Understanding the Evolution of Female Employment in Mexico

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Extended Abstract

Women's labor participation has increased steadily in Latin America and the Caribbean over the last decades. More than 70 million women have joined the labor market since the 1980s (Ñopo, 2012). Since the beginning of the 1990s, the proportion of working women of prime-working age increased from one-half to two-thirds. Mexico is no exception to this trend and since the 1989, the number of Mexican women joining the labor force has increased at a steady rate (Pagán and Sánchez, 2000; De Hoyos, 2006). According to official Mexican statistics, from 1989 to 2012, the labor force participation rate of women, 25 to 54 years of age, increased from 34% to 60%. The driving forces of this trend in the female labor participation are the main motivation for this study.

Over the past two decades, Mexican women have faced different cultural, political and economic changes that have eased the barriers for their employment. Yet, it is unclear whether this increase in women's participation has been driven mainly by demographic changes (i.e., lower fertility levels and higher education) or whether there has been a change in the returns to some of the characteristics that incentivize or discourage women's employment. The main hypothesis of this study is that returns to education and the 'motherhood penalty' have changed positively at different points in time over the last two decades, improving women's motivation for employment and further increasing their labor supply.

This study differs from previous work in that it disaggregates –through different methodologies– the contribution of the explanatory factors that impact women's labor decisions, focusing on supply-side characteristics. It also complements the literature of employment analyses of the Mexican labor market by extending the period of analysis ten more years –adding observations from 2002 to 2012.

Previous research on the labor supply of Mexican women has tended to use data from single years (Wong and Levine, 1992; Gong and van Soest, 2000; Pagán and Sánchez, 2000; Pagán and Ulibarri, 2000). In addition, most of these single-year studies have focused on particular sub-samples of Mexican women (e.g. married women, only one or two cities, only rural areas, etc.). Thus, their results are not generalizable to the whole Mexican population.

The main hypothesis of this study is that the increase in women's labor participation in Mexico has not been driven mainly by changes in women's mean endowments. Instead, I hypothesize that higher returns to education and a lower 'motherhood penalty' explain this increase in women's participation rates.

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The most appropriate methodological strategy to test this hypothesis is a decomposition analysis. The goal of a decomposition methodology is to quantify the separate contributions of period differences (t_0 v. t_1) in measurable characteristics. The first step is to calculate a counterfactual mean probability of women's labor participation had their distribution of observable characteristics not changed during the period of analysis (as if women from t_0 had women's t_1 coefficients). Second, differences are compared to the observed mean probability of labor force participation (DiNardo, 2002).

Blinder (1973) and Oaxaca (1973) developed the most commonly used decomposition technique. Their method consists of measuring mean outcome differences –between two groups or for two points in time– and to disaggregate these differences into two main components: *endowments*: the portion explained by mean differences in predictors and *coefficients*: this component measures the expected change in the returns to women's characteristics from one period to another. However, Oaxaca and Ransom (1994) developed a more robust version of the Oaxaca-Blinder (OB) decomposition methodology that provides estimates invariant to the choice of the reference period (unlike the original OB method). This decomposition methodology consists in estimating three separate constrained linear regressions. One regression for period t_0, one for period t_1 and a pooled regression that includes year intercept shifts along with an identification restriction and constraints for each categorical variable (Fortin, 2008).

In detailed decomposition analyses, coefficients of interest are not invariant to the choice of the base (omitted) category in the case of categorical regressors. Yun (2005) proposed a solution to compute the decomposition based on "normalized" effects in which effects are expressed as deviation contrasts from the grand mean. This study follows Yun's approach and normalization is applied to all categorical variables as well as to interactions. With this technique, the coefficients of interest will not be "contaminated" by the choice of the omitted category (Yun, 2005; Fortin, 2008).

A second decomposition methodology used in this study is the one proposed by Fairlie (1999, 2003, and 2005) as an extension to the OB decomposition to generate non-linear decompositions of binary outcome differentials. In order to estimate the total contribution of individual characteristics to labor force participation, Fairlie (2005) follows a similar approach to that of OB and Oaxaca-Ransom (OR), by calculating two sets of predicted probabilities and taking the difference between the averages values of the two. The main difference with the OB/OR methodologies is that Fairlie does not assume that there is a perfect one-to-one match of observations between the two compared groups. To address this problem, Fairlie suggests the use of the pooled coefficient estimates to calculate predicted probabilities, for each of the two compared subsamples. The next step is to draw a random subsample of the larger-sized population (t_1) equal in size to the smaller-sized population (t_0). Each observation for women in the t_1 subsample and full sample of women in t_0 is then separately ranked by the predicted probabilities and matched by their respective rankings (Fairlie, 2005). The decomposition estimates obtained from this procedure depend on the randomly chosen subsample of women in t_1.

Descriptive statistics show a significant progress for female Mexican workers when looking at human capital characteristics. There has been an increase of more than 20 pp in the share of working women graduating from secondary school or more over the last 20 years. Now the vast majority (more than 67%) of the female labor force has at least a secondary school diploma, while in 1996 only 38% of working women had such level of education. Fertility decisions have also changed starkly among the employed women. Large families are less

common in Mexico, and statistics show that from 1996 to 2012 the proportion of employed women with three or more children decreased from 40% to 27%. Other characteristics such as proportion of married or single women, age and household composition have maintained a more constant trajectory.

