c_j, \epsilon_j, \mathbf{P})$ (Akerlof & Kranton, 2000).

Consequently, under these assumptions, women's gender role beliefs shore up their identities. They provide the guidelines that actions must conform to in order to embody the ideal woman or man. In other words, these beliefs shape the prescriptions each individual associates with the categories "male" and "female" and actions that align with them —whether their own or others'— reaffirm or stagger their gender identity (Akerlof & Kranton, 2000). This is also the case when we examine violence exerted by men because it helps balance the loss of identity they experience

[1] While we recognize that the gender spectrum is wider than what we are accounting for, to keep the analysis simple and given that— according to 2021's Encuesta Nacional sobre Diversidad Sexual y de Género (ENDISEG)— 99.1% of Mexicans have a cisgender identity, we incur in this generalization. (How to cite here?)

when women's actions do not answer to their ideas of gender roles (by means of bolstering their own identity and forcing women's actions to represent these prescriptions). The specific context in which this violence takes place is inconsequential: whether it be domestic settings, workplaces, or public spaces, the underlying goals remain the same. The aim is to limit or exert control over women's freedom of movement, sexuality, and access to resources (WIEGO, 2018). Even more, this violence is evaluated by women according to their gender prescriptions.

Finally, the utility provided is evaluated partly by the degree of accordance actions have with the corresponding prescriptions. This means that the utility for individual j is a function $U_j = U_j(a, I_j)$. Akerlof and Kranton (2000) argue that payoffs to individual actions adjust in consonance with identity in several examples that can hardly be explained without an identity framework, such as self-mutilation, occupation distribution by gender, alumni donations, and mountaineering. Then they proceed to contend that there is evidence as well for the effects of others' actions, meaning that they can be interpreted as externalities. They present examples such as the distribution of occupation by gender, insults to manhood, and others' changing of groups or prescription violations.

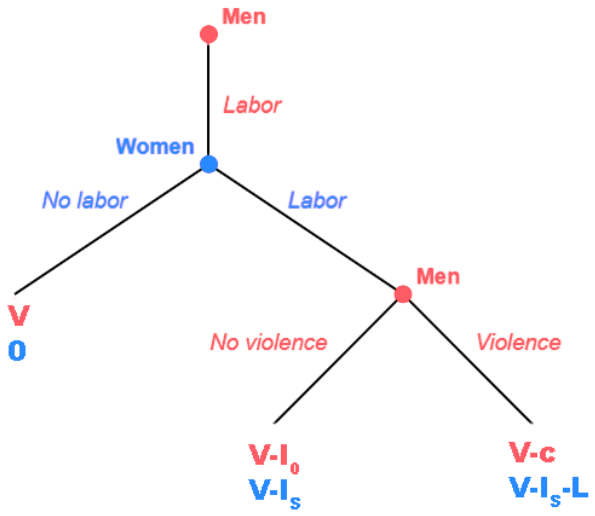
This modified utility function enables us to construct a corresponding set of preferences. Akerlof and Kranton (2000) then propose a game-theoretical model to examine how two individuals would interact and which actions each would take. They provide a general model, and then they continue giving some applications of this model. The first one seeks to explain occupational segregation by gender. A modification of this last application, whose objective is to account for female labor force participation, is presented hereunder.

Our simultaneous game begins with two players, a woman and a man. We build on the social categories we postulated before, "female" and "male", with their associated prescriptions which include "not working/ household work" for women and "being a provider/ not doing household work" for men. If women have traditional beliefs, they lose a quantity I_s of utility via a loss in female identity when they participate in the labor market. In this case, as it is perceived as a threat by men, the male player suffers a utility loss of I_o because of a loss in identity as well. We can normalize the payoffs and say that women get 0 utility if they do not participate in the labor market and a utility of V if they do. On the other hand, men can decide to exert violence as a means to reestablish their male identity and possibly deter women from participating in the labor market. This violence can be exerted for a cost c.

Therefore, as it can be deducted from figure 2.1,[2] this game has four possible subgame perfect equilibria. If $c < I_o$ and $I_s < V < I_s + L$, the woman does not work, and the man exert violence. If it is the case that $c < I_o$ and $I_s + L < V$, the man uses violence, but the woman works nevertheless. There is no violence when $c > I_o$ and $I_s < V$, and the woman works. Finally, if $I_s > V$, the woman does not work no matter what the man does.

[2]We present the extensive form of this game using the software developed by Savani and von Stengel (2014).

Figure 2.1.: Gender identity as violence and beliefs in extensive game theoretic framework



2.1.4. Violence models

It is worth mentioning that two more theories that seek to explain the connection between female work and violence have also been taken up by economists. Criminologists postulate in the exposure reduction theory that women who participate in the labor market spend less time at home. Therefore, the occasions for violent encounters with their partners diminish (Dugan et al., 1999; Dugan et al., 2003; Chin, 2012). Conversely, sociologists argue in the male backlash theory that women's participation in the labor force threatens men's role as breadwinners, so they resort to violence to reinstate their authority (Hornung et al., 1981; Macmillan & Gartner, 1999; Luke & Munshi, 2011; Chin, 2012; Finnoff, 2012; Caridad Bueno & Henderson, 2017; John, 2020; Dhanaraj & Mahambare, 2022)

2.2. Empirical Literature Review

2.2.1. Gender Identity

On the macro level, there have been efforts to advance the relevance of gender identity to explain female labor market outcomes. Fortin (2005) established the relationship between gender role prescriptions and employment in 25 OECD countries using three waves of the World Values Survey (between 1990 and 2001). She relies on previous research which defends that beliefs about working women are consolidated in youth (Thornton et al., 1983; Vella, 1994), in an attempt to justify why the relations she finds might be causal (*i.e.* beliefs are formed prior to labor market decisions).

The prescriptions Fortin reviews are traditional gender role views, that "men are the breadwinners of their households" (captured by agreement with the statement "When jobs are scarce, men should have more right to a job than a woman"); "women are the homemakers of their households" ("Being a housewife is just as fulfilling as working"); and what has been called in the literature "mother's guilt", an inner conflict between more traditional and modern views ("A working mother can establish just as warm and secure relationship with her children as a mother who does not work"). She regresses women's employment status on a vector of binary traditional gender values, using time and country dummies and a vector of controls. Even when controlling by average men's gender role views in a given country and time, she finds a significant negative coefficient on women's gender role prescriptions. This is maintained when mean country employment is explained by mean country gender prescriptions (Fortin, 2005).

Fortin (2005) concludes that the stronger explanatory prescription is that men are breadwinners. She finds that a 10% increase in the proportion of the country's population that supports this belief translates into a reduction of women's employment rate of 5-9%.[3] Nonetheless, these views are softening among recent cohorts. Women as homemakers is a prescription that is also negatively associated with female labor force participation, but it is not always significant. These beliefs were shown to be more persistent over time because they are likely formed in youth and linked to religious ideology. In third place, even if it is not significant country-wise, at the individual level, "mothers guilt" is also a good predictor of female labor force participation because the dissonance between family values and egalitarian views constitutes another obstacle for women to work. [4]

The same questions are analyzed in the United States by Fortin (2015), using the 1977-2006 General Social Surveys. The guiding hypothesis for this article is that the 2000's decline in female labor force participation (which had been characterized by an increasing trend and in the 1990s was closing on men's) is the effect of a reversal to more traditional gender values. Her identification

[3] She points out that only this variable passes the reverse causality test.

[4] Fortin accounts as well for the unexplained part of the gender wage gap, using these same soft factors. We do not delve much into this part as we will concentrate on labor force participation.

strategy uses a two-sample two-stage least squares variant, and she regresses LFP over a traditional attitudes index and an egalitarian attitudes dummy. The study discovers that more traditional gender role attitudes are linked to increased odds of choosing not to work and a preference for housewifery. Fortin's findings are that if average traditional prescriptions rise by 2 points and average egalitarian attitudes decrease by 4 points between 1993 and 2006, they jointly explain between a half and a percentage point decline in female labor force participation.

Charles et al. (2018).[5] recognize the importance, as Fortin found before, of gender prescriptions women have. Nevertheless, they differentiate between background sexism (experienced early in life), in which women internalize societal norms, and residential sexism (that corresponds to current living conditions), in which market discrimination might occur and different social norms could have an influence. Using an instrumental variables approach over a sample of immigrants between 1980 and 2012, they find that residential sexism mainly operates on labor market outcomes through male sexism. In contrast, background sexism affects through women's own beliefs.

Higher background sexism in one's state of birth is associated with a significant reduction in women's labor force participation and wages relative to men, conditional on residing in states with similar levels of sexism. The results suggest that internalized cultural norms play a role in shaping women's labor force participation decisions. The paper also finds that background sexism appears to act in the same direction as residential sexism on a woman's likelihood of marriage and childbearing age. However, the estimated associations with residential sexism are somewhat larger.

They also find that median male beliefs matter, but as they move away and reach both extremes of sexism (the 10th or 90th percentile), they are no longer significant in determining selection-corrected gender wage gaps and relative employment rates. The lack of significance of having more extreme gender beliefs could not be replicated for women. Another discovery was that when more sexist markets are analyzed, women's relative employment is lowered because of women who would have worked few hours even in sexism's absence. In this case, the mechanism is that lower wages are offered in these markets, and women's labor supply lowers.

These findings align with the "taste-based" discrimination model, which maintains that working with women has a psychological cost for sexist employers. As a result, some firms will only hire women if they are paid less than similarly skilled males. This results in the market segregating sexist employers from female employees, and the marginal discriminator—whose sexism is such that they are just indifferent between interacting with women or not—determines the equilibrium wage gaps. According to the study, the marginal discriminator has a sexism level in areas near the middle of the employer sexism distribution and not too far from the median.

In addition to the literature we reviewed that seeks to prove the effect of gender prescriptions

[5]There is a newer, complete version published online before print; how to cite this? http://jhr.uwpress.org/content/early/2022/11/01/jhr.0920-11209R3.refs

on the female labor market, other research strands aim to uncover the mechanisms through which gender identity is formed.

Technological innovation has been found to affect identity beliefs. A very influential finding is that innovations in contraception and the Pill increased schooling investment and marriage age for women in the US, which favored more egalitarian and less traditional gender role views (Goldin & Katz, 2002; Goldin, 2006). Although not linked yet with the gender identity literature, other exogenous shocks to technology, such as the dissemination of household appliances and the associated increase in FLP, could have operated, in part, via a change in gender prescriptions for women.

On the other hand, there is strong evidence in favor of the formation of gender beliefs in early childhood. Both men's and women's gender role beliefs have been found to depend on whether they had a working mother and on religious affiliation (Vella, 1994; Fernández et al., 2004). The intergenerational transmission of these beliefs has been documented as well. It has also been established that mothers' views affect children's beliefs and that mothers with less traditional gender role beliefs will be more likely to have daughters or daughters-in-law who participate in the labor force (Farré & Vella, 2013).

Lastly, schooling has an effect on gender identity. Some studies have found that girls who attend co-ed schools are more likely to develop and maintain more traditional gender beliefs than girls who attend single-sex schools (Maccoby, 2002; Maccoby, 1998; Lee & Marks, 1990; Dasgupta & Asgari, 2004).

2.2.2. Gender Violence

As was previously mentioned, bargaining models prepared the ground to examine the relationship between gender violence and female labor force participation. No consensus was found regarding the effect of paid work on domestic violence married women suffer, as these variables are endogenous, and there are reverse causality and omitted variable concerns that were not addressed in many of these studies. The reason is that if women are subject to violence, they might change their labor market decisions, for example, because of health concerns or due to wanting to evade being put in a vulnerable position if violence comes from the workplace. On the other hand, if they work, the violence they suffer might change because they spend time in a different environment. Therefore, several empirical studies have found that female labor force participation decreases violence risk. In contrast, others have found that it increases or has no effect at all (Bhattacharya, 2015).

Endogeneity was not taken into account until Aizer (2010). Using administrative data of female hospitalizations for assault as a measure of gender violence, she constructed a function of the wage gap utilizing local labor demand (for men and women). Her principal result is that the decrease

in the wage gap explains nine percent of violence reduction between 1990 and 2003. A similar result was found by Bhattacharyya et al. (2011) in North Indian villages while using caste as an instrument.

Until recently, the other direction of the relationship was not analyzed in the empirical literature, and when it was, it mainly examined data from the United States (Lloyd, 1997; Browne et al., 1999; Lloyd & Taluc, 1999; Staggs & Riger, 2005; Tolman & Wang, 2005; Lindhorst et al., 2007). They concluded, in general, an adverse effect of violence on labor force participation and hours worked. However, endogeneity was not addressed in these studies. The first study to do so was Bhattacharya (2015), where she uses an indicator of the husband's family history of violence as an instrumental variable. The direction of the effect is positive: women who experienced violence (ever or in the past 12 months) were more likely to work. She also found that being employed did not mean a greater resource command because women who experienced violence had less say over these earnings. These results were replicated by Fajardo-Gonzalez (2021) using data from Colombia and the husband's experience of childhood violence as an instrument; and by Gedikli et al. (2023), using women's and men's history of violence using 2008 and 2014 surveys of National Research on Domestic Violence against Women in Turkey.

In Mexico's case, two studies regarding the relationship between intimate partner violence and female labor outcomes rely on the ENDIREH survey. Canedo and Morse (2021) use a propensity score and inverse-probability-weighted regression adjustment approach to measure the effects of labor force participation in urban and rural Mexico on domestic violence. They find that this association is positive. Conversely, Aguirre (2022) find that the association is negative when examining women's earnings. Notably, none of these studies mention reverse causality and omitted variable issues.

3. Material and Methods

3.1. Data

Our primary data source for this research will be the Encuesta Nacional sobre la Dinámica de Hogares (ENDIREH), conducted by the Instituto Nacional de Estadística y Geografía (INEGI) in Mexico. The survey provides detailed information on gender-based violence experienced by women aged 15 and above, including data on total violence, violence by domain, type of violence, and the perpetrator's identity. It has been conducted every five years since 2006, contributing to our understanding of violence prevalence and patterns.

The ENDIREH survey is crucial in shedding light on the dynamics of gender violence within Mexican households. It is important to note that the survey consists of cross-sectional data for its different editions rather than panel data.

One significant aspect of the survey is its alignment with the Sustainable Development Agenda (2030), allowing for internationally comparable indicators. Through yes or no questions and occasionally assessing the frequency of incidents, the survey captures comprehensive data on the extent and nature of violence experienced by women. These data enable the calculation of indicators that highlight the proportion of women who have experienced violence, disaggregated by the form of violence and age, and indicators that depict violence prevalence by age and location of the incident.

The survey utilizes three distinct questionnaires based on women's marital status: Questionnaire A for married or cohabitating women, Questionnaire B for separated, divorced, or widowed women, and Questionnaire C for single women. This differentiation is crucial as it influences the types and domains of violence the surveyed women are exposed to.

Beyond violence-related questions, the ENDIREH survey also covers nine questions that explore gender roles. These inquiries provide valuable insights into societal attitudes and expectations related to gender, contributing to a deeper understanding of the cultural and social factors influencing gender dynamics.

In addition to violence and gender role questions, the survey collects socioeconomic, demographic, geographic, children, partner, and wealth information. This comprehensive set of variables enables a more holistic analysis of the factors associated with gender violence and its impact on

various aspects of women's lives.

With its rigorous data collection methods and comprehensive questionnaire, the ENDIREH survey offers a rich dataset that can inform researchers, policymakers, and organizations working towards promoting gender equality, preventing violence, and improving the well-being of women in Mexico.

For this research, we will focus specifically on the data from the year 2021. While previous editions of the survey exist, comparability regarding questions on the domain and type of violence is not guaranteed, except for the 2016 edition. An attempt to generate prevalence variables for violence by domain and type using the 2011 data resulted in notable differences in percentages.

With the database remaining unaltered, we have a total of 432,746 observations. However, by narrowing down the analysis to solely the selected women from each household, we are left with 110,127 observations.[1] These observations are representative of Mexican women aged 15 and above in 2021, specifically 50,523,469 individuals. We restricted our sample to women aged 15 to 64 years old in order to reflect the working age population as defined by OECD (2023b). For this population, we define two indicators: the first for women who have ever worked and the second indicating those who worked in the last 12 months.

