



Gender and Ethnicity in LAC Countries: The case of Bolivia and Guatemala

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Paper Prepared for the IARIW-IBGE Conference
on Income, Wealth and Well-Being in Latin America

Rio de Janeiro, Brazil, September 11-14, 2013

Session 4: Ethnicity and Race

Time: Thursday, September 12, 4:00-5:30

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Preliminary Version. Do not cite

Abstract

In this article, we examine the gender and ethnic distribution of both, paid and unpaid work, in Guatemala, while trying to explain whether the existing differences come from a purely race and gender discrimination or if part of them can be attributed to the inequality of endowments that each population has. We run a probit regression in order to measure which are the determinants of poverty and whether the discriminated population is more likely to live in poverty. To measure the existent wage gap and determine whether it comes from a difference in attributes or if it is mainly due to discrimination we use a Blinder-Oaxaca decomposition and we run Tobit regression on the numbers of hours spend in labor market and domestic activities. Our results indicates that women are highly discriminated in the job market and undertake most of the domestic activities of the households. The Indian population also suffer from discrimination but the wage gap is mostly explained by the difference in endowments. However, indian women have the biggest wage gap and suffer from discrimination in the labor market leading to a greater amount of hours spent on domestic activities.

Keywords: Discrimination; Ethnicity; Gender; Time-Use

JEL Classification: D11, D13, D31, D63

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1 Introduction

Since the late 90s Latin American countries have experience fast growing, a reduction in analphabetism and a mutation from agricultural economies to industrialized middle income countries. Most of the population has enjoyed the benefits of a bigger growth rate, increasing the mean income level of the population and diminishing inequalities. Unfortunately, the poorest countries in Latin America did not follow the same path. Bolivia and Guatemala, the 3rd and 4th poorest countries of the LAC region, have extremely high poverty levels, Bolivia reaches 62% while Guatemala rose the 56%; the low education level explain its low Human Development Index which reaches 0.67 and 0.63 respectively. But the level of education and poverty are not the only cause of their slow growth, inequality also plays a big role. Indeed, most of the studies in Latin America data, show that the slow growth experienced by Latin American countries during the 50-80 was mainly driven by the big inequality within the population. While almost all the countries in Latin America reduced considerable the inequalities in their societies, Guatemala is still the most unequal country of the whole region and Bolivia does not perform much better ranking in the 3rd position. Calla and Milosavljevic (2007)

The backlog endured by those countries makes us wonder about its causes and consequences. Having a closer look, we realize the proximity of both countries. Bolivia and Guatemala share some characteristics; they are both Latin American middle income countries with important natural resources. Their economy main export is based on primary goods such as coffee and oil and they both have a large Indian, rural based population (more than 70%). They also share similar conditions of employment characterized by a low rate of unemployment but a large informal job market sector (around 80%). Inequality in both countries is mainly driven by ethnic and gender discrimination suffered by the population not only on the job market, but also in education and health access. Therefore if inequality plays such an important role in the population and in the economy, what is the actual cost of discrimination suffered by the different ethnic groups and what would be the benefit of reducing the gap?

Much of the research on gender and ethnic inequality focuses on wages differences in the labor market, neglecting the importance of domestic labor and time use. In this article, we examine the gender and ethnic distribution of both, paid and unpaid work, in Bolivia and Guatemala, while trying to explain whether the existing differences come from a purely race and gender discrimination or if part of them can be attributed to the inequality of endowments that each population possess. Monetary and time resources are optimized in a different way depending on the importance of the households monetary constraint.

Ethnic and gender discrimination has two main consequences in the job market. The first one is the existence of an important entry barrier to the formal job market and the

second one, is that even when that barrier is crossed, there is still a wage gap between the discriminated population and those who are not. Consequently, this wage differential leads to a smaller labor force participation from the discriminated people and increases the demand for domestic production on in-home activities. In this context, women have a bigger incentive to stay at home and accomplish domestic tasks than participating in the labor market, especially when the wage differential is important. In those countries the non-labor activities and household production outcomes may be driven by the discrimination in market labor activities. In this case, the wage gap determines not only the demand for working hours but it might also explain the important number of hours of domestic work undertaken by women.

