

Analyzing wage gaps for indigenous in informal and formal labor markets in Latinamerica: The case of Bolivia, Brazil, Ecuador, Guatemala, Nicaragua and Perú

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Abstract

This paper analyzes the size, components and determinants of wage gaps in formal and informal labor markets in six Latin American countries, emphasizing on the indigenous wage gaps inside these employment sectors. To this aim household suveys carried out on 2001 are analyzed. The results from the decomposition are according to the literature and show that there exists large wage gaps between formal and informal sectors and against indigenous population. The unexplained portion of the wage gap tend to be high which could reflect high levels of discriminatio. I also find evidence that the unexplained wage gap is higher in informal sector of the labor market in all the countries, but is even higher in countries with high density of indigenous population. Regarding the determinants we find that experience increases the unexplained wage gap in formal markets and decreases it on informal markets in countries with higher levels of indigenous population, while education works in the opposite direction.

Keywords: Discrimination, Indigenous, Latin America, Informality
JEL Classification: J70, O17,

1 Introduction

Over the past two decades informality became one of the most important problems that developing countries face, due to its effects on household wealth, inequality and poverty itself. The growth on informal sectors in developing countries is due the lack of capacity of formal sectors to create jobs (Blunch et. al. 2001). In this line, the increase of the labor force in urban areas in developing countries (especially due to the population growth but also due to the high migration from rural to urban areas) has overwhelmed the potential job creation of formal sectors . Interestingly, a big part of the migrants from rural areas are indigenous, low educated and vulnerable groups that seek for a better future. These factors influenced to create two types of wage gaps that have been studied in the existing literature. The first is the wage differences existing between formal and informal sectors, and the second between indigenous and non indigenous population. Less attention has been paid to what happens inside these groups which is important in itself in policy and academic grounds.

Wage gaps between formal and informal workers are seeing as barriers for development and a major concern for governments and international organizations (World Bank 2007). These disparities have also been the focus of a recent literature.(Arias et. al. 2007, Maloney 1999, Pratap 2006). Based on the existing literature it is not clear if these differences are bigger or smaller inside employment sectors, for example there is no empirical evidence of the wage gaps inside the formal and informal employment sector, moreover there is not evidence on the explained and unexplained components of the wage gaps inside these sectors. It is a general believe that the unexplained portion of the wage gap (generally referred as discrimination) is higher in formal sector for those indigenous that have the possibility to get into this sector, and lower in informal markets given that the workers tend to be less specialized and their reservation wages do not vary among them. It is in this sense that the evaluation of the extend of wage gaps between informal and formal labor markets, and the existing wage gaps inside these employment sectors is important. It's also important to evaluate if part of the unexplained wage gap is due to barriers to employment in the formal sector.

The main goals of this paper are:

1. Analyze the wage gaps between formal and informal markets in Latin American countries.
2. Evaluate the existence of indigenous discrimination (or unexplained wage gap) in informal and formal labor markets and the extend of which each component affect the unexplained wage gap.

To achieve this two goals it is necessary to estimate what part of the difference between indigenous and non indigenous workers earnings cannot be explained by differences in their respective productive characteristics. Even this methodology presents limitations due the fact that it is nearly impossible to control for all the productive characteristics of the workers, it is the standard wage analysis.

Over the paper I use two different ways to distinguish between indigenous or

non indigenous. I apply the distinction, between indigenous and non indigenous, using self identification (Bolivia, Brazil, Guatemala, Nicaragua, Perú) or native language when the self identification was not available.(Ecuador).The years utilized on the study are listed on the appendix and are chosen based on the availability of household surveys. The intention is not only to analyze the wage gap of indigenous population in formal and informal markets but also find the specific components or sources of the unexplained part of income differential in order to draw policy implications.

I find that there exist substantial income disparities between informal and formal sectors, and between indigenous and non indigenous as well, as seening the existing literature. I extend the analysis of indigenous wage gap inside the formal and informal sectors, and find that the higher the indigenous population, the higher the unexplained wage gap. Moreover, the unexplained wage gap against indigenous in informal sector is higher in countries such as Bolivia or Guatemala where there is a big indigenous population.

The following section presents a brief review of the existing literature on informality and indigenous population in Latin America. Section 3 presents a discussion of the utilized data and the methodology, section 4 explains the results and section 5 presents the conclusions of the paper.

2 Where do I stand? Brief Review of Literature

Following I first present a brief review of literature on wage differential between for informal and formal workers and then between indigenous and non indigenous population, to the best of my knowledge there is no empirical or theoretical study that interacts both.

Wage differentials have been extensively studied over time in different contexts in developed and developing countries as well. The context in which wage differentials are analyzed vary between countries and context, but the main focus of the literature has been gender, race and regions. Latin American countries have not been the exception, several studies on wage differentials and their determinants exist in for different groups. In what respects to formal and informal labor markets in Latin America some authors have used rigorous data to show that wage differentials between these two sectors are statistically significant, even after controlling for several personal and household characteristics as well as for selectivity bias. Gindling (1991) for Costa Rica, Funkhouser (1996) for the five Central American countries, Marcouiller et al (1997) for Mexico, El Salvador and Perú, Saavedra and Chong (1999) for Perú and Orlando (2000) for Venezuela, Jimenez (1999) for Bolivia have failed to reject the hypothesis of no segmentation. All these studies find that the returns to education in the informal sector are either insignificant or smaller than in the formal sector. This has been taken as evidence of labor market segmentation because the same productive characteristic, i.e. education, is being paid differently across sectors.

The evidence is not unanimous though. Tannen (1991) found no difference between formal and informal wages, after controlling for other variables and

selectivity, in Northeast Brazil. More subtly, Pradhan (1995) argues that significant differences in wages may be due to compensating differentials rather than to segmentation. In other words, individuals accept different wages in different sectors simply because non pecuniary characteristics differ between jobs. Even for one or other reason the fact is that the wage differentials between informal and formal sector exists.

As stated by Arias, Landa and Yañez (2007), the definition of informality has not been universally agreed, nevertheless a wide consensus exists that it always relates to unprotected workers, avoidance of excessive regulation, low productivity, unfair competition, evasion of the rule of law, underpayment or nonpayment of taxes, and work “underground” or in the shadows. Studying this concept involves the recognition that whether the existence of formal sector reflects “*barriers*” or “*choice*”, particularly the old and young, who would prefer a job with standard labor protections, but are unable to get one “*barriers*”; or workers who have quit formal sector jobs to start a micro business to be their own boss, make more money, and avoid paying social protection taxes; and women leaving formal salaried jobs for the flexibility of balancing home and income-raising responsibilities “*choice*”.

