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FEMALE LABOUR SUPPLY AND INTERGENERATIONAL PREFERENCE FORMATION: EVIDENCE FOR MEXICO*

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Abstract

Using a national representative sample for Mexico, we analyse the effect of a husband having a working mother on the probability that he has a working wife. Our results show that labour force participation by a husband's mother increases the probability of the labour force participation of his wife by 15 percentage points. The effect is mainly driven by males with less than a high school education. One possible confounding factor is the effect of labour force participation of the wife's mother on the wife's labour participation decision. However, in a different sample, we do not find any effect of work force participation of wives' mothers on wives' decisions to join the labour force. Finally, we test the effect of the work force participation of a husband's mother on the husband's preferences regarding child-rearing practices. We find that having a working mother strongly reduces the probability that daughters will be tasked to care for siblings and fosters preferences for a more egalitarian allocation of educational resources among children. Hence, promoting female labour force participation can have important dynamic implications, especially for developing countries.

Keywords: Female Labour Supply; Family; Preferences; Social Norms; Role Models.

JEL: D10; J12; J16; J22; O54.

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1. Introduction

Female labour force participation has markedly increased in many countries in the second half of the twentieth century (Walsh, 2001). Acemoglu et al. (2004; p. 499) note that it was in the 1940s during WWII that “the largest proportional rise in female labour force participation” took place in the United States, an increase that they conclude was mainly induced by the mobilisation of men during the war. For Latin America and the Caribbean, the ratio of female-to-male labour force participation has also substantially increased since the early 1980s, although it is still approximately 10 percentage points below the average for OECD countries (Chioda, 2011). Mexico has also experienced an increase in female labour participation. Figure 1 shows a positive trend in the percentages of both married and non-married working females in highly urban areas,¹ although it is clear that most of the increase is driven by married females. In this context, Mexico presents an interesting case for analysis.

[Figure 1 about here]

The literature offers various explanations for the rise in female labour force participation. Some researchers argue that the dominant factor is technological advances, e.g., the introduction of domestic appliances, which have decreased household work time (Cavalcanti and Tavares 2008; Greenwood et al. 2005). However, others argue that the increase in female labour participation is due to availability of contraceptives (Goldin and Katz 2002; Goldin 2006). Another explanation concerns the possible effects of families’ role models, which are transmitted from one generation to the next (Fernández et al. 2004; Fernández and Fogli 2009a, 2009b; Fernández 2007).

Fernández et al. (2004) argue that a son who was raised by a working mother has a modified preference for a working wife; alternatively, even if his preferences do not change, the son may be more productive in housework (possibly by being more cooperative). These authors test their main hypothesis, using cross-sectional data, on females between 30 and 50 years old, from the General Social Survey for the United States,

¹ The only yearly series that is comparable across time is for highly urban areas. It is not possible to compare labour force participation for the whole country.

an annual series that starts in the early 1970s. Their results show that having a working mother increases the probability of having a working wife by 15-25 percentage points (with a 46-70 percent effect on the base probability).

Kawaguchi and Miyazaki (2009), who based their analysis on the General Social Surveys from 2000 to 2003 for the Japanese case, and Butikofer (2013), who employed the 2005 wave household panels for the case of Switzerland, conduct the same test. Although in the Japanese case, they do not find an effect of husbands' mothers, the effect in the Swiss case reaches 8 percentage points (10 percent relative to the base rate). In addition, both papers test the hypothesis that sons' preferences are affected by the work status of their mothers. Kawaguchi and Miyazaki (2009) show that the work status of a husband's mother modifies his views regarding a wife's household role, i.e., husbands with working mothers agree that wives should work and that a working wife does not negatively affect the development of children. Butikofer (2013), in contrast, shows that wives' income contribution to households decreases the life satisfaction of husbands who did not have working mothers. However, they are unable to test whether the work status of husbands' mothers affects how husbands' children are raised.

Available data allows us to test the hypothesis of Fernández et al. (2004) for the Mexican case. In contrast to previous studies, in the Mexican case, it is possible to investigate whether the grandmother's working status affects how grandchildren are raised. Mexico is an interesting case for several reasons. First, although there are several studies on the female labour supply in Mexico, none use the approach used in the present study.² Second, Mexico has one of the lowest female labour force participation rates in the world (excluding the Middle East and North Africa; Chioda, 2011). As Figure 1 shows, in highly urban areas, labour force participation among married females is low and close to 45 percent. Third, the results for developed countries are not necessarily similar to those for developing countries. Owing especially to significant differences in educational levels

² Anderson and Dimon (1998) investigate the effect of the cultural and structural features of Mexico on women's labour force participation. Arceo and Campos (2010) estimate traditional labour supply elasticities, using Heckman and Tobit models; similarly to Blau and Kahn (2007), they conclude that the cross-elasticity of married women has decreased during the 1990-2000 period. In addition, Gong and van Soest (2002) investigate the labour supply of married women in Mexico City, using a structural model.

among different countries, expected average income in labour markets varies. These differences suggest that the intergenerational persistence of traditional role models, i.e., wives who do not participate in the labour market, is stronger in developing than in developed countries. Fourth, as noted above, given the characteristics of available data, it is possible to examine whether the work status of husbands' mothers has any effect on husbands' children. In particular, in the Mexican case, it is possible to explicitly test whether the work status of husbands' mothers affects the perception of how children should be raised. In particular, it is possible to test whether having a working mother affects beliefs about who should care for siblings, do housework or obtain a paid job in case of family need. Moreover, it is possible to test whether having a working mother affects a husband's beliefs regarding the allocation of education expenses. To our knowledge, this is the first paper to investigate such links. Finally, it must be noted that the current paper is consistent with the growing literature on the importance of culture and the intergenerational transmission of social norms and beliefs.³

For the analysis, we use the 2011 ESRU Social Mobility Survey in Mexico (*Encuesta ESRU de movilidad social en México 2011*, EMOVI-2011), which includes information on the characteristics of surveyed husbands' wives and mothers. Additionally, and crucially for the present study, this survey includes retrospective information on parental work status when the individual was 14 years old. Nevertheless, one drawback of the data is that we cannot simultaneously observe the working behaviour of husbands' mothers and mothers-in-law.

