Female Labor Force Participation in the Urban Bolivia

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FEMALE LABOR FORCE PARTICIPATION IN THE URBAN BOLIVIA

Abstract

This paper analyzes the determinants of female labor force participation in urban Bolivia using data from the 2001 Population and Housing Census. Despite increasing trends over time, women's participation remains significantly lower than men's, with notable differences by ethnicity and socioeconomic status. The econometric analysis, based on Probit models, shows that education and age positively influence women's probability of being economically active. However, the most decisive factors are related to family responsibilities: being single or a household head increases the likelihood of labor force participation, while having more children at home reduces it. The results also highlight the role of ethnicity and poverty—indigenous and poorer women are less likely to participate in the labor force, likely due to lower opportunity costs and more traditional household roles. Living in major cities and being an immigrant are positively associated with participation, reflecting better job opportunities and the push factors of migration. These findings underscore the persistence of gender-based division of labor within households and suggest that policies aimed at increasing female labor force participation in Bolivia must address structural barriers related to care responsibilities, poverty, and educational gaps.

JEL Codes: J15; J16; J22; O54

Key words: Female labor force participation; Gender inequality; Indigenous women; Family responsibilities.

Contents

I. Introduction

Labor force participation in Bolivia still displays marked differences by gender group. One main reason is the human capital gap, since education is higher for men than for women. However, discrimination and segregation problems as well as personal choices related to tastes and family conditions could also explain labor force participation and quality labor market insertion of women compared to men.

This paper analyzes individual characteristics for explaining gender differences in urban labor conditions in Bolivia. The characteristics studied are education; age; experience; family conditions (marital status, number of children, home headship, etc.) and apparent "stereotypes" and innate abilities by gender. Because the marked socio-economic disparities between indigenous and non-indigenous people, this feature is also considered in the study.

Some empirical studies in this area have been developed in Bolivia. Indeed, in terms of employment, Ramírez (2003), using segregation indicators, identifies the existence of occupational segregation problems by gender, principally for unskilled workers.

Moreover, the empirical literature on labor income shows that education is the most important factor explaining wage inequalities. Using Mincer's regressions, some studies as Fields et al. (1998) and Andersen (2001*a*), found that the number of years of education determine more than two-thirds of the explained income. Other papers, as Rivero and Jiménez (1999) and Ramirez (2003), using the Oaxaca decomposition showed that different human capital endowments between women and men explain to a large extent the discrepancies in gender wages. From another point of view, Moensted (2000) observed that educational returns in Bolivia do not seem to be linear, getting higher returns for superior education than for primary and secondary instruction. A second notable result of these studies is wage discrimination against women, measured by a dummy variable or by wage decomposition methodologies. Some investigations found, for example, that male wages are more than 20% higher than female wages, still controlling for some indicators of human capital (see, for example, Pérez, 1997; and Mercado et al., 2003).

Besides those important findings, there are no studies analyzing female labor force participation factors and still it is unclear why occupational segregation and wage discrimination against women do exist. This study addresses these concerns and finds some important new results. First, education levels explain not only the labor income but also how education increases women probabilities of being in the labor force as well as of belonging in the less segregated occupations. Second, family responsibilities controlled by gender are the most important factors that

limit women labor force participation. These factors also restrict women to get involved in less segregated occupations and to have higher earnings, and could affect negatively their work performance. Third, different stereotypes and innate abilities between women and men seem to explain to a large extent an occupational segregation scheme and labor income gaps by gender. Lastly, it is questioned that the taste for discrimination or the statistical wage discrimination against women are important factors to explain the labor income gap by gender. Some discrimination problems against women seem to be present due to pregnancy and post-pregnancy potential costs that firms have to pay when they decide to hire women; but this is rationally justified in terms of minimizing cost.

The structure of the study is as follows. Section II contains a brief theoretical discussion concerning occupational segregation and wage discrimination problems, identifying individual characteristics and choices that could explain them. Section III describes the main personal characteristics by gender and ethnicity according to labor force participation, occupational category sectors and income. It is developed four statistical analyses. The first one studies the factors that explain women labor market participation based on Probit models. The second builds on occupational segregation indexes: Duncan & Duncan, Karmel & Maclachlan and Borghans & Groot (1999). The third statistical analysis, based on Probit models, identifies the characteristics to belong in less segregated occupations. Finally, Mincer's regressions are estimated in order to explain the income gap by gender. Section IV describes additional factors that explain labor market problems against women, based on surveys specifically developed for this study. Conclusions and recommendations can be found in Section V.

II. Stylized facts

Table 2.1 describes population in working age (PWA) by gender, according to their economic activity condition for the Census of the years: 1976, 1992 and 2001.

It is observed that women participation in the labor force has been growing over the time. In the urban area, women that were employed or unemployed (economically active population) in 1976 represented the 24.82% of the population in working age (PWA), but in 2001 the percentage increased to 41.56%. In contrast, men participation in the labor force slightly decreases over the time, which could be attributed to per capita income growth with further human capital accumulation in adolescents and young people, leading to a higher economically inactive population.

Although, labor force participation of men and women has contrary trends over the time, the gap is still high. In 2001 for each 100 men that

were in PWA about 61 of them were working or looking for a job, and for each 100 women in PWA only 42 of them were economically active.

TABLE 2.1
OVER 10 YEARS OLD POPULATION BY GENDER, ACCORDING TO ECONOMIC CONDITION OF ACTIVITY AND GEOGRAPHICAL AREA

DESCRIPTION	ECONOMICALLY ACTIVE		ECONOMICALLY INACTIVE	TOTAL	
	EMPLOYED	UNEMPLOYED		Percentage	Number
MEN					
1976					
Bolivia	71.10%	2.40%	26.50%	100.00%	1,553,110
Urban area	61.54%	3.60%	34.85%	100.00%	647,601
1992					
Bolivia	66.19%	2.24%	31.57%	100.00%	2,228,656
Urban area	58.03%	3.29%	38.68%	100.00%	1,289,915
2001					
Bolivia	60.19%	3.42%	36.39%	100.00%	2,957,387
Urban area	56.39%	4.27%	39.34%	100.00%	1,843,695
WOMEN					
1976					
Bolivia	19.52%	0.36%	80.12%	100.00%	1,646,057
Urban area	24.27%	0.55%	75.17%	100.00%	713,263
1992					
Bolivia	41.00%	0.51%	58.49%	100.00%	2,332,638
Urban area	33.59%	0.73%	65.68%	100.00%	1,411,688
2001					
Bolivia	39.95%	1.14%	58.91%	100.00%	3,043,481
Urban area	40.01%	1.55%	58.44%	100.00%	2,008,328

Source: Own elaboration based on CENSUS 1976,1992 and 2001 data - National Institute of Statistics

Table 2.2 shows population in working age in 2001 by gender and ethnicity, for Bolivian urban areas. For both men and women, it is observed that indigenous people is fewer compared to non-indigenous one. This is because indigenous people are mainly concentrated in the rural areas of Bolivia and not in the urban areas. [1]

Within each population group, it can be observed that indigenous people has a higher participation in the labor force. Among men, 75.59% of indigenous group work or look for a job and 56.75% of non-indigenous people are economically active (EA). Among women, 48.77% of the indigenous group participates in the labor force compared with the 39.42% of non-indigenous ones.