According to the definition used by International Labour Organization (ILO) informal labor can broadly be broken into two subsectors: informal salaried and independent work, and formal sector is composed by salaried workers¹. Formal salaried urban employment by this definition ranges from nearly 20 percent in Bolivia, Paraguay, and Perú, to roughly 60 percent in Chile reaching almost 40 percent for the region overall. Salaried informal work, including unpaid and domestic workers (mostly women) comprises roughly 33 percent of urban employment in the region, ranging from 17 percent in Chile to over 45 percent in Ecuador, Nicaragua Paraguay, and Perú. Informal independent (self-employed) workers, comprising single-person firms or owners employing other workers, represent roughly 24 percent of the regional urban workforce, ranging from 18 percent in Chile to over 35 percent in Bolivia, Colombia, the Dominican Republic, Perú, and the República Bolivariana de Venezuela. Clearly, the relative proportions depend on conventions for allocating workers—for instance, the ILO categorizes domestic workers as independent—or whether unpaid workers are counted as “salaried.”

Recently the World bank carried out surveys specialized on informality unfortunately are not yet publicly available. The surveys included, among other things, questions on the motivations or reasons for workers to be salaried or self-employed and to participate or not in labor benefits programs World bank (2007).

They found that except for Colombia, over 70 percent of independent workers are voluntary, in the sense that they would rather be independent if they were able to choose their job. In Colombia, by a different measure, only 41 percent of urban independent workers can be considered voluntary; they reportedly would

¹ Given the available information in the household surveys, we use this definition throughout the paper.

not take a formal salaried job with earnings equal to the earnings in their current job. When asked if they would take the same formal job but with lower earnings (a stricter standard), 71 percent of the Colombian informal self-employed said they would not. These findings are also remarkably in line with those for Mexico and Brazil based on very different surveys, as well as the findings of the sociological literature. For instance, more than two thirds of the Brazilian informal self-employed in the early 1990s reported that they would not take a formal salaried job, and less than 20 percent in Mexico reported involuntary reasons.¹⁹ Moreover, over half of salaried workers in Bolivia and the Dominican Republic and close to one third in Argentina and Colombia have intrinsic preferences for independent work, consistent with Blanchflower and Oswald's (1998) findings for the United Kingdom, the United States, and Germany. The informal salaried show somewhat stronger preferences for independent work than the formal salaried, especially in Bolivia.

In contrast to the self-employed, the majority of informal salaried workers appear to be involuntarily in their jobs, although not necessarily queuing for formal salaried employment. The inability to find a better job constitutes a much higher fraction of the reported reasons for being in informal salaried jobs than for the formal salaried: 48.4 versus 22.4 percent in Argentina; 64 versus 32 percent in Bolivia; 43 versus 16 percent in Colombia; and 40 versus 22 percent in the Dominican Republic. These are consistent with responses from the Brazilian informal salaried in 1990 that roughly 70 percent would rather have had a formal salaried job.

On the other hand several studies tried to analyze the indigenous unexplained wage gap topic, among the most complete and recent ones is the book presented by Patrinos and Hall (2005) where they analyze indigenous characteristics, and unexplained wage gap among them. They do an outset of 1990s in Urban Bolivia, Guatemala, Mexico and Perú, the authors find that unexplained wage gap (48-52%) and human capital explain earnings

Indigenous peoples' visibility in Latin American society and politics expanded during the 1990s, forcing the wider population to reexamine its attitudes towards indigenous peoples. That presence is being felt, first and foremost, via increased political participation. While across the region indigenous political representation has historically been minimal, substantial increases have occurred recently, with the most notable increases occurring after 1990. Indigenous populations vary from .4 percent of the total population in Brazil to as much as 62 percent of the total population in Bolivia. According to the World Development Indicators (2003), an estimate of 27.5 million can reasonably be taken as the lower-bound estimate for Latin America's indigenous population.

There are three basic ways to define indigenous peoples: self-identification, language use and geographic location. The need to operationalize a definition for research purposes notwithstanding, we accept at the outset the right of people everywhere to self-identify themselves as they wish (see, for example, International Labour Organisation's 1991 Convention No. 169 concerning indigenous and tribal peoples in independent countries (ILO 1991)).

Among Latin American countries, Bolivia, Guatemala, Perú and Ecuador

have a very complex and unusual multi-ethnic dimension; on the other hand countries such as Brazil, do not have a high indigenous population but have a great black population, therefore I include this group in the analysis.

Even informality and indigenous unexplained wage gaps are two important problems for Latin America societies and economies, the combination of both has not been studied in any article known by this author. This paper pretends to fill this hole in the literature addressing the extend, determinants of wage gaps in six Latin American countries. The importance of this topic has relevance not only on academic arena but also on policy field.

3 Data and Methodology

The data used are household surveys from the respective countries, which had a process of homogenization of the main variables in order to make them the most comparable possible, for this reason the year 2001 was selected in most of the countries except for Ecuador where year 2003 was selected. Given the characteristics of the labor markets in Latinamerica some considerations have to be taken into account. The sample used from each survey are workers from fifteen to sixty five years in urban areas. This criteria is used due the definition of informality to be used.

The definition of informality used follows the standards of the ILO. I classify as formal workers to those that work in firms with five or more employees and receive salaries, and self employed that make payments to social security.². The informal sector includes workers that are self employed but do not make payments to social security, and workers that are in firms with less than five employees. This definition is considered the standard given the availability of data.

The definition of indigenous depends on the availability of data on the household surveys. For this reason one of the following two definitions of indigenous will be used when available. The first is related to the language that the person learned to speak when she/he was a child, the logic of this definition lies in the fact that if a person learns an indigenous language when is a child there is a high probability that this person belongs to the indigenous population. The second definition is based on self identification of the person which gives an approximation of the indigenous condition.

The main variable to decompose wage differentials labor income per working hour, this variable was constructed using available data in the household surveys; it includes wages and salaries, extra hours payments, and in kind payments. Given that a big part of the informal workers are self-employed I include them in the sample and estimate their incomes based on the reported incomes. This information is available for all the household surveys named above. On the other side, the independent variables that are used to analyze the extend of unexplained wage gap are schooling, experience, experience-squared, married dummy, health dummy, migration, household members and sex.

²Note that in this group could exist white and blue collar workers.

In order to set some stylized facts, next I present a summary table obtained from the household surveys. This table divides workers between informal indigenous, informal non indigenous, formal indigenous and formal non indigenous. The results differ slightly from the ones reported by national statistical offices, but the difference are not more than three percent

As can be seen in Table 1, the percentage of male population is higher in formal compared to informal sector in all the cases, this shows the presence in gender unexplained wage gap that exist in Latin American countries, this difference is higher in countries like Bolivia, Peru and Guatemala; I do not find significant differences when comparing the indigenous condition as a whole which could be a sign that in terms of gender the indigenous condition. Regarding the age of the workers, this variable does not reflect significant differences between the four groups, the mean ranges from 35 in Nicaragua to 38 in Ecuador, except for Bolivia the lowest average is in the formal sector.

Perhaps two of the most interesting variables and their relation with informality are experience and schooling, while experience is higher in the informal sectors, schooling shows he opposite direction, it lower in informal sectors. This could be a sign of the screening process that goes on in formal and informal sectors, the skills required in each sector.