The results are consistent with the hypothesis of Fernández et al. (2004). Once we control for demographic and geographic characteristics, our econometric estimations show that the

³ Alesina et al. (2013) argue that the historical gender division of labour is due to societies that practise plough agriculture. Blau and Kahn (2011) and Fernández and Fogli (2009b) investigate women's labour supply, using the country of migration and the parental country of migration, respectively. Van Putten et al. (2008) analyse whether the daughters of working mothers show different job patterns than the daughters of non-working mothers. Casey and Dustmann (2010) reveal a strong intergenerational transmission of identity across generations of immigrants in Germany. In addition, Dohmen et al. (2011) and Farré and Vella (2013) show evidence of transmission of attitudes across generations in Germany and the United States, respectively. For the United Kingdom, Johnston et al. (2012) investigate how maternal gender role attitudes affect children's later educational outcomes and supply of labour. See also the contributions by Deri and Ross (2009), Escrinche (2007), Lundberg (2005), Neumark and Postlewaite (1998), Rijken and Liefbroer (2009), Sandler Morrill and Morrill (2013) and Stevens and Boyd (1980).

probability of having a working wife among husbands who have a working mother increases by 15 percentage points on average. When other controls, such as family income, the household of origin's characteristics and several interactions that control for possible wife and/or husband biases, are included, the effect remains largely the same. This effect is large and represents 63 percent of the base probability.

The effect of having a working mother is most significant for individuals with less than a high school education (which represents approximately 70 percent of the male population in Mexico). In this case, the probability of having a working wife, given that one has a working mother, increases by 23 percentage points. In contrast, for husbands with at least a high school education, we found a null effect of working mothers. This result suggests that gender roles are stronger for individuals with less education and that our previous argument on the potentially stronger intergenerational persistence of traditional role models in developing countries is correct. One disadvantage of the database is that it does not include, for surveyed husbands, information on wives' parents' work statuses. Nevertheless, the survey is representative of both males and females. Hence, it is possible to analyse the effect of having a working mother on surveyed married women. In such a case, results strongly indicate that having a working mother has no effect on the labour force participation of married women.

We also examine whether the work status of the husband's mother when he was 14 years old has any effect on his preferences regarding how children should be raised. In other words, we test whether a grandmother's working status, when the father was a teenager, affects the way her grandchildren are raised. There is little prior evidence on this subject; hence, the results presented in this paper are a significant contribution. In particular, we test whether a typical household prefers a more egalitarian allocation of educational resources among children. The results show two patterns: first, having a working mother strongly reduces the probability that a girl will be asked to care for her siblings; second, having a working mother fosters preferences in the husband for a more egalitarian allocation of educational resources among his children. Hence, consistent with the possible implications of public intervention for changing traditional roles, promoting female labour force

participation potentially has important dynamic effects, especially for developing countries such as Mexico.

The paper is organised as follows: in section 2, the data are discussed, and some simple descriptive statistics are presented; in section 3, the econometric model is presented and discussed; and in section 4, graphical and econometric results are presented. Finally, section 5 concludes.

2. Data and descriptive statistics

For the analysis, we use the 2011 ESRU Social Mobility Survey in Mexico (*Encuesta ESRU de movilidad social en México 2011*, EMOVI-2011). The EMOVI-2011 was conducted by the *Espinosa Rugarcia Foundation* (ESRU) and the *Center for Studies Espinosa Yglesias* (CEEY) to measure the intergenerational social mobility of the Mexican population.⁴ This survey is representative of both men and women (both household heads and non-household heads) aged 25-64 years old at the national, urban and rural levels. The survey is a cross-section that includes past and current information on the socioeconomic conditions of respondents, such as education, job characteristics and characteristics of dwellings. For the present study, the main survey question used addresses the work status of wives: “does your partner currently have a job?” The EMOVI-2011 also includes retrospective information on each respondent’s parents’ socioeconomic conditions when the individual was 14 years old. Moreover, it is possible to obtain detailed information on respondents’ partners or spouses, siblings and children. The survey also includes data on individuals’ current beliefs.⁵

The sample size of the EMOVI-2011 is 11,001 individuals. However, for our purposes, the data are restricted to those observations of married or cohabitating couples, where the

⁴ For more details, see the webpage of the Centre for Studies Espinosa Yglesias is <http://www.ceey.org.mx/>. The Centre is a think-tank located in Mexico City.

⁵ For example, one question asks, “Between a boy and a girl, who would you require to... do more housework, care more for siblings, or work in case of need?”

partner is present in the household and the respondent is between 30 and 50 years old.⁶ As a result, the final sample includes 1,454 males, with corresponding information on their parents and wives.

One disadvantage of the data source is that the former work status of wives' mothers cannot be observed when the interviewee is the husband. However, as the survey is representative of both males and females, a sample of females with the same restrictions as the sample of males can be constructed. In other words, when the interviewee is female, it is possible to obtain a sample of wives in which the labour force participation of wives' mothers, when the interviewee was 14 years old, is observed. In that case, the sample includes 1,196 wives. To make the results nationally representative, sample weights are applied to all employed statistics and regressions.

