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THE IMPACT OF UNPAID WORK ON EMPLOYMENT STATUS IN MEXICO

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Working Paper

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Abstract

Women in Mexico spent at least three times as much time on unpaid work compared to men. It is argued that these duties restrict women in their time use and channel them into flexible working arrangements, which are predominantly in the informal economy. This motivates the hypotheses investigated in this paper, that unpaid work impacts employment status of women in Mexico. The empirical investigations are made using the national occupation and employment survey of Mexico. The results obtained from the sequential logit model suggest that hours spend on unpaid work decrease the probability of being formally employed for women.

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1 Introduction

In arguably all countries in the world women spend at least double the amount of time on unpaid care work compared to men (Ferrant et al., 2014). This unpaid work¹ seems to impact females economic status. What has long been on the agenda of feminist economists and stated in paragraph 68b of the Forth World Conference on Women is to "[...]examine the relationship of women's unremunerated work to the incidence of and their vulnerability to poverty" (UN, 1996, p.25). This relation has now been recognized by policy makers and international institutions such as the World Bank, the United Nations and the Organization for Economic Co-operation and Development (WB, 2011; UN Women, 2015; Ferrant et. al., 2014). The importance is emphasized through the ratification of the United Nation Sustainable Development Goals which under the fifth goal to *achieve gender equality and empower all women and girls* explicitly mention to *recognize and value unpaid work*. Since the new global agenda is universal and all goals are interlinked, the achievement of the gender goal is also crucial to achieve goal 8 to *promote inclusive and sustainable economic growth, employment and decent work for all* and to finally achieve the first goal to *end poverty in all its forms* (UN, 2016). Thus, the impact of unpaid work is crucial to understand the link between women's poverty and their unequal opportunities and outcomes in the labor market (UN Women, 2015).

In Mexico, according to the underlying dataset *Encuesta Nacional de Ocupación y Empleo* (the national occupation and employment survey), people are primarily informally employed (INEGI, 2016). As Mexico has a low level of social security nets, people are often forced to accept any kind of job to make a living. Further, conservative ideas, known as *machismo* on labor division persist, that assign housework to women and men monetarily earn the living for the family (Segrest et al., 2003). Thus, according to the dataset,

¹Reproductive work refers to unpaid activities that can be assigned to a paid worker (Ponthieux and Meurs, 2015). A more detailed definition is given in section 4.2.

women in Mexico do three to five times as much unpaid work compared to men, depending on their employment status.

Neoclassical theory explains these labor division at home by comparative advantages. Supply side factors explain labor market differences among gender, as direct discrimination through employers is eradicated by functioning markets (Polachek, 1995). In contrast, feminist economists refer to a system of two co-existing economies. On the one hand the productive economy where people earn wages and goods are produced. On the other hand the reproductive economy which is build on unpaid care work (Campillo, 2003). The work in the reproductive economy secures the functioning of the productive economy as it cares for and reproduces the forces of the productive economy (Elson, 1999). As productive and reproductive economy intersect at the labor market, hours spent on unpaid care work influence opportunities and outcomes in the productive economy (UN Women, 2015). According to feminist literature the distribution of market and unpaid work is influenced by social norms, attributing certain activities to gender and not just based on comparative advantages (Badgett and Folbre, 1999). This results in disadvantages in opportunities and outcomes for females, as care responsibilities influence females in their job choice (Benería, 2003). To be able to combine unpaid work and wage work, women are in need of flexible working arrangements which are predominantly available in the informal economy (Elson, 1999).

Most studies on the relationship of unpaid work and labor market outcomes focus on labor force participation in developed countries (Mascherini et al., 2016). While in industrialized countries especially unpaid care work for young children lowers female labor force participation or rises part-time employment rates, few studies have investigated the relationship between unpaid work and labor market outcomes in developing countries (Cassirer and Addati, 2007). Ferrant et al. (2014) use time use data for different regions in the world to investigate the impact of unpaid work on gender gaps in labor outcomes. Differences in the distribution of unpaid care work, argued to be influenced by

social norms, are associated with differences in the labor force participation and a higher share of part time work or vulnerable employment (Ferrant et al., 2014). The flexibility, autonomy and geographical proximity to home of work in the informal economy attracts women who need to combine care responsibilities and paid work (Cassirer and Addati, 2007). In Central America as well as in Mexico these characteristics lead women to work in the informal economy (Lopez-Ruiz et al., 2017; Rodin et al., 2012). For their study Rodin et al. (2012) use in-depth interviews of working mothers in Mexico to analyze the reasons to choose informal employment. Besides the level of education, the lack of flexibility in low skilled formal jobs lead women to join the informal labor market, to take better care of their children. However, the gains in meeting their care responsibilities are limited (Rodin et al., 2012). As informal employment goes along with lower earnings and benefits as well as higher risks, the employment often does not lift the employed out of poverty (Chen et al., 2004).

Building on the line of literature, the underlying research question is whether unpaid work inhibit employment in the formal economy due to time restrictions and if so whether there is a difference among gender. By investigating the impact of unpaid work on employment status in Mexico using a sequential logit model, this paper contributes to the quantitative research on analyzing the relationship of unpaid work and employment status in developing countries.

The results show that unpaid work influences the employment status of women by primarily rising the probability of being informally employed. While young and unmarried women are most likely informally employed, married middle age women, who spent up to 17 hours on unpaid work, are most likely formally employed.