[1] Indigenous people have been determined according to their mother language, which can be: quechua, aymara or other native language.

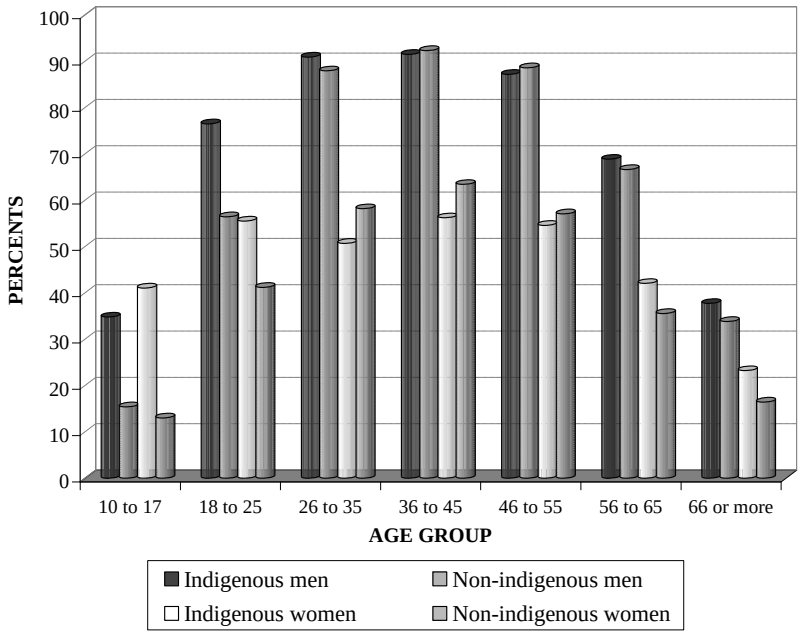
TABLE 2.2
OVER 10 YEARS OLD URBAN POPULATION BY GENDER AND ETHNICITY, ACCORDING TO ECONOMIC CONDITION OF ACTIVITY, 2001

DESCRIPTION	ECONOMICALLY ACTIVE	ECONOMICALLY INACTIVE	TOTAL
MALE POPULATION			
Indigenous	26.06%	12.99%	20.92%
Non-indigenous	73.94%	87.01%	79.08%
TOTAL	100.00%	100.00%	100.00%
Indigenous	75.59%	24.41%	100.00%
Non-indigenous	56.75%	43.25%	100.00%
FEMALE POPULATION			
Indigenous	27.10%	20.27%	23.11%
Non-indigenous	72.90%	79.73%	76.89%
TOTAL	100.00%	100.00%	100.00%
Indigenous	48.77%	51.23%	100.00%
Non-indigenous	39.42%	60.58%	100.00%

Source: Own elaboration based on CENSUS 2001 data – National Institute of Statistics

Figure 2.1 shows urban labor force according to the age group, considering each EA group as the percentage of its own PWA.

FIGURE 2.1
OVER 10 YEARS OLD URBAN LABOR FORCE BY GENDER AND ETHNICITY, ACORDING TO AGE GROUP, 2001



Source: Own elaboration based on CENSUS 2001 data – National Institute of Statistics

In general terms, it is observed a higher labor force participation of people of 19 to 65 years old. The exception is that the indigenous women group begins to work at an earlier age. It is worth to note that for the age group from 10 to 17 years old, indigenous women have the highest participation in the labor force (as a percentage of their PWA), with 41.07%. In this age group, adolescent indigenous men occupy the second position with 27%, and finally, about 10% of both non-indigenous male and female populations participate in the labor force.

For people that are over 18 years old, it is observed that men labor force participation is higher compared to women's participation. With exception of the 18 to 25 years old age group, there are no remarkable differences among indigenous and non-indigenous men. For women, it seems that the non-indigenous in between 26 and 55 years old participate in a higher proportion in the labor force rather than the indigenous ones.

Finally, it is interesting to notice that within each gender group of over 56 years old, there is a higher proportion of indigenous people working or looking for a job (compared to economically inactive) rather than for non-indigenous people. It can be explained because, as it will be seen later, the first ones are generally poorer than the second ones and, therefore, they have to produce a labor income still in the third age.

Comparing Figure 2.1 with Table 2.2 it is observed that the labor force participation gap by ethnicity is a consequence of a higher EA of adolescents and young indigenous people. Excluding the age group of 10 to 25 years old, for instance, the data shows a higher non-indigenous EA (within each population group): of 48.15% of indigenous women working or looking for a job compared to 64.28% of non-indigenous women; and to 81.71% of indigenous men participation in the labor force, compared to the 88.16% of non-indigenous men.[2]

Figure 2.1 shows a first decisive characteristic that explains labor market participation, through a relationship between age and EA in a U inverted shape. The low participation of adolescents and young people reflects, as a result, less needs to generate income given their economic dependence and, also an alternative use of the time, spent on education (mainly for non-indigenous people). The low participation of third age people in EA responds to pensions that some of them have, as well as to their limited own physical conditions for working.

A second factor that can affect the choice of participating in the labor market is related to education. Table 2.3 presents average years of schooling for the population older than 19 by gender and ethnic variables. Comparing first labor force participants by gender, it is observed that men have, on average, a higher level of instruction than women, although the gap is low. In urban area, women who are working

[2] Table A1 in annex A present in more detail the PWA by age group, gender and ethnicity.

or looking for a job have, on average, 8.70 years of education, and men in EA have 9.76 years of education. The educational gap becomes relevant if it is compared the population by ethnic origin. Indigenous women, in particular, are located in the worst position, with a gap of schooling years of 2.65 compared to indigenous men, and 5.62 compared to non-indigenous women.[3]

TABLE 2.3

AVERAGE YEARS OF SCHOOLING OF OVER 19 YEARS OLD BY GENDER AND ETHNICITY ACCORDING TO ECONOMIC CONDITION OF ACTIVITY, 2001

DESCRIPTION	ECONOMICALLY ACTIVE			ECONOMICALLY INACTIVE		
	Indigenous	Non indigenous	Total	Indigenous	Non indigenous	Total
MALE POPULATION						
Bolivia	5.62	9.63	7.93	5.07	10.69	8.76
Urban area	7.28	10.66	9.76	6.36	11.27	10.28
FEMALE POPULATION						
Bolivia	3.51	9.72	7.04	2.75	8.63	6.17
Urban area	4.63	10.25	8.70	3.56	9.55	7.91

Source: Own elaboration based on CENSUS 2001 data – Bolivian National Institute of Statistics

Among indigenous, there is a slightly propensity of men and women with higher education to participate in labor force. In the urban area, for example, economically active indigenous women have 4.63 years of schooling compared to 3.56 years of schooling of inactive indigenous women. Between indigenous men the difference is 7.28 to 6.36. Among non-indigenous people, most educated women are also in a relative higher proportion in EA; however, men with more years of schooling are economically inactive. This last characteristic could reflect a preference for using the time in superior education among young men.