TABLE 1 Summary Statistics

	Sample Means					Pop
	Lab Inc	Male Pop	Age	Exp	Scho	(In %)
Bolivia	1.44	0.56	36.42	20.83	9.57	1,919,636
Inf-Indigenous	1.02	0.47	38.65	25.47	7.17	0.33
Inf-Non Indigenous	1.21	0.51	34.46	19.82	8.65	0.25
Formal-Indigenous	1.70	0.70	36.55	18.97	11.52	0.20
Formal- Non Indigenous	1.97	0.65	35.14	16.57	12.53	0.22
Peru	0.62	0.56	37.31	23.30	8.01	11,688,346
Inf-Indigenous	0.11	0.46	38.47	27.02	5.46	0.27
Inf-Non Indigenous	0.41	0.54	37.03	23.79	7.25	0.41
Formal-Indigenous	0.89	0.71	37.77	22.43	9.34	0.08
Formal- Non Indigenous	1.20	0.67	36.37	18.79	11.59	0.25
Guatemala	6.79	0.56	36.24	22.33	6.89	1,762,719
Inf-Indigenous	6.01	0.53	38.39	28.18	3.10	0.17
Inf-Non Indigenous	6.33	0.44	37.58	25.07	5.56	0.32
Formal-Indigenous	6.92	0.72	36.08	23.10	6.07	0.09
Formal- Non Indigenous	7.34	0.64	34.40	17.76	9.58	0.42
Ecuador *	-0.09	0.59	38.51	22.81	9.71	17,551
Inf-Indigenous	-0.49	0.55	37.88	25.46	6.43	0.06
Inf-Non Indigenous	-0.32	0.54	39.27	25.07	8.22	0.48
Formal-Indigenous	0.01	0.73	37.42	21.54	9.89	0.03
Formal- Non Indigenous	0.19	0.65	37.80	19.94	11.87	0.42
Nicaragua	1.98	0.57	35.57	22.57	7.00	991,424
Inf-Indigenous	1.73	0.50	36.04	24.88	5.16	0.06
Inf-Non Indigenous	1.72	0.51	36.82	25.16	5.66	0.49
Formal-Indigenous	2.22	0.63	35.31	20.57	8.76	0.04
Formal- Non Indigenous	2.29	0.64	34.06	19.38	8.68	0.41
Brasil	0.85	0.58	36.10	21.44	7.71	55,466,836
Inf-Indigenous	0.20	0.56	36.22	24.39	4.90	0.21
Inf-Non Indigenous	0.63	0.53	38.01	24.57	6.50	0.26
Formal-Indigenous	0.84	0.65	34.30	19.35	7.98	0.17
Formal- Non Indigenous	1.33	0.60	35.54	18.50	10.09	0.36

* Ecuador did not have sample weights

On one side, formal sectors in general require higher skilled workers valuing more human capital reflected in higher schooling averages both for indigenous and non indigenous populations. On the other side, informal sectors require more experienced people, less skilled since the main characteristics of these jobs is that they are more routine type of jobs. The same pattern, but less pronounced is seen between indigenous and non indigenous population indigenous

population tend to have more experience compared to the non indigenous but less years of schooling. These patters may reflect the fact that given the higher levels of poverty of indigenous population these would have lower reservation wages and therefore would insert in labor markets faster compared to non indigenous who value higher increases in human capital.

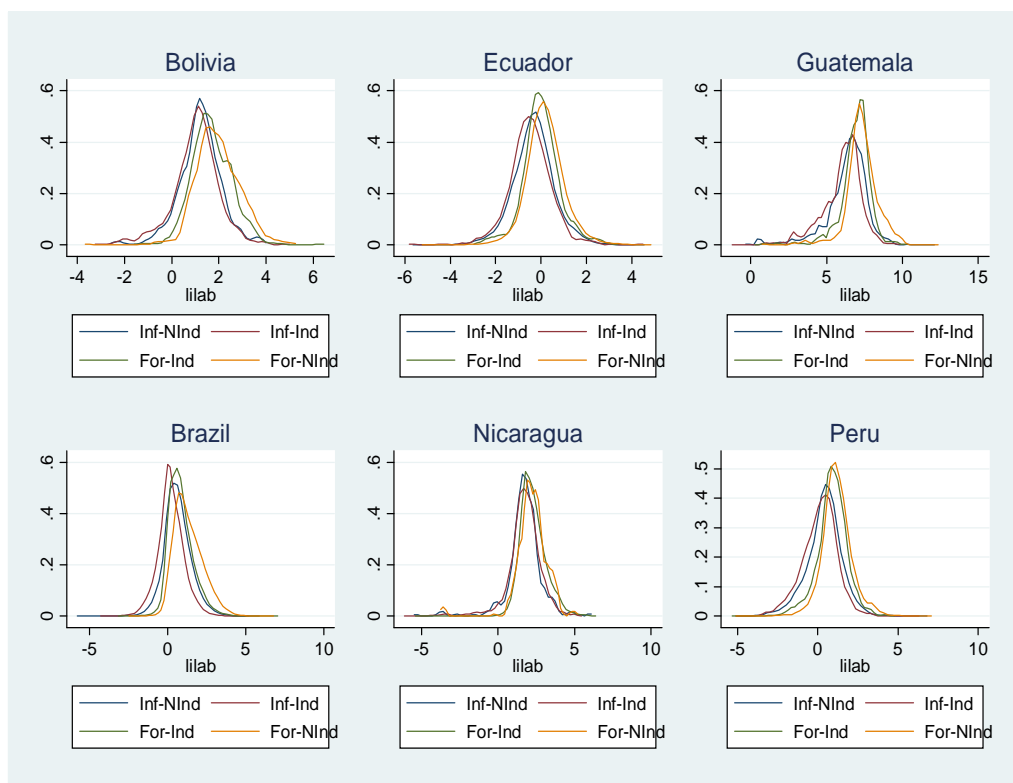
Informal workers represent a significant part of the population in the selected countries in all of them the percentage of informal workers is higher than 50 resembling the high degree of informality in Latin America³. For example, in Bolivia and Peru the informal sector is around 60% of the workers. The other variable of interest, indigenous, shows that in countries such as Guatemala, Bolivia, Peru or Brasil⁴ the proportion of indigenous; in the case of Ecuador and Nicaragua the number of indigenous population is far less this could be due to two reasons. The sampling of the surveys do not try to capture the characteristics of indigenous, and since most of the indigenous are in rural areas the probability that the household survey captures the existence of indigenous is low; but it should be noted that the results are according to the information provided by the national statistical offices, and the reason to find few indigenous is that indigenous people do not report their correct conditions this could lead to underestimate the wage gaps for this two countries.

