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Analysis of labor discrimination against women in Ecuador 2007-2016

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Abstract: The purpose of this article is to quantify wage gaps between men and women in Ecuador over the period 2007 – 2016. Based on Enemdu survey, the proposed methodology is based on Mincer type estimates (1974) to identify the determinants of labor income and in the decomposition method of wage differentials (Oaxaca, 1973 and Blinder, 1973). The results indicate that in 2016, there was a statistically significant net salary difference of 4.5% in favor of men contrasted with women. 66% of this difference is explained by salary discrimination by sex. We conclude that in spite of the educational achievements obtained over the last decade and because of the absence of an employment policy and the low economic cycle, there are still challenges in the labor field, particularly in terms of access to employment, which at the same time ensures equity for women.

Key words: gender, employment, discrimination, wage differences.

Resumen: El propósito de esta investigación es cuantificar la brecha salarial entre hombres y mujeres en Ecuador en el periodo 2007-2016. Con base en la encuesta Enemdu, la metodología se basa en estimaciones de tipo Mincer (1974) para identificar los determinantes del ingreso laboral y en el método de descomposición de las diferencias salariales (Oaxaca, 1973; Blinder, 1973). Los resultados señalan que en 2016 existe una diferencia salarial neta estadísticamente significativa de 4,5% en beneficio de los hombres frente a las mujeres. El 66% de esta diferencia es explicada por la discriminación salarial por sexo. Concluimos que a pesar de los logros en materia de educación obtenidos durante la última década, debido a la ausencia de una política de empleo y al ciclo económico bajo, aún persisten desafíos en cuanto al ámbito laboral con mayor agudez en el acceso a empleos de calidad, que al mismo tiempo aseguren equidad.

Palabras clave: género, empleo, discriminación, diferencias salariales.

Introduction

Over recent decades, there have been deep changes in the labor market dynamics. From the demographic standpoint, new gender roles socially assigned to women are noticed, with their exponential inclusion into paid employment. The difficulty to harmonize paid and unpaid work has conveyed an increase in female employment, which implies that productive and reproductive work carried out by women has increased.

This way, it is evident that paid work is shared with the rest of the household, whereas non-paid work still largely falls upon women. In this context, new modalities to face caring activities are pressing, via care services and the co-responsibility of all the household members.

Rodríguez (2010) expresses an overwhelming criticism to the orthodox economic vision of the new household economy, in which it is understood as a harmonious unit, where the co-responsibility of its members efficaciously concurs with productive work and caring activities. Therefore, it is essential to rethink the concept of labor, since the individuals' productivity has been traditionally measured in the labor market; while work at home remains invisible. Female subordination translates as lower female participation in the labor market, as well as wider access to jobs with no benefits in which admission requirements are simple, but imply severe instability and expose them to exploitation.

Owing to this, it is fundamental to aim at the broader conception represented by the *feminist economy* as regards the need to include an understanding of the power relations and inquilinity in the economic studies, as such relations are immersed in knowledge creation, where one risks that the comprehension of reality is biased by androcentric visions that hide women's asymmetries in various spheres (Pérez, 2004).

From the standpoint of the feminist economy, it has been argued that the economic science neglects an essential part of the social relations that ensure the subsistence of human life. This way, to speak of economy is imperative to transcend the vision of production as a means for the reproduction of society; this is to say, include the standpoint of reproductive work and, as a whole, speak of life sustainability. This approximation has been closely linked to the public-private dichotomy in social structure (Pérez, 2004; Carrasco, 2003).

According to Quiroga (2009), *domestic work*, as part of the care economy, refers to activities that mostly are performed in the private sphere, and by and large, women are in charge of them. At once, work called productive —paid with a salary and benefits for the employees— is performed in the public

sphere, however both men and women in recent decades perform this role, reflecting in this case the excessive workload that falls upon women.

There are variables that allow ascertaining the persistence of inequalities between men and women, among them the legal and regulatory system, education, remuneration, as well as the employment tendencies, which reflect on the sectoral distribution, with women mainly hired in personal services, education and health care (Branchi and Figueiredo, 2013). To specifically refer to the obstacles women face in their access to the labor system, Vásconez and Espinosa (2015) resort to the concept of "restriction structures" (Kabeer, 2001), which may be intrinsic or imposed. These restrictions define the masculine and feminine dominant models and, at once, the mechanisms with which the institutions reproduce inequality (Vásconez and Espinosa, 2015). In this regard, it is important to consider that the more difficult it is to conciliate paid with unpaid work, the more reduced participation in economic activities and higher labor precariousness (Vásconez and Espinosa, 2015). In this sense, informality is the most adequate option for women owing to their need for monetary resources and their available time to distribute it between paid and unpaid work.

As regards productive work, Baquero *et al.* (2000) distinguish the following categories of discrimination by sex. In the first place, there is "discrimination in the acquisition of human capital" (Baquero *et al.*, 2000: 4), which refers to impediments or obstacles faced by women in the access to generate capabilities in any sphere. Furthermore, "employment discrimination" (Baquero *et al.*, 2000: 4) is explained by women's unemployment compared to men's; and finally, labor segregation, which becomes labor participation and wage gaps, which are not produced by labor productivity.