A third factor that can explain the choice of being in the labor market is about individuals' selections that are related and influenced by family responsibilities. The Figure 2.2 presents labor force participation from 19 to 65 years of age by gender and ethnicity according to marital status.

Figure 2.2*a* shows EA for each group according to marital status. In all of the cases it is observed that the labor force is essentially married population (or who live as a couple).[4] In opposite sides are married indigenous men with the 78.28% of them in the labor force, and non-indigenous women married with the 54.56%. Single people occupy the second position in EA participation in each group, with higher proportion for non-indigenous people: 33.53% of women and 30.30% of men.

[3] Table A2 in annex A presents with detail educational gap by gender and ethnicity.
[4] A similar situation is verified in the PWA.

Finally, widow, divorced or separated (other) population is the less significant in EA; it represents 7.25% of feminine EA and 3.91% of masculine EA.

Figure 2.2*b* shows the labor force as a proportion of PWA (in this case population between 19 to 65 years old) according to marital status. The highest gap in the labor force by gender is between married men and married women, without significant differences by ethnicity: for each 100 married men about 89 of them are working or looking for a job and for each 100 married women, 48 are economically active. This gap can explain, in good part, the differences within EA by gender that have been described previously, since most of the population in working age is married.

The married gender gap suggests that family responsibilities are still marked in Bolivia, with male population producing monetary income and female population working at home. This remark is supported by the research of Wanderley (2003). In this work, she concludes, that from a sample of 118 families, that both domestic tasks and caring for children are essentially women jobs.

FIGURE 2.2
URBAN LABOR FORCE OF 19 TO 65 YEARS OLD BY GENDER AND ETHNICITY, ACORDING TO MARITAL STATUS, 2001

FIGURE 2.2*a*

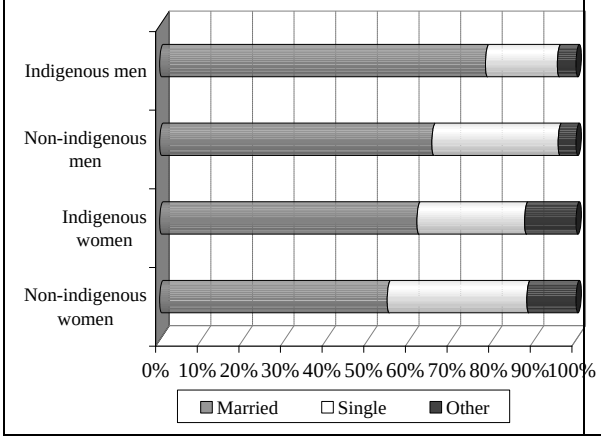
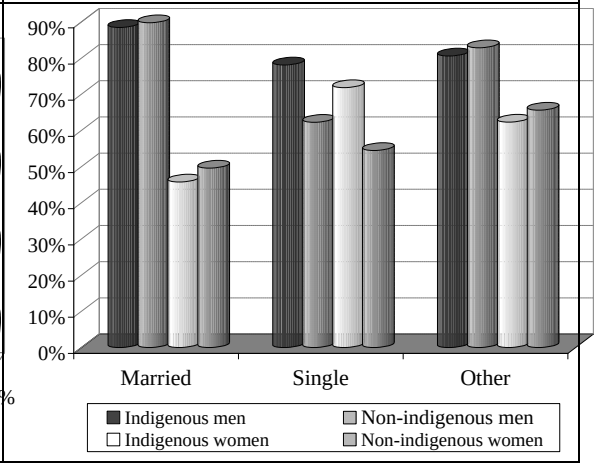


FIGURE 2.2*b*



Source: Own elaboration based on CENSUS 2001 data – National Institute of Statistics
Notes: Married population includes not only those legally constituted but also people that live in couple. The category "other" includes widow, separated or divorced population.

For single people, it is observed that indigenous people are in more proportion in the labor force rather than non-indigenous ones. Since most of single people are younger, this result is corroborated with Figure 2.1, where non-indigenous people usually participate in the labor market at a later age, probably because they use their time to obtain more education when they are young.

Finally, it is noted that gender gap decreases for widow, divorced or separated population, compared to married gender gap; being the result of lower men participation as well as higher women participation in the labor force. The lower gap can be explained because, on one side, mothers assume more responsibilities in the family having to work to generate income, since they usually live with the children. On the other side, men have fewer responsibilities in supporting economically their families.

A second characteristic related to home obligations, that could determine women labor force participation, is related specifically to children at home. Table 2.4 shows the ratio of the number of children per adult by house as a proxy variable of caring for children at home. The characteristic of the house has been attributed to each individual person, who belongs to it and who is between 19 to 65 years old. Children are considered as those who are 6 years old or less and adults are the population over 19 years old.[5]

Table 2.4 shows, according to the economically active condition, that the ratio has marked differences by gender. The male population that is economically inactive (EI) has an average ratio of children per adult smaller than female EI: 0.17 compared to 0.41. This gap suggests that men are EI for other reasons rather than caring for children, but for EI women this task seems to be an important reason for staying at home. Between feminine populations, it can also be observed that the ratio is, on average, smaller for labor force people rather than for economically inactive people: 0.34 compared to 0.41.

For each gender group the PWA was disaggregated in two: 1) individuals that have a ratio of children per adult higher than the population average ratio (for a given gender group); and 2) individuals that have a ratio lower than the population average ratio. According to this, it is separated the individuals into economically active and economically inactive people. This calculations show that men with a higher rate of children per adult in their house participate in a higher proportion in the labor market than men that have a rate under the average: 84.75% compared to 77.89%. Within female population it can be seen the opposite, a smaller percentage of EA women with high rates of children per adult and a greater percentage of EA women with rates lower than the average: 48.99% compared to 54.75%.

[5] This indicator is because there is no information of number of children at family level, only at house level. The house can have one or more families.