The heterogeneity in the prototype informal and indigenous workers is reflected in wide earnings variation. Figure 1 illustrates this with a comparison

Figure 1: Distribution of Income by country

³This result goes in line to what Arias et. al (2007) found recently.

⁴In the case of Brasil, as a proxy for indigenous population I used black population.



of the distribution of hourly earnings for formal indigenous, formal non indigenous, informal indigenous and informal non indigenous in urban areas in the six countries. In all the cases, the formal workers have earnings advantage in all the countries, this can be seen since the distribution function for formal non indigenous and formal indigenous lie to the right of other, there are differences between the formal and informal sectors. It should be noted that there is a clear difference on the distribution of wages between indigenous and non indigenous population inside formal and informal markets. In most of the countries the gap between indigenous and non indigenous seems to be more pronounced in informal labor markets, this along with the distribution of the population would show that there are reinforcing effects, one coming from the fact that informal workers receive lower wages, and, since more indigenous participate in informal markets, due to the condition of indigenous the wages are even lower. Next, I present the results from the wage decomposition.

The methodology presented consists in three parts. The first part is a simple OLS estimation of wage equations for each country. This is done controlling for the four groups presented in Table 1 for each country. The second and third part are estimation based on Oaxaca-Blinder decomposition, to this aim first the following wage equations are estimated:

$$\begin{aligned}\ln W_{\text{inf},i,j} &= \alpha_j^0 + \gamma_j^0 X_{\text{inf},j} + \varepsilon_{ij} \\ \ln W_{\text{for},i,j} &= \alpha_j^1 + \gamma_j^1 X_{\text{for},j} + \varepsilon_{ij}\end{aligned}$$

Then, using a method akin to that developed by Oaxaca (1973), the difference in average wage offers can be further decomposed, giving

$$\begin{aligned}\ln \bar{W}_{\text{for},i,j} - \ln \bar{W}_{\text{inf},i,j} &= (\bar{X}_{\text{for},j} - \bar{X}_{\text{inf},j}) [D\gamma_j^1 + (1-D)\gamma_j^0] \\ &\quad + [D\bar{X}_{\text{for},j} + (1-D)\bar{X}_{\text{inf},j}] (\gamma_j^1 - \gamma_j^0)\end{aligned}$$

where D is a diagonal matrix of weights. Note that $\ln \bar{W}_{\text{for},i,j} - \ln \bar{W}_{\text{inf},i,j} \approx (\bar{W}_{\text{for},i,j} - \bar{W}_{\text{inf},i,j})$ and this decomposition will divide the percentage difference between the geometric means of the observed wage rates for the two groups into two parts: the first due to differences in average characteristics of the groups, including differences in local price levels where members of the groups live; and the second due to differences in the parameters of the wage function, caused by labor market discrimination and other omitted factors. In general, we will get different measures of the impact of unexplained wage gap, depending on the choice of weights in the matrix D . This choice amounts to an assumption about what the wage function would be in the absence of discrimination (or unexplained wage gap) since employers' preference for the majority and their distaste for the minority no doubt distort both groups' wages, neither group's observed wage-offer function would be likely to exist in a non-discriminatory world. Instead, the no-discrimination wage function lies somewhere between 0 and 1. Rimers (1983) for example uses a 0.5 as the midpoint other authors use the proportion of each group. I use the proportion for each group as weights in each decomposition. I also tested for different weights and even the results differ when using the extreme cases (0 or 1) according to the existing literature is more appropriate to use the proportions as weights.

4 Results

Following the methodology described previously I estimate the Oaxaca-Blinder decomposition with weights. Initially I estimate the following wage equation⁵ in order to find the extent to which each group (employment sector and indigenous) affect wages.

$$W_{i,j} = \alpha_j + \beta_j^0 X_{ij} + \beta_j^1 D_{1j} + \beta_j^2 D_{2j} + \beta_j^3 D_{3j} + \varepsilon_{ij}$$

where $W_{i,j}$ are hourly earnings for worker i in country j ; X_{ij} are the con-

⁵It should be noted that this estimation and the wage decomposition were estimated with and without sampling weights in the surveys, but the results do not change substantially. Therefore the results using weights are presented.

control variables such as male, that is expected to be positive since males tend to earn higher wages in formal and informal sectors, secondary and tertiary education which is expected to be positive, assuming the theory of human capital more educated people would receive higher wages compared to those with lower education; married that is could be positive or negative and would depend on the externalities that couples create; a dummy of health that takes the value of 1 if the person has been sick in the period of reference⁶, the coefficient for this dummy is expected to be positive since bad health would have bad effects on productivity and therefore reduce wages; experience is expected to be positive at a decreasing rate (experience square negative) according to the evidence found in the exiting literature⁷; migrants variable are also included and finally a variable for the number of household members is also included. The variables D_{ij} are dummies for informal non indigenous, formal indigenous and formal non indigenous. (Results are in the appendix, table 2)

The results of the regression are presented in the appendix. These wage equations are estimated for each country, first omitting all the controls and later including the controls; as can be seen in the table the inclusion of the controls reduce the effect of the dummies but these remain highly significant. The controls behave as expected, being education variables the most important explaining wage in all the countries and married positive resembling positive externalities from being married. The dummies for the groups of employment sector and indigenous all present positive effects. The regression show that there is a higher premium for formal non indigenous, and significant differences for indigenous and non indigenous inside each employment sector (i.e. for Bolivia the wage gap inside informal is 0.15 while in formal sector 0.21; while in Peru is 0.24 and 0.16 respectively). The premium for non indigenous are higher for countries that have more indigenous population like Bolivia, Guatemala and Brasil and smaller for the other three countries.

In order to corroborate, get more robust estimates and decompose the wage gap (between unexplained⁸ and explained portions) of the effect of employment sector and indigenous condition we perform next three Oaxaca-Blinder decompositions. First I present the decomposition by employment sector with the usual control variables and the inclusion of a dummy variable for indigenous population. The second and third decomposition are by indigenous condition for formal and informal labor markets⁹. Figure 2 presents the main results for the wage gap between informal and formal and the actual decomposition, clearly the wage gap is bigger in Guatemala, Peru, Bolivia and Brazil. The decomposition show that the unexplained gap is bigger than the explained gap in all the cases. From the results shown in the appendix can be seen that in the first stage regressions there is a bigger impact of education on the wage functions, especially in the formal sector, moreover, the effect of tertiary education is higher for

⁶The period of reference in the surveys is last 3 months.