In order to measure these inequalities and have a better picture of the socio-demographic characteristics that are more frequently observed on the poorer households, we first proceed with a regression on the probability of being poor. This will be computed for the different combinations of gender and ethnicity in each of the countries under study and will show us if the most discriminated families are also the poorest ones. Second, in order to assess the importance and the determinants of the wage gap between the discriminated population and those that are not, we proceed to the usual Blinder-Oaxaca decomposition to check whether the difference in endowments of the population explains the difference in wages or if it is the discrimination that mostly affects the wage gap. Finally, we run Tobit regressions in order to explain the determinants of weekly allocation of time between domestic and paid market activities. One will expect that the factors affecting the allocation of time between domestic production and market activities would be the same.

This paper is divided as follows, section 2 describes the econometric methodology used to measure the gender and ethnic inequality in Guatemala and Bolivia, section 3 shows the results of our estimations and concludes.

2 Methodology

2.1 Probit specification

In order to establish the effect of gender and ethnicity on the likelihood of being poor, we run a single equation probit model:

$$Y_i = \beta_i X_i' + \varepsilon_i \quad (1)$$

Where the dependent variable takes the value 1 when a household's equivalent income is lower than 60% of the median income of the population, and zero otherwise. The model controls for individual and geographical characteristics see Table 1.

2.2 The Blinder-Oaxaca Decomposition

The standard approach for the study of earnings differentials was introduced in the economics literature by Blinder (1973) and Oaxaca (1973). From the estimation of wage equations this method allows to decompose the mean wage difference between two groups into three effects: the "Endowments effect", that amounts to the part of the differential due to group differences in the vector of characteristics; the "Coefficient effect", that corresponds to the differences in the coefficients; and the "Interaction effect", that accounts for the simultaneous existence of differences in endowments and coefficients.

Consider the wage equation:

$$Y_i = \beta_i X_i' + \varepsilon_i \quad (2)$$

Where $i = 1, 2$ denotes the different groups, Y the hourly wage of the individual, X_i a vector of control variables, and ε_i the iid error term.

By estimating equation 2 for each group and taking the difference between them, the mean wage difference can be expressed as the difference in the linear prediction at the group-specific means of the regressors. That is:

$$E(Y_1) - E(Y_2) = E(X_1)\hat{\beta}_1 - E(X_2)\hat{\beta}_2 \quad (3)$$

Expanding this expression by the assumed non-discriminatory wage structure β^* , we have:

$$E(Y_1) - E(Y_2) = E(X_1)\hat{\beta}_1 - E(X_2)\hat{\beta}_2 + E(X_1)\beta^* - E(X_1)\beta^* + E(X_2)\beta^* - E(X_2)\beta^* \quad (4)$$

After some rearrangements equation 4 becomes:

$$E(Y_1) - E(Y_2) = \beta^*(E(X_1) - E(X_2)) + E(X_1)(\hat{\beta}_1 - \beta^*) + E(X_2)(\hat{\beta}_2 - \beta^*) \quad (5)$$

Where the first term on the right hand side corresponds to the endowment effect, the second one to the coefficients effect, and the third one to the interaction effect.