On the other side, occupational discrimination refers to the typifying of certain occupations as feminine; because of this, female participation concentrates on the tertiary sector. Many of these activities are an extension of their caregiver role, as in health care services, domestic maids and education. "The so called female activities [...] have a lower wages, poor social prestige, weak design making power and are highly flexible" (Nicolás *et al.*, 2010: 47).

Labor policy in Ecuador

Between 1990 and 2016, there are three periods related to public policy making in Ecuador. The 1990's decade characterized by the setting into motion of marked neoliberal policies, oriented toward privatization, liberalization of the financial market and to give up on the planner and regulatory role of the State; over such period, the country experienced the

worst financial crisis in its history owing to the bankruptcy of banks and financial institutions, causing the loss of many citizens' savings, high inflation levels, adoption of dollarization, high unemployment and emigration rates. Hence, the period 2000-2006 was marked by the institutional crisis lived in Ecuador, reflected in the presence of four presidents in seven years, being a scantly clear and brief administrations.

In 2007, the consolidation of a regime with more State presence, supported on the approval of the 2008 Constitution. In this new Carta Magna equality between people, regardless of their condition, rules as a principle for fundamental rights. Among these, education, health care and labor are guaranteed and the right to labor in any of its modalities is stated: "a relation of dependence or autonomy, with the inclusion of self-sustain and human caregiving activities" (Asamblea Nacional, 2008a: 151). The Supreme Law mentions "equal jobs will receive equal remunerations" (Asamblea Nacional, 2008a: 152), securing the right to equitable remunerations. And it includes the guarantee of the "reproductive rights of workers, which includes the suppression of labor hazards that affect reproductive health and the access and stability in employment" (Asamblea Nacional, 2008a: 155).

The various National Development Plans (NDP) have gathered these constitutional principles in favor of a more equitable society free from discrimination. In reference to the eliminate employment discrimination by gender, 2007-2010 NDP promotes "the focalization of employment programs on rural populations and on women with the highest unemployment rates" (Senplades, 2007: 332). 2009-2013 NDP expresses "punish discrimination and harassment motivated by gender, ethnicity, age, sexual preferences, disability, maternity or other reasons in the workplace" (Senplades, 2009: 278). While 2013-2017 NDP proposes to "strengthen programs focused on the incorporation of women and priority-attention groups into the labor market, as paid workers or supporting their entrepreneurships" (Senplades, 2013: 283).

For its part, the Agenda for Gender Equality includes nine axes that define public policy to ensure equality, among which "the Production and Employment axis pursues to potentiate and set into motion the potential of women and LGBT people in the economic and productive development of the country, creating conditions to overcome underemployment, unemployment and labor exploitation (Consejo Nacional de Igualdad de Género, 2014: 53).

At regulatory level changes have been made such as the demand that paid housemaids receive a unified base wage, in addition to the contribution

of their bosses to the system of social security (Asamblea Nacional, 2012). In like manner, the Organic law for labor justice and the recognition of household work (Asamblea Nacional, 2015), fixing minimum sums that the affiliate has to pay to the Instituto Ecuatoriano de Seguridad Social [Ecuadoran Institute of Social Security] (IESS) according to their family socioeconomic status.

Another important achievement is the suppression of labor outsourcing, which hindered the coverage of social security and other benefits the workers with direct contracts are entitled by law (Asamblea Nacional, 2008b). Despite the significant regulatory advance, there is not a clear employment policy, with emphasis on closing the gaps in access to quality employment for men and women; hence, as presented below, despite the improvement in the training of human capital, discrimination still persists in employment and wages.

Discrimination experienced by Ecuadoran women in the access to labor market and the distribution of non-paid work at the household

One of the great global challenges is to reduce inequalities between men and women in order to secure the same conditions and close gender gaps. Albeit, according to the World Economic Forum (2018), in spite of the collective action and the constant struggles of women organizations, international agencies and national States, the global gender gap will take a hundred years to close; while the access to the labor market will close in 217 years (Foro Económico Mundial [WEF], 2018). Notwithstanding that at global and Latin American level women account for a half of the population, there are still insertion obstacles and instability to remain in the labor market (Abramo, 2004), this is to say, socioeconomically, a half of the labor force is being excluded in inequality of conditions.

The economic-productive structure, thereby, occupational of the Latin American region has as a background the particularities of its development along history and the macroeconomic restriction proper to each country, which enables a very peculiar insertion in the international division of labor. This way, each country exhibits the dynamic proper to the region (Branchi and Figueiredo, 2013).

In their study "Trabajo femenino en América Latina" [Female labor in Latin America], De Oliveira and Ariza (2000) point out that labor market gaps are evinced by wage differences, scarce political participation and in decision making, insertion in labor market without redistributing

caregiving tasks and maternity desertions (De Oliveira and Ariza, 2000). This has caused low life quality and level in relation to working hours and free time (Valerdi, 2004). Over the last decade, Latin American women have attained better schooling levels, which becomes the accumulation of human capital; however, women still face growing discrimination, noticed in the gap between men's and women's incomes.