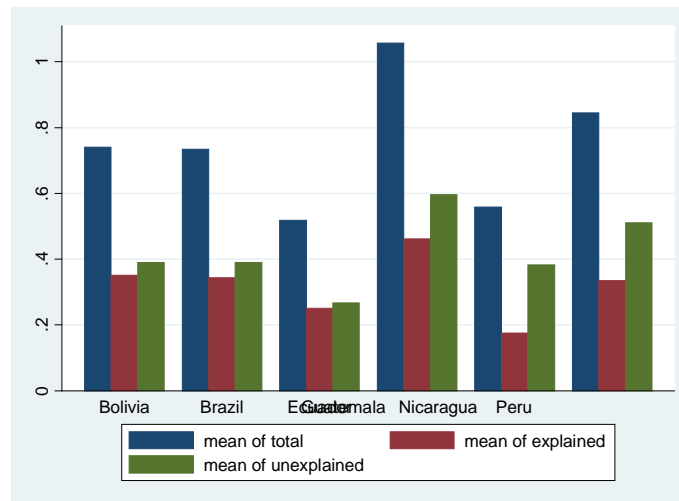
⁷Mroz (1987) proves this effect in wage equation with different especifications.

⁸The unexplained gap is usually attributed as the discrimination part of the wage gap.

⁹Again, due to space here we present the main results but the complete decomposition are presented in the appendix.

all the countries. This is in line of what Arias et. al. (2007) found for Bolivia and Argentina. This result is quite intuitive since one would expect that market signaling works better in a formally constituted environment, moreover this corresponds to the initial estimations. All the other variables behave as expected, interestingly the migrant variable is positive when is significant and negative when its not significant, this shows that migrants increase their wages compared to non migrants. The indigenous dummy included has a significant effect and negative effect on the wages for both formal and informal sectors meaning that indigenous receive generally lower wages in both sectors.

Figure 2. Wage decomposition for informal and formal sector by country



Next, I present results for the wage gap decomposition by indigenous and non indigenous population for formal and informal employment sectors. First stage regressions show that in general there is a bigger impact of education on wage functions, moreover is interesting to find out that the returns of having tertiary education are higher in formal markets, this result is quite intuitive since one would expect that market signaling works better in a formally and constituted environment. When one compares the indigenous and non indigenous there is no homogeneous effect of the education. Sex of the individual (defined as 1 if the person is male) shows a positive relation with incomes in all the groups¹⁰ as was expected and goes in accordance to most of the existing literature, the impact ranges from 0.1 to 0.6. Even this range is quite big it was also found in the existing literature¹¹.

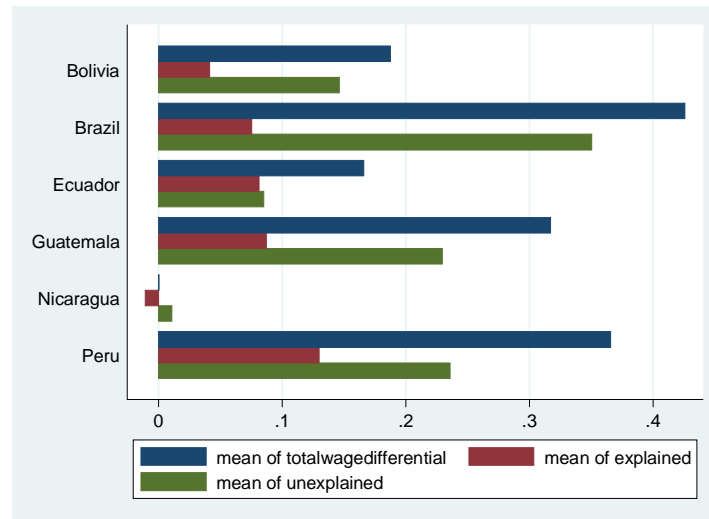
The results show that there the range of the income differential between indigenous and non indigenous is quite big (-0.07 to 0.46). Except for Bolivia, unexplained wage gap is higher in formal markets than in informal markets as

¹⁰Except for Nicaragua, non indigenous informal where its positive but insignificant.

¹¹For an extensive analysis please refer to Patrinos and Hall (2005).

would be expected, as shown in Patrinos and Hall (2005) unexplained wage gap is higher in countries with higher levels of indigenous population, namely Bolivia and Guatemala on average non indigenous earn 35 percent more than indigenous¹².

Figure 3. Wage decomposition for indigenous and non indigenous in formal sector by country



The effect of the number of members in the household tend to be negative but insignificant, showing that the bigger the family the less is the wage that the individuals are willing to accept, this shows the effect that high dependency ratio has. Experience¹³ presents the expected behavior positive with decreasing returns. It should be noted that this variable is highly significant always but with a small effect. In general, the returns of having more experience are higher for people working in informal sector, this suggest that informal markets value more signals such as experience in order to determine wages, this result is intuitively correct since most of informal sectors are characterized for not requiring high skilled workers.

An interesting finding is that in a group of countries with high number of indigenous population (Bolivia, Guatemala and Perú) the returns for one year of experience are higher for indigenous population working in formal sectors but is smaller for the indigenous working in informal sectors, but the contrary trend is present on the education variables. This could be suggesting the existence of

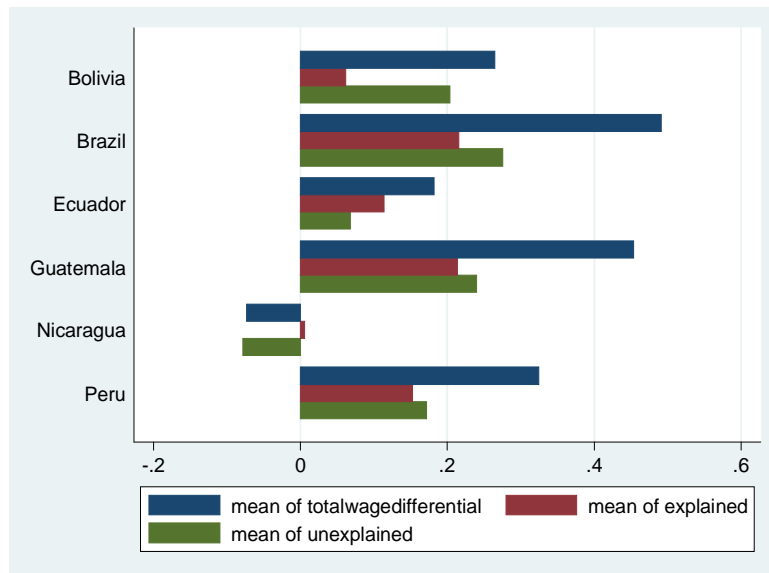
¹²This result is similar to the one found on Jimenez and Landa (2005) 34%.

¹³Experience was measured as the standard literature suggest age-schooling-6.

unexplained wage gap in both directions since formal markets are more populated by non indigenous population and therefore value more the experience in indigenous population over the education.