This paper is structured as follows: The next section describes the data from the national occupation and employment survey. The subsequent section fo-

cuses on the methodology and the sequential logit model. In section 4 the results are presented, which are discussed in section 5. Lastly, Section 6 concludes.

2 The Data

The fourth quarter of 2014 of the national occupation and employment survey (ENOE) forms the basis of the empirical investigations. The ENOE categories people into two groups. The first group are economically active people, who are either employed or unemployed. The second group are non economically active people, who are either available or unavailable. Considering these two groups with people of age 14 and above, the sample consists of 298,746² individuals, representing 89,883,797³ people of the Mexican population. The sample consists of 156,871 women and 141,875 men.

The dependent variable employment status is divided into three categories, namely unemployment, informal and formal employment. Unemployment incorporates those who are defined unemployed by the ENOE as well as those defined not economically active but available for the labor market. People defined available are those who are available, want or need to work but did not seek for a job for one month or longer. Thus, 3.7% men of the total population and 5.6% women of the total population are unemployed.

Informal employment is defined as suggested by the Mexican statistical office. It is comprised of those employees who operate in economic units not registered in the non agricultural sector; production modes formed by families who operate within the agricultural sector; and those employees who perform work which is not registered under any type of economic activity. Family workers who get not paid in money are considered informal if they work in economic

²Summary statistics and regressions are calculated using the Freeware R (R Core Team, 2016).

³All empirical investigations are done using weights. The *factor de expansión (FAC)* gives the weights in the dataset

units which are defined informal. If they have no workers rights but contribute to the creation of products and services then they are as well considered informal (INEGI, 2014). In the overall population as well as within the gender groups most are informally employed.

People defined not economically active as well as unavailable are predominantly people who claim no need to work or people with disabilities. 35.1% of the total population is defined unavailable, which are 19.3 % of all men, while 49.4% of all women are unavailable. People, who mainly claim they do not have the need to work are either students or people dedicating themselves to housework. 61.7% of unavailable women say they do not have the need to work and fully engage in housework and 19.6% of unavailable women are students. In contrast 0.06% men say they do not have the need to work and fully engage in housework, while 50% of unavailable men are students.

This demonstrates why one third of the economically active population are women. Table 1 displays the distribution of men and women within the employment categories.

Gender	Unavailable	Unemployed	Informal	Formal	Total
Men	8225556	3296956	18025700	13169535	42717747
	19.3%	7.7%	42.2%	30.8%	47.5%
	26.1%	39.7%	62.0%	62.8%	
	9.2%	3.7%	20.1%	14.7%	
Female	23299826	5014109	11061567	7790548	47166050
	49.4%	10.6%	23.5%	16.5%	52.5%
	73.9%	60.3%	38.0%	37.2%	
	25.9%	5.6%	12.3%	8.7%	
Total	31525382	8311065	29087267	20960083	89883797
	35.1%	9.2%	32.4%	23.3%	

Table 1: Summary Statistics

The following variables are the main covariates of interest.

Unpaid work incorporates activities defined by Margaret Reid’s third party criterion. This states that activities are counted productive if they can be carried out by paid workers (Reid, 1934). Hence, the variable unpaid work

includes non-market activities such as, care taking, errand, repair and construction work, housework, accompaniment of household members to school or the doctor and free services to the community. The variable is measured in hours spent on unpaid work last week. The distribution of hours spent last week on unpaid work is displayed in Figure 1. This graphic visualizes that women spent more hours on unpaid work than men. While hours spent on unpaid work peak between 0-5 hours for men, for women it peaks at 20-25 hours. Thus, as displayed in more detail in Table 2 and Table 3 women spent significantly more hours on unpaid work.⁴ Table 2 and 3 display a more detailed

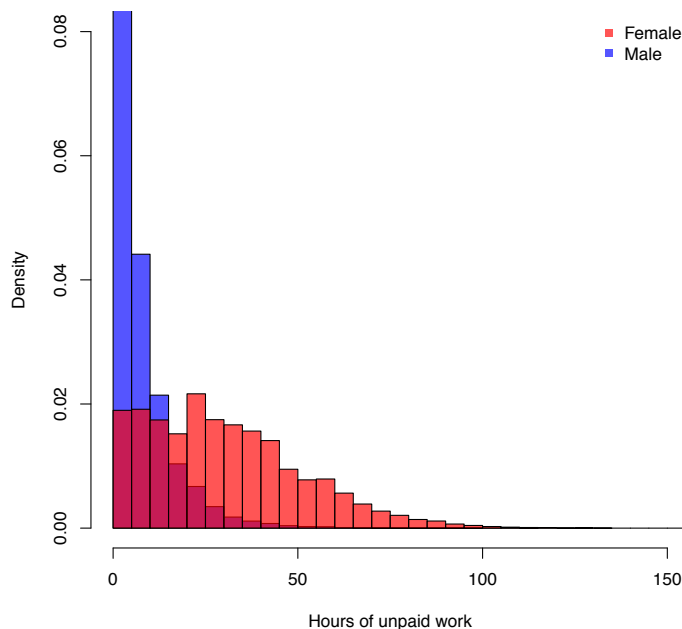


Figure 1: Hours of unpaid work per week by gender

summary of the components of unpaid work for women and men, respectively. Depending on their employment status, women spent three to five times as much hours on unpaid work than their male counterparts. The majority of hours spent on unpaid work are dedicated to housework and care work. Another variable of interest is age, which is a continuous variable accumulat-

⁴Table A2 displays the summary statistics for the overall dataset.

ing years of life starting at age 14. Unavailable as well as informally employed women are on average older than unemployed and formally employed women. In turn unavailable and unemployed men are younger than informally and formally employed men.