According to Branchi and Figueiredo (2013), taking the occupational sectors into consideration, there is a greater presence of workers in the service sector and the persistence of division of labor based on gender roles is noticed. Likewise, the occupational segregation in services mainly in productive activities and personal services; these posts are largely held by women. To this adds what Zubieta and Marrero (2005: 27) conclude for Mexico: "in the regulatory sphere, juridical changes have not found a counterpart in the institutional structures, in the effective access of women to decision making and chair positions, neither have they rooted as socially accepted values".

With this background that gathers relevant elements of the reality of Latin American women, we now inquire on the situation of Ecuadoran women as regards discrimination in training human capital, in employment, in wages and in occupation, and non-paid work, with a view to visualizing advancements and challenges in Ecuador, as regards the closing of gaps in the labor market between men and women over the 207-2016 period.

Discrimination in human capital training

Social mobility is heavily conditioned by education level, because of this it is important to generate capabilities to increase the possibility to reach quality employment. Table 1[1] shows that between 2007 and 2016, at national level, attendance to basic general schooling and high school significantly increased from 91,7 to 96,2%, and from 51,2 to 71,3%, respectively. In 2016, 73,4% of women and 69,4% of men attend high school-

Higher education attendance rate is higher among women, 33,2%, against 29,8% men. Likewise, in this decade men and women's schooling has increased ten years for both sexes on average. By 2016, the average schooling of the employed population[2] is 12,5 years, considering that in

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1 All tables are in the Annex at the end of the present article (Editor's note).

2 "It is composed of the employed people who […] work 40 or more hours [a week] and that in the month previous to the survey, received labor incomes equal or above the minimum wage, regardless of the intention and availability to work overtime" (INEC, 2014: 14-15). By 2016, minimum wage reached 366 USD.

this category women hold 14 years of schooling, this is to say 2,2 years more than men (see table 1).

Discrimination experienced by women at work

In 2016, the economically active population comprises 7,9 million people, 1,5 million more than in 2017. This population sector is composed of 58,2% men and 41,8% women. Over these ten years the growth of the affiliation to social security is noticeable, from 26,3% in 2007 to 42,1% in 2016. In this last year, a slight difference between the affiliation to social security of men (43,1%) compared with women (40,7%) (see table 2).

In 2016, unemployment at national level reached 5,2%, a figure similar to those at the beginning of the government in 2007. Women experience higher unemployment rates, 6,2% before that of men, 4,5% (see table 3). This reduction of employment is explained by the low economic cycle lived in Ecuador as of 2015, as a consequence of external shocks. Owing to the diminution in the oil price, main exportation, and the appreciation of dollar that weakened the competitiveness of exportations, in 2016 the economy experienced a decrease in its GDP (-1,5%) (Banco Central del Ecuador, 2017), which has influenced the deterioration of labor indicator, intensifying the situation of women to access employment.

Persistent discrimination in wages

By 2016, adequate national employment is 41,2%, 7,1 percentage points regarding 2014, when it reached a peak. Over these ten years, the gap between men and women has remained stable; therefore, by 2016, women's adequate employment is 31,9%, 16 percentage points below men (see table 4). Data account that women experience difficulties to be hired in quality jobs, mainly because of the need to combine productive and reproductive work.

At national level, the average labor income in adequate employment has increased twice as much since 2007, changing from 355 USD to 766 USD in 2016. This increase has benefitted both sexes: on average, women receive 734 USD and men 781 USD from work. In both cases, labor income accounts for more than twice the minimum wage (see table 4). Despite that for both sexes adequate employment is analyzed, there is a difference of about 50 USD against women. Even if educational gaps have reduced significantly, this has not been enough for women to access employment in the same conditions as men.

For its part, by 2016, inadequate employment[3] is 53,4%, reaching the peak of the decade. Women's inadequate employment reached 61,8%, 14,4 percentage points over men (see table 4). As regards the economic cycle, in low growth periods, it is noticed that owing to the imperious need to meet the most basic needs many people who do not have a decorous job engage in activities with no entrance restrictions. This situation implies a growth of underemployment and a relative reduction of average wages, which becomes an increase in the income gap.

Between 2007 and 2016, at national level, the average labor income of those with inadequate or precarious employment increased 56% in broad numbers, as it changed from 132 USD in 2007 to 206 USD in 2016. In this last year, labor income for men with inadequate employment is 229 USD, 137 USD under the minimum wage; while for women in these conditions, labor income is 178 USD, 188 USD under the minimum wage. All of this allows concluding there is still wage discrimination by sex (see table 4).

Occupational discrimination from social roles

By 2016, women mainly engage in: trade (23,8%), agricultural activities (23%) and lodging and catering systems (10,6%); while men in: agricultural activities (27,5%), trade (15,6%) and manufacture (12,3%) (see table 5). As noticed in table 5, the existence of occupational segregation is noticed, for among the most important activities of women those of lodging, catering and teaching are noticed, which besides are considered feminine; conversely, jobs related to construction, transport and storing exhibit larger presence of men, as they are considered masculine. This employment specialization by sex is heavily influenced by the cultural patterns and roles at home.