2.3 Tobit specification

In order to investigate the determinants of time spent on market work and domestic activities across gender and ethnic groups we estimate five Tobit models with censored values at zero. The models take the form:

$$Y_i = \beta_i X_i' + \varepsilon_i \quad (6)$$

Where the dependent variable takes the values of the hours allocated to market work and domestic activities. See tables 4, and 5

3 Datasets

The data used in this study is the Guatemalan National survey about conditions of quality of life (Encuesta de Condiciones de Vida, ENCOVI 2000) conducted by the Guatemalan National Institution of Statistics (INE) and the World Bank. The ENCOVI survey final sample is composed by 7,276 rural and urban households, interviewed during the calendar year 2000, which represents approximately 0.33% of all Guatemalan households. In order to collect the data, the national territory was divided on 11,159 zones of which 740 were selected for the sample survey. Each household within the zone has the same characteristics: they all live in the same geographical area, they are all either rural or urban households and they all have the same economical stratum.

The sample selection procedure used is an equal probability sampling frame based on the identification done in the 1994 Guatemalan census, this helps us to avoid any overrepresentation of a particular group of population. The household data was collected in two rounds; the 1st round collected only the demographic characteristics and time-use data of the family members while in the second round the consumption and expenditure data was recorded. In the survey there is a time-use chapter which records the number of hours that every member of the household spent last week performing a variety of activities. This section will help us to create the domestic production variables such as the number of hours spent on domestic chores by the each family member. The Guatemalan ENCOVI survey has both monetary and time expenditure in the same survey, so no matching procedure would be needed for the time expenses. As the entire data collection was conducted in the same quarter of the year, and as the seasonal variation of Guatemala climate is very small, we do not expect any change in wages and prices due to seasonal variation.

We work with a reduced sample that considers only on nuclear families, so as to avoid any disturbance caused by the inclusion of another adult member in the household. Also, only couples aged 25-60 and people reporting positive wages were included in the final sample.

4 Results

We present the preliminary results of our estimates in the tables below. Table 1 shows the marginal effect results of the probit regression of poverty status. A poor household is defined as those which total annual income is lower than 60% of the medium income of the population. We observe that all the variables are significant, and as expected, age, education and ownership of the house decreases the probability of being poor. The urban households and those receiving remittance from other countries also have a lower probability of being poor. The most important characteristic that help families to get out of

poverty is the educational level of the head household, indeed an additional degree of education decreases the probability of being poor by 0.32 for secondary education and by 0.43 for a tertiary education degree (with respect to primary education). This result has important policy implications, because as it can be seen in the table A.1 more than 77% of the population only has primary education or less. In order to help the poorest families to get out of the poverty, education should be one of the top priorities in Guatemala.

Table 1: Probit regression, Poor

Variable	dy/dx	Std. Err	P-value
Age	-0.209	0.020	0.000
Secondary education	-0.328	0.020	0.000
Tertiary education	-0.435	0.020	0.000
Male head household	-0.151	0.029	0.000
Urban household	-0.209	0.020	0.000
Indian	0.164	0.021	0.000
Log household size	0.109	0.020	0.000
Property owner	-0.155	0.021	0.000
Remittances	-0.111	0.035	0.002
Region 2	0.206	0.039	0.000
Region 3	0.145	0.043	0.001
Region 4	0.222	0.038	0.000
Region 5	0.091	0.038	0.018
Region 6	0.190	0.038	0.000
Region 7	0.250	0.038	0.000
Region 8	0.256	0.039	0.000

On the other hand families where the household head is female or Indian have a bigger probability of falling into poverty, as is the case for large families. Although, the Indian population is the most representative ethnic group in Guatemala (more than 60% of the sample), they have a bigger probability to be in poverty compared to the rest of the population. Being an Indian descendant, increases the probability of being poor by 0.16. As well as the Indian families, the families having a female household head do not perform better; their probability of being on poverty is slightly bigger than those of Indian household. This shows that the most discriminated and fragile population have bigger chances to fall into poverty. The difficulties experienced by the Indian and female population to access the formal job market may be one of the most important causes that explains their poverty status. Discrimination leads to smaller wages for the fragile population, which in return increases the chances of being in poverty. Table 3 will give us a clearer explanation on this fact.