Table 1 shows descriptive statistics for males and their wives. Husbands' average years of schooling are just above nine years, while the schooling levels of their wives are lower. Additionally, only 26 percent of wives work. In terms of the husbands' origins, there is some migration from rural to urban areas: 33 percent were born in rural areas, while only 21 percent currently live in rural areas ('rural areas' are defined as localities with fewer than 2,500 people). Finally, only 11 percent of husbands' mothers worked when the husbands were young.

[Table 1 about here]

The descriptive statistics for husbands who have and who lack a working mother are compared. In general, there are similarities in many variables; however, for the education variables that pertain to the husbands themselves, their wives and their parents, differences are statistically significant at the 5 percent level. Education levels are higher among families of husbands who have a working mother. In addition, such families have relatively fewer persons in the household. These characteristics are controlled for in the econometric analysis.

⁶ This age cohort, similar to that used in Fernández et al. (2004), makes the present study's results comparable to those of such study. In any case, the main results do not change when robustness tests are conducted on the sample.

Using both samples of husbands and wives, Figure 2 shows the proportion of married women who work relative to the work statuses of their own mothers and their husbands' mothers. The difference in the percentage of women who work, given that husbands' mothers work, is 18 percentage points. However, there is only a four percentage point difference in the case of wives' own mothers. Hence, as in Fernández et al. (2004), it appears that increases in the probability that a wife works are mainly due to the effects of the work status of her husband's mother.

[Figure 2 about here]

[Figure 3 about here]

Figure 3 shows the relationship between the working conditions of husbands' mothers with the working conditions of their wives. The graph clearly shows that this correlation is positive and substantially larger for husbands with less than a high school education than for husbands with at least a high school education. Thus, it is suggested that gender roles are stronger for individuals with less education.

3. The Econometric Model

As noted above, the first purpose of the present study is to estimate the effect of the working status of a husband's mother on the working status of his wife. Given that there are differences in some observable characteristics between husbands whose mothers worked and husbands whose mothers did not work, it is important to control for these characteristics. Thus, the following probit regression is estimated for the control variables Z :⁷

$$\Pr[Work_h^{Wife} = 1|Z] = F[\theta Work_h^{Mother} + \beta X_h + \gamma G_h + \delta I_h + \pi O_h] \quad (1)$$

⁷ We also estimated linear probability models, with results very similar to those of the probit model. We present the marginal effects of the probit model, using robust standard errors that are very similar to the standard errors that lacked that option.

where $Work_h^{Wife}$ is a dummy variable that indicates the work status of the wife of husband h ; $Work_h^{Mother}$ is a dummy variable that indicates the work status of the mother of husband h when he was 14 years old; X is a vector of demographic characteristics of husbands and wives (age and education, husbands' parents' education levels and knowledge of an indigenous language); G is a vector of dummy variables of geographical considerations (a rural dummy and three regional dummies); I is a set of variables that includes the husband's income, the household's current size, the total number of children per household and the total number of children who are younger than six years old; and O is a vector of characteristics of the family of origin of the husband. This vector includes the perception of income and assets (having a washing machine, having a refrigerator and the number of cars) in the household of origin.

The identification assumption is that the unobserved components in the current work status decision of a wife are not correlated with the work status decision of her husband's mother when the husband was 14 years old. The previous literature has assumed that, after controlling for important observable characteristics, this identification assumption holds (Fernández et al. 2004; Butikofer 2013; Kawaguchi and Miyazaki 2009).

Additionally, information on each wife's mother is not available, which may be problematic if it is believed that the wife's labour supply is determined by characteristics of her own mother and that this omitted variable is positively correlated with the work status of the husband's mother. Because no dataset for Mexico includes both variables, it is not possible to use two-sample estimates. Nevertheless, various robustness tests can be performed. First, various control variables intended to account for the possible preferences of wives and their husbands' households of origin are included. If these preferences are correlated with the labour supply of wives' mothers, large changes on the main estimate should be expected. Second, regressions of the labour supply decision of daughters on their mothers' labour supply decisions are also estimated.

Marginal effects on the covariates are presented after controlling for different characteristics. First, we present the results after controlling only for demographic and geographic characteristics. Then, results after controlling for husbands' incomes and

household sizes are presented. Third, the characteristics of households of origin are controlled for. Finally, to make the results more robust, 27 interactions of the demographic characteristics, geographic characteristics and the characteristics of each husband's household of origin are included; these interactions control for possible biases that affect the labour supply decisions of both husbands' mothers and their wives. This specification works as a robustness test because if any confounding factors that are correlated with those interactions affect the labour supply decisions of both husbands' mothers and wives, then we should observe changes in the main coefficient.

4. Results

A. Main estimates

Table 2 shows the main results of the estimation of equation (1). When the demographic characteristics of husbands, their parents and their wives are included, the average increase in the probability that a wife works due to the work status of her husband's mother is 15.4 percentage points. When geographic characteristics are controlled for, the effect is 14.7 percentage points. Even when the education of the husband is controlled for, the results indicate that it is possible that the working status of the wife is determined by socioeconomic conditions. Column (3) adds as controls the husband's income, household size, number of children, number of children under six years old as well as certain characteristics of the household of origin: perception of income status (the variable ranges from 1 to 10 and indicates where an individual locates his family in the income distribution when he was 14 years old), whether the family of origin had a refrigerator and/or a washing machine, and number of cars. Column (3) indicates an effect of 16.5 percentage points on the probability that the wife works.