Inequality in the performance of unpaid work

According to the "Encuesta de uso del tiempo" [Time use survey] (INEC, 2012a), in 2012, 93,1% of the population participated in non-paid work activities:[4] men with 89% and women with 97%, this is to say, 8 percentage

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3 "It is made up of those people with a job that does not meet the minimum conditions of hours or income, that is, they work less than 40 hours during the reference week, and/or in the month prior to the survey, they received labor income lower than the minimum wage, and may or may not want and be available to work overtime." (INEC, 2014: 15).

4 "Includes unpaid domestic work and family care, performed in and for the home itself as for other households, unpaid community activities and unpaid voluntary work." (INEC, 2012a: 3).

points more than men. Despite that 9 out of 10 men participate in non-paid work activities, it is important to point out that on average men devote six hours a week; whereas women devote more than 18 hours a week. According to this, it is clear that women, besides engaging to a larger extent in house chores, they also have jobs in precarious conditions owing to the difficulty they have to conciliate paid and non-paid work.

Analysis methodology

Mincer earnings function

In view of quantifying wage discrimination by sex, frequently the proposals by Oaxaca (1973) and Blinder (1973) are used; these begin by identifying wage determinants by means of a Mincer-type function (1974), ascertained by means of Ordinary Least Squares (OLS), which establishes that a regression of the logarithm of labor income before schooling, labor experience and this last variable's square (Wooldridge, 2009). From this, an extended Mincer equation will be produced, as in addition to the traditional variables, the people's individual and labor characteristics. According to this, the equation to estimate has the following functional formula:

$$Y_{it} = \beta X_i + u_{it}$$

Where, Y_i is the dependent variable, the logarithm of the wage of each individual i. X_i is the vector of independent variables. β is the vector of coefficients to calculate each one of the independent variables X_i. u_i is the perturbation or error variable and contains all the other factors than X_i which affect Y_i. The subscript i indicates that transversal data are used, and that data correspond to the individual i, with $i = 1, ..., N$.

At sampling level, only employed people account for the labor income variable, overlooking the unemployed and inactive, this way the sample would be dashed. This is to say, the variable Y_i is only observed for a part of the population. Therefore, observing Y_i does not depend on the individual and labor characteristics considered by the model, but on an external variable: participation in the labor system.

On the basis of the Heckman method (1979) it is possible to obtain consistent estimations from the examined data, and to do so, the selection bias is treated as the omission problem of a variable called inverse Mills ratio. This process begins with the estimation of a probit model called selection, in which the dependent variable S_i is equal to 1 if Y_i is observable, and 0 if it is

not. Independent variables of the selection equation Z_i are those related to the decision of belonging or not to the labor system.

$$S_i = f(Z_y)$$

Inverse Mills ratio is S_i estimated, $\hat{S}_i$. If by including $\hat{S}_i$ as one of the regressors of Mincer equation, the quotient of this variable is significant, then the presence of bias selection is verified.

$$Y_i = \beta X_i + \rho_1 \hat{S}_i + u_i$$

Oaxaca-Blinder decomposition

Once the estimation of wage determinants is carried out, the Oaxaca-Blinder decomposition will be performed. Starting from two groups of individuals, *g*, in this case we have the group of men, *H*, and the group of women, *M*, which have wage differences accredit to the set of independent variables *J* (Blinder, 1973; Oaxaca 1973, in Otero 2012). The general lineal model considered is:

$$Y_g = \beta_g X_g + u_g \ ; \qquad E(\varepsilon_g) = 0 \qquad g \in \{H, M\}$$

Taking the difference of mean values: $R = \bar{Y}_H - \bar{Y}_M$

With $Y_H = \beta_H X_H + \varepsilon_H$ and $Y_M = \beta_M X_M + \varepsilon_M$,

then $\bar{Y}_H = \beta_H X_H$ and $\bar{Y}_M = \beta_M X_M$

while the difference is:

$$R = \bar{Y}_H - \bar{Y}_M = \beta_H X_H - \beta_M X_M$$

by adding and subtracting the expressions $\beta_H X_M$, $\beta_M X_H$ and $\beta_M X_M$ and obtaining the common factor we have:

$$R = \beta_H X_H - \beta_M X_M + \beta_H X_M - \beta_H X_M$$

$$R = \beta_H (X_H - X_M) + X_M (\beta_H - \beta_M) + (X_H - X_M)(\beta_H - \beta_M)$$

The decomposition equation is composed of three parts. The first, called dotation, is attributed to the predicting effects, this is to say, the differences between men's and women's characteristics. The second measures the contribution of the coefficients of the dependent variable; i.e., the component of discrimination from the performances of these characteristics. The last term expresses the interaction between the two terms above.

Combination of transversal cohorts over time

Once wage is controlled in function of the explanatory variables: what has occurred with wage over time? And, what has been the effect in function of the interaction of variables sex and time? we will build —in order to answer these questions— a model based on an independent combination of transversal cohorts over time, also known as pooled data model (Wooldridge, 2009). This sort of combinations comprises random population samples at various times, in which the individuals are not repeated, and it is characterized by independent observations and not identically distributed.