Two of our key explanatory variables will be economic and sexual violence.[2] Their definitions are derived from the ENDIREH survey, as outlined by Ley General de Acceso de las Mujeres a una Vida Libre de Violencia (Cámara de Diputados, 2021). Economic violence encompasses actions or omissions by the perpetrator that harm the victim's economic well-being. It includes measures aimed at controlling the victim's income and perceptions and instances of unequal pay for equal work within the same workplace. On the other hand, sexual violence refers to any act that degrades or harms the victim's body and/or sexuality, violating their freedom, dignity, and physical integrity. It is a manifestation of power abuse that reinforces male dominance over women by objectifying and devaluing them.

It is worth mentioning that the measurement of violence varies in terms of the number of questions used for each type. To ensure comparability, we follow the approach outlined by Aguirre (2022) and we standardized the total number of occurrences for each type of violence. This involves subtracting the mean from the total count and dividing it by the standard deviation. This

[1] This survey is designed to collect demographic information on all of the household members, but INEGI randomly selected one woman aged 15 or older within each of them to apply the complete survey.

[2] ENDIREH survey also accounts for physical and psychological violence, but we found that these variables had the lowest correlation with labor decisions. When we ran joint probits, they were not significant after economic and sexual violence were included and had really low t statistics (with associated p-values of around 0.6). We could not reject the hypothesis that their coefficients were jointly zero at the 10% level, while economic and sexual violence were significant at the 1% confidence level. Therefore, we limited our analysis to these last two types of violence. Furthermore, we considered that when we restricted our sample to women who had never received economic violence, only 30% of the women had received physical or psychological violence. When we excluded sexual violence as well, this percentage further decreased to 20%.

standardization process allows for a consistent and meaningful analysis of the data.

Both the 2016 and 2021 waves of the ENDIREH survey include nine questions aimed at capturing women's beliefs regarding gender roles. However, it is worth noting that there are slight variations in the specific questions asked between the two surveys. For a detailed list of these questions, refer to Appendixes A.1 and A.2.

We were interested in summarizing in one number the progressiveness of gender role beliefs women have, so we employed a principal components analysis (PCA) on these beliefs questions. This statistical technique allowed us to combine the information from the nine questions and derive a single index. Lower values on the index indicate more traditionalist attitudes, while higher values reflect a more progressive perspective on gender roles. The utilization of this index provides a comprehensive and standardized measure to examine women's gender role beliefs across both survey waves.

Apart from the three prime variables for our analysis—economic violence, sexual violence, and the progressiveness index— we also integrated other variables that would further serve our analysis (as our empirical model will highlight). To begin with, we followed a similar procedure as outlined for the progressiveness index to generate four indexes using the 2016 wave of the ENDIREH survey. One index was designed to be analogous to the one created for 2021, while the remaining three were specifically created for the 2016 edition. These indexes aimed to capture different facets of gender role beliefs. The first index focused on gauging agreement with economic violence, the second evaluated agreement with sexual violence, and the third encompassed more general aspects of women's gender roles. By categorizing the questions, we analyzed distinct dimensions of gender role beliefs within the 2016 dataset. Furthermore, as only some of the municipalities were included in both waves of the survey, we used three levels to define the 2016 indexes: using the municipality-level mean (which contained fewer observations than our complete sample), state-level mean, and municipality-level indexes imputed by the state-level indexes (this was done in order to match observations whose municipalities appeared in 2021 but not in 2016).

On the other hand, considering that the socioeconomic status of women, especially if they are not employed, may have components not captured by their own income, we believe that a better indicator of socioeconomic standing is an index constructed from household assets using principal component analysis (Torche, 2015, pp. 570–572). Thus, we created an index through principal component analysis using questions about housing and household characteristics to determine the liquidity constraints imposed on the decision to participate in the labor market. First, an index was constructed based on housing quality, considering variables such as the number of rooms, light bulbs, type of drainage, and type of flooring. Subsequently, this index was integrated into a second principal component analysis, which now included household assets and whether the selected woman identifies as indigenous. This involved two steps to preserve as much variance of

the housing quality as possible, because we only used the first component of both analysis. Finally, the index was standardized to have a mean of 0 and a variance of 1. It is worth mentioning that another advantage of this method is the absence of missing values in the restricted sample for these questions.

Additionally, we incorporated the Índice de Rezago Social (IRS) at the municipality level, calculated by CONEVAL every five years starting from 2005. This index comprehensively assesses social deprivation by combining four key indicators: education, health, essential services, and housing quality and spaces. The IRS is derived through principal component analysis, and for our analysis, we utilized the index calculated for the year 2020 at the municipality level.

This indicator is used to synthesize the information that the literature identifies as contextual variables. This composite indicator incorporates various contextual variables identified in the literature. It encompasses multiple dimensions, including the illiteracy rate among individuals aged 15 and above, the proportion of children aged 6 to 14 who are not attending school, the percentage of households with individuals aged 15 to 29 who have not completed secondary education, the prevalence of incomplete primary education among individuals aged 15 and above, the lack of access to healthcare services, the presence of dirt floors in households, the average number of occupants per room, the absence of sanitation facilities in households, the absence of piped water from a public network in private households, the absence of drainage in private households, the lack of electricity in private households, the absence of a washing machine in private households, and the absence of a refrigerator in households. By considering these diverse indicators, we aim to capture a comprehensive picture of the contextual factors associated with the analyzed population.

We also categorized educational levels to capture different levels of attainment. We assigned a code of 0 for women who completed none, preschool, or elementary school. A code of 1 was assigned for middle school. High school was represented by a code of 2, while a code of 3 indicated a bachelor's degree. Finally, code 4 was used for individuals with a master's degree or Ph.D. This approach was implemented in order to reduce measurement errors since the database did not include a variable for years of schooling, and approximating it was challenging as it only provided information on the number of years completed at the most recent educational level.

It is important to note that while the effects of these variables at the individual level may seem to have been accounted for in the socioeconomic index of the women in question, as mentioned in the literature, there is also an effect of housing quality surrounding the examined individual.

The state and municipality level education gap was calculated from the 2020 edition of the Encuesta Nacional de Ocupación y Empleo (ENOE). We also construed three variables as in the case of the 2016 progressiveness indexes.

Lastly, we obtained from INEGI the percentage of Catholics per state in 2021 (it can be consulted

in Appendix B) and three state-level measures of employment: percentage of the economically active population, of the employed population, and informal employment.

3.2. Exploratory Analysis

3.2.1. Sample of working-age women

A notable portion, 81%, of women in our sample have engaged in employment at some point in their lives, while the percentage decreases to 55% when considering the past year. If we examine the demographic profile of working-age women, we find that the median woman has achieved a middle school education level, as denoted by the value of 1 for educational attainment. Additionally, the majority of women in the sample have two or more children. The median age for working age women is 37. It is also noteworthy that 77% of the women reside in urban areas, which are formed by settlements with more than $2,500$ residents. Furthermore, only 26% of them self-identify as indigenous. These findings provide insights into the educational background, number of children, urban, and indigenous distribution among the women in our study and are depicted in table 3.1.

Table 3.1.: Summary statistics of sample

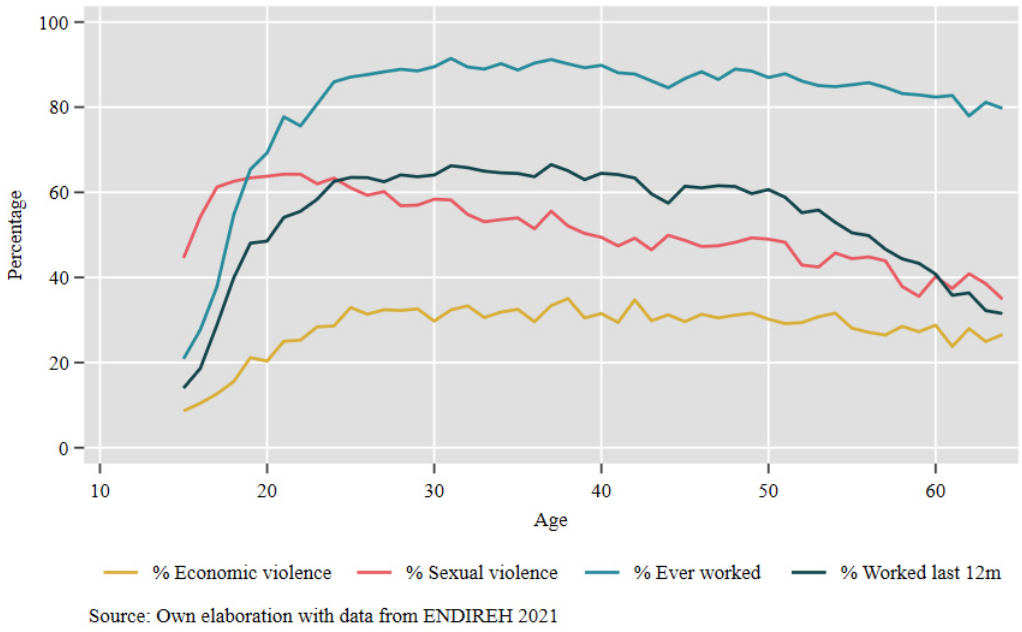
Variable	Mean	SD	p25	Median	p75	Min	Max
Ever worked	0.81	0.40	1	1	1	0	1
Worked 12m	0.55	0.50	0	1	1	0	1
Violence	0.72	0.45	0	1	1	0	1
Economic violence	0.28	0.45	0	0	1	0	1
Sexual violence	0.52	0.50	0	1	1	0	1
Progressiveness index	0.00	1.00	-0.43	0.26	0.72	-4.64	3.22
Economic violence instances	0.73	1.58	0	0	1	0	21
Sexual violence instances	1.88	3.00	0	1	3	0	31
Age	37.31	14.00	25	37	49	15	64
Educational attainment	1.55	1.10	1	1	2	0	4
Wealth index	0.00	1.00	-0.52	-0.16	0.43	-1.49	3.20
Children	1.91	1.81	0	2	3	0	24
IRS	-0.81	0.70	-1.25	-1.06	-0.58	-1.55	7.00
Urban	0.77	0.42	1	1	1	0	1
Indigenous	0.26	0.44	0	0	1	0	1

Regarding key explanatory variables for this research, women's experiences of violence and their beliefs, approximately three-quarters of women have encountered some form of violence. Among them, 28% have experienced economic violence, while 52% have faced sexual violence. These percentages translate to approximately 12 million women affected by economic violence and around 23 million women affected by sexual violence. Comparing the occurrence and distribution, we can see that the prevalence of sexual violence is higher than that of economic violence, as indicated by the mean occurrence and quartile values (figures C.1 and C.2 support this point as well).

The prevalence of both economic and sexual violence exhibits an upward trend until women are

in their mid-20s, after which economic violence stabilizes. In contrast, sexual violence gradually decreases over the life cycle, as depicted in figure 3.1. It is important to note that this pattern may be influenced by underreporting or a different perception of what constitutes violence among older women. This interpretation is further supported by the observation that older women tend to hold more traditional views on gender roles, which could contribute to a greater tolerance of such behaviors (figure 3.2).

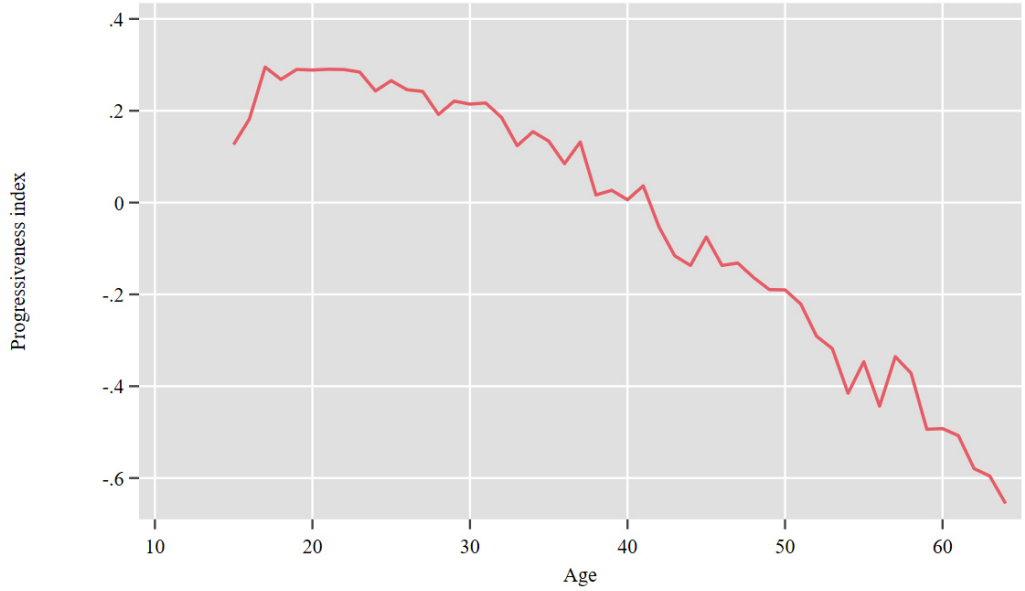
Figure 3.1.: Economic violence, sexual violence and LFP (ever and 12m) by age



Source: Own elaboration with data from ENDIREH 2021

It is worth mentioning that the distribution of beliefs has a negative skew, meaning that most women have more progressive views than the mean woman, although there are extreme observations of very sexist women (figure C.3).

Figure 3.2.: Progressiveness by age in 2021



Source: Own elaboration with data from ENDIREH 2021

As we can see in figures 3.3 and 3.4, most states have stayed within the same range of sexism. Because of a higher index level denoting more progressive views and lower, more sexism or traditionalism, if states descend from one quintile to the next, the mean beliefs of their women's population become more sexist. This is the case for Aguascalientes, Campeche, Coahuila, Guanajuato, and Nuevo León. Conversely, Colima, Hidalgo, Nayarit, Quintana Roo, and Yucatán became less traditionalist from 2016 to 2021.

Hence, it can be inferred that beliefs exhibit a certain level of stability across states, with changes occurring gradually rather than abruptly. These changes do not involve shifts of more than one quintile in either ascending or descending order. Figure 3.5 illustrates that the magnitude of the change in the progressiveness index remains within the range of 0.15 or less.

Figure 3.3.: Mean progressiveness index by State in 2016

1st quintile 2nd quintile 3rd quintile 4th quintile 5th quintile

Source: Own elaboration with data from ENDIREH 2016

Figure 3.4.: Mean progressiveness index by State in 2021

1st quintile 2nd quintile 3rd quintile 4th quintile 5th quintile

Source: Own elaboration with data from ENDIREH 2021

Figure 3.5.: Change in progressiveness index by State between 2016 and 2021

Source: Own elaboration with data from ENDIREH 2016 and 2021

Table 3.2 provides insights into the incidence of economic violence among women based on their employment status. The first row represents the number of women experiencing different levels of economic violence, while the second row indicates the corresponding percentages within the working group. It is evident that working or having worked in the last 12 months does not entail experiencing economic violence. However, it increases the likelihood compared to women who are not employed. This pattern holds across all levels of violence. Additionally, the distribution of violence appears to be similar between women who have ever participated in the labor force and those who have done so within the past year. We also observe that receiving more than six instances of economic violence is rare.

In the case of sexual violence, the same observations regarding the distribution of violence could be made, as depicted in table 3.3, less violence is received if the woman has not worked. The most striking difference is that not having ever worked was correlated with receiving sexual violence for 62% of women, and working in the last 12 months, for 55% (while the figures are higher for economic violence). As we can observe, across all groups, the likelihood of receiving sexual violence once or twice is similar for women who have worked (ever or 12m) and those who have not. However, working is correlated with the likelihood of more sustained sexual violence, as can be seen when there are more than three instances of violence.