[Table 2 about here]

Finally, Column (4) includes 27 interaction terms that control for possible confounding factors between the working status of the husband's mother and unobserved components in

the probability of wives working status. Interactions are included among the demographic characteristics of husbands, wives and parents, as well as between the demographic characteristics of wives and the assets of their husbands' households of origin. The effect of a husband having a working mother on the probability that his wife works is nearly identical to the effect shown in Column (1). Hence, it is concluded that having a working mother increases the probability of having a working wife by 15-16 percentage points on average. This effect is large, given that the proportion of working wives whose husbands' mothers do not work is only 24 percent. Hence, a husband's working mother increases the probability that he has a working wife by 63 percent, which is similar to what Fernández et al. (2004) find for the U.S. and much larger than the reported effects in Japan and Switzerland (Kawaguchi and Miyazaki 2009; Butikofer 2013).

B. Heterogeneity and Robustness tests

The main disadvantage of the data used is that it is not possible to observe the working status of wives' mothers when the interviewee is the husband. However, as the sample is representative of both males and females, we can construct a sample of wives and their mothers' working behaviour when the interviewee is the wife. Using this sample, regression models similar to equation (1) are estimated, but the dependent variable is now the work status of the female interviewee (wife), as determined by the labour force participation of her own mother when she was 14 years old.

The results are shown in Table 3. The econometric estimation shows a null effect of the working status of wives' mothers on wives' labour force participation, with effects that are always statistically insignificant and have values of between 1 and 2 percentage points. Hence, evidence does not support the hypothesis that wives' labour force participation is positively affected by the labour force participation of their mothers. This result is also supported by evidence of previous studies (Butikofer, 2013; Fernández et al., 2004).

Table 4 shows the main results when the sample is restricted to different subgroups. The effect of the work status of husbands' mothers is only relevant for husbands with less than a

high school education. In the case of husbands with at least a high school education, working mothers have a null effect on the working statuses of wives, while in the case of husbands with less than a high school education, a working mother increases the probability that his wife works by 23 percentage points on average. The effect is statistically significant at the one percent level.

[Tables 3 and 4 about here]

Table 4 also shows results for other subgroups. Fernández et al. (2004), for example, focus on a sample of wives between 30 and 50 years old. To examine whether the main results of our study hold for a more inclusive sample, regressions that restrict the ages of wives to between 25 and 60 years old are conducted. The results from Table 3 hold with a high level of significance.

C. Preference formation

[Table 5 about here]

Once it is shown that the working status of a husband's mother affects the probability that his wife works, it is important to examine whether the preferences of husbands regarding how their children should be raised are affected by the work force participation of their mothers. As noted, studies of Fernández et al. (2004), Butikofer (2013) and Kawaguchi and Miyazaki (2009) do not examine this issue. Nonetheless, studies of preference formation and cultural transmission exist (Cavalli-Sforza and Feldman, 1973 and 1981; Bisin and Verdier, 2000 and 2001). On this topic, Cavalli-Sforza and Feldman (1981) argue that, "In all living beings, including man, there are some innate behaviors...But most of human behavior is not preprogrammed, and is at least in part learned" (p. 6). With regard to transmission channels, Cavalli-Sforza and Feldman identify three types: vertical, oblique and horizontal. Whereas vertical transmission refers to the influence of parents on offspring, oblique transmission refers to the influence of members of older generations who live in the immediate environment (e.g., school teachers). Finally, horizontal transmission

refers to the influence of members of the same population cohort. The study of Bisin and Verdier (2000) suggests that vertical transmission is stronger than the others. To explain the failure of the “melting pot” theory of cultural convergence in the U.S., they argue that “parents have well-defined preferences over the cultural traits acquired and developed by their own children. Further, they have access to a socialization technology that allows them to influence the cultural traits of their children, rationally reacting to their children’s social environment” (pp. 956-7). In contrast, in an empirical study of ethnic neighbourhoods in the U.S., Borjas (1995) finds that the impact of ethnicity on intergenerational mobility is due to both neighbourhood effects (oblique and horizontal transmission) and parental effects (vertical transmission).

Based on previous studies, it can be assumed that preference formation of husbands is mainly the result of preference transmission from parents. Hence, the preferences of husbands regarding their children are largely influenced by preference transmission from children’s grandparents to their fathers. Thus, an important contribution of the present study is to examine whether preference formation of husbands varies depending on the working status of children’s grandmothers.

To estimate the effects of maternal labour force participation on husbands’ preferences regarding child-rearing, several questions in the EMOVI-2011 are of use. In particular, two questions are intended to measure preferences regarding housework and education of a husband’s children:

- I. On housework: “Independently of your current personal situation, between a boy and a girl, who should you require to do more in the case of...”
 - a) Care for siblings
 - b) Domestic work
 - c) Work to help with household expenditures

- II. On education: “If there is only enough money for one child to attend ... who would you select to attend school?”

- a) Secondary School
- b) High School
- c) College

For both questions, there are three mutually exclusive answers: 1. Boy, 2. Girl, or 3. Both a boy and a girl. With this information, it is possible to test whether having a working mother changes beliefs regarding traditional gender roles and promotes intra-household gender equality among children.

Probit regressions similar to equation (1) are estimated, using answers to previous questions as dependent variables. In particular, there is a specific interest in decisions that benefit the girl only (a dummy variable equal to 1 if the husband responds by indicating only the girl and zero otherwise) and in decisions that benefit the girl or both the boy and the girl. Table 5 shows the estimates when all characteristics (demographic, geographic, income and family of origin) and interactions are controlled for. Column (1) restricts the dependent variable to answers that indicate only a girl, and Column (2) restricts the dependent variable to answers that indicate only a girl or both a boy and a girl.