The combination of independent transversal cohorts increases the sample size, obtaining more accurate estimators. Various methodologies can be applied for transversal data, with the difference that the inclusion of variables that allow analyzing the influence of time, or at once, the interactions of time together with other explanatory variables on the independent variable.

The equation to estimate the Pooled data model corresponds to a MCO model

$$Y_{it} = \alpha + \beta X_{it} + u_{it}$$

Where, Y_{it} is the dependent variable of the wage of the individual i corresponding to t. X_{it} is the vector of independent variables, composed of individual and labor characteristics of each worker, of $J \times 1$ dimensions, being J the number of independent variables. u_{it} is the perturbation or error and it contains all factors other than X_i that affect Y_i. Subscript i corresponds to individual i, while subscript t indicates the year, with $i = 1, ..., N.$ and $t = 1, ..., T.$.

Information source and variable definition

In order to apply the methodology, we will resort to "Encuesta Nacional de Empleo, Desempleo y Subempleo" (Enemdu) [National survey of employment, unemployment and underemployment] (INEC, 2007, 2012b, 2016). To estimate the model of wage determinants with transversal data, we will use the December 2016 round; while, for the estimation in function of the combination of transversal cohorts, the rounds corresponding to December 2007, 2012 and 2016. In this regard, it is worth mentioning that every two years there is a full refreshing of Enemdu sample, which ensures that individuals are not repeated in the selected years.

The dependent variable of the regression is the natural logarithm of monthly labor wage, a transformation that will impose a constant percentage effect on wage to each explanatory variable. As regards, the independent variables: *age* and *age²* are included in view of accounting for the effect that the older the age the higher labor income; however, this increase is not linear, as at a certain age labor income begins to decrease. Owing to this, it is expectable that the variable age has a positive sign unlike *age²* with a negative one.

In order to prove the educational effect of labor income, the variable schooling was included, which measures each individual's years of study. It is expected that those with more *schooling* years earn a better income and also the variable *sex* is one of the determinants to explain labor income. According to this, it is intended to quantify to what extent the fact of being a woman is associated to a lower labor income than men.

The model includes variables of area and natural region to account for the geographic effect as regards the urban area and the Amazonía region. The first variable is composed of two categories: *urban* area present and the city and outskirts, and the *rural* one, associated to the countryside. The second variable comprises the Ecuadoran continental land and is composed of three categories: *Sierra*, *Costa* and *Amazonía*. The variable *ethnicity* was included referring to those individuals whose self-identification is Afro-Ecuadoran or indigenous in view of enquiring if this characteristic allows explaining labor income.

The variable *economy sector* comprises three categories: 1) primary sector, referred to agricultural, livestock and extraction activities; 2) secondary sector, manufacture and industrialization; and, 3) tertiary sector, services. It is expected that sectors that need more formal education years influence to have a better salary. The variable *occupation category* is composed of:

government employee, employer, private worker, self-employed, day laborer and domestic employee.

The variable marital status has been utilized in the literature as an approximation for the degree of responsibility each individual has, which tends to increase the probability of being employed and the need to earn higher incomes. Contributions to *social security* is related to the formality and quality of employment, this way it is expectable to be affiliated to social security have better incomes than those who are not. With the variable *more than 100 employees* is intended to enquire if workers belong to large enterprises —those with more than a hundred workers— earn a higher income regarding those who work in small enterprises.

In view of correcting the bias of the individuals' election to estimate the selection equation, all the regressors of the extended Mincer function that do not refer to the labor characteristics of being employed are considered; this is to say, the following variables were excluded: economy sector, occupation category, affiliation to social security and enterprise size. In like manner, two variables referred to labor at the household, given its relation with the decision to work: children under 5 years of age and the elderly (see table 9).

For the model from the combination of transversal cohorts, the variable year will be added to analyze whether labor income has increased as a consequence of the passing of time. The selected years to produce the data pool are: 2007, 2012 and 2016. Actual income in 2007 was utilized in view of studying the evolution of wage in constant terms, considering its purchasing power (Wooldridge, 2009).

As well interactions between variables and years and sex were included so as to quantify to what extent the fact of being a woman in each of the considered time points has influenced on labor income before men and the rest of women. This way, it is intended to enquire on the advance, setback or stagnation of wage gaps by sex between 2007 and 2016.

Discussions and results

In function of the methodology exposed, we estimated the regression of the determinants of labor income corresponding to 2016 and then the Heckman's selection bias correction (see table 6). The Mills quotient is significant, which indicates that indeed, there was a selection bias and it had to be corrected. The regression coefficients with and without Heckman correction are relatively similar. The coefficient are significant and their sign is as expected. Age and schooling are positive, unlike squared age that

is negative. Labor income increases in 3,3 and 3,5% by year of age and each additional schooling year, respectively, which indicates that income is superior as education level increases. The fact of being a woman decreases labor income in 27,7% regarding men.