These variations may be attributed to the distinct composition of women who have had work

Table 3.2.: Instances of economic violence by female labor force participation

Economic violence	Ever worked		Worked 12m		Total
instances	No	Yes	No	Yes	
0	7,728,055	24,301,194	16,603,969	15,425,280	32,029,249
	89.65	67.76	82.31	63.44	72
1	533,547	4,473,537	1,892,407	3,114,677	5,007,084
	6.19	12.47	9.38	12.81	11.26
2	165,150	2,503,969	742,230	1,926,889	2,669,119
	1.92	6.98	3.68	7.93	6
3	78,403	1,572,146	370,051	1,280,498	1,650,549
	0.91	4.38	1.83	5.27	3.71
4	59,049	1,132,152	274,069	917,132	1,191,201
	0.68	3.16	1.36	3.77	2.68
5	28,970	751,205	162,873	617,302	780,175
	0.34	2.09	0.81	2.54	1.75
6	18,551	502,180	75,523	445,208	520,731
	0.22	1.4	0.37	1.83	1.17
7	7,414	276,944	38,017	246,341	284,358
	0.09	0.77	0.19	1.01	0.64
8	172	147,630	9,580	138,222	147,802
	0	0.41	0.05	0.57	0.33
9	1,099	90,829	3,054	88,874	91,928
	0.01	0.25	0.02	0.37	0.21
10	0	41,295	701	40,594	41,295
	0	0.12	0	0.17	0.09
11	0	33,940	579	33,361	33,940
	0	0.09	0	0.14	0.08
12	0	15,685	0	15,685	15,685
	0	0.04	0	0.06	0.04
13	0	9,427	0	9,427	9,427
	0	0.03	0	0.04	0.02
14	0	6,248	0	6,248	6,248
	0	0.02	0	0.03	0.01
15	0	2,528	0	2,528	2,528
	0	0.01	0	0.01	0.01
16	0	3,283	0	3,283	3,283
	0	0.01	0	0.01	0.01
17	0	1,222	0	1,222	1,222
	0	0	0	0.01	0
19	0	276	0	276	276
	0	0	0	0	0
21	0	218	0	218	218
	0	0	0	0	0
Total	8,620,410	35,865,908	20,173,053	24,313,265	44,486,318

In each row, the first line shows absolute numbers, and the second the corresponding percentages.

Table 3.3.: Instances of sexual violence by female labor force participation

Sexual violence instances	Ever worked		Worked last 12m		Total
	No	Yes	No	Yes	
0	5,346,301	15,922,575	11,112,276	10,156,600	21,268,876
	62.02	44.39	55.08	41.77	47.81
1	1,269,686	5,940,062	3,195,513	4,014,235	7,209,748
	14.73	16.56	15.84	16.51	16.21
2	727,494	3,784,687	1,905,360	2,606,821	4,512,181
	8.44	10.55	9.45	10.72	10.14
3	430,013	2,646,637	1,206,571	1,870,079	3,076,650
	4.99	7.38	5.98	7.69	6.92
4	281,591	2,017,016	830,258	1,468,349	2,298,607
	3.27	5.62	4.12	6.04	5.17
5	168,998	1,420,092	549,023	1,040,067	1,589,090
	1.96	3.96	2.72	4.28	3.57
6	123,917	1,034,747	384,389	774,275	1,158,664
	1.44	2.89	1.91	3.18	2.6
7	76,840	664,354	252,951	488,243	741,194
	0.89	1.85	1.25	2.01	1.67
8	69,817	575,963	219,114	426,666	645,780
	0.81	1.61	1.09	1.75	1.45
9	42,184	431,160	138,539	334,805	473,344
	0.49	1.2	0.69	1.38	1.06
10	32,295	335,613	103,513	264,395	367,908
	0.37	0.94	0.51	1.09	0.83
11	13,492	230,394	69,181	174,705	243,886
	0.16	0.64	0.34	0.72	0.55
12	13,415	219,132	61,207	171,340	232,547
	0.16	0.61	0.3	0.7	0.52
13	6,346	165,794	36,958	135,182	172,140
	0.07	0.46	0.18	0.56	0.39
14	5,962	117,782	26,119	97,625	123,744
	0.07	0.33	0.13	0.4	0.28
15	3,495	85,727	18,210	71,012	89,222
	0.04	0.24	0.09	0.29	0.2
16	2,766	79,435	13,857	68,344	82,201
	0.03	0.22	0.07	0.28	0.18
17	1,279	44,814	12,827	33,266	46,093
	0.01	0.12	0.06	0.14	0.1
18	2,348	42,295	11,936	32,707	44,643
	0.03	0.12	0.06	0.13	0.1
19 or more	2,171	107,629	25,251	84,549	109,800
	0.02	0.31	0.12	0.34	0.24
Total	8,620,410	35,865,908	20,173,053	24,313,265	44,486,318

In each row, the first line shows absolute numbers, and the second the corresponding percentages.

experience or have been employed in the past twelve months compared to those who have not. This is supported by the t-test results, as indicated in Tables C.1 and C.2. Specifically, women who have never worked tend to be younger, with an average age of 31, reside more frequently in urban areas, and possess lower levels of educational attainment. While there are statistically significant differences in other demographic characteristics, the effect sizes associated with these differences are relatively small. On the other hand, when analyzing labor force decisions in the past year, age is more balanced, although educational attainment and urban residence follow the pattern mentioned before.

3.2.2. Subsample of women who have never received economic violence

This subsample, which includes women who have never worked and those who have worked, displays age characteristics that closely resemble those of the original sample. On average, women who have never worked have a mean age of 30, while those who have worked have a slightly higher mean age of 37. Moreover, other demographic characteristics demonstrate consistent patterns, as evidenced in table C.6.

Regarding their experience of violence and sexual violence, both groups of women in the subsample exhibit similar patterns to those observed in the original sample. However, the intensity of violence experienced by these women is relatively lower compared to the overall sample.

3.2.3. Subsample of women who have never received either economic or sexual violence

In this second subsample, the disparity in violence experienced between women who have participated in the labor force and those who have not is minimal. The prevalence of violence is lower, with approximately a quarter of women reporting such experiences, as economic and sexual violence constitute the most common types.

However, women who have not worked demonstrate substantialy higher levels of sexism compared to the original sample, although the contrast in attitudes between them and women who have worked remains consistent.

In terms of demographic characteristics, both groups in this subsample consist of older women. Educational attainment, urban residence, belonging to an indigenous group, wealth, number of children, and IRS status follow the same trends as observed in the original sample, as presented in Table C.7.

3.3. Empirical Model and Identification Strategy

We established in the last section that working is a feasible option for women, as 81% of working age women have participated in the labor market at some point in their lives (see table 3.1), *i.e.* we are not dealing with the case when most women get a disutility important enough from working (via a loss in identity) that no matter if they receive violence or not, they mostly choose not to work (in section 2.1.3 it was the last game equilibrium analyzed).

The relevance of violence in the labor force participation decision comes from the fact that 72% of these women had experienced some type of violence by 2021, and the figure is 60% examining women who suffered either economic or sexual violence. As there are women who experienced these types of violence that also chose to work and women who chose not to do it, this suggests that what men do, the violence they exert, matters for female labor force participation decisions. However, the final result also depends on women's gender identity beliefs.

3.3.1. Probit model

Hence, we are interested in explaining LFP for working age women, measured by their affirmative or negative responses to the question if they ever worked. As a first attempt to understand the effect of how much economic and sexual violence a person has ever received and of their progressiveness level on this decision, we start with a simple probit regression. Our base model is:

$$Y_i = \alpha + \theta_1 V_{Eco} + \theta_2 V_{Sex} + \theta_3 Bf + \beta \mathbf{X} + \epsilon_i,$$

where the coefficients of interest are $\theta_1, \theta_2, \theta_3$. Y_i is a dummy that indicates if woman i participates in the labor market, V_{Eco} and V_{Sex} are the standardized indexes of how much economic and sexual violence has a woman ever received, and Bf denotes the progressiveness index. We use a vector $\mathbf{X}$ of relevant controls according to the literature: a second-degree age polynomial, educational attainment, a binary variable for indigenous status, socioeconomic status index, a dummy variable for living in a city, number of children and IRS (to account for geographical effects).

We obtain the results presented in table 3.4 by running this probit. The first column shows the coefficients without controlling for the covariates vector. When we control and examine the effect of these variables together or by themselves, we obtain that the coefficients are stable and highly significant. Thence, it appears as if economic violence, sexual violence, and having more progressive gender roles' beliefs have a positive effect on the decision to work. Economic violence seems to have a more considerable effect, while the contribution of the other two is smaller but similar to each other.[3] Figure 3.6 shows that the corresponding increases in probability are all

[3] We are measuring increases in standard deviations over the mean

positive, albeit small: they imply less than a 0.1% increase in the probability of ever having worked in the three cases.

Figure 3.6.: Average marginal effects on FLFP with 95% CIs

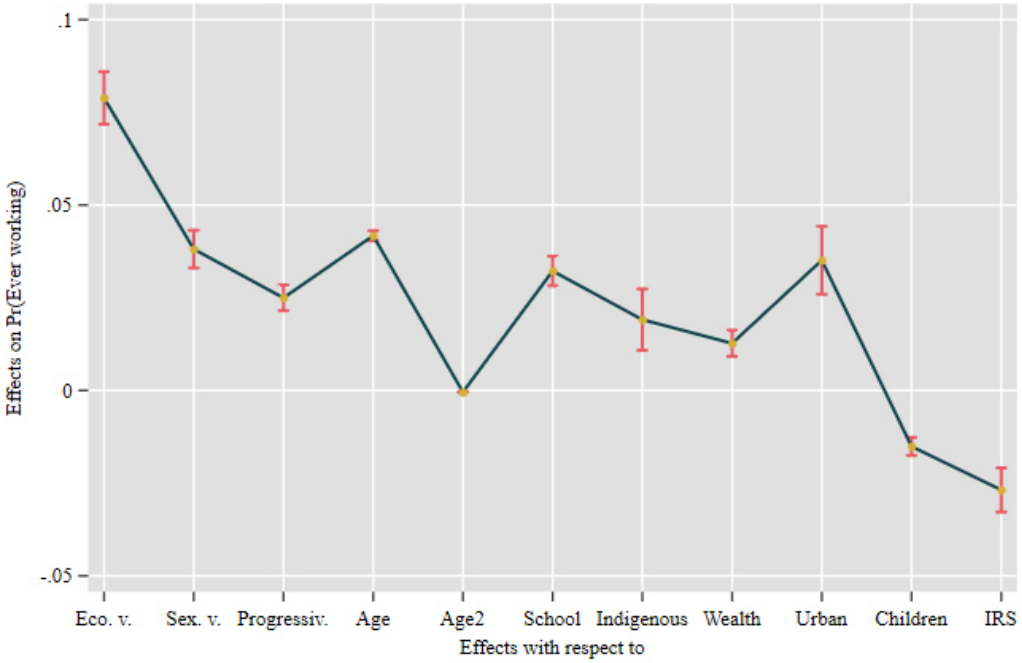


Table 3.4.: Probit regressions of labor force participation on economic violence, sexual violence, and sexism

VARIABLES	(1) Y_i	(2) Y_i	(3) Y_i	(4) Y_i	(5) Y_i	(6) Y_i	(7) Y_i
Economic violence index	0.4233***	0.3616***	0.4176***			0.3559***	
	(0.0162)	(0.0169)	(0.0166)			(0.0167)	
Sexual violence index	0.1366***	0.1747***		0.2732***		0.1848***	0.2647***
	(0.0111)	(0.0120)		(0.0116)		(0.0121)	(0.0115)
Progressiveness index	0.1396***	0.1145***			0.1207***		0.1073***
	(0.0073)	(0.0082)			(0.0080)		(0.0081)
Age		0.1913***	0.1876***	0.1972***	0.1918***	0.1917***	0.1968***
		(0.0035)	(0.0035)	(0.0035)	(0.0035)	(0.0035)	(0.0035)
Age^2		-0.0021***	-0.0021***	-0.0022***	-0.0021***	-0.0021***	-0.0022***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Educational attainment		0.1477***	0.2066***	0.1685***	0.1632***	0.1830***	0.1350***
		(0.0094)	(0.0091)	(0.0091)	(0.0093)	(0.0092)	(0.0093)
Indigenous		0.0875***	0.0751***	0.0905***	0.0976***	0.0789***	0.0989***
		(0.0194)	(0.0194)	(0.0193)	(0.0193)	(0.0194)	(0.0193)
Wealth index		0.0583***	0.0541***	0.0597***	0.0552***	0.0577***	0.0604***
		(0.0081)	(0.0081)	(0.0081)	(0.0081)	(0.0081)	(0.0081)
Urban		0.1609***	0.2008***	0.1851***	0.2041***	0.1792***	0.1678***
		(0.0214)	(0.0216)	(0.0214)	(0.0216)	(0.0215)	(0.0214)
Children		-0.0692***	-0.0759***	-0.0601***	-0.0528***	-0.0742***	-0.0552***
		(0.0057)	(0.0058)	(0.0059)	(0.0059)	(0.0058)	(0.0058)
IRS		-0.1230***	-0.1556***	-0.1447***	-0.1494***	-0.1415***	-0.1276***
		(0.0140)	(0.0140)	(0.0141)	(0.0143)	(0.0140)	(0.0141)
Constant	0.9618***	-3.0589***	-3.0946***	-3.2833***	-3.2282***	-3.1182***	-3.2287***
	(0.0092)	(0.0649)	(0.0647)	(0.0648)	(0.0647)	(0.0647)	(0.0650)
Observations	95,428	95,428	95,428	95,428	95,428	95,428	95,428

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.3.2. Instrumental variables discussion

Nonetheless, as we explained in section 2.2, some literature has already shed light on the existence of an endogeneity issue involving violence, beliefs, and labor force participation decisions. Consequently, we will use instrumental variables' maximum likelihood estimation to address this problem. This means that the timing of the labor force participation decision is taken and when violence occurs matters, because one could influence the other. Since our data set can not account for the order between violence occurrence and LFP decisions, the probit model approach is insufficient. Moreover, we do not know how stable beliefs are over time, and working could affect them if they are not fixed already at 15 years old.

On the one hand, deciding to work increases the likelihood of receiving economic violence, as part of it occurs at the workplace or over women's earnings. For example, the ENDIREH survey accounts for receiving discrimination when pregnant or having fewer opportunities than men at the workplace. On the other, if women receive economic violence, they might be deterred from working in the first place (or encouraged to do it in order to escape their violent situation).

Furthermore, labor market participation could augment exposure to sexual violence at work or during transportation. Conversely, being the subject of sexual violence could similarly affect economic violence, and it could have a positive or negative relationship with the decision to work.

Finally, due to the fact that women who work live in a richer environment than those who do not (and have a varied array of experiences), having worked can change women's beliefs. Additionally, assumptions about gender roles can motivate or dishearten women to work, as the theoretical model we explained beforehand posited.

In such a way, the interest of this investigation is to isolate the causal effect of gender beliefs on women's decision to work, so we need the IV approach to go a step further than finding only a correlation. We propose the following state-level instrumental variables: 2021's informality percentage and education gap, 2020's catholic men percentage, and 2016's beliefs about gender roles. In what follows, we will discuss the relevance of these instruments and their validity.

It is important to note that our instruments are variables that affect gender role beliefs: if they directly affect women's beliefs, they are used for our progressiveness index. If they affect men's understanding of gender prescriptions, and because we assume they can materialize via violence, they can be used as instruments for some type of violence.

We stress that people do not have instant and clear knowledge of the predominant gender role prescriptions in their society; nonetheless, they seek to act in consonance with them. Thence, they need to read signals from their environment, and they try to align, to a certain degree, their own beliefs with the social norm. It has been documented that there are peer effects on beliefs and behavior because others' ways of acting or information about their beliefs signal us about the

current norms. It has also been found that the closer someone is to us and the more similar their situation to ours, the easier it is for them to influence our behavior. Seeking the approval of our peers and being publicly showcased in front of them can exert pressure for change. Although, instead of publicly shaming, the effect is more pronounced if there is an opportunity for our behavior to be publicly praised. Highlighting a particular behavior's growing popularity can also prompt a behavior change (Milkman, 2021). Those are the reasons why our instruments are given at the state or at the municipality level.

Even if we disagree with *what we think* is the current social norm, we can be pressured to act according to it. Ursztyn et al. (2020) showed that we could have a very misaligned understanding of the current social norms: in their study, men think the norm is more sexist than it is, so they act in more traditionalist ways even if their views are progressive.

If we take this argument further, we have evolved to think socially and conform to our groups. It has been posited that our default, the type of thoughts we have when we are not actively thinking, is about improving our social aspects. This would mean that it is fundamental for our lives. Thus, Lieberman (2013) argues that three notable networks allowed the evolution from vertebrates to mammals, subsequently to primates, and eventually to human beings. The first, following the evolutionary order in which they appeared, is connection, the ability to feel social pleasure and pain like physical pain. In this way, our well-being will always be intrinsically linked to social well-being. Next is mind-reading, which is the ability present in primates to understand the actions and thoughts of others as separate from their own. This also enables interaction to develop more effectively, facilitating group cohesion. Lastly, there is harmonization, where the self is understood not so much as a barrier to the environment but rather as the means through which the beliefs and values of others impact one's own.