TABLE 2.4
URBAN POPULATION OF 19 TO 65 YEARS OLD BY GENDER ACCORDING TO THE RATIO OF CHILDREN PER ADULT, 2001

DESCRIPTION	ECONOMICALLY ACTIVE	ECONOMICALLY INACTIVE	TOTAL
AVERAGE			
Men	0.32	0.17	0.29
Women	0.34	0.41	0.37
POPULATION PERCENTAGE OF OVER AND UNDER TOTAL AVERAGE (0.29 FOR MEN AND 0.37 FOR WOMEN)			
Men			
Over the total average	84.75%	15.25%	100.00%
Under the total average	77.89%	22.11%	100.00%
Women			
Over the total average	48.99%	51.01%	100.00%
Under the total average	54.75%	45.25%	100.00%

Source: Own elaboration based on CENSUS 2001 data – National Institute of Statistics

Finally, labor force participation is analyzed considering the level of individual's poverty. Figure 2.3*a* shows population by gender and ethnicity according to four categories of poverty: non-poor, roughly poor, poor (moderate) and very poor (indigent and marginal). This indicator is built by Bolivian National Institute of Statistical through the "unsatisfied basic needs" that are evaluated considering housing and individual characteristics: use of water services, basic sanitation and combustible, years of education and health attendance.

A first result, which has been documented in the literature, is that non-indigenous population is mostly non-poor: in the first two categories – non-poor and roughly poor– it is found the 74.88% of women and the 73.45% of men. Indigenous population, on the other hand, is generally poor or very poor: the 62.14% of indigenous women and the 62.80% of indigenous men belong to the two last categories – poor and very poor.

Figure 2.3*b* shows the labor force participation as a proportion of PWA for each category of poverty. Among men, it is observed that when they are non-poor they participate relatively in less proportion in the labor force. Among women the contrary fact can be seen, non-poor women participate in more percentage in the labor force than poorer women. It is interesting to note that the 75.94% of non-poor indigenous women are working or looking for a job, a high percentage compared to women EA population (see Table 2.1).

The gap by gender found in Figure 2.3*b* seems to reflect two important aspects: differences in responsibilities at home between men and women and opportunity costs for female population. In this way, poor women

are generally less educated (in quality and quantity) and they have fewer opportunities of getting a good job rather than more educated women. In this case, the use of the time in domestic tasks seems to be not only an occupational stereotype imposed by the society, but also a good way of dividing the responsibilities at home. As the family is less poor, however, mother domestic tasks can be carried out through recruiting domestic workers in Bolivia. Additionally, since less poor women are generally more educated, the opportunity cost of not working in labor market and staying at home becomes higher.

FIGURE 2.3
URBAN LABOR FORCE OF 19 TO 65 YEARS OLD BY GENDER AND ETHNICITY ACORDING TO THE LEVEL OF POVERTY, 2001

FIGURE 2.3*a*

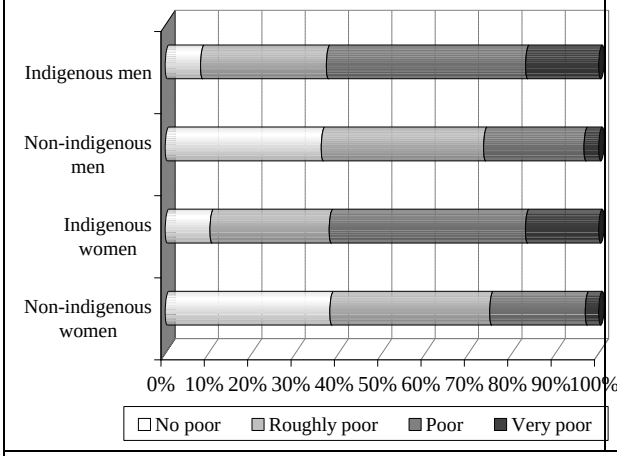
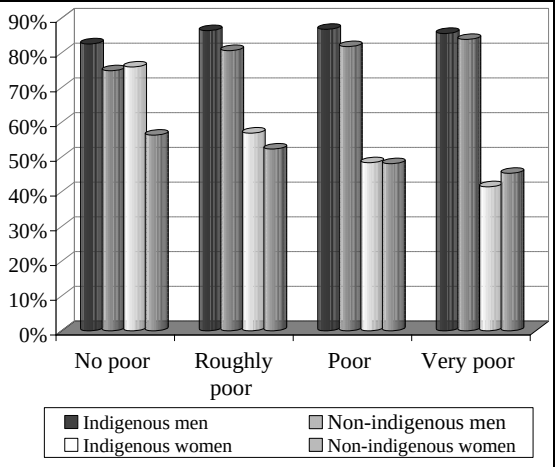


FIGURE 2.3*b*



Source: Own elaboration based on CENSUS 2001 data – National Institute of Statistics

III. Econometrics analysis

III.1. The model

The potential factors that could explain female labor force participation can be analyzed through models of binary choice. In general terms, in these models the dependent variable assume only two values: $y = 1$ if observation k ($k = 1, 2, 3, \ldots, K$) has a given characteristic and $y = 0$ otherwise. The explanatory factors are collected in a vector $\boldsymbol{x}$ and related with y through the following probabilities,

$$\text{(3.1)} \quad \text{Prob}\,(y = 1) = F(\boldsymbol{\beta}'\boldsymbol{x})$$
$$\text{Prob}\,(y = 0) = 1 - F(\boldsymbol{\beta}'\boldsymbol{x})$$

The vector of coefficients $\boldsymbol{\beta}$ resume the $\boldsymbol{x}$ impact over the probability of having (or not) the given characteristic, and $F(\cdot)$ is the cumulative distribution function. The marginal effects are determined through the

$$\text{(3.2)} \quad \frac{\partial E(y)}{\partial \boldsymbol{x}} = \left(\frac{dF(\boldsymbol{\beta}'\boldsymbol{x})}{d(\boldsymbol{\beta}'\boldsymbol{x})} \right) \boldsymbol{\beta} = f(\boldsymbol{\beta}'\boldsymbol{x})\boldsymbol{\beta}$$

where $f(\cdot)$ is the density function that corresponds to the cumulative distribution $F(\cdot)$. For the cases studied here it is worked with the Probit model, which assume that $f(\cdot)$ is a normal distribution function.

III.2. Results

Probit model has been estimated for female urban population in working age, between 19 and 65 years old, using Census data of 2001. The dependent variable used is: $y = 1$ if the individual is working or looking for a job (if it belongs to EA population) and $y = 0$ otherwise. The explanatory variables are: 1) years of education; 2) age; 3) squared age (given the EA U inverted shape according to age group, see Figure 3.1); 4) an ethnicity dummy, which takes the value one if individual is an indigenous person and zero if otherwise; 5) the index of "unsatisfied basic needs" for measuring poverty; 6) a dummy variable of whether the individual lives in the main cities of Bolivia (La Paz, Santa Cruz and Cochabamba); 7) a marital status dummy (equals one if the person is single and zero if otherwise); 8) the ratio of children per adult; 9) a dummy variable of whether the individual is immigrant; and 10) a home headship dummy. The econometrics estimation results are in Table 3.1.