The continuous variable education, accumulates years spend on education. The highest education have men and women in the formal sector. However, women spent on average one more year in education than men in the formal economy. The lowest average education have informally employed men and unavailable women.

Moreover people are defined as urban citizens, if they live in localities bigger than 2500 inhabitants otherwise they are defined rural citizens. And people are grouped into married and unmarried.⁵

Variable	Unavailable	Unemployed	Informal	Formal
Age	40.448	37.740	39.252	37.671
Education	8.264	8.701	8.657	12.531
Unpaid work	32.028	33.030	28.119	23.993
Care	7.469	7.027	5.823	5.332
Errand	2.185	2.123	2.362	2.394
Accompany	0.722	0.771	0.677	0.604
Construction	0.004	0.016	0.003	0.001
Repair work	0.035	0.044	0.035	0.035
Housework	21.534	22.939	19.149	15.569
Community work	0.078	0.110	0.070	0.057

Table 2: Summary women

⁵Table A1 in the appendix displays all detailed definitions of used variables in the estimation.

Variable	Unavailable	Unemployed	Informal	Formal
Age	37.210	35.004	38.731	38.819
Education	8.659	9.333	8.155	11.523
Unpaid work	7.029	9.033	6.504	7.418
Care	0.746	1.443	1.375	2.019
Errand	0.818	0.902	1.062	1.416
Accompany	0.103	0.210	0.184	0.300
Construction	0.051	0.078	0.036	0.025
Repair work	0.365	0.613	0.414	0.390
Housework	4.883	5.706	3.350	3.224
Community work	0.065	0.081	0.084	0.043

Table 3: Summary men

3 Methodology

The underlying hypothesis states that unpaid work has adverse effects on the employment status of individuals. Supposedly those who spent more time on unpaid work are more restricted in their time use. These time restrictions channel people into more flexible working arrangements, mostly represented in the informal economy (UN Women, 2015). As women primarily do unpaid work it is expected that the effect is more pronounced for women.

The response variable employment status for the regressions is categorical and exhibits a hierarchical order. Therefore a sequential logit, with two steps in the hierarchical order, is applied. First a binary logit on employment is regressed and second a binary logit on informal employment is applied. These stages are assumed to be conceptually distinct and statistically independent. The sequential ordering thus allows for category-specific effects.

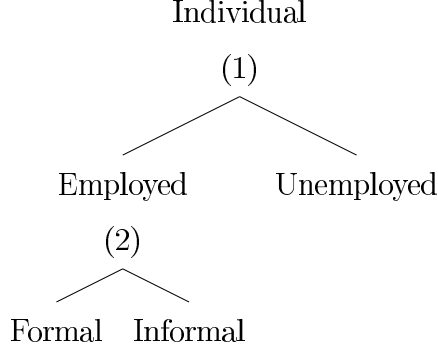


Figure 2: Employment tree

$$P(y_1 = \text{Employed}) = F(\beta_0 + \beta_1 age + \beta_2 age^2 + \beta_3 educ + \beta_4 urban + \beta_5 married + \beta_6 gender + \beta_7 unpaid + \beta_8 unpaid * gender) \quad (1)$$

$$P(y_2 = \text{Informal}) = F(\gamma_0 + \gamma_1 age + \gamma_2 age^2 + \gamma_3 educ + \gamma_4 urban + \gamma_5 married + \gamma_6 gender + \gamma_7 unpaid + \gamma_8 unpaid * gender) \quad (2)$$

Based on the classical Mincer wage equation the relation ship between employment status and age is modelled by a quadratic polynomial, while for education a simple linear term is used (Lemieux, 2006). A dummy variable for being an urban citizen and a dummy variable for being married are included to account for potential differences between these groups. To control for differences among gender, the dummy variable gender is included. The continuous variable unpaid work is added as people engaged in unpaid work are expected to be more likely unemployment or informally employed, as they are more restricted in time. As this might especially apply to women an interaction term between gender and unpaid work is added.

The probabilities for the three outcomes of the sequential logit are derived as follows:

$$P(y_1 = \text{Unemployed}) = 1 - P(y_1 = \text{Employed}) \quad (3)$$

$$P(y_2 = \text{Informal}) = (P(y_1 = \text{Employed})) * P(y_2 = \text{Informal}) \quad (4)$$

$$P(y_2 = \text{Formal}) = (P(y_1 = \text{Employed})) * (1 - P(y_2 = \text{Informal})) \quad (5)$$

4 Results

Table 4 displays the average marginal probability for the variables of interest gender, unpaid work and the interaction between gender and unpaid work, for the logit regressions (1) and (2).⁶ Moreover, in the first two columns the table displays the results for the reduced model, which means that unpaid work is excluded from model (1) and (2). Being female decreases the probability of being employed by 4.4 percentage points for zero hours worked in unpaid work and holding all other covariates constant. Without adding unpaid work, being female reduces the probability of being employed by 11.8 percentage points. The interaction indicates that there is a difference in the impact of unpaid work on being employed for men and for women. The effect for men is given by the coefficient of unpaid work. The probability of being employed decreases for both, but the slopes are significantly different, c.p. As for any regression results, caused inference must be treated with great caution, in particular since reverse causality may be a major issue. However, standard strategies to address this issue, like instrumental variables are largely infeasible due to the lack of adequate instruments (see Ponthieux and Meurs, 2015).