Interestingly, in the case of housework (I), families in which the husband's mother worked when the husband was 14 years old are 8 percentage points less likely to demand care for siblings from girls, an effect that is statistically significant at the 5 percent level. However, no significant effects are found for domestic housework and for paid work in case of need. Although a definitive explanation for these results cannot be given, an intuitive and plausible explanation is that demands on housework and work in case of need are heavily influenced by traditional gender roles and not necessarily influenced by the husband's mother's work status. Nevertheless, there is some evidence that the work status of a husband's mother does affect how a father raises a girl. Our results suggest that fathers whose mothers worked are open to less traditional gender roles.

With respect to education (II), families in which the husband's mother worked are more willing to invest only in girls, but the standard errors are large and a null effect cannot be ruled out. However, when the dependent variable is modified to take a value of 1 for answers of both boys and girls or only a girl and 0 otherwise, we find that labour force

participation by a husband's mother positively affects his willingness to invest in both boys and girls. In other words, having a working mother has an effect on a husband's preference formation that favours the education of daughters. This is a relevant and important result not previously observed in the literature. Hence, there are important dynamic implications for sons whose mothers participated in the labour force. Moreover, the daughters of fathers with working mothers fit less well into female stereotypes (caring for siblings, housework, etc.) and benefit relatively more from a willingness to invest in them.

5. Conclusions

Mexico has experienced a continuous rise in female labour force participation over the last two decades. However, the level of female participation remains below the levels for developed countries. To explain the specific characteristics of the Mexican case, the present study analyses possible effects of a family's role models that are transmitted from one generation to the next. Given that the differences in education levels among developing and developed countries are significant, comparing our results with existing evidence regarding a population's education level is crucial. Moreover, we contribute to related literature by analysing whether the grandmother's working status affects how grandchildren are raised.

First, following the hypothesis of Fernández et al. (2004), we use the EMOVI-2011 to test whether a husband's mother's working status when the husband was 14 years old affects the current working status of his wife. Second, given the availability of data, it is possible to test whether the grandmother's working status impacts the way her grandchildren are raised through its effect the father's preferences regarding child-rearing.

On the first point, once it is controlled for demographic and geographic characteristics, our econometric estimations show that the probability of having a working wife for those husbands who have a working mother increases by an average of 15 percentage points. The estimate does not change when other controls such as family income, the characteristics of both the husband's and wife's households of origin and several interactions that control for possible wife and/or husband biases are included. Moreover, we find no effect of labour

force participation of the wife's mother on the wife's labour force participation decisions. The effect of labour force participation of a husband's mother on labour force participation of his spouse is large and represents 63 percent of the base probability. This result is similar to that of Fernández et al. (2004) and much larger than those found for Japan (Kawaguchi and Miyazaki, 2009) and Switzerland (Butikofer, 2013). An initial explanation for the differences between the results for Mexico and for other countries relates to Mexico's low levels of female labour force participation. A second reason concerns differences in education among developing and developed countries. The present study finds that the increase in the probability of having a working wife, given that one has a working mother, is significant mainly for husbands with less than a high school education (23 percentage points). This suggests that in developing countries, there is stronger intergenerational persistence of traditional role models.

On the second point above, to our knowledge, there is no available evidence in the literature; however, we find that families in which the husband's mother worked are less willing to transmit traditional roles to their daughters. Furthermore, we find that such families are more willing to allocate educational resources to their children in an egalitarian fashion. These preferences may translate into higher employment opportunities for women, a lower gender wage gap, and higher educational attainment for women. Hence, promoting female labour force participation today may have important knock-on effects in the future. Indeed, this possibility appears to be a fruitful avenue for future research.

References

- Acemoglu, D., D. H. Autor and D. Lyle (2004). "Women, War and Wages: The Effect of Female Labor Supply and the Wage Structure at Midcentury", *Journal of Political Economy*, 112 (3): 497-551.
- Alesina, A., P. Giuliano and N. Nunn (2013). "On the origins of gender roles: women and the plough", *Quarterly Journal of Economics*, forthcoming.
- Anderson, J. and D. Dimon (1998). "Married women's labor force participation in developing countries: the case of Mexico", *Estudios Económicos*, 13 (1): 3-34.
- Arceo, E. and R. Campos (2010). "Labor supply of married women in Mexico: 1990-2000", February, Colegio de Mexico, Mexico.
- Bisin, A. and T. Verdier (2000). "Beyond the Melting Pot: Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits", *The Quarterly Journal of Economics*, 115 (3): 955-88.
- Bisin, A. and T. Verdier (2001). "The Economics of Cultural Transmission and the Dynamics of Preferences", *Journal of Economic Theory*, 97 (2): 298-319.
- Blau, F. and L. Kahn (2007). "Changes in the Labor Supply of Married Women: 1980-2000," *Journal of Labor Economics*, 25 (3): 393-438.
- Blau, F. and L. Kahn (2011). "Substitution between individual and cultural capital: pre-migration labor supply, culture and US labor market outcomes among immigrant women", National Bureau of Economic Research, NBER Working Papers 17275.
- Borjas, G. J. (1995). "Ethnicity, Neighborhoods, and Human-Capital Externalities", *The American Economic Review*, 85 (3): 365-90.