The basic regression - (1) and (1*a*)– considers the dependent variable as a function of two main factors, usually studied in the literature: years of education and age. In (1) coefficients have the expected signals and are significant at 1% level. On one hand, as woman is more educated the probability of participating in the labor force increases. On the other hand, the positive coefficient for age and negative coefficient for squared age show that the possibility of a woman being EA increases with age, but at decreasing rates. In (1*a*) the marginal effects of explanatory variables are calculated. It is interesting to note that age has a higher impact rather than years of education over woman probability of participating in the labor force.

TABLE 3.1
Probit model: Women probability of being in the urban labor force, 2001
(In between 19 to 65 years old)

Variables	**(1)**	**(1*a*)**	**(2)**	**(2*a*)**
Years of schooling	0.0220	0.0088	0.0174	0.0069
	(0.0002)***		(0.0003)***	
Age	0.1070	0.0426	0.1263	0.0503
	(0.0006)***		(0.0006)***	
Age squared	-0.0013	-0.0005	-0.0016	-0.0006
	(0.0000)***		(0.0000)***	
Ethnicity dummy			-0.1284	-0.0511
			(0.0030)***	
Poverty			-0.1176	-0.0468

			(0.0027)***	
Dummy for principal cities			0.0974	0.0388
			(0.0027)***	
Single dummy			0.2940	0.1159
			(0.0029)***	
Ratio: children adults			-0.1478	-0.0588
			(0.0025)***	
Immigrant dummy			0.0399	0.0159
			(0.0023)***	
Household head dummy			0.2755	0.1085
			(0.0027)***	
Constant	-2.0566		-2.2638	
	(0.0107)***		(0.0135)***	
Number of observations	1,333,498	1,333,498	1,333,498	1,333,498

Notes: a) Between parentheses are the standard errors; b) (***) means that the coefficient is significant at 1%; c) the standard errors have been calculated using the robust covariance-variance matrix; d) the database used is the Census 2001.

The second regression - (2) and (2*a*)– considers the dependent variable as a function of all of the explanatory variables described before. All coefficients are significant at 1% level. Through the marginal effects, it is observed that two factors are most relevant over woman probability of participating in the labor force: being single and being household head. Both characteristics show that selections related to family responsibilities determine fundamentally female EA population: the man assumes the responsibility of getting income and the woman is dedicated to domestic tasks. When the woman has to be household head - essentially because she is widow, divorced or separated – she has additional responsibilities at home, having to work also for monetary payment in order to support and sustain their children. In this case she is strongly stimulated to participate in the labor force.

Other variables that increase the possibility of getting women to work or look for a job are - besides the ones in (1) – living in the main cities of Bolivia and being immigrant. Regarding the first variable, a positive coefficient seems to reflect the higher economic activities in these regions compared to other cities in Bolivia, where more and better employment opportunities could stimulate women participation in the labor market. In the case of immigrant women it is known that one of the causes of changing residence, from rural to urban or from urban to urban, are certainly to look for a (better) job.

In regression (2) and (2*a*) it can also be observed that the probability of women labor force participation diminish when she is indigenous and poor. This result is broadly consistent with the previously commented

premise: the opportunity costs of spending time working at home instead of working in the labor market are lower for these type of women, and probably do not compensate the choice of being EA given the family responsibilities. Lastly, it is observed that the higher is the ratio of children per adult, the probability of female labor force participation decreases. In the same sense, the single dummy result reflects the family responsibilities division by gender.

The previous observations are supported with Probit regressions analysis for masculine population, see Table 3.2. On one hand, single men, or with a fewer number of children per adult in the house, have less probability of being in the labor force. This shows that this kind of men have less responsibilities of generating income for the family. On the other hand, when men are indigenous or poor, they have higher possibilities to work or to look for a job. In this case, indigenous or poor families seem to have further marked separation responsibilities, perhaps because income gap by gender in these families is relatively higher than in other cases. In fact, Mincer's regressions (described later) will show, for example, that indigenous women perceive the lowest income in the labor market, even controlling for other variables that explain income.

TABLE 3.2
Probit model: Men probability of being in the urban labor force, 2001
(In between 19 to 65 years old)

Variables	**(i)**	**(i*a*)**	**(ii)**	**(ii*a*)**
Years of schooling	-0.0273	-0.0068	-0.0147	-0.0035
	(0.0004)***		(0.0004)***	
Age	0.2451	0.0614	0.1787	0.0431
	(0.0007)***		(0.0008)***	
Age squared	-0.0030	-0.0008	-0.0023	-0.0006
	(0.0000)***		(0.0000)***	
Ethnicity dummy			0.0072	0.0017
			(0.0040)***	
Poverty			0.0465	0.0112
			(0.0036)***	
Dummy for principal cities			0.1483	0.0372
			(0.0034)***	
Single dummy			-0.4908	-0.1276
			(0.0038)***	
Ratio: children adults			0.1576	0.0380
			(0.0049)***	
Immigrant dummy			0.0761	0.0183
			(0.0030)***	
Home headship dummy			0.2660	0.0662
			(0.0036)***	
Constant	-3.2037		-2.1283	
	(0.0127)***		(0.0169)***	

Notes: a) Between parentheses are the standard errors; b)(***) means that the coefficient is significant at 1%; c) the standard errors have been calculated using the robust covariance-variance matrix.

IV. Concluding remarks and recommendations

Comparing the econometric results with the Figures and Tables described previously, it is possible to have some conclusions over the characteristics that determine women labor force participation. First, usually more educated women are in the labor market, nevertheless, this variable is not found as the most important. Second, decisions within the family are the most significant factors. Married women with children in the house assume mainly domestic tasks, but when they are household heads they have the additional responsibility of generating income. Finally, the socio-economic factors around the families – where do they live and if they are poor - seem to define women labor force participation choices. When these conditions are better, there are more possibilities of having EA women.

This research has been carried out in order to analyze labor market conditions and labor force participation in Urban Bolivia controlling mainly by gender group. The analysis was based in three main differences between women and men: human capital - years of education and work experience, family conditions (marital status, number of children, household headship, etc) and 'stereotypes'.