Having emphasized that state-level instruments matter because people seek to conform to the norms of their environment, and these instruments are some of their indicators, we argue why each effectively impacts women's or men's gender beliefs. Some are important for more than one endogenous variable, but most only significantly impact one or two of them.

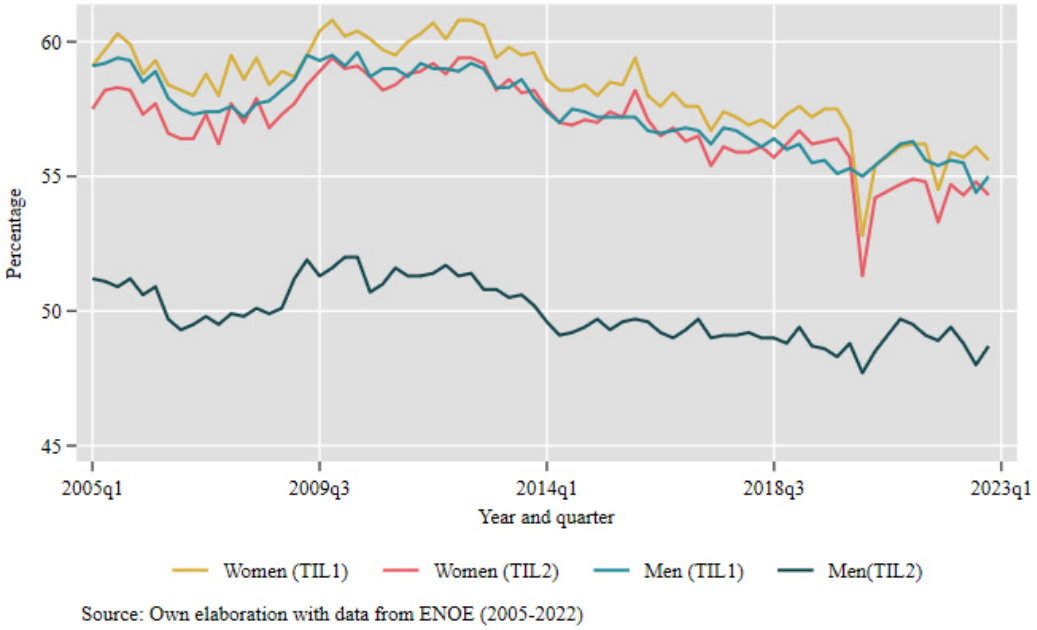
Since economic violence accounts for women having fewer labor opportunities than men because of their gender, it should be affected by some measures of this discrimination. One direct indicator would be to use the wage gap, but in Mexico's case, an underreporting issue could bias this estimation (Campos Vázquez, 2013).[4] In its place, the education gap and informality rate are proposed as instruments for economic violence.

If we examine all jobs, the employed female population is more vulnerable than men, as women tend to work slightly more on informality conditions. Not considering the agricultural sector, the gap in vulnerability becomes more pronounced for women, as figure 3.7 shows. Hence, a

[4]In fact, the state-level wage gap was proposed as an instrument but turned out to be weak.

higher informality rate reflects an increased vulnerability of women's labor conditions. Although all informal workers face the risk of violence, women are particularly vulnerable to it due to the intersection of their gender and unsafe working conditions. This risk could manifest as any type of violence, in consonance with the sector and place of work, including sexual and economic violence. Nonetheless, the standard view implies that an increase in informality should have a positive relationship with violence, as women's vulnerability increases the likelihood of receiving violence. This could happen because women in this setting compete for more scarce resources with men, do not have laws under which they can seek refuge, or have a more isolated workplace (for example, in domestic work) that facilitates violence occurrences (WIEGO, 2018).

Figure 3.7.: Informality evolution in Mexico from 2005 to 2022



Source: Own elaboration with data from ENOE (2005-2022)

Note: TIL1 (Tasa de Informalidad Laboral 1) is the proportion of the employed population that includes the non-duplicated sum of workers who are vulnerable due to the nature of the economic unit they work for, along with those whose employment relationship or dependency is not recognized by their employer. TIL2 (Tasa de Informalidad Laboral 2) calculates the same rate but excludes the agricultural employed population.

In contrast, our identity model framework points to a negative effect: the male population is less threatened by women's decision to participate in the labor market. Therefore, increasing the state informality rate should decrease the instances of all types of violence, as it rebalances power between genders with no necessity for men to incur the cost of exerting violence.

This rate should affect female labor force participation via the lack of opportunities the state labor market offers: lower wages for women, no employment benefits (such as protection, social security, and healthcare), fewer opportunities for human capital development, and, most importantly, worse

hierarchical positions in relation to men. Men predominate at the top of the employment pyramid, representing employers (and the formal sector). At the same time, women are predominately found in the lowest category, including manufacture or domestic workers, which are frequently informal. In fact, from 2000 to 2009, around 35% of women's informal employment was concentrated around informal jobs in formal firms, followed by 25% in informal business and 15% in domestic work (Cardero & Espinosa, 2010), all of which tell not only of their vulnerability but of the visibility it acquires for men. Therefore, even if the analyzed female has not ever worked, state-level women's informality percentage is a sign for men that the power balance inclines for them and, according to our framework, of a feebler loss in utility they have to repair. This implies that the mechanisms through which informality rates affect labor force participation decisions pass through violence, which could be enforced as economic or sexual violence.

A similar case could be made for the education gap: an increased difference in years of education gives the signal that women are in a more precarious situation than men. The usual logic is that access to education is crucial for protecting and empowering girls. Education acts as a shield, reducing vulnerability and fostering resilience in both girls and their communities. Conversely, when girls are denied education, their protection diminishes, leading to increased risks and reinforcing gender inequalities. (Inter-agency Network for Education in Emergencies (INEE), 2021). The reason is that increasing education equips women with the confidence, knowledge, and social connections necessary to challenge gender inequality and power dynamics linked to violence. Notably, both educated women (secondary level or higher) and educated men (secondary level or higher) are less prone to experiencing or perpetrating violence compared to their non-educated or primary-educated counterparts (Plan International, 2012).

Our gender identity framework, on the contrary, allows for a negative relationship. A greater aggregated education gap could imply that less economic violence is needed to reinstate the economic superiority of men. Kahneman and Tversky (1979) had shown already that people value the change from their reference point, not in absolute quantities. Therefore, although higher education levels could explain less violence against a particular woman, what matters for the social norm and men's gender identity being threatened or not is the gap.

On the other hand, observable characteristics that could affect both these instruments and the labor force participation decision are already considered in our vector of controls. This means that the state-level informality rate is determined by women's and men's characteristics in the labor market. We stated that there is a measurement error in the wage gap, so we can control for men's characteristics when we include the education gap per state.

Consequently, the education gap and informality rate are proposed as the most relevant instruments for economic violence. It is essential to mention that they are relevant separately, but jointly the effect of one could overshadow the effect of the other. Both instruments affect mainly

through economic violence because their mechanisms are comprised in the definition of this type of violence. They can have some effect on sexual violence as men also use this type of violence to reinstate their identity and the utility derived from it. However, as we will explain, there is a stronger predictor of sexual violence.

Catholicism percentage per state is the most relevant instrument we propose for sexual violence. It does not directly affect labor force participation decisions, as it is not stated in its prescriptions that women should not work, nor are catholic women impeded or encouraged to work by labor market norms just because of their religion. Nevertheless, it imposes various gender roles, in particular regarding women's chastity, making sexual violence one of the most effective threats to deter women from working. In consequence, exerting sexual violence serves the purpose of rebalancing men's utility because it acts against one of the most defining features of women according to this religion.

The interplay between religion and gender roles has been extensively documented across various sources. A foundational principle observed within religious communities is the inherent subordination and inferior status assigned to women in relation to men. This is exemplified, for instance, in Catholicism, where women are restricted from pursuing positions in the clergy and are instead limited to roles as reverend sisters or nuns. Consequently, from a sociological standpoint, it has been argued that such practices serve to reinforce patriarchal systems. The relegation of women to a lesser status is justified as a norm rooted in religious scriptures, rendering it resistant to critical examination. Remarkably, the Attoh (2017) reveals that respondents, accepting this discriminatory practice as the prevailing order, perceive no fault in excluding women from the priesthood.

Even more, it has been found that Christian nationalism strongly correlates with traditionalist gender ideologies, even when considering various political and religious factors. This relationship maintains across different religious traditions, including more gender-egalitarian groups and the unaffiliated (Whitehead & Perry, 2019).

Other strands in the literature have relied on a more nuanced understanding of sexism to model its connection with religion. A widely used conceptualization is the one proposed by Glick et al. (2000), the Ambivalent Sexism Inventory (ASI). It posits that there are two components to gender beliefs: hostile sexism and benevolent sexism. The first one is open antagonism, in which women deserve a lesser status than men (because they are a threat and seek to control men via sexuality or feminism). In contrast, the second one entails apparently positive but patronizing attitudes: women are weaker, purer, and need men's protection. Benevolent sexism is compounded by gender differentiation, in which women have nurturing comparative advantages in relation to men, heterosexual intimacy, according to which men need a heterosexual romantic relationship to complete their selves; and protective paternalism, which entails that men should be the breadwinners and protectors for women.

In this framework, Glick et al. (2002) found that Catholicism predicted benevolent sexism in

Spain and hypothesized that participating in church activities reinforced these traditional gender ideas. This connection was not supported in the case of hostile sexism. Furthermore, McFarland (1989) identified that for the median religious position (*i.e.* controlling for fundamentalism), sexism is predicted by religion only in the case of men, but it is not significant for women. This result was replicated by Maltby et al. (2010): there is a positive relationship between subscribing to the core views of Christianity and having more sexist views only in men's cases. They examine mainly the effect of the protective paternalism component of sexism.

It is crucial to point out that the gender role expectations associated with religiosity have an impact on labor-related decisions. As highlighted by Ammons and Edgell (2007), individuals with religious beliefs face distinct trade-offs between family and work responsibilities, and this influence is further moderated by gender. Moreover, a separate study employing the Religious Tendency Scale discovered a robust association between religious inclination—assessing the prominence of religion in participants' lives—and unfavorable attitudes towards women's work roles (Sevim, 2006).

Having established the connection between Catholicism and the perpetuation of male sexism through gender role beliefs, a crucial question arises: How do these religiously enforced beliefs transform into acts of violence?

In the context of domestic violence, research has examined the role of religious teachings in supporting and perpetuating abusive marriages. It has identified several reasons for women permitting the perpetuation of abuse within these relationships. These reasons are often associated with values deeply rooted in religious teachings, including beliefs in male leadership, expectations of female submission to their husbands, the sanctity of marriage, and the notion that enduring suffering contributes to the virtue of forgiveness. The aforementioned values can reinforce power imbalances and justify abusive behaviors, making it challenging for women to break free from abusive situations (Westenberg, 2017).

Abusers often exploit religious teachings of male leadership and female submission to rationalize their abusive behavior. They interpret scriptures in a way that assigns disproportionate power to husbands, emphasizing said teachings of male leadership and female submission. These interpretations serve as a means to establish and justify the exertion of power and control, effectively keeping women in subservient roles. By distorting religious teachings, abusers reinforce and perpetuate oppressive dynamics within relationships, further enabling their abusive conduct (Levitt & Ware, 2006).

According to Berkel et al. (2004), in their study on white male college students, religious affiliation alone did not substantially impact attitudes towards violence against women or sympathy for battered women. However, various facets of religious orientation and spirituality emerged as noteworthy predictors. Intrinsic religious orientation, characterized by a profound and central role

of religion in one's life, exhibited a negative association with attitudes endorsing violence against women. Conversely, personal extrinsic religious orientation, which harnesses religion for personal gain or external motives, demonstrated a positive association with attitudes supporting violence against women. These findings suggest that individuals driven by a more internalized and personal religious motivation were less inclined to endorse violence against women. In contrast, those utilizing religion for personal gains were more likely to harbor such attitudes.

Thus far, we have not delved into the underlying reasons why this form of violence often manifests as sexual violence. However, this is intricately connected to the public aspect of religiosity, as indicated by the aforementioned extrinsic religious orientation discussion. By adopting an honor-shame framework, we can deepen our analysis and better understand the phenomenon at hand. This will serve as well to connect with violence perpetrated by other males, as our analysis is not restricted to intimate partner violence received by women.

The concept of honor, as a symbolic attribute, has been proposed as an alternative explanation for certain forms of violence against women. It encompasses notions of integrity and moral virtue that individuals use to assess their own worth, emphasizing the need for public recognition of this value. Concurrently, the concept of shame establishes boundaries and delineates transgressions against the prescribed norms upheld by a community. Consequently, as Gill (2014) points out, the maintenance, reaffirmation, and defense of honor become imperative, while avoiding shame is deemed essential.

Within this context, honor-shame dynamics often manifest in regulating female sexuality to align with societal norms. To this end, men are authorized to resort to aggressiveness. Among the array of actions regarded as dishonorable, the most prominent revolve around perceived transgressions against female chastity and fidelity, even in cases where such violations are a consequence of rape or sexual assault. The reason is that a woman's sexual virtue is deeply intertwined with her family's symbolic standing within the community (Gill, 2014). Therefore, extrinsic religiosity can be perceived as a means to uphold honor, and for men who adhere to this less internalized understanding of religion, resorting to violence against women who bring shame upon their principles may be deemed justifiable.

Indeed, within the broader examination of honor-based violence, it is commonly acknowledged that girls and young women are the primary victims of such acts, often perpetrated by their own family members or individuals connected through marriage. However, as emphasized by Tombs (2002) in the context of Latin America, the duty to restore honor and punish women for perceived transgressions is not limited solely to closely related males. Even individuals not directly linked by blood ties can assume this responsibility as a means of constructing their own honor, safeguarding the honor of their families, and upholding the prevailing social norms. This dynamic has been explored concerning more extreme instances, such as state-sanctioned torture during the 1970s and

1980s in military regimes.

According to Tombs (2002), men often define their identities based on machista values, where exerting power without restraint allows them to perceive themselves as triumphant. This perception of masculinity is reinforced through an active and dominant role in the realm of sexuality. Importantly, this need for reaffirmation of masculine identity is primarily directed towards themselves and other men. As a result, men strive to attain honor through the conquest of women, while women become objects of shame. Within Latin American machista culture, female identity is further reinforced as one of passivity through the experience of sexual violence, as the goal of such violence is to assert dominance. Consequently, when men's honor is challenged, they are socially humiliated, particularly in the presence of other men, and may experience a loss of status unless they take steps to restore their sense of identity.

Finally, the gender identity beliefs at the state level in 2016 should not directly impact women's decisions regarding labor force participation today, as women currently make choices based on their own beliefs and the discriminatory practices prevalent in the labor market. However, past beliefs may have influenced the present-day attitudes of women, as individuals are shaped by the social context in which they are immersed. We described this phenomenon when we argued in favor of interpreting state-level instruments as peer effects. Even more, changes in state beliefs are expected to occur gradually over time, as discussed in section 3.2. On the other hand, these historical beliefs undoubtedly shaped the discrimination experienced in 2021.

3.3.3. IV model on the sample of working-age women

This discussion of the relevance and validity of these instruments will be confirmed by the proper tests presented alongside IV probit results. At first instance, when we run the model without additional controls but being mindful of endogeneity , we find that only two of our three endogenous variables significantly affect the decision to participate in the labor market (table 3.5, column 1). The most considerable effect comes from receiving economic violence, and we have a positive relationship. It is followed by the coefficient on the progressiveness index, which means that more progressive gender identity beliefs could be associated with the decision to work. Finally, close in magnitude to the coefficient of progressiveness, receiving sexual violence appears to decrease participation, but this is not significant.

However, upon incorporating the control variables $\mathbf{X}$, the previously observed effects of sexual violence and beliefs diminish, as demonstrated in Table 3.7. While the coefficient for economic violence retains its magnitude and direction, the coefficients for sexual violence and sexism converge to zero. Notably, these findings remained robust when employing alternative instruments such as municipality-level progressiveness indexes and education gap combinations. Similarly, using

Table 3.5.: Female Labor Force participation on progressiveness, economic and sexual violence.