- Butikofer, A. (2013). "Revisiting 'mothers and sons' preference formation and female labor force in Switzerland", *Labour Economics*, 20 (1): 82-91.
- Casey, T. and C. Dustmann (2010). "Immigrants' identity, economic outcomes and the transmission of identity across generations", *The Economic Journal*, 120 (542): 31-51.
- Cavalcanti, T., and J. Tavares (2008). "Assessing the "Engines of Liberation": Home Appliances and Female Labor Force Participation," *The Review of Economics and Statistics*, 90 (1): 81-88.
- Cavalli-Sforza, L. L. and M. W. Feldman (1973). "Cultural versus Biological Inheritance: Phenotypic Transmission from Parents to Children (A Theory of the Effect of Parental Phenotypes on Children's Phenotypes)", *The American Journal of Human Genetics*, 25 (6): 618-37
- Cavalli-Sforza, L. L. and M. W. Feldman (1981). *Cultural Transmission and Evolution: A Quantitative Approach*, Princeton University Press, Princeton, N.J.
- Chioda, L. (2011). *Work & Family. Latin American and Caribbean Women in Search of a New Balance*. The World Bank, Washington DC.
- Deri, C. and F., Ross (2009). "The long-term effects of maternal employment on daughters later labour force participation and earnings", November, Faculty of Social Sciences.
- Dohmen, T., A. Falk, D. Huffman, and U. Sunde (2011). "The intergenerational transmission of risk and trust attitudes", *The Review of Economic Studies*, 79 (2): 645-677.
- Escrinche, L. (2007). "Persistence of occupational segregation: the role of the intergenerational transmission of preferences", *The Economic Journal*, 117 (520): 837-857.

- Farré, L. and F. Vella (2013). “The intergenerational transmission of gender role attitudes and its implications for female labor force participation”, *Economica*, 80 (318): 219-247.
- Fernández, R. and A. Fogli (2009a). “Culture: an empirical investigation of beliefs, work, and fertility”, *American Economic Journal: Macroeconomics*, 1 (1): 146-177.
- Fernández, R. and A. Fogli (2009b). “Fertility: The Role of Culture and Family Experience”, *Journal of the European Economic Association*, 4 (3-4): 552-561.
- Fernández, R., A. Fogli and C. Olivetti (2004). “Mothers and Sons: Preference Formation and Female Labor Force Dynamics”, *Quarterly Journal of Economics*, 119 (4): 1249-1299.
- Fernández, R. (2007). “Women, Work and Culture”, *Journal of the European Economic Association*, 5(2-3): 305-332.
- Goldin, C. (2006). “The quiet revolution that transformed women’s employment, education and family”, *American Economic Review*, 96 (2): 1-23.
- Goldin, C. and Katz, L. (2002). “The power of the pill: oral contraceptives and women’s career and marriage decisions”, *Journal of Political Economy*, 110 (4), 730-770.
- Gong, X. and A. van Soest (2002) “Family Structure and Female Labor Supply in Mexico City”, *The Journal of Human Resources*, 37 (1): 163-191
- Greenwood, J., A. Seshadri and M. Yorukoglu (2005). “Engines of Liberation”, *The Review of Economic Studies*, 72 (1): 109-133.
- Johnston, D.W., S. Schurer, and M.A. Shields (2012). “Maternal Gender Role Attitudes, Human Capital Investment, and Labour Supply of Sons and Daughters”, Institute for the Study of Labor (IZA), IZA Working Paper 6656.

- Kawaguchi, D. and J. Miyazaki (2009). "Working mothers and sons' preferences regarding female labor supply: direct evidence from stated preferences", *Journal of Population Economics*, 22 (1): 115-130.
- Lundberg, S. (2005). "Sons, Daughters, and Parental Behavior", *Oxford Review of Economic Policy*, 21 (3): 340-356.
- Neumark, D., and A. Postlewaite (1998). "Relative Income Concerns and the Rise in Married Women's Employment", *Journal of Public Economics*, 70 (1): 157-183.
- Rijken, A. J. and A. C. Liefbroer (2009). "Influences of the family of origin on the timing and quantum of fertility in the Netherlands", *Population Studies: A Journal of Demography*, 63 (1): 71-85.
- Sandler Morrill, M.S., and T. Morrill (2013). "Intergenerational Links in Female Labor Force Participation", *Labour Economics*, 20 (1): 38-47.
- Stevens, G. and M. Boyd (1980). "The Importance of Mother: Labor Force Participation and Intergenerational Mobility of Women", *Social Forces*, 59 (1): 186-199.
- Van Putten, A.E., P.A. Dykstra and J.J. Schippers (2008). "Just like Mom? The Intergenerational Reproduction of Women's Paid Work", *European Sociological Review*, 24 (4): 435-449.
- Walsh, M. (2001). "Womanpower: The Transformation of the Labour Force in the UK and the US Since 1945", *Refresh: Recent Findings of Research in Economic & Social History*, 30: 1-4.

Table 1. Descriptive Statistics.

Variables	Husbands' Mothers' work statuses			
	All	Yes	No	Diff
Age	42.2	42.2	42.2	0.0
Wife's Age	38.8	39.0	38.8	0.1
Years of Schooling	9.3	10.2	9.2	1.0*
Wife's Years of Schooling	8.7	9.6	8.6	1.0*
Speaks an Indigenous Language	0.16	0.14	0.16	-0.01
Wife's work status	0.26	0.42	0.24	0.18*
Rural status	0.18	0.14	0.19	-0.05
Husbands' income	4970	4705	5002	-297
Household size	4.5	4.3	4.5	-0.2*
# Own children	2.3	2.1	2.3	-0.2*
# Own children <6 yrs old	0.4	0.3	0.4	0.0
Household of origin				
Income perception	5.9	5.6	5.9	-0.3
Rural origin	0.34	0.30	0.36	-0.06
Father's work status	0.92	0.89	0.92	-0.03
Mother's work status	0.11	1	0	1.0
Father's years of schooling	4.0	4.9	3.9	1.0*
Mother's years of Schooling	3.6	4.8	3.4	1.4*
Number of siblings	4.5	4.5	4.5	0.0
Observations	1454	171	1283	

Notes: Calculations were made by the authors, using EMOVI 2011. We restrict the information to individuals with valid information on the variables we employ in the study as well as to married females between the ages of 30 and 50, as in Fernández et al. (2004). Income is given in Mexican Pesos of 2011. The number of siblings includes the surveyed individual. * indicates statistical significance at the 5% level.