With regards to women labor force participation, the results found in this research are summarized in the following points. First, education is constituted as an important explanatory factor. When women have more years of education, they have a higher probability of being in the labor force - nevertheless, this factor is not the most important. This characteristic reflects the average years of educational gap between EA and EI women, with almost one more year of education for EA. Second, EA population and age have an inverted U-shaped correlation: there is a higher proportion of adults working or looking for a job compared to young or third age people. The indigenous women group has the highest proportion of the population that get into the labor market at an earlier age, but the adult indigenous women proportion is relatively lower than non-indigenous people and indigenous men.

Third, the most important factors that explain women labor force participation are related with family responsibilities and "stereotypes". It is less probable that married women with children get into the labor force - because they have more housework responsibilities, while men with these characteristics have a higher probability of belonging to the EA population. This result shows that social occupation division inside the household by gender is still marked in Bolivia. Because most of the EA population is married, it also explains significantly the labor force gap by gender. However, when women are household headship, they have more responsibilities for generating income, having, therefore, a higher probability of working or looking for a job.

Finally, family socio-economic features such as the place where they live and poverty determine also the women labor force participation choices. When these conditions are better, there are more possibilities for women to be EA. This result seems to be related with women opportunity costs. On one hand, living in the main cities of Bolivia (La Paz, Santa Cruz and Cochabamba) can incentive women to participate in the labor force, probably because there are more job opportunities. On the other hand, poor women are generally less educated (in quality and quantity), have more children within the household and have fewer possibilities to get a good job compared to more educated and less poor women.

With regards to labor characteristics by gender, the following results were found. First, women are usually concentrated in unskilled occupations – with low earnings; 93.96% of indigenous women belong to this category. However, within skill occupations there are no marked differences by gender, being men relatively more concentrated in semi-skilled occupations. Second, there are also some specific jobs where women – or men – work. According to the Karmel & Maclachlan index, women are concentrated in unskilled jobs, i.e. office, service and sale jobs. In contrast, men work as machineries and installation operators and as extractive, construction and manufacturing workers.

Third, analyzing the gender gap by economic sector it is found that a few proportion of women, principally indigenous women, works at high paid sectors compared to men. One reason of this result is that the trade sector, which has low labor incomes, concentrates the 32.54% of female population (the 41.24% of indigenous women) compared to the 18.31% percent of males.

Fourth, the Borghans & Groot's occupational segregation index shows that gender differences in education – presorting - and occupational choices and opportunities – postsorting - have a similar relevance in explaining this problem. The educational gap is more important within indigenous people, and occupational choices and opportunities are more relevant within non-indigenous population. The educational differences by gender are relevant for workers that have primary and secondary instruction in terms of illiteracy and postsorting. Additionally, between indigenous and non-indigenous women educational differences explain almost all the occupational segregation problems.

Lastly, it is found that years of education are the most important factor of the explained probability of being in less segregated occupations. Family responsibilities are also relevant factors that restraint women to work in less segregated occupations, which is related principally with choices. Additionally, the "stereotypes" attributed to each gender seem to have an important role in explaining why women are concentrated in some occupations and are scarce in others, and this is related mainly with job opportunities.

Regarding the income gap by gender, some interesting results emerge from the study. First, returns to schooling are low for workers with 8 years of schooling and they rise as years of education increase. Because indigenous women have, on average, low education, it explains in good part their low labor income. Second, to some extent, women's work performance is limited as more children live in the household. Third, it is found that as women workers are more educated, they have a higher probability of being in less segregated occupations, thus obtaining higher earnings. That is, education is also relevant to determine labor income trough occupational segregation problems. Finally, self-employed women labor productivity is low, and this represents the 50% of the explained income gap by gender. However, women employees also receive low salaries than the rest of the workers (ceteris paribus).

The new data collected for this study made possible to analyze additional characteristics that are no observed in official data. First, it was found further human capital differences between the population groups analyzed in the survey at home level. The training period courses are important for a segment of the population; however, there are no marked differences by gender. Here, indigenous women are also disadvantaged since they have the least years of training. This result could also explain, to some extent, high educational returns for workers with more than 12 years of schooling (see regressions of Table 3.11) because usually more educated workers have also higher training period courses. However, on average, for all the population these courses have marginal contribution on the returns to years of education.

The marked gap by gender - related to human capital- was found in years of experience. On average, men have around 3 more years of labor experience than women. This characteristic is present in both the first job and the actual occupation. Women also have higher periods of inactivity compared to men, with a gap of 2 years. Additionally it was found a high disparity of experience between the first job and the actual occupation (around 8 years). These results suggest, on one hand, that the experience proxy variables usually used in the literature are misleading and, on the other hand, that labor income gap by gender is also explained by non-observed labor years of experience gap by gender.

In addition, the desire to accumulate human capital is shared by men and women students, being the additional years of education slightly higher for men. The strong disparities by gender are found in the election of professions or occupations. A higher proportion of men, for example, would like to study pure sciences or engineering, and more women than men prefer education sciences. This tendency is related to different choices - between men and women – that results from gender specific tastes.

Second, the firms' interviews suggest that statistical and taste discrimination problems are not relevant to explain labor income gap by

gender. Furthermore, some productivity disparities by gender that are not related with either education or experience seem to favor women workers; for example, they are considered more responsible and disciplined than men. However, married women request more work licenses that harm their labor performance. A form of discrimination against women is presented because pregnancy and post-pregnancy costs disincentives women hiring, but it is rationally justified in terms of minimizing costs.

The most important differences between men and women in the labor market are attributed to stereotypes and innate abilities. Women, for example, are preferred for customs services and men for security jobs. It is highly possible that these disparities are more important within unskilled workers, thus explaining the high segregation indexes in occupations mainly with this kind of workers.

These results are compatible with the analysis of secondary students' expectations. Around the half of the students perceive that there are no different labor market conditions – in terms of finding jobs, having better chance of promotion and having a good salary. When they believe that such differences exist, the main reasons are related with innate abilities, capabilities and stereotypes, being discrimination problems not really important.

Lastly, the survey at home level corroborates the perceptions around different family obligations between women and men. When women do not want - or they do not feel capable – to assume a work position of higher responsibility, the main reason is household obligations – childcare and housework. However, most women would like to have a work with higher responsibility. In Addition, husbands have greater duties for generating income for the family and women on other household matters.

These family responsibilities division, however, seems to be less marked for young people. There is a low proportion of students that believe that women have more obligations concerning childcare and housework. In addition, while 75.65% of women think that the income generating duties has to be equal, about 50% of men believe that they will have higher responsibilities compared to their wives.

Recommendations

It is still much to be done in order to have similar labor market conditions between women and men. The formal education policies are important instruments to reduce occupational segregation problems and labor income disparities. These policies should be mainly concentrated toward indigenous women, because they are most disadvantaged. Observing that this group of population has the highest proportion of adolescents working, it seems that exist a tradeoff between working and studying. Therefore, it is essential to have programs stimulating the adolescent indigenous women education at home and/or at work. Many

of them, for example, work as domestic employees, so by Law the bosses should be forced to send adolescent workers to school.