The forth column displays the average marginal effects for equation (2) and its reduced form in column two. Being female decreases the probability of being informally employed, by 5.8 percentage points, for zero hours worked in unpaid work and holding all other covariates constant. While the probability of being informally employed increases for women, it decreases if unpaid work is incorporated to the regression equation. The interaction term is statistically significant and states that the slope for women differs to that of men, with a difference of 0.43 percentage points, c.p. Thus unpaid work has a significant

⁶Table 5 displays the whole regression results for the logit regressions (1) and (2).

impact on informal employment. Moreover, the effect for men is statistically insignificant and can also be considered economically insignificant as the magnitude is small.

	Employed	Informal	Employed (1)	Informal (2)
Female	−0.1182*** (0.0016)	0.0629*** (0.0028)	−0.0436*** (0.0023)	−0.0576*** (0.0048)
Unpaid Work			−0.0040*** (0.0001)	0.0004 (0.0002)
Unpaid Work x Female			0.0008*** (0.0001)	0.0043*** (0.0002)

Table 4: Logit regression: Average marginal probabilities

The use of the logit link function in the sequential logit implies that the effect of the independent variable changes over the range of the variable (Winkelmann and Boes, 2006).

To account for the impact variation of explanatory variables probabilities for unemployment, informal and formal employment are estimated for different covariate combinations.

The probabilities are calculated for 24 years (first age quartile) and 37 years (median age), as these are within the predominant child bearing and rearing years. Probabilities are displayed for 5 hours worked in unpaid work per week (median men) as well as 14 hours (first quartile women), 27 hours (median women) and 42 hour (third quartile women) spend on unpaid work. Further, the urban population⁷ is considered and education is set to its median of 9 years. These variable combinations are chosen to cover the population, which is primarily expected to be affected by care responsibilities and therefore spent more hours on unpaid work. The results are displayed in Table 6 for unmarried women, in Table 7 for married women and in Table 8 for unmarried men and Table 9 for married men.

In all considered variable combinations being unemployed is the most unlikely

⁷Results for the rural population are displayed in Table A4 to A7.

	Employed (1)	Employed (2)	Informal (3)	Informal (4)
Intercept	-1.6029*** (0.0408)	-1.7636*** (0.0421)	4.9459*** (0.0478)	5.0784*** (0.0483)
Age	0.1852*** (0.0021)	0.2158*** (0.0022)	-0.0875*** (0.0024)	-0.0956*** (0.0024)
Age ²	-0.0020*** (0.0000)	-0.0024*** (0.0000)	0.0009*** (0.0000)	0.0011*** (0.0000)
Education	0.0372*** (0.0018)	0.0294*** (0.0019)	-0.2095*** (0.0015)	-0.2073*** (0.0016)
Urban	-0.0138 (0.0170)	-0.0460** (0.0174)	-0.9295*** (0.0163)	-0.9219*** (0.0163)
Married	0.0814*** (0.0161)	0.2732*** (0.0166)	-0.2232*** (0.0124)	-0.2808*** (0.0126)
Female	-1.0653*** (0.0141)	-0.4443*** (0.0227)	0.2576*** (0.0117)	-0.2343*** (0.0196)
Unpaid Work		-0.0417*** (0.0010)		0.0015 (0.0009)
Unpaid Work x Female		0.0089*** (0.0011)		0.0174*** (0.0010)
AIC	127365.1178	121904.3448	164431.8623	163400.9980
BIC	127436.4336	121996.0365	164502.1327	163491.3457
Log Likelihood	-63675.5589	-60943.1724	-82208.9311	-81691.4990
Deviance	142626.1494	136659.3576	187280.4839	186091.2097
Num. obs.	196412	196412	169165	169165

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 5: Logit regression: Coefficients

situation. Married women at median age are most likely formally employed if they spent 5 or 14 hours on unpaid work, while all other women are most likely informally employed over the range of considered covariate combinations.

Human capital theory suggest that younger women might be more likely informally employed as they have not yet gained enough experience and on-the-job training.

But on average in Mexico women give birth to their first child with 21.3 years (OECD, 2009). This goes along with intensive needs for unpaid care work in the family and might especially drive young women into flexible working arrangements. Younger women most likely have younger children and therefore more rigid care responsibilities, which channel them into more flexible working arrangements, predominantly found in the informal economy. Older married women, presumably have older children and therefore their unpaid care responsibilities might not restrict them as much in time as younger women. Additionally, it can be argued, that single women are most likely solely responsible for unpaid care work, which restrict them even more to engage in rigid formal jobs. Accordingly, there is evidence that unpaid responsibilities channel women into informal employment due to time restrictions. As women who do not want to work and do the housework are not included in the considered sample, it is unlikely that in these considered cases women prefer to not do wage work but the unpaid work.