This result is very different when comparing the income differential inside formal and informal labor markets; income differentials between indigenous and non indigenous in Bolivia is higher in informal sector than in formal sector (differentials are 0.44 vs. 0.26), this result could be explained by the fact that in Bolivia the formal sector is small (35% of occupied) and tend to be more homogenous than informal sector.¹⁴ Moreover this could be seen looking at the components of the income differential, compared to other countries, in the case of Bolivia the proportion of the endowments component (explained part of the differential) is higher, when one consider only the unexplained wage gap component the trend is similar. For the rest of the countries the trend is homogenous, higher income differentials are present in formal sectors ranging from 0.46 to 0.14 in formal sector and 0.37 to -0.07 in informal sector

Figure 4. Wage decomposition for indigenous and non indigenous in informal sector by country



The effect of the number of members in the household tend to be negative but insignificant, showing that the bigger the family the less is the wage that the individuals are willing to accept, this shows the effect that high dependency ratio has. Experience¹⁵ presents the expected behavior positive with decreasing returns. It should be noted that this variable is highly significant always but with a small effect. In general, the returns of having more experience are higher for

¹⁴In all the cases most part of the differential could be attributed to discrimination since the endowments component does not capture big part of it.

¹⁵Experience was measured as the standard literature suggest age-schooling-6.

people working in informal sector, this suggest that informal markets value more signals such as experience in order to determine wages, this result is intuitively correct since most of informal sectors are characterized for not requiring high skilled workers.

An interesting finding is that in a group of countries with high number of indigenous population (Bolivia, Guatemala and Perú) the returns for one year of experience are higher for indigenous population working in formal sectors but is smaller for the indigenous working in informal sectors, but the contrary trend is present on the education variables. This could be suggesting the existence of unexplained wage gap in both directions since formal markets are more populated by non indigenous population and therefore value more the experience in indigenous population over the education.

This result is very different when comparing the income differential inside formal and informal labor markets; income differentials between indigenous and non indigenous in Bolivia is higher in informal sector than in formal sector (differentials are 0.44 vs. 0.26), this result could be explained by the fact that in Bolivia the formal sector is small (35% of occupied) and tend to be more homogenous than informal sector.¹⁶ Moreover this could be seen looking at the components of the income differential, compared to other countries, in the case of Bolivia the proportion of the endowments component (explained part of the differential) is higher, when one consider only the unexplained wage gap component the trend is similar. For the rest of the countries the trend is homogenous, higher income differentials are present in formal sectors ranging from 0.46 to 0.14 in formal sector and 0.37 to -0.07 in informal sector

5 Conclusions and future research

Over the past 30 years a lot of research has been focused on indigenous population, and more recently a lot of attention has been paid to informality in Latin America. Unfortunately these two topics have been covered as two completely different topics even if its widely recognized that there exist close relation between them This paper present an initial approach to study indigenous unexplained wage gap inside formal and informal labor markets in Latin America using household surveys for six Latin American countries, namely the most indigenously populated countries. To this aim Oaxaca Ramson decomposition techniques have been applied.

The results obtained from the decomposition show a differential on income between informal and formal markets, and between indigenous and non indigenous as well. The unexplained wage gap of the wage differential is higher on informal than on formal markets in all the countries. An interesting case of study is Bolivia where the income differential between indigenous and non indigenous population is higher in informal markets but the unexplained wage gap is higher in formal sector.

¹⁶In all the cases most part of the differential could be attributed to discrimination since the endowments component does not capture big part of it.

I found that countries with higher indigenous population have higher unexplained wage gap in both sectors, compared to the rest of the countries. unexplained wage gap against indigenous in informal sector is higher in countries with higher indigenous population.

The policy implications of the results come across to the elimination of unexplained wage gap through different policies that could be applied such as controls over contracts, penalties or law enforcement where the laws are already settled.

Future research can be done in this area, the next step is to refine the estimations considering the potential endogeneity that the education variable may have. After correcting this, counterfactual microsimulation techniques will be applied in order to estimate the impact on poverty reduction of eliminating the unexplained wage gap component.

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Summary Statistics

	Sample Means					Population (In percentages)
	Labor Income	Percentage of Male Population	Age	Experience	Schooling	
Bolivia	1.44	0.56	36.42	20.83	9.57	1,919,636
Inf-Indigenous	1.02	0.47	38.65	25.47	7.17	0.33
Inf-Non Indigenous	1.21	0.51	34.46	19.82	8.65	0.25
Formal-Indigenous	1.70	0.70	36.55	18.97	11.52	0.20
Formal- Non Indigenous	1.97	0.65	35.14	16.57	12.53	0.22
Peru	0.62	0.56	37.31	23.30	8.01	11,688,346
Inf-Indigenous	0.11	0.46	38.47	27.02	5.46	0.27
Inf-Non Indigenous	0.41	0.54	37.03	23.79	7.25	0.41
Formal-Indigenous	0.89	0.71	37.77	22.43	9.34	0.08
Formal- Non Indigenous	1.20	0.67	36.37	18.79	11.59	0.25
Guatemala	6.79	0.56	36.24	22.33	6.89	1,762,719
Inf-Indigenous	6.01	0.53	38.39	28.18	3.10	0.17
Inf-Non Indigenous	6.33	0.44	37.58	25.07	5.56	0.32
Formal-Indigenous	6.92	0.72	36.08	23.10	6.07	0.09
Formal- Non Indigenous	7.34	0.64	34.40	17.76	9.58	0.42
Ecuador *	-0.09	0.59	38.51	22.81	9.71	17,551
Inf-Indigenous	-0.49	0.55	37.88	25.46	6.43	0.06
Inf-Non Indigenous	-0.32	0.54	39.27	25.07	8.22	0.48
Formal-Indigenous	0.01	0.73	37.42	21.54	9.89	0.03
Formal- Non Indigenous	0.19	0.65	37.80	19.94	11.87	0.42
Nicaragua	1.98	0.57	35.57	22.57	7.00	991,424
Inf-Indigenous	1.72	0.51	36.82	25.16	5.66	0.49
Inf-Non Indigenous	1.73	0.50	36.04	24.88	5.16	0.06
Formal-Indigenous	2.29	0.64	34.06	19.38	8.68	0.41
Formal- Non Indigenous	2.22	0.63	35.31	20.57	8.76	0.04
Brasil	0.85	0.58	36.10	21.44	7.71	55,466,836
Inf-Indigenous	0.20	0.56	36.22	24.39	4.90	0.21
Inf-Non Indigenous	0.63	0.53	38.01	24.57	6.50	0.26
Formal-Indigenous	0.84	0.65	34.30	19.35	7.98	0.17
Formal- Non Indigenous	1.33	0.60	35.54	18.50	10.09	0.36