In addition, the intensification of the programs for reducing illiteracy are also highly advisable because - according to the Karmel & Maclachlan index - it explains, in an important way, the occupational segregation problems.

The education in Bolivia, however, seems to be poor when related with the productive sector, mainly primary education (given its low return on labor income). So, it is required important changes in educational policies to be focused on programs that effectively improve productivity and, therefore, generate higher income. Training policies also are highly recommended in this context.

Besides the relevance of education for productivity, however, women policies to reallocate them to high paid sectors and occupations are desirable, as well as improving other productivity determinants, such as physical capital and technology, in sectors (or occupations) where women are concentrated. The most needed population here seems to be the self-employed women workers - principally indigenous women - since their income is almost 34% lower compared with the rest of the workers.

It is also recommended policies that look towards the promotion of equal family responsibilities between husband and wife. These policies should be implemented in several levels. First, in the labor force analyzed – population among 19 to 65 years – men participation in domestic tasks and children care should be encouraged. Second, at the school, professors should receive training courses related to family gender equity issues, so that such knowledge can be transmitted to their students. Third, the curriculum should give higher relevance to gender equity as well as human rights matters. Finally, parents also should be educated to promote gender equity with their children.

Although little can be done to reduce innate abilities and stereotypes disparities by gender, it is possible to stimulate, in some way, a more equitable selection of occupations by gender, in order to reduce segregation problems, by education and campaign programs.

Finally, the main cause of discrimination problems against women seems to be associated with the pregnancy and post-pregnancy costs. These costs should be assumed, in a good part, for the society, since it is a social cost. In this context, the Government should, for example, create a fund exclusively to cover the three months of inactivity cost for the pregnant women that is stipulated by Law. The firms' recommendations are strongly supported here, which were described previously.

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Annex

TABLE A.1
BOLIVIA: OVER 10 YEARS OLD POPULATION BY GENDER AND ETHNICITY, ACCORDING TO CONDITION OF ACTIVITY AND GEOGRAPHICAL AREA, 2001

DESCRIPTION	ACTIVE POPULATION				INACTIVE POPULATION		TOTAL	
	EMPLOYED		UNEMPLOYED					
	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous
TOTAL POPULATION								
Total	**1,281,969**	**1,710,935**	**46,345**	**89,264**	**940,224**	**1,922,685**	**2,268,538**	**3,722,884**
10 to 17 years	109,622	165,668	3,229	6,336	292,485	939,922	405,336	1,111,926
18 to 25 years	224,990	411,126	9,607	28,209	136,310	431,310	370,907	870,645
26 to 35 years	263,942	468,875	11,193	25,558	123,531	190,223	398,666	684,656
36 to 45 years	258,521	347,536	9,609	15,562	107,213	112,940	375,343	476,038
46 to 55 years	196,103	196,711	6,734	8,853	84,479	79,976	287,316	285,540
56 to 65 years	126,468	81,522	3,835	3,502	75,039	72,588	205,342	157,612
66 or more	102,323	39,497	2,138	1,244	121,167	95,726	225,628	136,467
Urban area	**488,716**	**1,353,141**	**28,576**	**81,276**	**331,538**	**1,564,123**	**848,830**	**2,998,540**
10 to 17 years	33,727	118,340	1,187	5,090	56,598	745,258	91,512	868,688
18 to 25 years	95,404	326,205	5,423	25,604	54,581	371,406	155,408	723,215
26 to 35 years	114,170	382,700	7,493	23,722	55,048	154,568	176,711	560,990
36 to 45 years	111,513	284,941	6,511	14,425	44,895	88,556	162,919	387,922
46 to 55 years	76,584	157,690	4,539	8,226	34,546	63,454	115,669	229,370
56 to 65 years	36,350	58,520	2,402	3,158	32,372	60,363	71,124	122,041
66 or more	20,968	24,745	1,021	1,051	53,498	80,518	75,487	106,314
Rural area	**793,253**	**357,794**	**17,769**	**7,988**	**608,686**	**358,562**	**1,419,708**	**724,344**
10 to 17 years	75,895	47,328	2,042	1,246	235,887	194,664	313,824	243,238
18 to 25 years	129,586	84,921	4,184	2,605	81,729	59,904	215,499	147,430
26 to 35 years	149,772	86,175	3,700	1,836	68,483	35,655	221,955	123,666
36 to 45 years	147,008	62,595	3,098	1,137	62,318	24,384	212,424	88,116
46 to 55 years	119,519	39,021	2,195	627	49,933	16,522	171,647	56,170
56 to 65 years	90,118	23,002	1,433	344	42,667	12,225	134,218	35,571
66 or more	81,355	14,752	1,117	193	67,669	15,208	150,141	30,153

Table A.1 continued

DESCRIPTION	ACTIVE POPULATION				INACTIVE POPULATION		TOTAL	
	EMPLOYED		UNEMPLOYED					
	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous
MALE POPULATION								
Total	**750,244**	**1,027,906**	**37,569**	**63,364**	**307,811**	**765,658**	**1,095,624**	**1,856,928**
10 to 17 years	53,198	94,992	2,327	4,367	150,161	463,527	205,686	562,886
18 to 25 years	128,432	243,645	7,072	18,075	42,320	172,388	177,824	434,108
26 to 35 years	162,180	282,377	8,963	17,535	20,181	37,908	191,324	337,820
36 to 45 years	155,178	205,533	8,070	11,879	17,835	17,708	181,083	235,120
46 to 55 years	117,361	120,920	5,895	7,345	17,211	15,317	140,467	143,582
56 to 65 years	75,472	53,947	3,410	3,094	20,940	22,303	99,822	79,344
66 or more	58,423	26,492	1,832	1,069	39,163	36,507	99,418	64,068
Urban area	**269,038**	**769,805**	**22,152**	**56,521**	**94,043**	**629,762**	**385,233**	**1,456,088**
10 to 17 years	14,082	63,187	739	3,356	27,767	365,505	42,588	432,048
18 to 25 years	49,450	183,259	3,553	15,923	16,285	153,760	69,288	352,942
26 to 35 years	66,823	220,511	5,673	15,939	7,239	32,419	79,735	268,869
36 to 45 years	63,246	159,541	5,285	10,868	6,360	14,198	74,891	184,607
46 to 55 years	44,170	91,649	3,902	6,763	7,061	12,669	55,133	111,081
56 to 65 years	20,573	36,382	2,129	2,775	10,261	19,585	32,963	58,742
66 or more	10,694	15,276	871	897	19,070	31,626	30,635	47,799
Rural area	**481,206**	**258,101**	**15,417**	**6,843**	**213,768**	**135,896**	**710,391**	**400,840**
10 to 17 years	39,116	31,805	1,588	1,011	122,394	98,022	163,098	130,838
18 to 25 years	78,982	60,386	3,519	2,152	26,035	18,628	108,536	81,166
26 to 35 years	95,357	61,866	3,290	1,596	12,942	5,489	111,589	68,951
36 to 45 years	91,932	45,992	2,785	1,011	11,475	3,510	106,192	50,513
46 to 55 years	73,191	29,271	1,993	582	10,150	2,648	85,334	32,501
56 to 65 years	54,899	17,565	1,281	319	10,679	2,718	66,859	20,602
66 or more	47,729	11,216	961	172	20,093	4,881	68,783	16,269