Table 2. The main results.

	[1]	[2]	[3]	[4]
Husband's mother's work status	0.154** [0.065]	0.147** [0.065]	0.165** [0.066]	0.159** [0.066]
Demographic	Y	Y	Y	Y
Geographic	N	Y	Y	Y
Family & income	N	N	Y	Y
Interactions	N	N	N	Y
# Regressors	7	12	20	47
N	1,454	1,454	1,454	1,454

Notes: Calculations were made by the authors, using EMOVI 2011. The marginal effects of the probit model were evaluated at the mean of covariates. We restrict the information to individuals with valid information for the variables we employ in the study as well as to married females between the ages of 30 and 50, as in Fernández et al. (2004). ** (***) indicates statistical significance at the 5% (1%) level.

Table 3. Robustness test: the effect of labour force participation of the wife's mother.

	[1]	[2]	[3]	[4]
Wife's mother's work status	0.028 [0.068]	0.011 [0.066]	0.023 [0.067]	0.008 [0.066]
Demographic	Y	Y	Y	Y
Geographic	N	Y	Y	Y
Family & income	N	N	Y	Y
Interactions	N	N	N	Y
# Regressors	7	12	20	47
N	1,169	1,169	1,169	1,169

Notes: Calculations were made by the authors, using EMOVI 2011. The marginal effects of the probit model were evaluated at the mean of covariates. We restrict the information to individuals with valid information for the variables we employ in the study as well as to married females between the ages of 30 and 50, as in Fernández et al. (2004). ** (***) indicate statistical significance at the 5% (1%) level.

Table 4. Heterogeneity results.

	Estimate
A. High School+	0.004 [0.107]
B. <High School	0.227*** [0.078]
C. Not restricting age	0.128*** [0.046]
D. Not restricting age & less than High School	0.158*** [0.055]
Demographic	Y
Geographic	Y
Family & Income	Y
Interactions	Y

Notes: Calculations were made by the authors, using EMOVI 2011. The marginal effects of the probit model were evaluated at the mean of covariates. We restrict the information to individuals with valid information on the variables we employ in the study as well as to married females between the ages of 30 and 50, as in Fernández et al. (2004). ** (***) indicate statistical significance at the 5% (1%) level.

Table 5. Results on Perceptions.

	Daughter	Daughter or both
	[1]	[2]
A. Care for siblings	-0.082** [0.039]	-0.024 [0.017]
B. Domestic house work	-0.000 [0.000]	-0.007 [0.006]
C. Paid work in case of need	-0.000 [0.000]	0.001 [0.062]
D. Secondary School	0.058 [0.038]	0.079*** [0.020]
E. High School	0.050 [0.035]	0.069*** [0.022]
F. College	0.022 [0.041]	0.083*** [0.021]
N	1,454	1,454

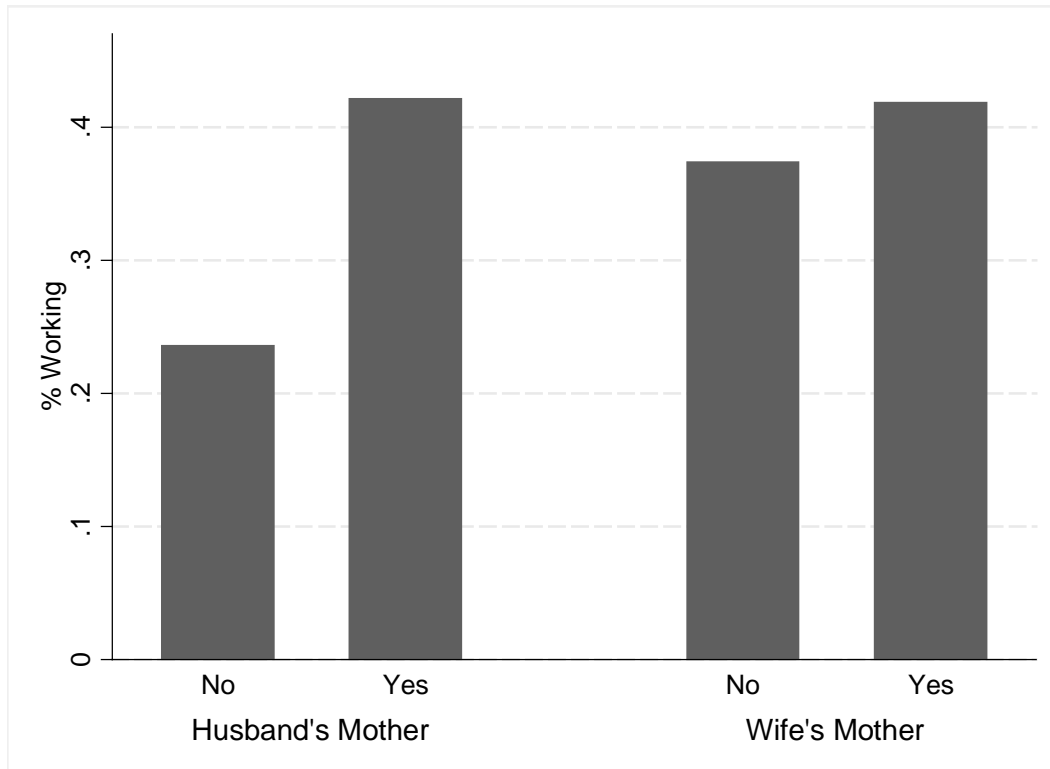
Notes: Calculations were made by the authors, using EMOVI 2011. The marginal effects of the probit model were evaluated at the mean of covariates. We restrict the information to individuals with valid information for the variables we employ in the study as well as to married females between the ages of 30 and 50, as in Fernández et al. (2004). Each entry in the rows and columns shows a different regression result. Whereas the variable in the first column depicts the dependent variable in each regression, each column depicts a different dependent variable. For example, Care for siblings includes three possible answers: 1. Boys, 2. Girls, 3. Both. Column 1 defines the dependent variable as 1 if the interviewee responded 'Girls' and 0 otherwise. Column 2 defines the dependent variable as 1 if the interviewee responded 'Girls' or 'Both' and 0 if he or she responded 'Boys'. ** (***) indicates statistical significance at the 5% (1%) level.