Once LFPRs are decomposed year by year, models show that changes in women's employment in Mexico are increasingly explained by returns to the characteristics that influence their employment decisions. Results from the OR decomposition show that, on average, changes in motherhood represent a larger share of the total differential explained by changes in the endowments of working women. In the case of education, there are positive and negative changes in endowments within the period 1996-2012, and measured from the first to the last year, the share of changes in education decreased its explanatory power on total changes in endowments.

The contribution of motherhood and education in explaining changes in returns to employment showed an increasing trend, growing from low shares. From the period 1996-1998 to 2010-2012 the share of returns to motherhood to overall changes in the returns to employment increased 65% (4 pp). In the case of returns to education, the change was 95% (6 pp). In contrast, the share of the returns of other characteristics decreased 10 pp. Two possible hypotheses that can explain these results are that on these decades the demand for high-skilled workers increased in Mexico as a consequence of trade liberalization and more access to education (and more competition in the labor market). Another hypothesis is that working women could have been affected by policies that decrease the cost of motherhood, namely universal preschool and daycare centers for low income mothers.

In adjusted models that control for within-household workers and selection into motherhood, employment differentials diverged at the beginning of the comparison period, but then converged. The main conclusion drawn from this result is that if women had not had the additional income of workers in the household and mothers had behaved as non-mothers, the female LFPR would have been higher over the analyzed period. Interestingly, these effects are mainly observed in the period prior to 2000-2002, and after this period changes in the observed and adjusted differentials in LFPRs converge. The implications of this convergence are two. First, the cross-income elasticity of Mexican women was higher in the 1990s and in the following decade women's cross-income elasticity decreased. This means that women were more sensitive to changes in other workers income within the household in the former period and then became less sensitive in the latter period. This behavior is commonly observed in developed counties where women's behavior in the labor market resembles to that of men's (Blau & Kahn, 2007). Second, returns to motherhood may have improved over the last years and as a consequence mothers and non-mothers started behaving more similarly.

Through a better understanding of the characteristics that influence women's employment decisions, effective public policy programs can be created to encourage further female participation in the Mexican labor market. On a micro-level, women provide a crucial source of income and family support an increase in working women's standard of living could result in less stress for children, families and governments. An overall improvement in women's working conditions would signify an increase in labor participation and possibly a more efficient utilization of the labor force, which have been linked to increases in national wealth, and development, as well as reductions in poverty rates and inequality.

References

Blau, Francine D. and Lawrence M. Kahn. 2007. "Changes in the Labor Supply Behavior of Married Women: 1980–2000." *Journal of Labor Economics*, University of Chicago Press, vol. (25), pages 393-438.

Blinder, Alan S. 1973. "Wage Discrimination: Reduced Form and Structural Variables." *Journal of Human Resources*, 8, 436-455.

De Hoyos, Rafael. E. 2006. Structural Modelling of Female Labour Participation and Occupation Decisions. Faculty of Economics, University of Cambridge. Unpublished manuscript.

DiNardo, John. 2002. "Propensity Score Reweighting and Changes in Wage Distributions." Mimeo, University of Michigan. [Section IV].

Chioda, Laura. *Work and Family: Latin America and Caribbean Women in Search of a New Balance* . The International Bank for Reconstruction and Development, World Bank, 2011

Fairlie, Robert W. 1999. The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment, *Journal of Labor Economics* 17 (1): 80–108

_____. 2003. An Extension of the Blinder-Oaxaca Decomposition Technique to Logit and Probit Models. Economic Growth Center, Yale University Discussion Paper No. 873.

_____. 2005. An extension of the Blinder-Oaxaca decomposition technique to logit and probit models. *Journal of Economic and Social Measurement* 30: 305-316.

Fortin, Nicole. 2008. "The gender wage gap among young adults in the United States: the importance of money vs. people." Journal of Human Resources 43 (4): 886–920.

Gong, Xiaodong and Arthur van Soest. 2002. "Family structure and female labour supply in Mexico City". *Journal of Human Resources* 37 (1), 163– 191.

Ñopo, Hugo and Alejandro Hoyos. 2010. "Evolution of Gender Wage Gaps in Latin America at the Turn of the Twentieth Century: An Addendum to "New Century, Old Disparities." IZA Discussion Papers 5086, Institute for the Study of Labor (IZA).

Oaxaca, Ronald. 1973. "Male-Female Wage Differentials in Urban Labor Markets," *International Economic Review*, 14 (October): 693-709.

Oaxaca, Ronald and Michael R. Ransom. 1994. "On Discrimination and the Decomposition of Wage Differentials," *Journal of Econometrics* 61 (1994), 5–21.

Pagán, José A. and Susana M. Sánchez. 2000. "Gender Differences in Labor Market Decisions: Evidence from Rural Mexico," *Economic Development and Cultural Change* 48: 619–37.

Pagán, Jose Antonio., and Ullibarri, M. 2000. "Group Heterogeneity and the Gender Earnings Gap in Mexico." *Economía Mexicana* (New Series) 9(1): 23-40.

Sánchez, Susan. 1998. "Gender Earnings Differentials in the Microenterprise Sector: Evidence from Rural and Urban Mexico." Washington, DC, United States: World Bank, Latin America and the Caribbean Region, Finance, Private Sector, and Infrastructure Sector Unit

Yun, Myeong-Su. 2005. "A Simple Solution". *Economic Inquiry*. 43(4): 766-772.

Wong, Rebeca and Ruth E. Levine. 1992. “The Effect of Household Structure on Women’s Economic Activity and Fertility: Evidence from Recent Mothers in Urban Mexico,” *Economic Development and Cultural Change*, 89-102.