From Heckman's correction, the coefficient of the variable women decreases, since it significantly contributes to the model of selection of probability of being working, which shows the large wage gap by sex. Being indigenous or Afro-Ecuadoran reduces income almost by 8,3%, while those married earn 12,9% more compared with those who are not. At territorial level, individuals who belong to the rural area earn 10,8% less than those living in urban areas.

By natural region, whose in Costa and Sierra earn 7,9 and 5,2% more than those in Amazonía. As regards the economic sector, it is noticed that those in the primary and secondary sectors shown a lower labor income of 32,6 y 7,4% compared with the tertiary sector, respectively. In the category occupation, compared with day laborers and paid workers at home, public and private employees have a higher labor income of 34,2 and 12,8%, respectively.

Employers have an income superior in 61,6%, while those who work on their own have an income lower in 40%. Those employed affiliated to social security earn 28,6% more than those who are part of enterprises with more than one hundred employees, with incomes 27,2% higher than workers in smaller enterprises.

For the case of the model from the combination of transversal cohorts, the same process was followed as for 2016. The equation of actual labor income determinants was estimated and then the selection bias was corrected, obtaining relatively similar results (see table 7). In function of this, belonging to 2012 and 2016 produces an actual labor income superior in about 12%, compared with the base year, 2007. It was expectable that the coefficient corresponding to 2016 is larger, for there are four years of difference regarding 2012, however, its magnitude is quite similar.

Interactions between sex and year are statistically significant and show that the variable women in 2012 represents an income higher in almost 7,7% compared with women in 2007 and all men. Whereas, the variable women in 2016 contributed with an increase of 4% in labor income compared with women in 2007, the year 2012 was better than 2016 in terms of income for all the population and the closing of wage gaps by sex.

By means of Oaxaca-Blinder decomposition it was found that for 2016, in function of labor income predictions for both sexes, there is a statistically

significant net difference of 4,5% in benefit of men (see table 8). According to this decomposition, about 19,7% of the differential is explained by the term of dotation, i.e., owing to independent variables.

This component indicates a difference favorable to the group of women, contrasting with other two terms that favor men. 66,7% of the decomposition is explained by the term of coefficients or return of the characteristics considered in the model. Such term is known as the component of wage discrimination, evincing the persistence of labor asymmetries between sexes. The remaining 9% of the differential is the term of interaction between the individuals' characteristics and yields. This component assesses the wage differential by contrasting men's characteristics with the coefficients calculated for women and women's characteristics regarding the coefficients estimated for men.

Conclusions

This research shows the situation of women in the labor market and the persistent wage discrimination in Ecuador. The intention of the analysis was to elicit an informed debate on the State omissions against women; this way, from the evidence presented for the period 2007-2016 there is no defined labor policy that intends to reduce the gaps in quality employment access with the same incomes. The low economic cycle lived in Ecuador as of 2015, owing to the appreciation of the American dollar and the reduction in oil prices, allows evincing a generalized deterioration of labor indicators, largely affecting women.

Discrimination to hire women was identified; they still endure higher unemployment levels than men and as well they work in inadequate positions, which do not give them the guarantees of formal employment, more often. In Ecuador, the main activities the population engages in are agricultural and trade; apart from these activities, women carry out service activities, while men work in construction and industry.

There has been advance in access to education, there is no discrimination in the acquisition of human capital, since the attendance to all education levels makes it clear that both sexes have such access. The greatest challenge is to increase and sustain over time the attainment of full education levels. Women are the ones with higher attendance rates in all education levels; however, they lack better opportunities to access adequate jobs, and more so, to wages equal to men's. Analyzing schooling in the formal sector, it is noticed that women have more schooling years compared with men;

this demonstrates the heavier pressure women have to be hired in formal employment.

By means of the econometric models, we reached important conclusions regarding wage discrimination by sex between 2007 and 2016. According to the transversal cut model estimated for 2016 it was found that the fact of being a woman decreases labor income in 27,7% compared with men. As for the model based on the combination of transversal cohorts for 2007, 2012 and 2016, it is concluded that the variable woman in 2012 accounts for an income higher in almost 7,7% compared with the rest of women in 2007 and all men. While the variable woman in 2016 contributes with an increase of 4% of labor income compared with women in 2007 and all men.

These results show that, taking 2007 as a reference, 2012 was better than 2016 for women, evincing the effect that of the aforementioned low economic cycle. By means of the Oaxaca-Blinder decomposition, it was noticed that for 2016, in function of income labor predictions for both sexes, there is a statistically significant net difference of 4,5% favorable for men. 66% of this difference is explained by wage discrimination by sex, which demonstrates the high degree of labor asymmetries between sexes.

Even if it is true that the constitutional and planning framework to ensure equal labor rights has been created, it is fundamental to generate a public policy of labor and employment with affirmative action that provides men and women with the same opportunities to access quality employment. Likewise, it is necessary that laws are promoted from the State and set up public policies that dignify women's labor with the recognition to their activity in public and labor life, as well as to their activity in the private and family spheres.