Table A.1 continued

DESCRIPTION	ACTIVE POPULATION				INACTIVE POPULATION		TOTAL	
	EMPLOYED		UNEMPLOYED					
	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous
FEMALE POPULATION								
Total	**531,725**	**683,029**	**8,776**	**25,900**	**632,413**	**1,157,027**	**1,172,914**	**1,865,956**
10 to 17 years	56,424	70,676	902	1,969	142,324	476,395	199,650	549,040
18 to 25 years	96,558	167,481	2,535	10,134	93,990	258,922	193,083	436,537
26 to 35 years	101,762	186,498	2,230	8,023	103,350	152,315	207,342	346,836
36 to 45 years	103,343	142,003	1,539	3,683	89,378	95,232	194,260	240,918
46 to 55 years	78,742	75,791	839	1,508	67,268	64,659	146,849	141,958
56 to 65 years	50,996	27,575	425	408	54,099	50,285	105,520	78,268
66 or more	43,900	13,005	306	175	82,004	59,219	126,210	72,399
Urban area	**219,678**	**583,336**	**6,424**	**24,755**	**237,495**	**934,361**	**463,597**	**1,542,452**
10 to 17 years	19,645	55,153	448	1,734	28,831	379,753	48,924	436,640
18 to 25 years	45,954	142,946	1,870	9,681	38,296	217,646	86,120	370,273
26 to 35 years	47,347	162,189	1,820	7,783	47,809	122,149	96,976	292,121
36 to 45 years	48,267	125,400	1,226	3,557	38,535	74,358	88,028	203,315
46 to 55 years	32,414	66,041	637	1,463	27,485	50,785	60,536	118,289
56 to 65 years	15,777	22,138	273	383	22,111	40,778	38,161	63,299
66 or more	10,274	9,469	150	154	34,428	48,892	44,852	58,515
Rural area	**312,047**	**99,693**	**2,352**	**1,145**	**394,918**	**222,666**	**709,317**	**323,504**
10 to 17 years	36,779	15,523	454	235	113,493	96,642	150,726	112,400
18 to 25 years	50,604	24,535	665	453	55,694	41,276	106,963	66,264
26 to 35 years	54,415	24,309	410	240	55,541	30,166	110,366	54,715
36 to 45 years	55,076	16,603	313	126	50,843	20,874	106,232	37,603
46 to 55 years	46,328	9,750	202	45	39,783	13,874	86,313	23,669
56 to 65 years	35,219	5,437	152	25	31,988	9,507	67,359	14,969
66 or more	33,626	3,536	156	21	47,576	10,327	81,358	13,884

Source: Own elaboration based on CENSUS 2001 data – Bolivian National Institute of Statistics

TABLE A.2

LEVEL OF EDUCATION OF OVER 19 YEARS OLD POPULATION BY GENDER AND ETHNIC, ACCORDING TO CONDITION OF ACTIVITY AND GEOGRAPHICAL AREA, 2001

DESCRIPTION	ACTIVE POPULATION				INACTIVE POPULATION	
	EMPLOYED		UNEMPLOYED			
	Indigenous	Non indigenous	Indigenous	Non indigenous	Indigenous	Non indigenous
MALE POPULATION						
BOLIVIA	**682,988**	**909,906**	**34,500**	**57,462**	**146,670**	**263,702**
None	83,731	25,751	3,764	1,282	33,119	9,896
Primary	434,458	296,782	22,109	17,374	75,677	54,879
Secondary	124,858	339,146	7,380	24,929	27,058	97,670
Superior non university	28,673	108,504	747	5,208	6,299	32,670
University	11,268	139,723	500	8,669	4,517	68,587
URBAN AREA	**250,228**	**690,705**	**21,126**	**51,889**	**62,326**	**231,172**
None	12,253	8,728	1,444	825	9,001	5,673
Primary	137,491	162,013	13,108	14,030	31,091	39,852
Secondary	75,997	290,800	5,545	23,436	14,790	88,256
Superior non university	15,494	94,959	581	5,034	3,847	30,505
University	8,993	134,205	448	8,564	3,597	66,886
RURAL AREA	**432,760**	**219,201**	**13,374**	**5,573**	**84,344**	**32,530**
None	71,478	17,023	2,320	457	24,118	4,223
Primary	296,967	134,769	9,001	3,344	44,586	15,027
Secondary	48,861	48,346	1,835	1,493	12,268	9,414
Superior non university	13,179	13,545	166	174	2,452	2,165
University	2,275	5,518	52	105	920	1,701
FEMALE POPULATION						
BOLIVIA	**461,826**	**595,378**	**7,576**	**22,995**	**477,642**	**638,346**
None	155,646	26,281	1,748	487	195,473	51,769
Primary	256,059	184,806	4,468	4,789	243,333	234,362
Secondary	33,506	191,095	1,020	8,357	28,418	209,506
Superior non university	13,200	103,839	202	3,938	7,542	63,660
University	3,415	89,357	138	5,424	2,876	79,049
URBAN AREA	**193,535**	**513,964**	**5,781**	**22,135**	**204,640**	**518,790**
None	38,593	14,298	1,113	411	63,790	25,718
Primary	120,760	141,510	3,501	4,393	115,390	163,399
Secondary	23,675	176,649	868	8,107	18,614	192,258
Superior non university	7,506	94,230	167	3,868	4,450	60,006
University	3,001	87,277	132	5,356	2,396	77,409
RURAL AREA	**268,291**	**81,414**	**1,795**	**860**	**273,002**	**119,556**
None	117,053	11,983	635	76	131,683	26,051
Primary	135,299	43,296	967	396	127,943	70,963
Secondary	9,831	14,446	152	250	9,804	17,248
Superior non university	5,694	9,609	35	70	3,092	3,654

University	414	2,080	6	68	480	1,640

Source: Own elaboration based on CENSUS 2001 data – Bolivian National Institute of Statistics