* Ecuador did not have sample weights

OLS Wage Regression

	Bolivia		Peru		Guatemala		Ecuador		Nicaragua		Brazil	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Inf-Non Ind	0.188*** (0.0401)	0.151*** (0.0373)	0.295*** (0.0174)	0.248*** (0.0173)	0.324*** (0.0497)	0.219*** (0.0459)	0.168*** (0.0309)	0.0796*** (0.0294)	0.00034 -0.0721	0.0073 -0.0676	0.426*** (0.00762)	0.342*** (0.00653)
Formal-Indigenous	0.684*** (0.0403)	0.330*** (0.0399)	0.777*** (0.0258)	0.548*** (0.0260)	0.907*** (0.0660)	0.563*** (0.0603)	0.501*** (0.0478)	0.277*** (0.0453)	0.565*** -0.0346	0.374*** -0.0347	0.638*** (0.00813)	0.413*** (0.00711)
Formal- Non Indige	0.949*** (0.0395)	0.540*** (0.0405)	1.091*** (0.0183)	0.707*** (0.0202)	1.334*** (0.0469)	0.819*** (0.0465)	0.680*** (0.0310)	0.332*** (0.0304)	0.492*** -0.0842	0.300*** -0.0797	1.127*** (0.00698)	0.690*** (0.00645)
Male		0.238*** (0.0280)		0.187*** (0.0133)		0.578*** (0.0302)		0.200*** (0.0137)			0.0343 -0.0324	0.274*** (0.00444)
Secondary		0.318*** (0.0355)		0.446*** (0.0160)		0.583*** (0.0380)		0.372*** (0.0169)		0.417***		0.619*** (0.00542)
Terciary		1.005*** (0.0423)		0.879*** (0.0217)		1.190*** (0.0503)		0.858*** (0.0205)		1.112***		1.533*** (0.00790)
Married		0.0492 (0.0326)		0.00869 (0.0148)		0.0882*** (0.0335)				0.231***		
Health		-0.0605* (0.0355)								-0.0575*		
Experience		0.0279*** (0.00315)		0.0240*** (0.00134)		0.0383*** (0.00317)		0.0278*** (0.00135)		0.0300***		0.0438*** (0.000493)
Experience Square		-0.000425*** (0.0000521)		-0.000419*** (0.0000200)		-0.000745*** (0.0000491)		-0.000387*** (0.0000218)		-0.000362***		-0.000610*** (0.00000882)
Migrant		-0.0123 (0.0281)				0.0759** (0.0295)		0.0539*** (0.0151)		0.0754**		0.0801*** (0.00442)
Household members				0.00219 (0.00259)				-0.0168*** (0.00287)				
Constant	1.018*** (0.0262)	0.390*** (0.0550)	0.112*** (0.0139)	-0.410*** (0.0289)	6.008*** (0.0405)	5.301*** (0.0563)	-0.489*** (0.0292)	-1.007*** (0.0390)	1.725*** -0.0237	1.025*** -0.0543	0.202*** (0.00564)	-0.680*** (0.00833)
Observations	4081	4081	25759	25146	5812	5683	16050	15752	3834	3833	118031	116870
R-squared	0.148	0.282	0.143	0.238	0.168	0.339	0.082	0.200	0.07	0.189	0.195	0.422

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

**WAGE DECOMPOSITION BY INFORMAL AND FORMAL
REGRESSION ESTIMATES**

	Bolivia		Nicaragua		Guatemala		Peru		Brazil		Ecuador	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Male	0.215*** (0.0399)	0.262*** (0.0393)	0.133*** (0.0405)	-0.0252 (0.0482)	0.380*** -0.0357	0.804*** -0.0496	0.142*** (0.0200)	0.206*** (0.0176)	0.290*** (0.00571)	0.262*** (0.00698)	0.169*** (0.0187)	0.229*** (0.0199)
Secondary	0.379*** (0.0543)	0.270*** (0.0476)	0.421*** (0.0445)	0.439*** (0.0610)	0.655*** -0.041	0.417*** -0.07	0.438*** (0.0254)	0.445*** (0.0206)	0.647*** (0.00669)	0.587*** (0.00902)	0.419*** (0.0242)	0.338*** (0.0238)
Tertiary	1.094*** (0.0524)	0.788*** (0.0859)	1.190*** (0.0529)	0.793*** (0.157)	1.230*** -0.0471	1.183*** -0.158	0.899*** (0.0259)	0.747*** (0.0469)	1.572*** (0.00815)	1.320*** (0.0293)	0.919*** (0.0244)	0.735*** (0.0403)
Married	0.0407 (0.0444)	0.0519 (0.0469)	0.172*** (0.0409)	0.268*** (0.0503)	0.101** -0.0395	0.0699 -0.0546	0.0388* (0.0214)	-0.0175 (0.0198)				
Health	-0.102** (0.0502)	-0.0219 (0.0496)	-0.0230 (0.0395)	-0.0899* (0.0506)								
Experience	0.0304*** (0.00452)	0.0214*** (0.00459)	0.0180*** (0.00462)	0.0366*** (0.00515)	0.0378*** -0.00366	0.0390*** -0.0055	0.0253*** (0.00207)	0.0213*** (0.00179)	0.0437*** (0.000663)	0.0405*** (0.000782)	0.0260*** (0.00194)	0.0268*** (0.00199)
Experience Square	-0.000406*** (0.0000853)	-0.000362*** (0.0000708)	-0.000159* (0.0000841)	-0.000449*** (0.0000755)	-0.000687*** -0.0000621	-0.000789*** -0.0000804	-0.000388*** (0.0000344)	-0.000393*** (0.0000255)	-0.000557*** (0.0000133)	-0.000590*** (0.0000129)	-0.000319*** (0.0000362)	-0.000388*** (0.0000299)
Migrant	-0.0318 (0.0374)	0.00894 (0.0413)	0.146*** (0.0404)	0.0125 (0.0516)	0.117*** -0.0334	0.0527 -0.0505			0.0496*** (0.00557)	0.118*** (0.00711)	0.0840*** (0.0199)	0.0258 (0.0224)
Household members							-0.0192*** (0.00372)	0.0159*** (0.00350)			-0.0244*** (0.00399)	-0.0116*** (0.00410)
Indigenous	-0.205*** (0.0370)	-0.147*** (0.0394)	0.0777 (0.0642)	-0.00755 (0.0762)	-0.234*** -0.0449	-0.262*** -0.0537	-0.167*** (0.0220)	-0.241*** (0.0184)	-0.272*** (0.00590)	-0.349*** (0.00701)	-0.0427 (0.0338)	-0.0911*** (0.0317)
Constant	0.852*** (0.0746)	0.642*** (0.0772)	1.367*** (0.0877)	0.994*** (0.107)	6.160*** -0.0539	5.500*** -0.086	0.375*** (0.0408)	-0.180*** (0.0365)	-0.0300*** (0.0101)	-0.274*** (0.0126)	-0.671*** (0.0406)	-0.910*** (0.0435)
Observations	1796	2285	1698	2135	2916	2767	9467	15679	64762	52108	7631	8121
R-squared	0.280	0.088	0.259	0.070	0.293	0.176	0.170	0.105	0.428	0.187	0.201	0.081