VARIABLES	(1) Y_i	(2) V_{Eco}	(3) V_{Sex}	(4) Bf
Economic violence index	1.1030***			
	(0.0584)			
Sexual violence index	-0.2820			
	(0.1721)			
Progressiveness index	0.3965**			
	(0.1570)			
% Informality/Employed st, level (2021)		-0.0036***	-0.0082***	-0.0107***
		(0.0003)	(0.0004)	(0.0005)
Education gap st, level (2021)		0.0683*	0.5045***	0.4435***
		(0.0363)	(0.0386)	(0.0363)
% Catholic men st, level (2020)		0.4872***	0.9399***	0.6642***
		(0.1023)	(0.0708)	(0.0738)
Progressiveness index (st. level), econ. v.		0.0098	0.1521*	0.8515***
		(0.0612)	(0.0815)	(0.0924)
Progressiveness index (st. level), general		-0.0878	-0.1232	-0.4839***
		(0.0627)	(0.0824)	(0.0848)
Observations	95,428			

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

different indicators such as the percentage of employed individuals or the percentage of economically active population yielded consistent results. Furthermore, this outcome persisted even when considering variables such as the percentage of Catholic women and the percentage of Catholics at the state level. We present the results of some of these alternative tests in table D.2

Table 3.6 presents the results of various tests used to assess the relevance, exogeneity, strength, and exclusion restriction of the instrumental variables employed in the model. These tests provide insights into the quality and validity of the instruments.

We first discuss the relevance of our instruments. After conducting the Wald test, we obtained a statistic of 34.85 and a p-value of 0.00. Therefore we reject the null hypothesis that the coefficients of the instruments on the predicted endogenous variables are jointly zero. This result is further enhanced when we performed The Cragg-Wald test, designed to evaluate the strength of the instruments. It yielded a significant test statistic of 21.74 (p-value ¡ 0.05). This confirms the individual instruments' goodness and their relevance for estimating the causal relationship. Hence, we are working with strong instruments. The Anderson canonical correlation LM statistic tests the underidentification of the model and yields a test statistic of 86.91 (p-value ¡ 0.05), indicating that the model is identified.

To further validate the instruments, the Anderson Rubin F test is performed, resulting in a significant test statistic of 57.35 (p-value ¡ 0.05). This test examines the joint significance of the endogenous regressors in the main equation, supporting the rejection of the null hypothesis that the coefficients are zero and the overidentifying restrictions are valid. Lastly, the Sargan test evaluates the overall validity of the instrumental variables, assessing their correlation with the error term and the appropriateness of excluding any instruments from the estimated equation. The test statistic obtained is .63, with a p-value of 0.4263. These results indicate that our instruments are exogenous and effectively address endogeneity. Furthermore, they suggest that the exclusion restriction holds, and we do not find evidence to support the hypothesis of overidentifying restrictions being violated.

Upon examining the regression results presented in table col. 2-3-4 of 3.7, as expected given the tests, we find compelling evidence of the relevance of our instruments, as they demonstrate high levels of statistical significance in predicting the endogenous variables. The obtained F-statistic values further support the strength and significance of the instrumental variables as a collective group, as they effectively explain a substantial portion of the variation observed in the endogenous variable. This suggests that the instruments successfully capture the variability in the explanatory variable that is independent of the error term. Although the Partial R-squared and Shea Partial R-squared are not notably high, these findings indicate that the determination of violence and beliefs is influenced by multiple sources of variation that extend beyond the variables considered in our analysis. Hence, our model only captures a fraction of the overall variation, highlighting the complex nature of the phenomenon under study.

In summary, the results of these tests collectively confirm the quality and validity of the instrumental variables used in the analysis. These findings enhance the credibility of the estimated coefficients and contribute to the reliability of the instrumental variables regression model.

Table 3.6.: Tests of model in sample

Wald	P-val	Cragg-Wald	Anderson-R F	P-val	LM	P-val	Sargan	P-val
34.85	0.0000	21.74	57.35	0.00	86.91	0.0000	0.63	0.4263

The results were maintained when using only economic violence as our treatment variable, as table 3.8 depicts. Within this model, we computed the marginal effects for each variable. We find that if women receive one standard deviation more of violence over the mean occurrence of violence, they increase their probability of ever working by 1.09 percentage points. We also obtained that the corresponding 95% confidence interval is $(1.07, 1.12)$. To provide a point of comparison, it is worth noting that having one more level of educational attainment elevates the likelihood of ever working by a mere 0.07%. As previously established, the standard deviation for the severity of economic violence stands at 1.6, with a mean value of 0.73. Consequently, we can deduce that each one-and-a-half instance of economic violence over the mean occurrence translates approximately into a one-percentage-point increase in the probability of ever working.

Contrasting with the probit model, we can conclude that when the effect of receiving economic violence is accounted for, it is so strong that sexual violence and gender identity beliefs are negligible.

Table 3.7.: Female LFP IV probit on progressiveness, economic and sexual violence.

VARIABLES	(1) Y_i	(2) V_{Eco}	(3) V_{Sex}	(4) Bf
Economic violence index	1.0899***			
	(0.0459)			
Sexual violence index	-0.0510			
	(0.1292)			
Progressiveness index	-0.0999			
	(0.1197)			
Age	0.0639***	0.0355***	-0.0031	0.0104***
	(0.0142)	(0.0019)	(0.0020)	(0.0020)
Age^2	-0.0007***	-0.0005***	-0.0001***	-0.0003***
	(0.0002)	(0.0000)	(0.0000)	(0.0000)
Educational attainment	0.1287***	0.0104**	0.1519***	0.2822***
	(0.0244)	(0.0051)	(0.0051)	(0.0046)
Indigenous	-0.0199	0.0606***	-0.0153	-0.0642***
	(0.0179)	(0.0115)	(0.0110)	(0.0110)
Wealth index	0.0215***	-0.0001	-0.0113**	0.0109**
	(0.0066)	(0.0050)	(0.0055)	(0.0046)
Urban	0.0175	0.1188***	0.1646***	0.1746***
	(0.0231)	(0.0125)	(0.0132)	(0.0145)
Children	-0.0922***	0.0572***	0.0113***	-0.0441***
	(0.0057)	(0.0042)	(0.0031)	(0.0039)
IRS	-0.0455**	-0.0239***	-0.0600***	-0.1539***
	(0.0178)	(0.0089)	(0.0095)	(0.0170)
% Informality/Employed st, level (2021)		-0.0020***	-0.0023***	0.0014**
		(0.0004)	(0.0005)	(0.0005)
Education gap st, level (2021)		0.0556*	0.3342***	0.1985***
		(0.0336)	(0.0404)	(0.0331)
% Catholic men st, level (2020)		0.5039***	0.7519***	0.3899***
		(0.0641)	(0.0647)	(0.0668)
Progressiveness index (st. level), econ. v.		0.2002***	-0.0621	0.4886***
		(0.0648)	(0.0747)	(0.0723)
Progressiveness index (st. level), gender		-0.1890***	0.0978	-0.1981***
		(0.0641)	(0.0842)	(0.0741)
Constant	-0.8508***	-1.0822***	-0.6122***	-0.9124***
	(0.2281)	(0.0543)	(0.0621)	(0.0635)
Observations	95,428			
Shea Partial R2		0.0013	0.0023	0.0027
Partial R2		0.0018	0.0055	0.0060
Partial F-statistic		34.64	104.66	115.93
P-value		0.0000	0.0000	0.0000

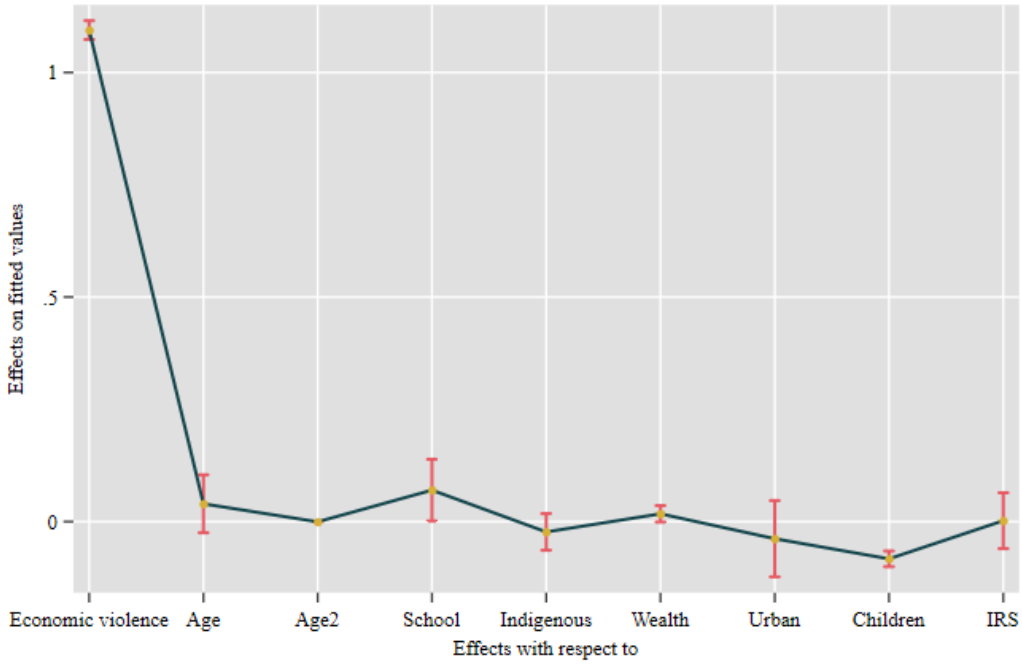
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.8.: Female Labor Force participation IV probit on economic violence.

	(1)	(2)	(3)
VARIABLES	Y_i	V_{Eco}	
Economic violence index	1.0944***		
	(0.0107)		
Age	0.0397	0.0353***	
	(0.0329)	(0.0019)	
Age^2	-0.0004	-0.0005***	
	(0.0004)	(0.0000)	
Educational attainment	0.0701**	0.0107**	
	(0.0351)	(0.0051)	
Indigenous	-0.0229	0.0576***	
	(0.0208)	(0.0115)	
Wealth index	0.0174*	-0.0011	
	(0.0094)	(0.0047)	
Urban	-0.0380	0.1264***	
	(0.0433)	(0.0122)	
Children	-0.0828***	0.0570***	
	(0.0089)	(0.0041)	
IRS	0.0021	-0.0678***	
	(0.0317)	(0.0072)	
Education gap st, level (2021)		-0.0694**	
		(0.0284)	
Constant	-0.3860	-0.8735***	
	(0.5628)	(0.0314)	
Observations	95,428		
Shea Partial R2		0.0002	
Partial R2		0.0002	
Partial F-statistic		14.44	
P-value		0.0001	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 3.8.: Average marginal effects on FLFP with 95% CIs in complete sample



3.3.4. IV model on the subsample of women who have never received economic violence

To examine the effects of sexual violence and gender role beliefs in greater depth, we conducted an analysis focusing on women who have not experienced economic violence. This represents 72 % of the population of working-age women, as we saw in table 3.2 This subsample allows us to isolate the specific impact of sexual violence on women's outcomes. As mentioned in section 3.2.2, the subsample analysis revealed a notable difference in the intensity of sexual violence compared to the overall sample. Specifically, women who have experienced sexual violence in this subsample have encountered fewer instances of it compared to the broader sample. On the other hand, the analysis of demographic characteristics in this subsample did not reveal significant differences compared to the overall sample. The demographic profiles of women who have not experienced economic violence remained relatively consistent, indicating that factors such as age, educational attainment, residence, indigenous group affiliation, wealth, children, and IRS status were similar between the two groups. These findings suggest that economic violence does not significantly impact the demographic composition of this particular subsample.

First, we ensured the validity of our instruments and performed various tests to assess their relevance, exogeneity, strength, and exclusion restriction. The results, presented in table 3.9,

confirm the validity of our instruments. Additionally, the high partial F-statistics provide further support for the credibility of the coefficients and the significance of our model.

Table 3.9.: Tests of model in first subsample

Wald	P-val	Cragg-Wald	Anderson-R F	P-val	LM	P-val	Sargan	P-val
14.92	0.0000	12.74	42.45	0.0000	38.21	0.0000	1.43	0.2323

Moving on to the estimation results, we analyzed the model with and without considering sexism as a factor. In table 3.10, we present the results when sexism is included in the model, while in table 3.11, we present the results without considering sexism. The coefficient on sexual violence is stable across both specifications.

Our findings reveal that when sexual violence is taken into account, the importance of women's own progressiveness is null. Furthermore, the effect of sexual violence is slightly stronger than that of economic violence. Through the calculation of marginal effects on female labor force participation, we found that each standard deviation (3.00) of sexual violence above the mean occurrence (1.88) increases the likelihood of ever working by 1.36%. This effect and those of the other variables considered in the analysis are depicted in figure 3.9.

Figure 3.9.: Average marginal effects on FLFP with 95% CIs in the first subsample

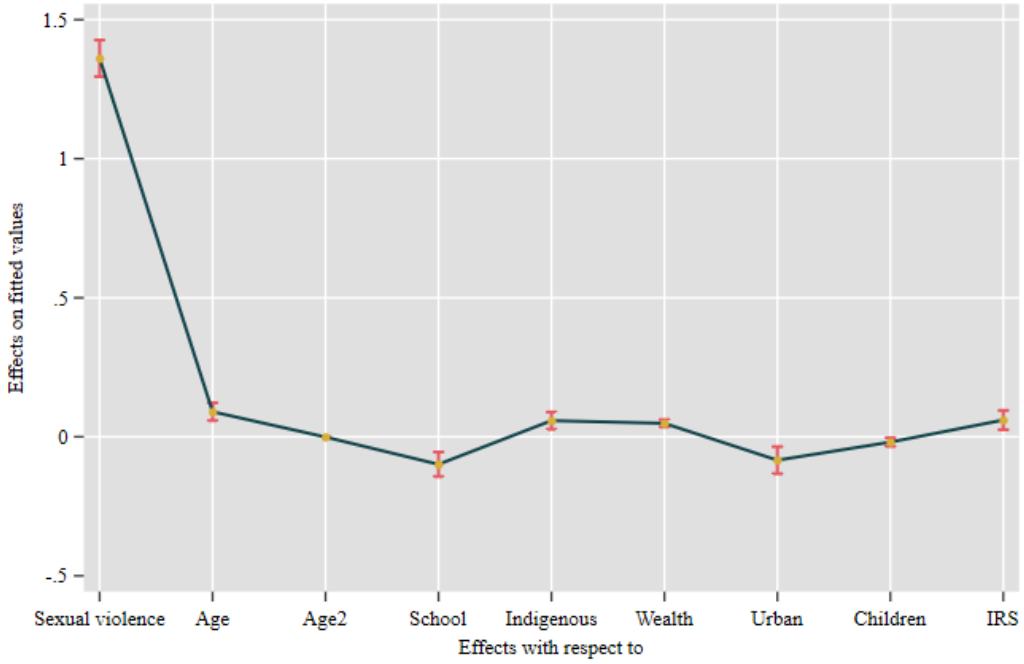


Table 3.10.: Female Labor Force participation IV probit on progressiveness and sexual violence.

VARIABLES	(1) Y_i	(2) V_{Sex}	(3) Bf
Sexual violence index	1.3069***		
	(0.0464)		
Progressiveness index	-0.0932		
	(0.1702)		
Age	0.1055***	-0.0086***	0.0081***
	(0.0200)	(0.0019)	(0.0024)
Age^2	-0.0011***	0.0000	-0.0002***
	(0.0002)	(0.0000)	(0.0000)
Educational attainment	-0.0565	0.1334***	0.2721***
	(0.0376)	(0.0047)	(0.0056)
Indigenous	0.0545**	-0.0177*	-0.0744***
	(0.0242)	(0.0100)	(0.0130)
Wealth index	0.0517***	-0.0264***	-0.0025
	(0.0082)	(0.0048)	(0.0053)
Urban	-0.0395	0.1170***	0.1943***
	(0.0305)	(0.0117)	(0.0178)
Children	-0.0275***	-0.0098***	-0.0503***
	(0.0085)	(0.0026)	(0.0049)
IRS	0.0366	-0.0584***	-0.1576***
	(0.0273)	(0.0098)	(0.0185)
% Informality/Employed		-0.0012***	0.0010*
		(0.0004)	(0.0006)
% Catholic men st, level (2020)		0.2564***	0.3405***
		(0.0437)	(0.0639)
Progressiveness index (mun level), sexual v.		0.0405**	0.1855***
		(0.0186)	(0.0334)
Constant	-1.3756***	-0.3422***	-0.8168***
	(0.3371)	(0.0506)	(0.0712)
Observations	63,897		
Shea Partial R2		0.0007	0.0020
Partial R2		0.0011	0.0033
Partial F-statistic		23	70.2
P-value		0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3.11.: Female Labor Force participation IV probit on sexual violence.