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Annex

Table 1

Education indicators at national level by sex

Indicator	2007			2016		
	national	man	woman	national	man	women
General basic education net attendance rate	91,7%	91,5%	91,8%	96,2%	95,9%	96,6%
High school net attendance rate	51,2%	47,5%	55,2%	71,3%	69,4%	73,4%
Higher education gross attendance rate	36,0%	33,6%	38,6%	31,5%	29,8%	33,2%
Schooling years	9,1	9,3	8,9	10,1	10,2	10,1
Schooling years of the population with adequate employment	10,1%	9,7%	10,9%	12,5%	11,8%	14,0%

Source: Sistema Integrado de Conocimiento y Estadística Social (Sices) (2017), based on Enemdu (various years).

Table 2

Social security coverage of the Economically Active Population, at national level by sex

Indicator	Disaggregation	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Social security of EAP	National	26,3%	27,5%	29,9%	33,5%	38,2%	41,4%	43,0%	44,3%	44,2%	42,1%
	Man	26,7%	28,3%	30,7%	33,2%	39,0%	41,7%	43,3%	45,8%	45,4%	43,1%
	Women	25,6%	26,3%	28,9%	33,9%	36,9%	40,9%	42,6%	42,1%	42,4%	40,7%

Source: Sistema Integrado de Conocimiento y Estadística Social (Sices) (2017), based on Enemdu (various years).

Table 3

Evolution of unemployment rate at national level by sex

Indicator	disaggregation	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Unemployment	Nacional	5,0%	6,0%	6,5%	5,0%	4,2%	4,1%	4,2%	3,8%	4,8%	5,2%
	Man	3,8%	4,3%	5,2%	4,1%	3,3%	3,7%	3,4%	3,1%	3,9%	4,5%
	Woman	6,7%	8,3%	8,4%	6,4%	5,6%	4,8%	5,4%	4,9%	6,1%	6,2%

Source: Sistema Integrado de Conocimiento y Estadística Social (Sices) (2017), based on Enemdu (various years).

Table 4

Adequate and inadequate employment at national level by sex

Indicator	Disaggregation	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Adequate employment	National	43,2%	44,8%	39,2%	44,7%	45,5%	46,5%	47,9%	49,3%	46,5%	41,2%
	Man	50,5%	52,4%	45,2%	50,0%	51,8%	51,6%	53,5%	56,2%	53,1%	47,9%
	Women	32,4%	33,6%	30,2%	36,5%	35,9%	38,9%	39,1%	39,0%	36,9%	31,9%
Means labor income in adequate employment (current USD)	National	355,5	358,6	518,7	555,5	582,3	620,1	699,4	705,6	757,5	766,4
	Man	386,9	388,5	532,1	570,5	592,4	634,2	722,8	724,4	778,5	781,6
	Women	295,6	303,1	489,1	523,8	560,2	592,0	650,0	665,4	713,5	734,5
Inadequate employment	National	50,8%	49,0%	52,4%	49,5%	49,7%	47,2%	47,8%	46,7%	48,1%	53,4%
	Man	44,6%	42,9%	47,4%	45,1%	44,2%	42,6%	42,9%	40,5%	42,3%	47,4%
	Women	59,8%	58,0%	59,7%	56,2%	58,0%	54,1%	55,3%	55,9%	56,5%	61,8%
Mean labor income in inadequate employment (current USD)	National	132,1	153,7	133,2	141,6	152,5	166,3	184,2	194,7	200,8	206,7
	Man	158,1	174,9	146,0	152,3	169,0	180,8	201,9	218,4	222,9	228,7
	Woman	99,5	127,3	115,0	125,4	128,9	145,0	158,6	164,4	171,8	178,0

Source: Sistema Integrado de Conocimiento y Estadística Social (Sices) (2017), based on Enemdu (various years).

Table 5

Five main activity sectors for men and women

	Men		Women	
Activities	Participation	Lodging and catering activities	Participation	
Agriculture, livestock, hunting and forestry	27,5%	Trade and reparations	23,8%	
Trade and reparations	15,6%	Agriculture, livestock, hunting and forestry	23,0%	
Manufacturing industries	12,3%	Lodging and catering activities	10,6%	
Construction	11,8%	Manufacturing industries	9,7%	
Transported and storage	9,1%	Teaching	6,6%	
Other	23,8%	Other	26,4%	
Total	100,0%	Total	100,0%	

Fuente: Sistema Integrado de Conocimiento y Estadística Social (Sices) (2017), based on Enemdu (2016).