Table 2 shows the descriptive statics on the weekly hours spent on domestic and paid market labor activities for the male, female, Indian, and non-Indian population of the

sample. A quick glance at the table tells us that in average people devote twice as much time to paid labor activities rather than domestic activities. In general, men spends more time participation in the job market compared to women, but women spends 5 times more hours performing domestic task than men. Women dedicate almost the same amount of time in domestic chores than in the labor job market activities (around 40 hours for each of them). Concerning the Indian population, they spend one more hours doing domestic activities than the rest of the population and spend 3 hours less in the paid market activities. The difference between these two groups is not very big, especially when compared to the difference between men and women labor and domestic activities.

Table 2: Descriptive Statistics

Mean hours spent in	Domestic Work	Market Work
Whole sample	17.590	47.824
Male	7.026	51.972
Female	39.333	39.286
Indian	18.305	46.318
Non Indian	17.158	48.731

Mean values per week

The large differential between the numbers of hours spent on domestic activities for men and women may be driven by lower wages for women in the paid market activities, pushing her to carry out most of the housework activities. The bigger the wage gap, the larger the incentive for women to stay at home. In order to test this assumption we run a Oaxaca decomposition to see if the difference on the wage gap is driven by the endowments and characteristics of the household or it comes from the discrimination suffered by the Indian and female population in the job market. We run the Oaxaca decomposition on the female population as well as for the Indian male and female population. The results of the Oaxaca decomposition are shown in table 3. As explained in section 2, the Oaxaca decomposition divides the wage gap into two components: the explained component which is the part of the wage gap that is attributed to the difference of endowment of the discriminated population with those who are not, and the unexplained component which would be interpreted as the difference on the wage gap coming from purely discrimination.

Table 3: Blinder-Oaxaca Decomposition

	Wage Gap	Explained Component	Unexplained Component
Based on indian wage structure	0.760	0.423	0.337
Based on female wage structure	0.581	-0.054	0.635
Based on indian female wage structure	0.947	0.485	0.461
Based on indian male wage structure	0.716	0.436	0.280

In table 3 we observe the results from the Oaxaca decomposition for the different groups, we observe that the wage gap for the Indian population is even more important than the wage gap for a woman worker. However, when we take into account the Indian women, we realize that the wage differential almost double the wage gap for woman workers only. Even worst, only half of the wage differential is explained by the difference in attributes, the other half is imputed to pure discrimination. When we have a look at the importance of the unexplained component, Indian women still perform better than the women baseline, even if the wage gap is bigger for the female Indians, only half of this difference comes from discrimination while in the case of female workers all the wage gap is due to discrimination in the job market. The Oaxaca decomposition also shows that the explained effect accounts for 0.423 log points out of the 0.76 average log wage gap between Indian and non-Indian workers. Indeed, even if Indian workers are also discriminated in the job market, the difference in wages is mainly driven by the difference on endowments. This is especially true for the male Indian workers where only a third of the wage gap is explained by the discrimination in the job market. Women suffer most of discrimination in the job market, but the wage gap is bigger for the Indian population, especially for the Indian female workers.

Tables 4 and 5 show the results of the Tobit regression on the weekly hours of work on labor market and domestic activities respectively. Column one, shows us the estimates for the whole population, columns two and three represents the estimation for male and female population respectively and the last two columns show us the results of the Tobit regression for Indian and non- Indian workers. A close look at table 4, the regression on the number of hours spent at paid market activities, indicates that the bigger determinants of weekly working hours are age, education, poverty status, the fact that the individual is a women and finally, if he/she belongs to Indian population. All those variables influence negatively the amount of working hours, education level and sex induce the biggest decrease compared to the other variables. Gender is an important determinants of time spent in the labor market. Our results suggest that being a woman decreases the time spent on market work by 13 hours compared to men. While being an Indian woman decreases the time on market activities even more, by almost 18 hours per week. Concerning the levels of education, the hours spent on working start to decrease for both sexes from secondary level onwards, what is interesting to see is that while tertiary education decreases the time by 8 hours per week for men, it just decreases the time of women by 5 hours. Educating women seems a good strategy in order to equalize the female-male labor participation force and reduce its inequality. An interesting fact also appears when we compare the effect that has young children in the household. While men would increase by 1.6 hours per week the time spend at work, the opposite happens to women that decrease it by more than 3 hours. Indeed, having kids penalize the women labor force participation while it

increases the amount of hours spends at work.