Concerning male individuals, those at age 24 as well as unmarried men are most likely informally employed while married median age men are most likely formally employed over the range of hours spend on unpaid work. The probability of being informally employed decreases with the amount of hours spend on unpaid work. As men rarely spent more than 20 hours on unpaid work, unpaid work seems to be insignificant in magnitude, according to partial effects. Moreover the coefficient was insignificant as well as small in magnitude, which leads to the conclusion, that hours spent on unpaid work does not have a significant effect on employment status for men. Moreover the issue of reverse

causality arises as unemployed men might have more time to engage in unpaid work.

According to Qi and Dong (2016) not only the length of time women spend on unpaid work influence their job choices but also the point in time when unpaid work occurs. This means that while duties such as shopping and repair work could be postponed to different points in time, child care and food preparation duties, can only be performed at a continuous or regular basis (Qi and Dong, 2016). As it was portrayed in the summary statistics, women spend triple the time on housework and double the time on child care when compared with men. It is likely that in the particular Mexican context, women are restricted in time and space to engage in certain jobs, since they are bind to perform unpaid work on a side. Thus, future studies need to control for these differences in tasks to better understand the relationship between unpaid work and labor market status in Mexico

Moreover, in this context aspects such as class, ethnicity, race and geographic aspects inter alia need to be taken into account, to properly evaluate the relation between unpaid work, job choice and poverty (Chen et al., 2005).

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.127	0.476	0.397	0.055	0.419	0.526
14	0.163	0.491	0.346	0.072	0.450	0.477
27	0.230	0.497	0.273	0.106	0.489	0.405
42	0.328	0.475	0.197	0.163	0.515	0.321

Table 6: Partial marginal effects married women

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.160	0.515	0.325	0.071	0.477	0.453
14	0.204	0.520	0.276	0.093	0.504	0.403
27	0.282	0.507	0.211	0.135	0.532	0.333
42	0.391	0.464	0.145	0.204	0.541	0.255

Table 7: Partial marginal effects unmarried women

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.097	0.535	0.368	0.037	0.462	0.501
14	0.136	0.515	0.349	0.053	0.457	0.489
27	0.213	0.473	0.315	0.089	0.445	0.467
42	0.336	0.402	0.262	0.154	0.418	0.429

Table 8: Partial marginal effects married men

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.113	0.574	0.312	0.048	0.523	0.428
14	0.157	0.549	0.294	0.069	0.515	0.416
27	0.243	0.496	0.261	0.113	0.495	0.392
42	0.375	0.413	0.212	0.193	0.455	0.352

Table 9: Partial marginal effects unmarried men

Figures 3 and 4⁸ visualize the results of the sequential logit by displaying the probabilities of being unemployed, informally employed or formally employed over a range of 0 to 60 hours spend on unpaid work. The considered population are urban citizens, with 9 years of education (median). Results are displayed for men and women aged 24 (first quartile) and 37 years (median). While Figure 3 displays the married population, Figure 4 displays the unmarried population. The graphics visualize the implications of Tables 6/ 7/ 8/ 9. Hence, the likelihood for women of being informally employed increases with the amount of hours spent on unpaid work. As men rarely spent more than 20 hours on unpaid work, primarily these probabilities should be of interest.

⁸Figure A5 and A6 show the results for the rural population.