	(1)	(2)	(3)
VARIABLES	Y_i	V_{Sex}	
Sexual violence index	1.3609***		
	(0.0334)		
Age	0.0900***	-0.0089***	
	(0.0163)	(0.0018)	
Age^2	-0.0009***	0.0000*	
	(0.0002)	(0.0000)	
Educational attainment	-0.0990***	0.1332***	
	(0.0225)	(0.0045)	
Indigenous	0.0581***	-0.0203**	
	(0.0157)	(0.0093)	
Wealth index	0.0484***	-0.0241***	
	(0.0067)	(0.0045)	
Urban	-0.0841***	0.1252***	
	(0.0248)	(0.0108)	
Children	-0.0191**	-0.0091***	
	(0.0078)	(0.0023)	
IRS	0.0603***	-0.0821***	
	(0.0176)	(0.0067)	
% Catholic men st, level (2020)		0.2033***	
		(0.0429)	
Constant	-1.0342***	-0.3967***	
	(0.3018)	(0.0466)	
Observations	68,185		
Shea Partial R2		0.0005	
Partial R2		0.0005	
Partial F-statistic		36.38	
P-value		0.0000	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.3.5. IV model on the subsample of women who have never received either economic or sexual violence

Upon further restricting our sample to women who have not experienced economic or sexual violence, we represent around 40% of the original sample and 55% of the first subsample. In this subsample, we observed a significant increase in sexism compared to all working-age women, as discussed in section 3.2.3. The source of this sexism is the exclusion of women who have received sexual violence. This conclusion is supported by examining the coefficients and significance of the t-tests in tables C.4 and C.5. Specifically, we found that the difference in mean sexism is not statistically significant between women who have suffered economic violence and those who have not, and it is close to the overall mean level of sexism. However, women who have never experienced sexual violence display a higher level of sexism than the original sample, regardless of their work status.

Table D.3 shows that the coefficients are reasonably stable for relevant instrumental variables. As table D.4 depicts, we also found that our instruments are relevant for most of the models, and they satisfy exogeneity and correctly identify our variables.

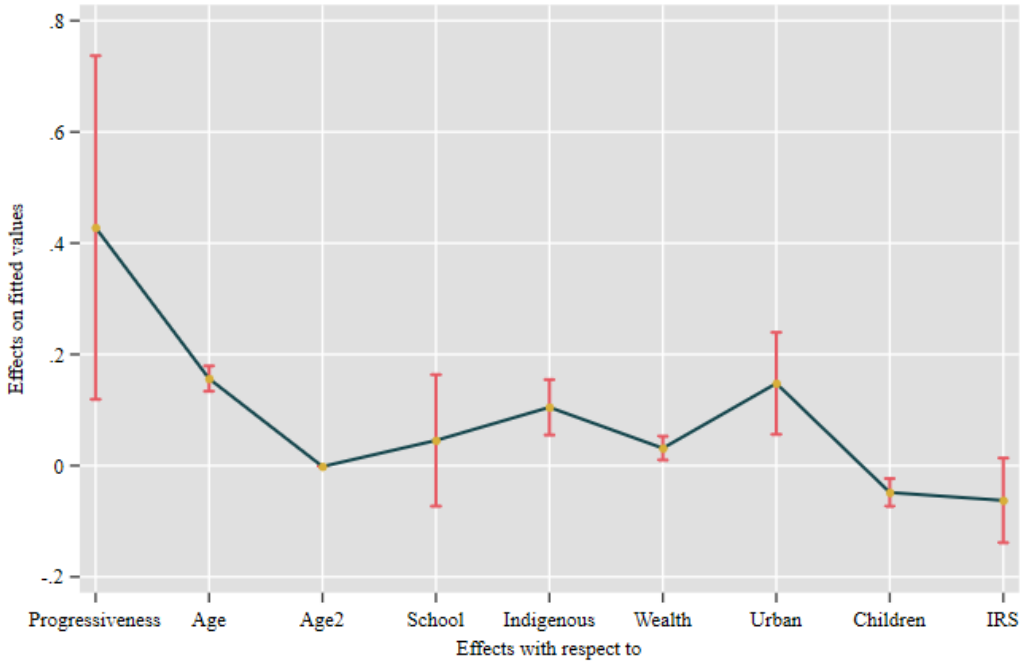
As figure 3.10 depicts, the effect is that having one more unit of progressive beliefs translates into an increment of 0.43 percentage points in the likelihood of ever working. The confidence interval is bigger for these effects, going from 0.12 to 0.74. Nonetheless, compared to having one less child, the effect is more considerable.

Table 3.12.: Female Labor Force participation IV probit on progressiveness index

VARIABLES	(1) Y_i	(2) Bf
Progressiveness index	0.4280***	
	(0.1576)	
Age	0.1564***	0.0100***
	(0.0116)	(0.0032)
Age^2	-0.0016***	-0.0003***
	(0.0001)	(0.0000)
Educational attainment	0.0453	0.3106***
	(0.0603)	(0.0073)
Indigenous	0.1048***	-0.0583***
	(0.0254)	(0.0183)
Wealth index	0.0313***	-0.0170**
	(0.0109)	(0.0076)
Urban	0.1478***	0.1568***
	(0.0468)	(0.0210)
Children	-0.0483***	-0.0438***
	(0.0127)	(0.0055)
IRS	-0.0626	-0.1368***
	(0.0388)	(0.0183)
Progressiveness index (st. level), econ. v.		0.4375***
		(0.0599)
Constant	-2.6662***	-0.6466***
	(0.2918)	(0.0618)
Observations	40,087	
Shea Partial R2		0.0043
Partial R2		0.0043
Partial F-statistic		175.00
P-value		0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 3.10.: Average marginal effects on FLFP with 95% CIs in the second subsample



3.3.6. IV model on the sample considering LFP in last 12m

We now turn our attention to examining the labor force participation decision within the past 12 months. To address some degree of the potential issue of endogeneity, we focus specifically on women who took part recently in the workforce. In other words, women who participated in the labor market in the year prior to the survey. By doing so, we aim to mitigate the impact of their experiences of violence and their beliefs, as these are more likely to have occurred prior to their decision to engage in labor force participation.

Table 3.13 confirms that we are working with valid instruments for our analysis. Turning our attention to the regression results in table 3.12, we find that experiencing instances of economic violence has a similar magnitude of effect as when we considered the decision ever to work. However, in this analysis of labor force participation within the past 12 months, we observe the significance of gender role beliefs, as indicated by the progressiveness index. These beliefs significantly and negatively affect labor force participation, suggesting that more traditional gender roles are associated with a lower likelihood of women participating in the workforce. Furthermore, sexual violence has a negative effect and similar in importance as beliefs.

Figure 3.11 visually depicts the effects of economic violence and the progressiveness index on the likelihood of working in the last year. Consistent with our previous findings, economic violence has

Table 3.13.: Tests of Model in Sample

Wald	P-val	Cragg-Wald	Anderson-R F	P-val	LM	P-val	Sargan	P-val
30.89	0.0000	23.85	34.55	0.0000	119.12	0.0000	4.25	0.1196

a positive impact on labor force participation and of the same magnitude, while the progressiveness index and sexual violence are associated with a decrease in the likelihood of working.

Figure 3.11.: Average marginal effects on FLFP (12m) with 95% CIs in complete sample

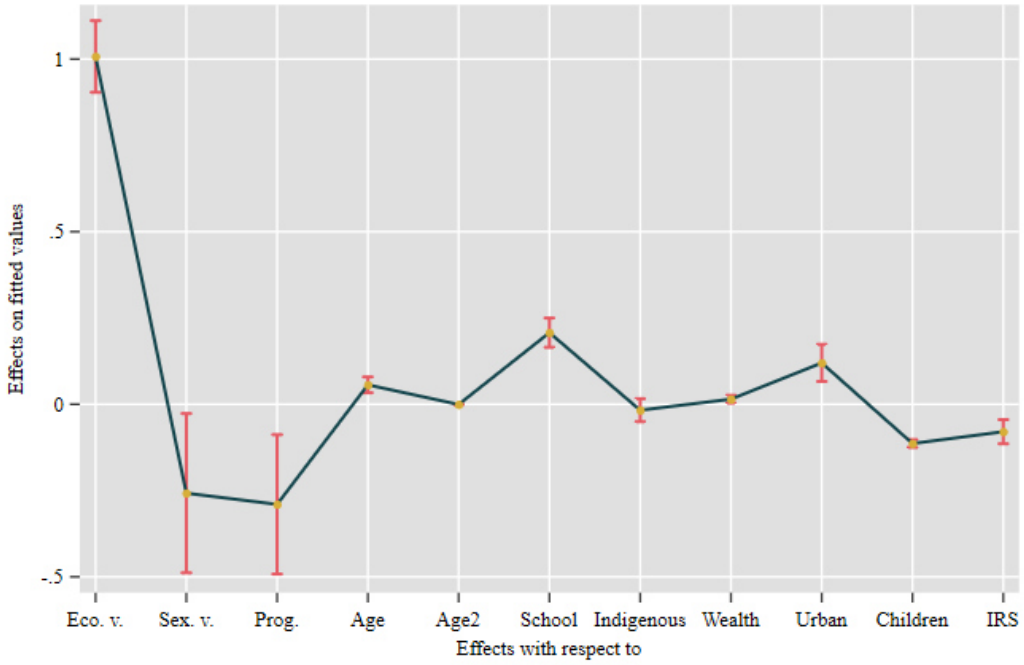


Table 3.14.: Female LFP (12m) IV probit on progressiveness, economic and sexual violence.

VARIABLES	(1) Y_i	(2) V_{Eco}	(3) V_{Sex}	(4) Bf
Economic violence index	1.0074***			
	(0.0530)			
Sexual violence index	-0.2577**			
	(0.1177)			
Progressiveness index	-0.2900***			
	(0.1030)			
Age	0.0562***	0.0355***	-0.0031	0.0104***
	(0.0117)	(0.0019)	(0.0020)	(0.0020)
Age^2	-0.0007***	-0.0005***	-0.0001***	-0.0003***
	(0.0001)	(0.0000)	(0.0000)	(0.0000)
Educational attainment	0.2073***	0.0105**	0.1519***	0.2822***
	(0.0216)	(0.0051)	(0.0051)	(0.0046)
Indigenous	-0.0172	0.0598***	-0.0155	-0.0641***
	(0.0170)	(0.0115)	(0.0110)	(0.0110)
Wealth index	0.0147**	-0.0012	-0.0111**	0.0115**
	(0.0057)	(0.0050)	(0.0056)	(0.0046)
Urban	0.1198***	0.1214***	0.1652***	0.1742***
	(0.0274)	(0.0125)	(0.0132)	(0.0145)
Children	-0.1138***	0.0571***	0.0113***	-0.0441***
	(0.0057)	(0.0042)	(0.0031)	(0.0039)
IRS	-0.0795***	-0.0295***	-0.0618***	-0.1537***
	(0.0178)	(0.0091)	(0.0096)	(0.0167)
% Informality/Employed		-0.0015***	-0.0022***	0.0013**
		(0.0004)	(0.0005)	(0.0005)
Education gap st. (2021)		0.0352	0.3337***	0.2066***
		(0.0347)	(0.0411)	(0.0331)
% Catholic men st, level (2020)		0.5204***	0.7616***	0.3945***
		(0.0645)	(0.0639)	(0.0662)
Progressiveness index (st. level), econ. v.		0.1129*	-0.0764	0.5088***
		(0.0676)	(0.0744)	(0.0688)
Progressiveness index (st. level), gender		-0.0993	0.1078	-0.2245***
		(0.0701)	(0.0863)	(0.0712)
Constant	-1.1274***	-1.1243***	-0.6264***	-0.9115***
	(0.2326)	(0.0546)	(0.0608)	(0.0613)
Observations	95,428			
Shea Partial R2		0.0013	0.0023	0.0027
Partial R2		0.0018	0.0055	0.006
Partial F-statistic		34.64	104.66	115.93
P-value		0.0000	0.0000	0.0000

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4. Conclusions

We recapitulate the implications of the gender identity model in relation to what we found in our data. Firstly, as most women decide to work, they find it more valuable than the loss of identity it causes them, according to our model. If this was not the case and the disutility from going against gender norm was great enough, we would not observe that the mean woman works. In other words, we do not observe this equilibrium for most women, so we can infer the relationship between the costs and gains of working.

Secondly, the utility of working when men exert violence is higher than 0 (the normalized utility of not working for women). In other words, even adding up the loss of identity for working and the loss of utility after receiving economic violence, most women still value working more. This is a consequence of the positive relationship between working and receiving economic violence. In fact, our results point to women obtaining a higher utility from working in the presence of violence so that the equilibrium of working and receiving violence is supported as a valid outcome.

Lastly, as there are men who use violence, it is less costly to them than the loss of identity women's work would entail for them. If this was not the case, no violence would be observed.

Our first-stage regression analyses revealed the significance of various factors in predicting gender role beliefs in both women and men. Specifically, we found that a higher percentage of informality and a greater education gap had a negative impact on the severity of economic violence experienced. This finding supports our identity framework and suggests that as objective discrimination against women increases, men perceive less threat to their identity, reducing their motivation to take action against women.

The presence of a high and statistically significant positive effect of the percentage of Catholic men on the severity of sexual violence provides further support for our interpretation based on the identity framework. Additionally, it aligns with the interpretation of honor restoration through the shaming of women, which manifests in the form of sexual violence against them. This finding is particularly critical since no previous quantitative literature exploring this association was found, highlighting the novelty and importance of our research.

In our findings, we have underscored the influential role of the context in which people are immersed in shaping beliefs, highlighting their resilient nature. Notably, past beliefs consistently predicted current beliefs across all our regression analyses. It is worth emphasizing that greater

progressiveness in past beliefs regarding economic and sexual violence predicted more progressive current beliefs. However, when it came to general gender roles, the effect was smaller and negative, suggesting a more nuanced relationship.

These interpretations remain consistent for both short-term and long-term perspectives when considering the decision to participate in the labor market as a short-run decision and the decision to ever work as a long-term outcome.

In our primary regression analyses of the impact of violence and beliefs on female LFP, we have found a positive effect indicating that each instance of violence occurring more frequently than the average increases the likelihood of the same type of working by one percentage point. This aligns with the findings in the literature that address endogeneity concerns. For instance, Bhattacharya (2015) examined sexual and physical violence together as a single indicator without considering their intensity, focusing solely on whether they occurred or not, and found a positive association as well. In contrast, our analysis reveals that experiencing economic violence (either in the past or currently) completely nullifies the effect of sexual violence. This underscores the importance of carefully distinguishing between different forms and intensities of violence, as merely examining the total effect could mask which forms of violence contribute more.

Gender role beliefs significantly influence long-term decisions, but primarily among women who have not experienced economic or sexual violence, which accounts for only 28% of women in Mexico. This implies that for most women, the imperative to secure economic survival outweighs the values associated with their gender identity. This observation highlights the potential presence of cognitive dissonance among many women. It is crucial to investigate this phenomenon further, as it suggests that promoting positive changes in women's beliefs could enhance their labor force participation. It should be noted that women in this particular subsample exhibit higher levels of sexism compared to the overall average. This explains why shifting their beliefs toward a more positive direction increases their likelihood of participating in the labor force.

Our analysis of short-term decisions shows a negative association between having more progressive views and labor force participation. One plausible explanation for this finding could be the impact of the COVID-19 pandemic, where women with less sexist beliefs may have placed a higher value on their health, leading to a lower participation rate. Furthermore, we also observe that receiving more instances of sexual violence is associated with a decrease in the likelihood of working in the last 12 months. Consequently, additional research is needed to ascertain whether these effects are context-specific or if short-term decisions exhibit distinct patterns compared to long-term decisions. Addressing these questions could be accomplished through the forthcoming wave of the survey, anticipated in 2026.