Table 4: Tobit regressions, hours market work

Variable	WS	Male	Female	No Indigenous	Indigenous
Age	-0.082** (0.037)	-0.119** (0.041)	-0.023 (0.069)	-0.105** (0.048)	-0.045 (0.058)
Secondary education	-2.880*** (0.789)	-3.589*** (0.891)	-2.291* (1.374)	-2.403** (0.955)	-4.837*** (1.473)
Tertiary education	-7.596*** (1.126)	-8.684*** (1.258)	-4.823** (2.094)	-6.805*** (1.292)	-11.606*** (2.74)
Male head household	-4.150** (1.713)	6.674 (4.378)	-1.476 (4.986)	-1.356 (2.097)	-10.72*** (2.944)
Sex: Male	13.64*** (0.642)	- -	- -	11.455*** (0.841)	17.844*** (0.977)
Urban household	1.048 (0.659)	1.481** (0.731)	0.402 (1.190)	0.513 (0.900)	1.635* (0.953)
Poor	-2.901*** (0.648)	-2.127*** (0.718)	-4.410*** (1.156)	-1.897** (0.873)	-4.461*** (0.955)
Female kids older than 12	0.169 (0.630)	1.024 (0.726)	-0.766 (1.059)	-0.626 (0.830)	1.235 (0.956)
Kids younger than 5	-0.148 (0.686)	1.673** (0.767)	-3.234*** (1.215)	-0.717 (0.881)	0.718 (1.091)
Indian	-2.377*** (0.593)	-1.687*** (0.648)	-3.346*** (1.099)	- -	- -
Electricity supply	2.029*** (0.743)	2.214*** (0.801)	2.126 (1.428)	2.640** (1.067)	1.625 (1.008)
Water supply	0.290 -0.696	0.514 -0.757	-0.010 -1.312	0.496 -0.975	0.201 -0.969
Couple	0.659 (1.456)	0.933 (1.477)	-1.777 (5.039)	-0.504 (1.819)	3.581 -2.43
Log wage male	0.000* (0.0002)	0.001** (0.0002)	0.0001 (0.0003)	0.0003 (0.0002)	0.0004 (0.0010)
Log wage female	0.001* (0.0003)	-0.0003 (0.0004)	0.001*** (0.001)	0.0006 (0.0003)	0.002 (0.0020)

The Tobit regressions on the number of hours per week spent on domestic activities are presented on table 5. A glance at the table shows that the education level increases by 2 hours per week the number of hours spent on domestic activities. Being a poor households also increase the amount of domestic hours, especially women with the lowest income spent 2 more hours on domestic chores compared to other poor households. The results suggest that being a woman increases the time devoted to domestic activities by 25 hours per week with respect to men, while being an Indian women increases it by 28 hours per week. Also married women or women living in couple, have a housework decrease of 3.6 hours a week, while for men the effective decrease of the time spent on household

chores is 5.1 hours a week. In addition, childcare burden seems to be supported more by women than by men. One additional infant (0-5 years) in the household increases the time of women spent on domestic activities by 5 hours a week, while men only increases it by 0.3 hours per week. Finally, one additional female child older than 12 years old decreases the time devoted to domestic activities by 3 hours a week for women and has no effect on male housework. This is explained by the fact that young girls undertake some of their mothers domestic task at home, taking off some of their mothers load.