Figure 1. The female labour supply in Mexico.



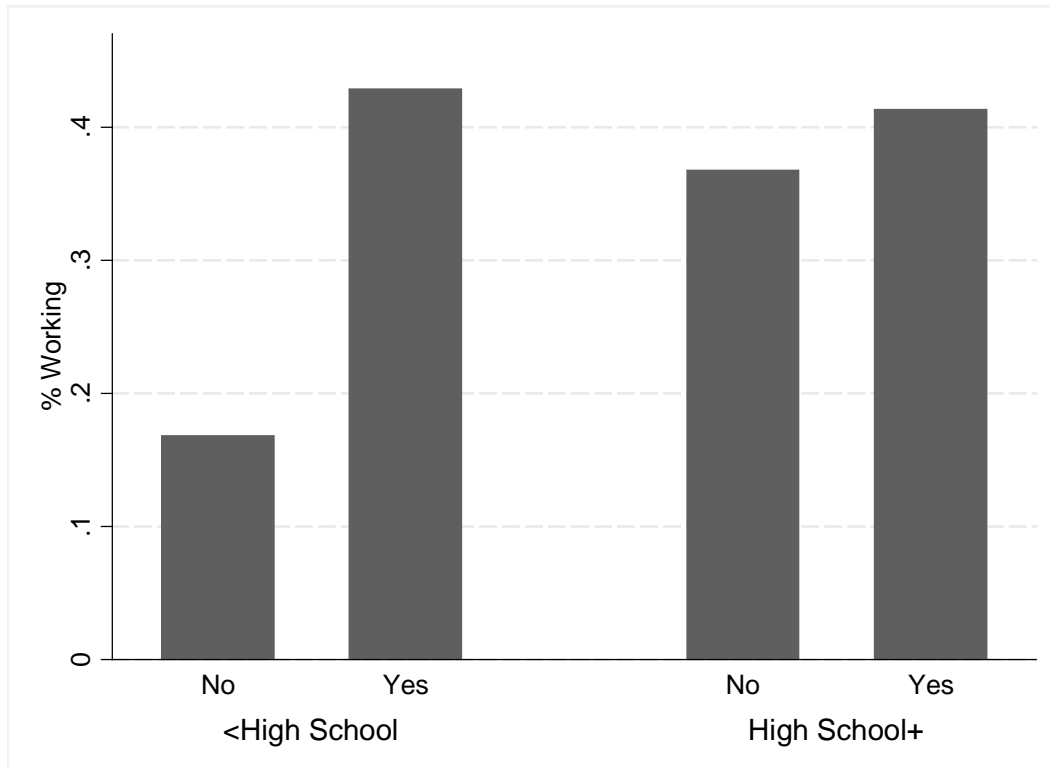
Notes: Calculations were made by the authors, using Employment surveys in Mexico for females aged 20-60 years old. We use the surveys *Encuesta Nacional de Empleo Urbano* (ENEU), *Encuesta Nacional de Empleo* (ENE) and *Encuesta Nacional de Ocupacion y Empleo* (ENOE). To compare all of the surveys, we restrict the information to urban areas (i.e., areas with more than 100,000 people). The surveys are available at <http://www.inegi.org.mx>.

Figure 2. The work statuses of wives by the work statuses of their husbands' mothers and their own mothers.



Notes: Calculations were made by the authors, using EMOVI 2011. We restrict the information to individuals with valid information on the variables we employ in the study. The age of each wife is restricted to the ages 30-50, as in Fernández et al. (2004). “Husband’s mother” refers to the wife’s working status relative to the status of the husband’s mother (N=1,454). “Wife’s mother” refers to the working status of the female interviewee relative to the status of her own mother (N=1,169).

Figure 3. The work statuses of wives by the work statuses of their husbands' mothers:
Husbands with less than a high school education and at least a high school education.



Notes: Calculations were made by the authors, using EMOVI 2011. We restrict the information to individuals with valid information on the variables we employ in the study. The age of each wife is restricted to the ages 30-50, as in Fernández et al. (2004). "Husband's mother" refers to the wife's working status relative to the status of the husband's mother (N=1,454). The sample sizes for husbands with less than a high school education and at least a high school education are equal to 1,071 and 383, respectively.