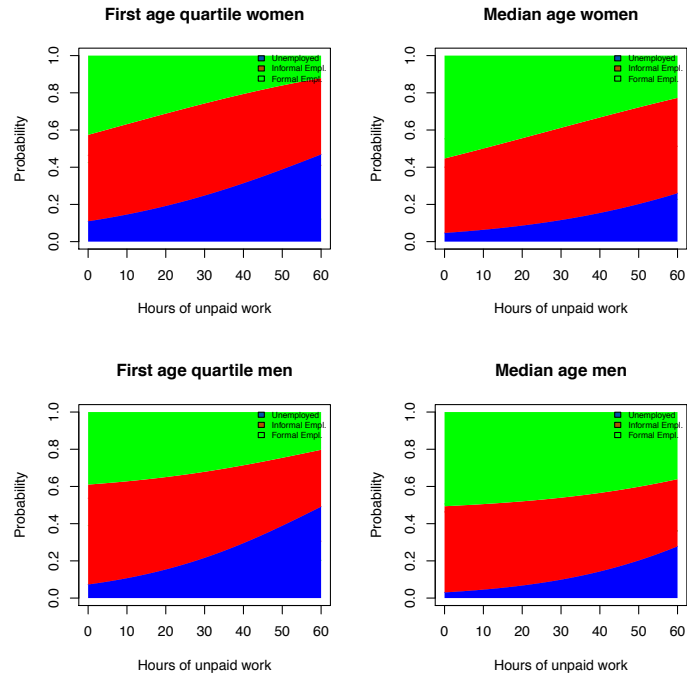


Figure 3: Sequential logit graphs for married men and women

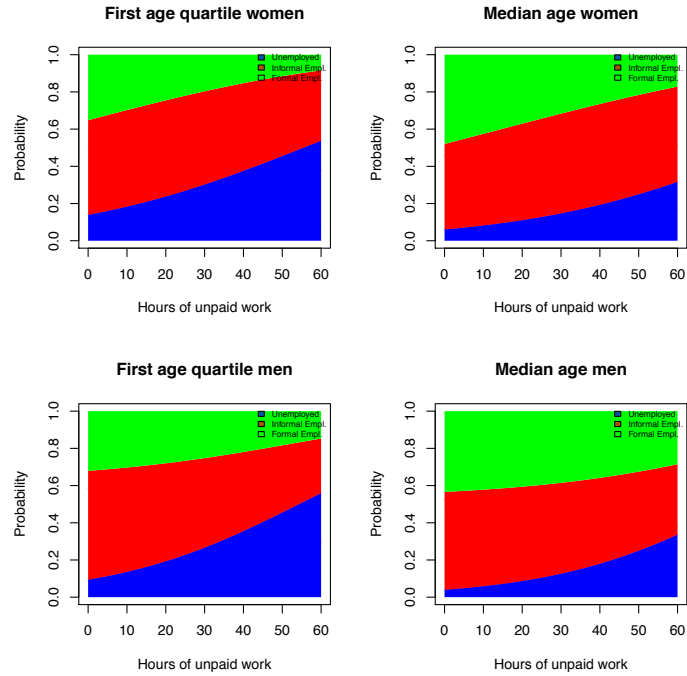


Figure 4: Sequential logit graphs for unmarried men and women

5 Conclusion

In Mexico, where the picture of the breadwinner father and supportive mother still persists, it is crucial to understand the relation between unpaid work and labor market outcomes to eradicate poverty, since little governmental policies exist to support women in their care duties.

According to the data women spent, depending on their employment status, three to five times as much time on unpaid work compared to men, which predominantly incorporate duties that have to be accomplished on a daily basis. These unpaid responsibilities are expected to restrict them in time and space to find decent employment. These realities motivated the empirical investigation of this paper. The underlying hypothesis states that unpaid work has adverse effects on the employment status of individuals, especially women. Women are expected to be channeled into more flexible working conditions primarily found in the informal sector, due to their rigid care responsibilities.

To evaluate the relationship of unpaid work and employment status a sequential logit model is applied. The sequential ordering allows for category specific effects and the logit link function implies that the effect of the independent variable changes over the range of the variable. Therefore marginal average effects and partial marginal effects are calculated.

In line with the hypothesis our findings show that the probability of being informally employed increases with each hour spend on unpaid work for women, c.p. The probabilities for each employment category differ between age and marital status. While younger and unmarried women are most likely informally employed, middle age married women have a higher likelihood to be formally employed for under 17 hours spend on unpaid work. While younger women have younger kids and more rigid care responsibilities middle age women have more independent children, leading to more flexible care responsibilities. Moreover, they might have gained more working experiences that facilitate obtaining formal jobs. These relations need to be taken more into account in future

works.

In turn, our results portray that unpaid work has a slight impact on male unemployment, while it has neither a statistical effect nor a economical effect on male informal employment.

These results provide some evidence for the assumption that inequalities in unpaid work, shaped by social norms, harm women labor market outcomes in Mexico. However, further studies are needed to explore drivers of labor division such as on the influence of social norms and comparative advantages. Furthermore, differences between women and men might result from the type of unpaid work they do, as tasks predominantly done by women, such as child care cannot be postponed in time. Thus, as younger age women are in the child rearing and bearing years, they might be even more restricted in their ability to find decent employment. Future empirical investigations need to take into account the different types of housework and the possible differences on the impact on wages and employment status. A potential source for investigating time use issues and interruptions of market work are time use data.

This analysis supports the long persistent feminist conviction that in order to empower women and make it possible for everyone to obtain decent work and fight poverty in all its forms, it is crucial to understand the relationship between unpaid and paid work.

References

- Badgett, M. L. and Folbre, N. (1999). Assigning care: Gender norms and economic outcomes. *International Labour Review*, (138):311–326.
- Benería, L. (2003). *Gender, development, and globalization: Economics as if all people mattered*. Routledge, New York, NY.
- Campillo, F. (2003). Unpaid household labour: A conceptual approach. In Gutiérrez, M., editor, *Macro-economics*, pages 106–121. Zed, London.
- Cassirer, N. and Addati, L. (2007). *Expanding women’s employment opportunities: Informal economy workers and the need for childcare*. ILO Geneva.
- Chen, M., Vanek, J., Lund, F., Heintz, J., and Jhabvala, R. (2005). *Women, work and poverty*, volume 2005 of *Progress of the world’s women*. UNIFEM, New York, NY.
- Chen, M. A., Vanek, J., and Carr, M. (2004). *Mainstreaming informal employment and gender in poverty reduction: A handbook for policy-makers and other stakeholders*. New gender mainstreaming series on development issues. Commonwealth Secretariat and International Development Research Centre, London.
- Elson, D. (1999). Labor markets as gendered institutions: Equality, efficiency and empowerment issues. *World Development*, 27(3):611–627.
- Ferrant, G., Pesando, L. M., and Nowacka, K. (2014). Unpaid care work: The missing link in the analysis of gender gaps in labour outcomes. *Centro de Desarrollo de la OCDE*, 5.
- INEGI (2014). *La informalidad laboral: Encuesta Nacional de Ocupación y Empleo*. Instituto Nacional de Estadística y Geografía (INEGI), Aguascalientes, Mexico.