Table 6

Extended Mincer equation– transversal cohort 2016

Explanatory variables	MCO	MCO Heckman correction
Constant	4,001*** (0,0489)	4,447***(0,081)
Age	0,0500*** (0,00202)	0,0333***(0,00309)
Age^2	-0,000553*** (0,0000219)	-0,000364***(0,0000338)
Schooling	0,0383*** (0,00109)	0,0350***(0,00117)
Women	-0,439*** (0,00889)	-0,277***(0,0256)
Ethnicity	-0,0857*** (0,0118)	-0,0829***(0,0118)
Married	0,100*** (0,00883)	0,129***(0,01)
Rural	-0,105*** (0,0101)	-0,108***(0,0103)
Costa	0,0788*** (0,0127)	0,0786***(0,0125)
Sierra	0,0632*** (0,0119)	0,0518***(0,0115)
Sector 1	-0,325*** (0,0128)	-0,326***(0,0117)
Sector 2	-0,0731*** (0,0111)	-0,0736***(0,0118)
Public employee	0,342*** (0,0197)	0,342***(0,0238)
Private employee	0,127*** (0,0128)	0,128***(0,015)
Employer	0,614*** (0,0281)	0,616***(0,0239)
Self-employed	-0,398*** (0,012)	-0,396***(0,0128)
Social security	0,285*** (0,0109)	0,286***(0,0101)
More than 100 employees	0,271*** (0,0128)	0,272***(0,0163)
Mills		-0,313***(0,0464)
N	38.437	38.437
R^2	0,4839	
F(17, 38.419)	2.332	
Wald chi^2(17)		26.838

Robust standard errors in parentheses.
Heteroscedasticity correction with White robust standard errors.
Significance level: *** p<0,01, ** p<0,05, * p<0,1
Source: own elaboration based on Enemdu.

Table 7

Extended Mincer equation– combination of transversal cohorts over time, years 2007, 2012 and 2016

Explanatory variables	MCO	MCO Heckman correction
Constant	3,902*** (0,0327)	4,273***(0,0529)
Age	0,0456*** (0,00131)	0,0315***(0,002)
Age2	-0,000492*** (0,000014)	-0,000333***(0,0000219)
Schooling	0,0435*** (0,000727)	0,0402***(0,000803)
Woman	-0,482*** (0,0115)	-0,322***(0,0212)
Ethnicity	-0,0839*** (0,00841)	-0,0882***(0,0083)
Married	0,104*** (0,00591)	0,129***(0,00662)
Rural	-0,144*** (0,00683)	-0,138***(0,00696)
Costa	0,0630*** (0,0103)	0,0682***(0,00996)
Sierra	0,0366*** (0,00992)	0,0300***(0,00954)
Sector 1	-0,281*** (0,00864)	-0,283***(0,00802)
Sector 2	-0,0651*** (0,00763)	-0,0653***(0,00797)
Public employee	0,335*** (0,0131)	0,334***(0,016)
Private employee	0,129*** (0,00814)	0,129***(0,00963)
Employer	0,624*** (0,0174)	0,625***(0,0143)
Self-employed	-0,320*** (0,00789)	-0,319***(0,00821)
Social security	0,243*** (0,00719)	0,244***(0,00678)
More than 100 employees	0,269*** (0,00866)	0,270***(0,0111)
Year 2012	0,120*** (0,00863)	0,121***(0,00893)
Year 2016	0,116*** (0,00816)	0,117***(0,00827)
Woman 12	0,0768*** (0,0151)	0,0768***(0,0146)
Woman 16	0,0415*** (0,014)	0,0390***(0,0131)
Mills		-0,277***(0,0315)
N	85.914	85.914
R²	0,458	
F(21, 85.892)	3.869	
Wald chi²(21)		53.084

Robust standard errors in parentheses.
Heteroscedasticity correction with White robust standard errors.
Significance level: *** $p<0,01$, ** $p<0,05$, * $p<0,1$
Source: own elaboration based on Enemdu.

Table 8

Oaxaca Blinder model, year 2016

	Decomposition	Contribution
Prediction men	5,525***(0,0173)	
Prediction women	5,288***(0,0679)	
Difference	0,237***(0,0701)	4,5%
Dotation	-0,0771***(0,0149)	19,7%
Coefficients	0,261***(0,0703)	66,7%
Interaction	0,0533***(0,0132)	13,6%

Robust standard errors in parentheses.
Heteroscedasticity correction with White robust standard errors.
Significance level: *** p<0,01, ** p<0,05, * p<0,1
Source: own elaboration based on Enemdu.

Table 9

Selection equation, probit model of the probability of being employed

Explanatory variables	Transversal cohort 2016	Combination of transversal cohorts 2007, 2012 and 2016
Constant	-1,176*** (0,0592)	-0,976*** (0,04)
Age	0,101*** (0,00227)	0,0940*** (0,00149)
Age2	-0,00111*** (0,0000223)	-0,00105*** (0,0000144)
Schooling	0,0252*** (0,00132)	0,0280*** (0,000875)
Woman	-1,045*** (0,0117)	-1,140*** (0,00773)
Ethnicity	-0,0273* (0,0163)	0,0302*** (0,0114)
Married	-0,225*** (0,0126)	-0,217*** (0,00823)
Rural	0,00602 (0,0132)	-0,0619*** (0,00847)
Costa	0,0111 (0,0175)	-0,0311** (0,0136)
Sierra	0,100*** (0,016)	0,0716*** (0,0131)
Presence of children under 4 years	0,0362*** (0,0135)	0,0207** (0,00893)
Presence of elderly people	-0,841*** (0,0274)	-0,824*** (0,0188)
N	61.240	141.455

Robust standard errors in parentheses.
Heteroscedasticity correction with White robust standard errors.
Significance level: *** p<0,01, ** p<0,05, * p<0,1
Source: own elaboration based on Enemdu.

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