A. Appendix: ENDIREH database

A.1. Gender Role Questions (ENDIREH 2016)

- **Cuidado.** ¿Usted cree que las mujeres deben ser las responsables del cuidado de los hijos(as), de las personas enfermas y ancianas?
- **Salario.** ¿Usted cree que los hombres deben ganar más salario que las mujeres?
- **Responsabilidad de traer dinero para la casa.** ¿Usted cree que las mujeres deben ser igual de responsables que los hombres de traer dinero para la casa?
- **Responsabilidad en las tareas del hogar.** ¿Usted cree que los hombres deben encargarse, al igual que las mujeres de las tareas de la casa y de cuidar a los niños(as), y a las personas enfermas y ancianas?
- **Igualdad de género en salir por las noches.** ¿Usted cree que las mujeres deben tener derecho a salir solas en la noche a divertirse?
- **Discriminación de la mujer en el ámbito laboral.** ¿Usted cree que los hombres deben ocupar mejores puestos que las mujeres en los trabajos?
- **Trabajo de mujeres con hijos (as).** ¿Usted cree que las mujeres que trabajan descuidan a sus hijos (as)?
- **Vestimenta y acoso sexual.** ¿Usted cree que las mujeres deben vestirse sin escotes para que no las molesten los hombres?
- **Relaciones sexuales sin consenso.** ¿Usted cree que las mujeres casadas deben tener relaciones sexuales con su pareja cuando él quiera?

A.2. Gender Role Questions (ENDIREH 2021)

- **Cuidado.** ¿Quién cree usted que debe ser responsable del cuidado de los hijos(as), de las personas enfermas y ancianas?
- **Salario.** ¿Quién cree usted que debe ganar más salario en el trabajo?
- **Responsabilidad de las tareas del hogar.** ¿Quién cree usted que debe ser el responsable de las tareas de la casa?
- **Responsabilidad de traer dinero para la casa.** ¿Quién cree usted que debe ser el responsable de traer dinero para la casa?
- **Capacidad para trabajar y/o estudiar.** ¿Quién cree usted que tiene mayor capacidad para trabajar y/o estudiar?
- **Igualdad de género en salir por las noches.** ¿Está usted de acuerdo en que hombres y mujeres tienen el mismo derecho a salir por las noches a divertirse?
- **Trabajo de mujeres con hijos(as).** ¿Está usted de acuerdo en que las mujeres que tienen hijos(as) trabajen, aún si no tienen necesidad de hacerlo?
- **Vestimenta y acoso sexual.** ¿Está usted de acuerdo en que las mujeres que se visten con escotes provocan que los hombres las molesten?
- **Relaciones sexuales en el matrimonio.** ¿Está usted de acuerdo en que las mujeres casadas deben tener relaciones sexuales con su esposo cuando él quiera?

B. Appendix: Other data sources

Table B.1.: Percentage of Catholics per State in 2020

State	Population	Men	Women
Aguascalientes	81.36%	80.40%	82.27%
Baja California	58.04%	56.78%	59.31%
Baja California Sur	68.13%	67.10%	69.20%
Campeche	55.53%	54.51%	56.52%
Coahuila de Zaragoza	68.57%	67.88%	69.25%
Colima	77.60%	76.48%	78.69%
Chiapas	48.78%	48.18%	49.35%
Chihuahua	67.19%	66.16%	68.20%
Ciudad de México	72.04%	70.39%	73.55%
Durango	75.50%	74.87%	76.11%
Guanajuato	82.82%	81.95%	83.65%
Guerrero	72.77%	71.89%	73.58%
Hidalgo	74.14%	73.44%	74.79%
Jalisco	81.97%	81.03%	82.88%
México	72.79%	71.88%	73.66%
Michoacán de Ocampo	80.80%	79.92%	81.64%
Morelos	65.87%	64.95%	66.72%
Nayarit	76.45%	75.57%	77.32%
Nuevo León	71.79%	71.09%	72.49%
Oaxaca	69.11%	68.28%	69.87%
Puebla	76.82%	76.05%	77.54%
Querétaro	78.60%	77.49%	79.66%
Quintana Roo	50.75%	49.47%	52.04%
San Luis Potosí	78.62%	77.79%	79.41%
Sinaloa	72.56%	71.46%	73.64%
Sonora	71.14%	70.23%	72.04%
Tabasco	57.13%	56.40%	57.83%
Tamaulipas	63.04%	62.16%	63.89%
Tlaxcala	77.86%	77.31%	78.37%
Veracruz de Ignacio de la Llave	69.65%	68.77%	70.47%
Yucatán	68.84%	67.76%	69.88%
Zacatecas	83.65%	83.00%	84.27%

C. Appendix: Exploratory Analysis Complements

Figure C.1.: Histogram of economic violence instances in sample

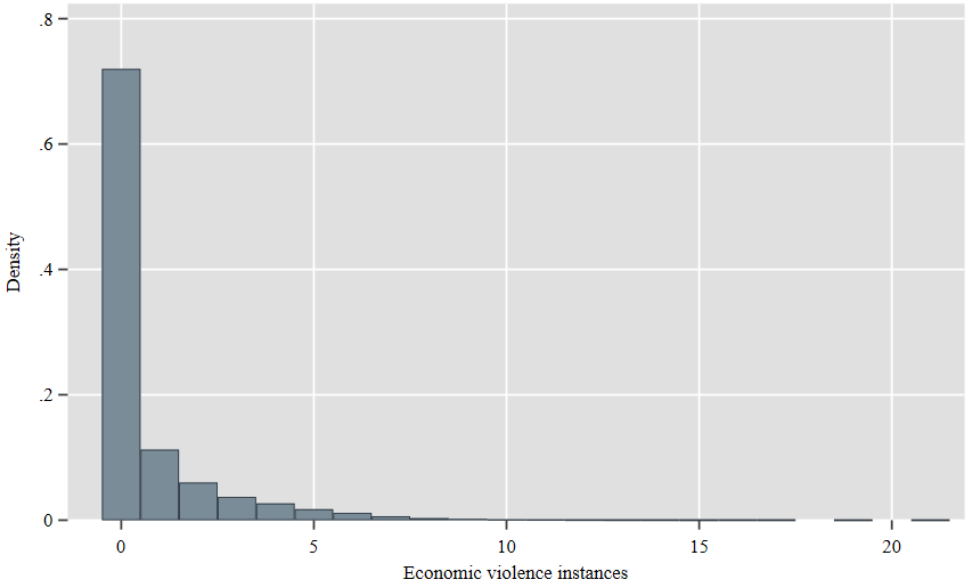


Figure C.2.: Histogram of sexual violence instances in sample

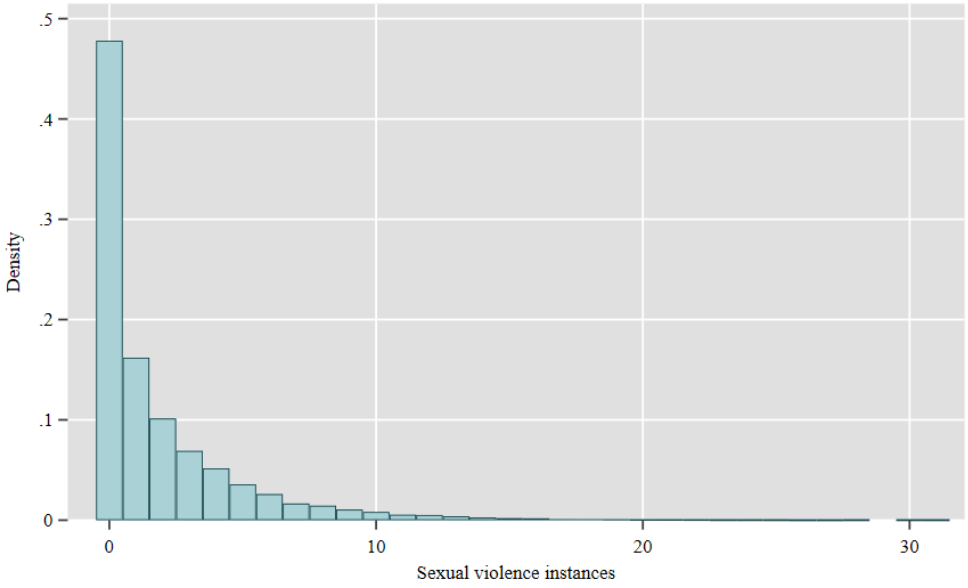


Figure C.3.: Empirical distribution of progressiveness index in sample

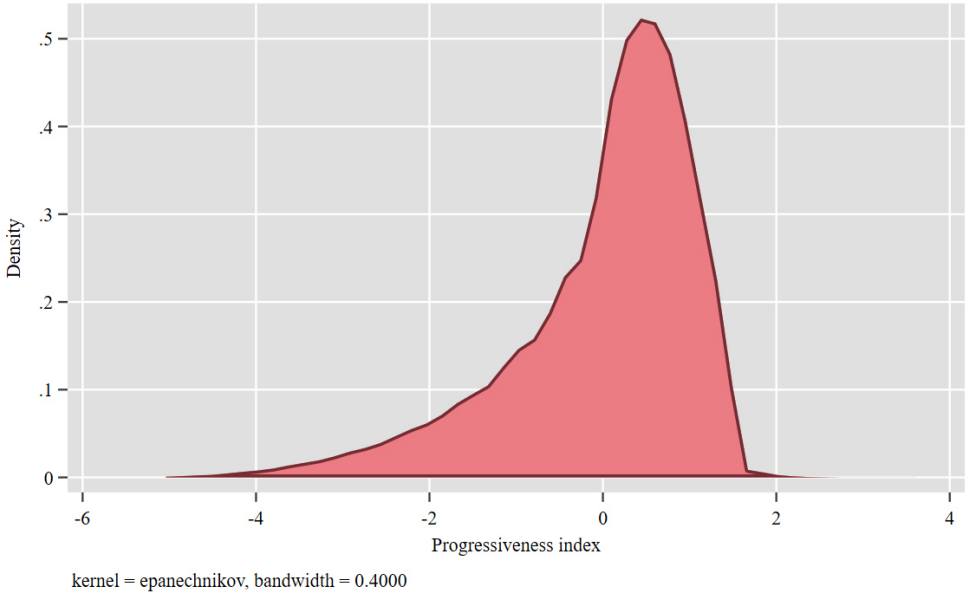


Table C.1.: T-test of means by having ever worked

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Violence	0.1873	0.0063	29.8826	0.0000	0.1750	0.1995
	0.5686	0.0060	95.4596	0.0000	0.5569	0.5803
Economic violence	0.2189	0.0042	52.6858	0.0000	0.2108	0.2271
	0.1035	0.0033	30.9954	0.0000	0.0970	0.1101
Sexual violence	0.1762	0.0067	26.4868	0.0000	0.1632	0.1893
	0.3798	0.0062	61.7050	0.0000	0.3677	0.3919
Economic violence instances	0.6651	0.0117	56.8584	0.0000	0.6422	0.6880
	0.1919	0.0074	25.7842	0.0000	0.1773	0.2065
Sexual violence instances	1.0132	0.0304	33.2941	0.0000	0.9535	1.0728
	1.0681	0.0245	43.5442	0.0000	1.0200	1.1162
Progressiveness index	0.2940	0.0156	18.8822	0.0000	0.2635	0.3245
	-0.2370	0.0152	-15.6072	0.0000	-0.2668	-0.2073
Age	7.2156	0.1953	36.9477	0.0000	6.8328	7.5984
	31.4890	0.1821	172.8757	0.0000	31.1319	31.8460
Educational attainment	0.3645	0.0142	25.7275	0.0000	0.3367	0.3923
	1.2515	0.0128	97.6569	0.0000	1.2264	1.2766
Urban	0.1584	0.0067	23.7754	0.0000	0.1453	0.1715
	0.6412	0.0059	109.0686	0.0000	0.6297	0.6528
Indigenous	-0.0527	0.0067	-7.8207	0.0000	-0.0659	-0.0395
	0.3073	0.0067	46.1061	0.0000	0.2942	0.3203
Wealth index	0.0914	0.0124	7.3997	0.0000	0.0672	0.1156
	-0.0737	0.0107	-6.8719	0.0000	-0.0947	-0.0527
Children	0.2418	0.0298	8.1122	0.0000	0.1834	0.3002
	1.7116	0.0284	60.2209	0.0000	1.6558	1.7673
IRS	-0.2963	0.0156	-18.9632	0.0000	-0.3269	-0.2656
	-0.5680	0.0167	-34.1081	0.0000	-0.6007	-0.5354

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

Table C.2.: T-test of means by having worked in the last 12 months

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Violence	0.1315	0.0044	29.9463	0.0000	0.1229	0.1401
	0.6477	0.0037	175.5607	0.0000	0.6405	0.6549
Economic violence	0.1886	0.0042	44.8558	0.0000	0.1804	0.1969
	0.1769	0.0028	63.5090	0.0000	0.1715	0.1824
Sexual violence	0.1331	0.0050	26.5989	0.0000	0.1233	0.1429
	0.4492	0.0040	112.6839	0.0000	0.4413	0.4570
Economic violence instances	0.6761	0.0143	47.4104	0.0000	0.6482	0.7041
	0.3586	0.0070	50.9803	0.0000	0.3448	0.3724
Sexual violence instances	0.8543	0.0297	28.7816	0.0000	0.7961	0.9125
	1.4180	0.0208	68.0539	0.0000	1.3772	1.4589
Progressiveness index	0.2946	0.0103	28.5984	0.0000	0.2744	0.3148
	-0.1610	0.0088	-18.2352	0.0000	-0.1783	-0.1437
Age	0.4786	0.1463	3.2712	0.0011	0.1918	0.7654
	37.0448	0.1194	310.1693	0.0000	36.8107	37.2789
Educational attainment	0.4173	0.0109	38.3152	0.0000	0.3959	0.4386
	1.3173	0.0081	161.6399	0.0000	1.3013	1.3332
Urban	0.1214	0.0045	26.6868	0.0000	0.1125	0.1303
	0.7026	0.0032	221.1160	0.0000	0.6964	0.7088
Indigenous	-0.0353	0.0047	-7.5681	0.0000	-0.0444	-0.0261
	0.2841	0.0042	67.6117	0.0000	0.2758	0.2923
Wealth index	0.0642	0.0091	7.0807	0.0000	0.0465	0.0820
	-0.0351	0.0061	-5.7510	0.0000	-0.0471	-0.0231
Children	-0.2941	0.0189	-15.6009	0.0000	-0.3310	-0.2571
	2.0672	0.0157	131.7940	0.0000	2.0365	2.0980
IRS	-0.1854	0.0095	-19.6103	0.0000	-0.2040	-0.1669
	-0.7055	0.0101	-70.1073	0.0000	-0.7253	-0.6858

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

Table C.3.: T-test of means by having ever received violence

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Worked	0.1450	0.0048	29.9145	0.0000	0.1355	0.1545
	0.7019	0.0044	159.1239	0.0000	0.6933	0.7105
Worked (12m)	0.1616	0.0053	30.5792	0.0000	0.1512	0.1719
	0.4303	0.0044	97.7483	0.0000	0.4217	0.4389
Progressiveness index	0.2708	0.0118	23.0370	0.0000	0.2478	0.2939
	-0.1949	0.0108	-18.0596	0.0000	-0.2160	-0.1737
Age	-2.1305	0.1578	-13.5014	0.0000	-2.4398	-1.8212
	38.8394	0.1347	288.4015	0.0000	38.5754	39.1033
Educational attainment	0.3288	0.0122	26.9208	0.0000	0.3049	0.3528
	1.3087	0.0106	123.4930	0.0000	1.2879	1.3295
Urban	0.1201	0.0054	22.1503	0.0000	0.1095	0.1307
	0.6825	0.0043	158.0453	0.0000	0.6740	0.6910
Indigenous	-0.0412	0.0052	-7.9869	0.0000	-0.0513	-0.0311
	0.2944	0.0050	58.5152	0.0000	0.2846	0.3043
Wealth index	0.0160	0.0106	1.5091	0.1313	-0.0048	0.0367
	-0.0115	0.0084	-1.3656	0.1721	-0.0280	0.0050
Children	-0.2005	0.0212	-9.4513	0.0000	-0.2421	-0.1590
	2.0508	0.0182	112.8375	0.0000	2.0152	2.0864
IRS	-0.2040	0.0103	-19.7780	0.0000	-0.2242	-0.1838
	-0.6601	0.0115	-57.5222	0.0000	-0.6826	-0.6376