- INEGI (2016). *Encuesta Nacional de Ocupación y Empleo (ENOE), población de 15 años y más de edad: Microdatos - descarga*. <http://www3.inegi.org.mx/sistemas/tabuladosbasicos/tabtema.aspx?s=est&c=33698> [accessed on 9.7.2016].
- Lemieux, T. (2006). The “mincer equation” thirty years after schooling, experience, and earnings. In Grossbard, S., editor, *Jacob Mincer A Pioneer of Modern Labor Economics*, pages 127–145. Kluwer Academic Publishers, Boston.
- Lopez-Ruiz, M., Benavides, F. G., Vives, A., and Artazcoz, L. (2017). Informal employment, unpaid care work, and health status in spanish-speaking central american countries: A gender-based approach. *International journal of public health*, 62(2):209–218.
- Mascherini, M., Bisello, M., and Rioboo Leston, I. (2016). *The gender employment gap: Challenges and solutions*, volume 16/38/EN of *Research report / Eurofound*. Publications Office of the European Union, Luxembourg.
- OECD (2009). Fertility rates. In OECD, editor, *Society at a Glance 2009*. OECD Publishing, Paris.
- Polachek, S. (1995). Human capital and the gender earnings gap: A response to feminist critiques. In Kuiper, E. and Sap, J., editors, *Out of the margin*, pages 44–57. Routledge, London, New York.
- Ponthieux, S. and Meurs, D. (2015). Gender inequality. In Atkinson, A. B. and Bourguignon, F., editors, *Handbook of income distribution*, Handbooks in economics, pages 981–1146. Elsevier Science, Burlington.
- Qi, L. and Dong, X.-y. (2016). Unpaid care work’s interference with paid work and the gender earnings gap in china. *Feminist Economics*, 22(2):143–167.
- R Core Team (2016). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

- Reid, M. G. (1934). *Economics of Household Production*,. John Wiley, New York.
- Rodin, D. L., McNeill, K., Vite-León, N., and Heymann, J. (2012). Determinants of informal employment among working mothers in mexico. *Community, Work & Family*, 15(1):85–99.
- Segrest, S. L., Romero, E. J., and Domke-Damonte, D. J. (2003). Exploring the role of machismo in gender discrimination: A comparison of mexico and the us. *Equal Opportunities International*, 22(1):13–31.
- UN (1996). *Report of the Fourth World Conference on Women: Beijing, 4 - 15 September 1995*. World Conference on Women Vereinte Nationen, New York.
- UN (2016). *Sustainable Development Goals: 17 Goals to Transform our World*. <http://www.un.org/sustainabledevelopment/sustainable-development-goals/> [accessed on 11.7.2016].
- UN Women (2015). *Transforming economies, realizing rights*, volume 2015-2016 of *Progress of the world's women*. UN Women, New York, NY.
- Winkelmann, R. and Boes, S. (2006). *Analysis of Microdata*. Springer-Verlag Berlin Heidelberg, Berlin, Heidelberg.

A Appendix

Table A1: Variables

Variable	Coding	Definition	Explanation
Gender (gender)	0 1	Male Female	Sex of the questioned person
Unemployed (empl)	0 1	unemployed employed	Population clasified as employed and unemployed
Reproductive work (repro)	Number	Hours	Totoal ammount of hours of reproductive work (repro= hwork2 and/or hwork3 and/or hwork4 and/or hwork5 and/or hwork6 and/or hwork7 and/or hwork8
Care taking (hwork2)	0-97	Hours	Free exclusive care taking of kids, elderly, handycaped, ill persons
Errand (hwork3)	0-97	Hours	Shopping, account keeping, make transactions, provide security
Accompany h. members (hwork4)	0-97	Hours	Bring a household member to school, the doctor or other activities
Construction (hwork5)	0-97	Hours	Construct or enlarge residence
Repair work (hwork6)	0-97	Hours	Repair or keep up your residence, furniture, electric devices or vehicles
Housework (hwork7)	0-97	Hours	Hours dedicated to housework (wash, iron , prepare food, sweep)
Community work (hwork8)	0-97	Hours	Provide free services to your community (get pantries, care for people in the hospital)
Hourly wage (hwage)	Number	Hourly wage	monthly wage devided by hours worked

Education (educ)	1-24	Years	Years of schooling
Age (age)	14-97	Years	Age
Informal (infor)	1 0	Informal Formal	Classification of the primary employment by formal and informal
Urban (urban)	1 0	Urban citizen Rural citizen	Urban is defined as more than 2500 citizens
Employment status (estat)	0 1 2	Unemployed Informal employed Formal employed	Clasification of employment status of the economic active popultaion
Employment status 2 (estat2)	0 1 2 3	Unemployed Informal employed Formal employed Unavailable	Clasification of employment status of the economic active popultaion
Married (married)	1 0	Yes No	Marital status
Weight (FAC)	Number	Inflation factor	Value of inflation factor of an individual

	Mean	Std.dev	Min.	1st Quant.	Median	3rd Quant.	Max.
Age	39.36	17.77	14.00	24.00	37.00	51.00	97.00
Education	9.22	4.46	0.00	6.00	9.00	12.00	24.00
Unpaid Work	29.67	20.43	0.00	14.00	27.00	42.00	161.00
Care	6.63	12.02	0.00	0.00	0.00	10.00	97.00
Errand	2.26	2.69	0.00	0.00	2.00	3.00	72.00
Accompany	0.69	1.94	0.00	0.00	0.00	0.00	80.00
Construction	0.00	0.39	0.00	0.00	0.00	0.00	60.00
Repair work	0.04	0.60	0.00	0.00	0.00	0.00	56.00
Housework	19.97	12.53	0.00	10.00	20.00	28.00	96.00
Community work	0.08	1.14	0.00	0.00	0.00	0.00	88.00