Table 5: Tobit regressions, hours domestic work

Variable	WS	Male	Female	No Indigenous	Indigenous
Age	0.044* (0.023)	0.028 (0.017)	0.073 (0.069)	0.068** (0.028)	-0.002 (0.040)
Secondary education	1.567*** (0.513)	1.035** (0.406)	2.677* (1.451)	1.568*** (0.578)	2.059* (1.122)
Tertiary education	2.156*** (0.790)	1.415** (0.602)	2.041 (2.335)	2.211*** (0.844)	2.037 (2.271)
Male head household	6.644*** (0.736)	0.507 (1.918)	6.771 (4.755)	6.483*** (0.867)	6.765*** (1.384)
Sex: Male	-25.889*** (0.575)	- -	- -	-24.933** (0.691)	-27.934*** (1.142)
Urban household	-0.737* (0.405)	-0.156 (0.313)	-2.918 (1.211)	-0.407 (0.527)	-0.937 (0.639)
Poor	1.285*** (0.401)	0.599* (0.308)	3.336*** (1.195)	1.078** (0.516)	1.405** (0.644)
Female kids older than 12	-1.064*** (0.379)	-0.343 (0.308)	-3.146*** (1.058)	-0.942 (0.472)	-1.111* (0.644)
Kids younger than 5	1.413*** (0.419)	0.312 (0.328)	4.862*** (1.247)	1.708*** (0.512)	0.733 (0.742)
Indian	1.808*** (0.372)	1.206*** (0.282)	2.504** (1.138)	- -	- -
Electricity supply	0.619 (0.452)	0.097 (0.341)	1.98 (1.435)	0.193 (0.623)	0.982 (0.689)
Water supply	-0.388 (0.431)	-0.206 (0.326)	-0.669 (1.327)	-0.795 (0.578)	-0.002 (0.663)
Couple	-6.422*** (1.087)	-5.112*** (0.842)	-3.656 (5.167)	-5.814*** (1.260)	-7.222*** (2.077)
Log wage male	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Log wage female	0.000 (0.000)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.000)	-0.005** (0.002)

Surprisingly, wages have no influence whatsoever in the hours spend in domestic activities, one might think that females with higher income would undertake less domestic chores. Here, however the housework seems not to be affected by the level of income but

more by the level of education of women and men. Also Indian population work 2 hours more per week at home compared to the others but the difference is not that consequently. The most important fact to highlight is the important amount of hours spent on domestic activities explained by the individual's sex. Women work in average 25 hours more at home compared to men, If we have a look at the number of mean hours on domestic chores (39 hours per week) it is almost as if women have a full time job at home even though they also work in average 39 hours per week in the labor market.

***Work in Progress: same estimations for Bolivia.

Conclusions

Overall, we found that in Guatemala, there are significant gender differences in time allocation and market wages. The differences are greater between sexes than between ethnic groups. However, when the two conditions are considered, indian women have a bigger wage gap, and spent more time doing domestic activities than men, and than non indian women.

Finally, even when women spend fewer hours in the labor market, the difference is very small compared to the big gap in domestic activities between both sexes. Implying that women are double burdened and tend to accumulate both types of work while men concentrate only on market work.

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Appendix A

Table A.1: Descriptive Statistics (Guatemala, Whole Sample)

Variables	Obs	Socio-Economic Variables			
		Mean	Std. Dev	Min	Max
Income per Capita	3759	14,729	40,336	31	1,524,248
Household Size	3759	4.31	2.03	1	12
Age Household Head	3759	38.49	14.34	16	95
Percentage Urban Households	3759	0.45	0.50	0	1
Ave. Number of Children	3759	2.43	1.92	0	9
Percentage Couples	3759	0.82	0.39	0	1
Primary Education	3759	0.77	0.42	0	1
Secondary Education	3759	0.17	0.38	0	1
Tertiary Education	3759	0.06	0.24	0	1

Guatemala data is shown in local currency, Quetzales