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

Table C.4.: T-test of means by having ever received economic violence

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Worked	0.1696	0.0036	47.7701	0.0000	0.1627	0.1766
	0.7587	0.0028	271.9450	0.0000	0.7533	0.7642
Worked (12m)	0.2319	0.0051	45.8494	0.0000	0.2220	0.2418
	0.4816	0.0030	160.2949	0.0000	0.4757	0.4875
Progressiveness index	-0.0062	0.0106	-0.5905	0.5548	-0.0269	0.0145
	0.0017	0.0065	0.2705	0.7868	-0.0109	0.0144
Age	1.8685	0.1469	12.7189	0.0000	1.5805	2.1564
	36.7831	0.0875	420.6174	0.0000	36.6117	36.9545
Educational attainment	-0.0226	0.0120	-1.8905	0.0587	-0.0461	0.0008
	1.5517	0.0070	221.4879	0.0000	1.5379	1.5654
Urban	0.0507	0.0048	10.6012	0.0000	0.0413	0.0601
	0.7547	0.0024	320.0275	0.0000	0.7501	0.7594
Indigenous	0.0067	0.0048	1.3981	0.1621	-0.0027	0.0161
	0.2629	0.0033	79.9628	0.0000	0.2565	0.2694
Wealth Index	0.0508	0.0102	4.9862	0.0000	0.0308	0.0708
	-0.0142	0.0046	-3.0769	0.0021	-0.0233	-0.0052
Children	0.4117	0.0203	20.3226	0.0000	0.3720	0.4514
	1.7912	0.0112	160.3997	0.0000	1.7693	1.8131
IRS	-0.0792	0.0078	-10.2196	0.0000	-0.0944	-0.0640
	-0.7847	0.0074	-106.7323	0.0000	-0.7991	-0.7703

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

Table C.5.: T-test of means by having ever received sexual violence

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Worked	0.1103	0.0042	25.9786	0.0000	0.1020	0.1187
	0.7486	0.0034	221.6306	0.0000	0.7420	0.7553
Worked (12m)	0.1322	0.0050	26.6530	0.0000	0.1225	0.1419
	0.4775	0.0036	133.8969	0.0000	0.4705	0.4845
Progressiveness index	0.4645	0.0099	46.9575	0.0000	0.4451	0.4839
	-0.2424	0.0086	-28.1327	0.0000	-0.2593	-0.2256
Age	-3.8624	0.1436	-26.9038	0.0000	-4.1438	-3.5810
	39.3221	0.1024	384.1751	0.0000	39.1215	39.5228
Educational attainment	0.5702	0.0112	51.0915	0.0000	0.5483	0.5921
	1.2477	0.0082	152.3964	0.0000	1.2317	1.2638
Urban	0.1650	0.0046	35.8817	0.0000	0.1560	0.1740
	0.6828	0.0032	213.5701	0.0000	0.6765	0.6891
Indigenous	-0.0910	0.0046	-19.5978	0.0000	-0.1001	-0.0819
	0.3123	0.0043	73.3246	0.0000	0.3039	0.3206
Wealth Index	0.0054	0.0093	0.5791	0.5625	-0.0128	0.0235
	-0.0028	0.0059	-0.4713	0.6374	-0.0144	0.0088
Children	-0.5746	0.0186	-30.9328	0.0000	-0.6110	-0.5382
	2.2064	0.0146	151.3359	0.0000	2.1778	2.2349
IRS	-0.2733	0.0088	-31.1906	0.0000	-0.2905	-0.2561
	-0.6642	0.0095	-69.7856	0.0000	-0.6829	-0.6456

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

Table C.6.: T-test of means by having ever worked in the first subsample

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Violence	0.1209	0.0071	17.0992	0.0000	0.1070	0.1348
	0.5188	0.0064	80.7129	0.0000	0.5062	0.5314
Sexual violence	0.1210	0.0073	16.6499	0.0000	0.1068	0.1353
	0.3597	0.0065	55.0356	0.0000	0.3469	0.3725
Sexual violence instances	0.5236	0.0289	18.1178	0.0000	0.4670	0.5803
	0.9416	0.0237	39.7957	0.0000	0.8953	0.9880
Progressiveness index	0.2710	0.0167	16.2734	0.0000	0.2384	0.3036
	-0.2039	0.0159	-12.8106	0.0000	-0.2351	-0.1727
Age	7.8738	0.2100	37.5016	0.0000	7.4622	8.2853
	30.8092	0.1910	161.2984	0.0000	30.4348	31.1836
Educational attainment	0.3530	0.0153	23.0746	0.0000	0.3230	0.3829
	1.2839	0.0135	94.7861	0.0000	1.2573	1.3104
Urban	0.1474	0.0071	20.8198	0.0000	0.1335	0.1612
	0.6429	0.0062	103.0211	0.0000	0.6307	0.6551
Indigenous	-0.0517	0.0072	-7.2278	0.0000	-0.0657	-0.0377
	0.3021	0.0070	43.3221	0.0000	0.2885	0.3158
Wealth index	0.0736	0.0133	5.5363	0.0000	0.0475	0.0996
	-0.0700	0.0115	-6.1013	0.0000	-0.0925	-0.0475
Children	0.2374	0.0319	7.4401	0.0000	0.1749	0.2999
	1.6111	0.0300	53.6804	0.0000	1.5523	1.6699
IRS	-0.2757	0.0159	-17.3536	0.0000	-0.3069	-0.2446
	-0.5755	0.0171	-33.6210	0.0000	-0.6090	-0.5419

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

Table C.7.: T-test of means by having ever worked in the second subsample

Variable	Coefficient	Se	T-statistic	P-value	Lower b.	Upper b.
Violence	0.0577	0.0076	7.5894	0.0000	0.0428	0.0726
	0.2485	0.0064	38.5606	0.0000	0.2358	0.2611
Progressiveness index	0.3224	0.0222	14.5493	0.0000	0.2790	0.3659
	-0.4545	0.0207	-21.9944	0.0000	-0.4950	-0.4140
Age	6.7817	0.2645	25.6427	0.0000	6.2633	7.3001
	34.0636	0.2407	141.5363	0.0000	33.5919	34.5354
Educational attainment	0.3255	0.0178	18.2961	0.0000	0.2907	0.3604
	1.0363	0.0149	69.3603	0.0000	1.0070	1.0656
Urban	0.1737	0.0092	18.9858	0.0000	0.1558	0.1917
	0.5528	0.0081	67.9365	0.0000	0.5368	0.5687
Indigenous	-0.0605	0.0092	-6.5794	0.0000	-0.0785	-0.0425
	0.3523	0.0090	39.1888	0.0000	0.3347	0.3699
Wealth Index	0.0865	0.0170	5.0810	0.0000	0.0531	0.1199
	-0.0757	0.0148	-5.1175	0.0000	-0.1047	-0.0467
Children	0.0989	0.0438	2.2592	0.0239	0.0131	0.1846
	2.0541	0.0404	50.9031	0.0000	1.9750	2.1332
IRS	-0.3327	0.0212	-15.6926	0.0000	-0.3742	-0.2911
	-0.4128	0.0226	-18.2266	0.0000	-0.4571	-0.3684

The first line of each row is the coefficient on the regression of the variable over the treatment, and the second line is the coefficient of the corresponding constant

D. Appendix: Alternative Models and Tests

Table D.1.: Models for IV probit of FLFP on economic and sexual violence and progressiveness

Model	Informality rate	Education gap	% Catholic men	Eco. V. Beliefs	Sex. V. Beliefs	Gender Beliefs
1	State	State	State	State	State	
2	State	State	State	State		
3	State	State	State		State	
4	State	State	State			State
5	State	State	State	Municipality		Municipality
6	State	State	State	Municipality		
7	State	State	State			Municipality
8	State	State	State	Municipality imp.	Municipality imp.	Municipality imp.
9	State	State	State		Municipality imp.	Municipality imp.
10	State	State	State	Municipality imp.	Municipality imp.	
11	State	State	State		Municipality imp.	
12	State	State	State			Municipality imp.
13	State	Municipality imp.	State	Municipality		

Table D.2.: Tests of models on the sample

Model	Wald	P-val	Cragg-Wald	Anderson-R F	P-val	LM	P-val	Sargan	P-val
1	30.64	0.00	23.85	51.01	0.00	119.12	0.00	1.72	0.42
2	36.18	0.00	27.93	57.13	0.00	111.59	0.00	1.17	0.28
3	38.56	0.00	25.75	56.92	0.00	102.89	0.00	4.64	0.03
4	34.85	0.00	21.74	57.35	0.00	86.91	0.00	0.63	0.43
5	32.15	0.00	21.66	40.67	0.00	108.17	0.00	4.40	0.11
6	39.07	0.00	25.39	47.61	0.00	101.44	0.00	3.90	0.05
7	37.68	0.00	16.74	47.80	0.00	66.92	0.00	4.32	0.04
8	27.81	0.00	19.84	43.68	0.00	118.92	0.00	7.63	0.05
9	31.24	0.00	17.30	50.64	0.00	86.43	0.00	6.91	0.03
10	32.68	0.00	21.99	46.62	0.00	109.82	0.00	7.32	0.03
11	35.78	0.00	20.59	58.22	0.00	82.29	0.00	4.95	0.03
12	39.27	0.00	19.53	58.25	0.00	78.08	0.00	0.92	0.34
13	26.08	0.00	21.51	51.52	0.00	107.44	0.00	12.16	0.00

Table D.3.: IV models on the second subsample

Model	Instrument	Coefficient	Se	T-statistic	P-value	Lower bound	Upper bound
1	Progressiveness index (mun.)	0.3822	0.1561	2.4483	0.0144	0.0762	0.6882
2	Progressiveness index, sexual violence (mun.)	0.4847	0.2093	2.3157	0.0206	0.0744	0.8950
3	Progressiveness index, economic v. (mun.)	0.4140	0.1473	2.8102	0.0050	0.1252	0.7027
4	Progressiveness index, general (mun.)	0.3063	0.1917	1.5981	0.1100	-0.0694	0.6820
5	Progressiveness index (st.)	0.3651	0.1843	1.9813	0.0476	0.0039	0.7263
6	Progressiveness index, sexual violence (st.)	0.2785	0.2688	1.0361	0.3002	-0.2484	0.8053
7	Progressiveness index, economic violence (st.)	0.4280	0.1576	2.7159	0.0066	0.1191	0.7369
8	Progressiveness index, general roles (st.)	0.3293	0.1969	1.6724	0.0945	-0.0567	0.7153
9	Progressiveness index, sexual violence (mun.-st.)	0.3010	0.1785	1.6865	0.0917	-0.0488	0.6509
10	Progressiveness index, economic violence (mun.-st.)	0.4113	0.1364	3.0158	0.0026	0.1440	0.6786
11	Progressiveness index, general roles (mun.-st.)	0.4418	0.1984	2.2265	0.0260	0.0529	0.8307

Table D.4.: Tests of models on the second subsample

Model	Wald test	P-value	Shea Partial R2	Partial R2	Partial F	P-value	Cragg -Wald	A-R F	P-value	LM statistic	P-value
1	51.29	0.0000	0.0065	0.0065	240.43	0.0000	240.43	17.93	0.0000	238.94	0.0000
2	18.34	0.0000	0.0021	0.0021	77.61	0.0000	77.61	11.77	0.0006	77.46	0.0000
3	49.42	0.0000	0.0061	0.0061	228.09	0.0000	228.09	22.32	0.0000	226.75	0.0000
4	47.01	0.0000	0.0051	0.0051	190.65	0.0000	190.65	7.04	0.0080	189.72	0.0000
5	47.10	0.0000	0.0039	0.0039	155.13	0.0000	155.13	10.37	0.0013	154.57	0.0000
6	25.08	0.0000	0.0021	0.0021	83.11	0.0000	83.11	2.30	0.1294	82.96	0.0000
7	53.34	0.0000	0.0043	0.0043	175.00	0.0000	175.00	18.38	0.0000	174.29	0.0000
8	46.89	0.0000	0.0037	0.0037	147.07	0.0000	147.07	7.51	0.0061	146.57	0.0000
9	46.31	0.0000	0.0049	0.0049	197.41	0.0000	197.41	6.57	0.0104	196.49	0.0000
10	48.67	0.0000	0.0058	0.0058	233.68	0.0000	233.68	21.85	0.0000	232.38	0.0000
11	19.00	0.0000	0.0021	0.0021	84.55	0.0000	84.55	9.37	0.0022	84.39	0.0000

Table D.5.: Models for IV probit of FLFP (12m) on economic and sexual violence and progressiveness

Model	Informality rate	Education gap	Catholic men percentage	Eco. V. Beliefs	Sex. V. Beliefs	Gender Beliefs
1	State	State	State	State	State	
2	State	State	State	State	State	State
3	State	State	State	State	State	
4	State	State	State		State	State
5	State	State	State		State	
6	State	State	State	State		
7	State	State	State			State
8	State	Municipality imputed	State	State	State	State
9	State	Municipality imputed	State		State	State
10	State	Municipality imputed	State	State		State

Table D.6.: Tests of models on the sample (12m)

Model	Wald	P-val	Cragg-Wald	A-R F	P-val	LM	P-val	Sargan	P-val
1	30.89	0.00	23.85	34.55	0.00	119.12	0.00	4.25	0.12
2	34.05	0.00	23.95	35.01	0.00	143.48	0.00	4.63	0.20
3	39.24	0.00	23.97	41.97	0.00	119.71	0.00	2.16	0.34
4	30.89	0.00	23.85	34.55	0.00	119.12	0.00	4.25	0.12
5	38.57	0.00	25.75	47.59	0.00	102.89	0.00	1.20	0.27
6	36.38	0.00	27.93	43.15	0.00	111.59	0.00	1.78	0.18
7	34.99	0.00	21.74	43.04	0.00	86.91	0.00	3.07	0.08
8	22.34	0.00	19.39	32.91	0.00	116.23	0.00	2.59	0.46
9	24.13	0.00	10.59	33.10	0.00	52.94	0.00	1.51	0.47
10	26.09	0.00	21.51	26.96	0.00	107.44	0.00	1.21	0.55

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List of Tables

3.1 Summary statistics of sample 22
3.2 Instances of economic violence by female labor force participation 27
3.3 Instances of sexual violence by female labor force participation 28
3.4 Probit regressions of labor force participation on economic violence, sexual violence, and sexism 32
3.5 Female Labor Force participation on progressiveness, economic and sexual violence. 41
3.6 Tests of model in sample 43
3.7 Female LFP IV probit on progressiveness, economic and sexual violence. 44
3.8 Female Labor Force participation IV probit on economic violence. 45
3.9 Tests of model in first subsample 47
3.10 Female Labor Force participation IV probit on progressiveness and sexual violence. 48
3.11 Female Labor Force participation IV probit on sexual violence. 49
3.12 Female Labor Force participation IV probit on progressiveness index 51
3.13 Tests of Model in Sample 53
3.14 Female LFP (12m) IV probit on progressiveness, economic and sexual violence. . . 54

B.1 Percentage of Catholics per State in 2020 59

C.1 T-test of means by having ever worked 64
C.2 T-test of means by having worked in the last 12 months 65
C.3 T-test of means by having ever received violence 66
C.4 T-test of means by having ever received economic violence 67
C.5 T-test of means by having ever received sexual violence 68
C.6 T-test of means by having ever worked in the first subsample 69
C.7 T-test of means by having ever worked in the second subsample 70

D.1 Models for IV probit of FLFP on economic and sexual violence and progressiveness 72
D.2 Tests of models on the sample 73
D.3 IV models on the second subsample 74
D.4 Tests of models on the second subsample 75
D.5 Models for IV probit of FLFP (12m) on economic and sexual violence and progressiveness 76
D.6 Tests of models on the sample (12m) 77

List of Figures

2.1 Gender identity as violence and beliefs in extensive game theoretic framework . . . 12

3.1 Economic violence, sexual violence and LFP (ever and 12m) by age 23
3.2 Progressiveness by age in 2021 24
3.3 Mean progressiveness index by State in 2016 25
3.4 Mean progressiveness index by State in 2021 25
3.5 Change in progressiveness index by State between 2016 and 2021 26
3.6 Average marginal effects on FLFP with 95% CIs 31
3.7 Informality evolution in Mexico from 2005 to 2022 35
3.8 Average marginal effects on FLFP with 95% CIs in complete sample 46
3.9 Average marginal effects on FLFP with 95% CIs in the first subsample 47
3.10 Average marginal effects on FLFP with 95% CIs in the second subsample 52
3.11 Average marginal effects on FLFP (12m) with 95% CIs in complete sample 53

C.1 Histogram of economic violence instances in sample 62
C.2 Histogram of sexual violence instances in sample 62
C.3 Empirical distribution of progressiveness index in sample 63