Table A2: Summary statistics women

	Mean	Std.dev	Min.	1st Quant.	Median	3rd Quant.	Max.
Age	38.17	17.61	14.00	23.00	36.00	50.00	97.00
Education	9.51	4.41	0.00	6.00	9.00	12.00	24.00
Unpaid work	7.12	8.76	0.00	0.00	5.00	10.00	115.00
Care	1.48	4.71	0.00	0.00	0.00	0.00	97.00
Errand	1.12	1.97	0.00	0.00	0.00	2.00	70.00
Accompany	0.21	1.13	0.00	0.00	0.00	0.00	70.00
Construction	0.04	0.89	0.00	0.00	0.00	0.00	78.00
Repair work	0.41	1.78	0.00	0.00	0.00	0.00	50.00
Housework	3.79	5.14	0.00	0.00	2.00	7.00	84.00
Community work	0.07	1.02	0.00	0.00	0.00	0.00	70.00

Table A3: Summary statistics men

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.122	0.659	0.219	0.052	0.632	0.316
14	0.157	0.659	0.184	0.069	0.655	0.276
27	0.222	0.638	0.140	0.102	0.675	0.223
42	0.318	0.585	0.096	0.157	0.676	0.168

Table A4: Partial marginal effects rural married women

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.154	0.676	0.170	0.068	0.677	0.255
14	0.197	0.663	0.140	0.089	0.691	0.220
27	0.273	0.624	0.103	0.130	0.697	0.173
42	0.380	0.551	0.069	0.197	0.677	0.127

Table A5: Partial marginal effects rural unmarried women

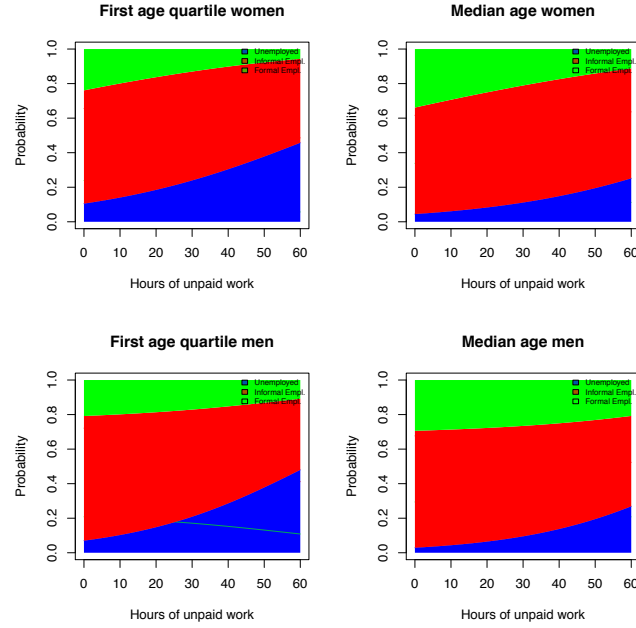


Figure A5: Sequential logit graphs for married men and women in rural areas

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.093	0.712	0.195	0.036	0.674	0.291
14	0.131	0.685	0.185	0.051	0.666	0.283
27	0.205	0.628	0.166	0.085	0.646	0.270
42	0.326	0.536	0.139	0.148	0.605	0.247

Table A6: Partial marginal effects rural married men

	Unempl. (24)	Infor. (24)	Formal (24)	Unempl. (37)	Infor. (37)	Formal (37)
5	0.109	0.733	0.159	0.046	0.719	0.234
14	0.151	0.700	0.149	0.066	0.707	0.227
27	0.234	0.633	0.133	0.109	0.678	0.214
42	0.364	0.528	0.108	0.186	0.622	0.192

Table A7: Partial marginal effects rural unmarried men

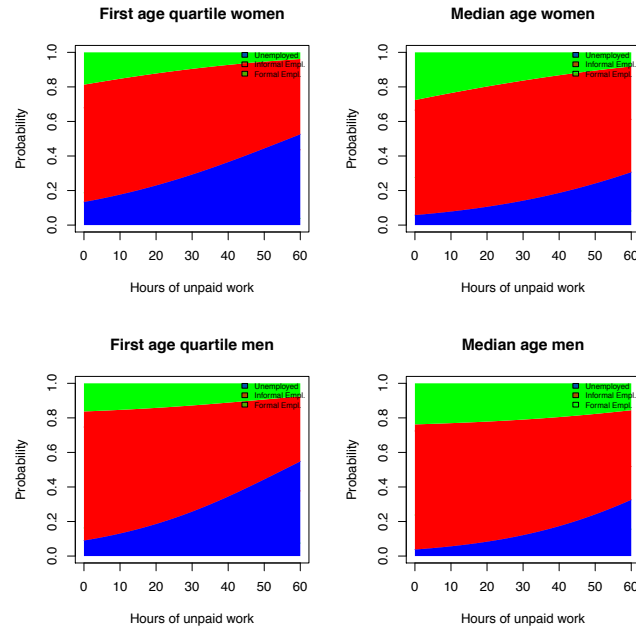


Figure A6: Sequential logit graphs for unmarried men and women in rural areas