Standard errors in parent

*** p<0.01, ** p<0.05, *

DECOMPOSITION ESTIMATES

	Bolivia		Nicaragua		Guatemala		Peru		Brazil		Ecuador	
	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Male	0.0381627 (0.01)	-0.0280056 (0.03)	0.0076542 (0.004)	0.0903857 (0.036)	0.0905009 (0.01)	-0.2424231 (0.04)	0.0152104 (0.00)	-0.0404235 (0.02)	0.0151092 (0.001)	0.0165429 (0.005)	0.0151889 (0.002)	-0.0364047 (0.017)
Secondary	-0.0069155 (0.00)	0.0395775 (0.03)	0.0480335 (0.008)	-0.0048313 (0.021)	0.0838936 (0.01)	0.0593527 (0.02)	0.001701 (0.00)	-0.0025807 (0.01)	0.1046724 (0.002)	0.0197841 (0.004)	-0.0086289 (0.003)	0.0285737 (0.012)
Tertiary	0.3327898 (0.02)	0.0868349 (0.03)	0.1605753 (0.016)	0.0379211 (0.016)	0.2104806 (0.02)	0.005289 (0.02)	0.2869988 (0.01)	0.0276032 (0.01)	0.2433407 (0.004)	0.027183 (0.003)	0.2630285 (0.009)	0.0406045 (0.010)
Married	-0.0008178 (0.00)	-0.0078274 (0.04)	0.0054029 (0.004)	-0.0544996 (0.037)	-0.000904 (0.00)	0.0196896 (0.04)	-0.0002154 (0.00)	0.0350111 (0.02)				
Health	0.0016958 (0.00)	-0.0139151 (0.01)	0.0033982 (0.002)	0.0249087 (0.024)								
Experience	-0.1752929 (0.03)	0.1848966 (0.13)	-0.1565048 (0.024)	-0.4223361 (0.157)	-0.3399229 (0.03)	-0.0258786 (0.15)	-0.1736719 (0.01)	0.0948599 (0.07)	-0.2241522 (0.004)	0.0694002 (0.022)	-0.1537308 (0.010)	-0.0172257 (0.065)
Experience Square	0.1451309 (0.02)	-0.0271874 (0.07)	0.1078801 (0.023)	0.21925 (0.086)	0.3709928 (0.03)	0.0814422 (0.08)	0.1827668 (0.01)	0.004527 (0.04)	0.1690722 (0.004)	0.0210144 (0.012)	0.131166 (0.010)	0.0549044 (0.038)
Migrant	0.0006701 (0.00)	-0.0241164 (0.03)	-0.0013849 (0.001)	0.0425353 (0.021)	0.0056557 (0.00)	0.0307925 (0.03)			-0.002309 (0.000)	-0.0371833 (0.005)	-0.0004686 (0.000)	0.0152533 (0.008)
Household members							0.0003453 (0.00)	-0.1843784 (0.03)			0.0022674 (0.001)	-0.0615513 (0.027)
Indigenous	0.0156351 (0.00)	-0.0299438 (0.03)	0.0007384 (0.001)	0.0767533 (0.090)	0.0408899 (0.01)	0.0073261 (0.02)	0.0217212 (0.00)	0.0214971 (0.01)	0.0382032 (0.001)	0.0295227 (0.004)	0.0024859 (0.001)	0.004464 (0.004)
Constant		0.2096989 (0.11)		0.372973 (0.138)		0.6599921 (0.10)		0.554361 (0.05)		0.2439923 (0.016)		0.2385673 (0.059)
Wage Differential	0.3510582 (0.02)	0.3900124 (0.03)	0.1757929 (0.019)	0.38306 (0.033)	0.4615866 (0.02)	0.5955825 (0.03)	0.3348561 (0.01)	0.5104767 (0.01)	0.3439364 (0.004)	0.3902562 (0.005)	0.2513084 (0.008)	0.2671855 (0.015)
Total Wage Differential	0.7410706		0.5588529		1.0571691		0.8453328		0.7341926		0.5184939	

WAGE DECOMPOSITION BY INDIGENOUS AND NON INDIGENOUS IN FORMAL SECTOR
REGRESSION ESTIMATES

	Bolivia		Nicaragua		Guatemala		Peru		Brazil		Ecuador	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Male	0.167*** (0.0566)	0.342*** (0.0543)	0.0251 -0.157	-0.0328 -0.0504	0.741*** -0.0635	0.888*** -0.0784	0.214*** (0.0216)	0.191*** (0.0304)	0.287*** -0.00989	0.229*** -0.00983	0.246*** (0.0211)	0.0857 (0.0614)
Secondary	0.294*** (0.0655)	0.222*** (0.0687)	0.803*** -0.194	0.397*** -0.0639	0.355*** -0.0812	0.599*** -0.15	0.430*** (0.0245)	0.466*** (0.0385)	0.622*** -0.0121	0.535*** -0.0138	0.335*** (0.0251)	0.368*** (0.0763)
Tertiary	0.822*** (0.116)	0.733*** (0.126)	1.852*** -0.661	0.717*** -0.161	1.151*** -0.183	1.046*** -0.344	0.748*** (0.0527)	0.700*** (0.107)	1.342*** -0.0333	1.315*** -0.0757	0.728*** (0.0416)	0.822*** (0.169)
Married	0.0805 (0.0662)	0.0224 (0.0665)	0.18 -0.158	0.286*** -0.0528	0.0885 -0.0682	-0.00277 -0.0904	-0.0183 (0.0241)	-0.0389 (0.0354)				
Health	-0.0633 (0.0744)	0.00629 (0.0666)	-0.691*** -0.168	-0.0173 -0.0529								
Experience	0.0221*** (0.00707)	0.0195*** (0.00636)	0.0499*** -0.0161	0.0331*** -0.00547	0.0355*** -0.00686	0.0517*** -0.00926	0.0238*** (0.00221)	0.0159*** (0.00310)	0.0421*** -0.00109	0.0382*** -0.00112	0.0258*** (0.00210)	0.0347*** (0.00620)
Experience Square	-0.000368*** (0.000121)	-0.000344*** (0.0000925)	-0.000696*** -0.000211	-0.000388*** -0.0000814	-0.000797*** -0.000101	-0.000880*** -0.000133	-0.000432*** (0.0000328)	-0.000301*** (0.0000419)	-0.000585*** -0.0000181	-0.000590*** -0.0000185	-0.000371*** (0.0000317)	-0.000520*** (0.0000909)
Migrant	0.0928 (0.0576)	-0.0702 (0.0586)	-0.0773 -0.157	0.00258 -0.0545	-0.0362 -0.0633	0.286*** -0.0835			0.0737*** -0.0101	0.174*** -0.00994	0.0309 (0.0236)	-0.0165 (0.0703)
Household members							-0.0000883 (0.00422)	0.0551*** (0.00636)			-0.0123*** (0.00439)	-0.00887 (0.0116)
Constant	0.608*** (0.103)	0.578*** (0.112)	1.104*** -0.272	0.998*** -0.0856	5.677*** -0.107	4.896*** -0.131	-0.118*** (0.0437)	-0.556*** (0.0632)	-0.317*** -0.017	-0.571*** -0.0169	-0.906*** (0.0459)	-1.009*** (0.130)
Observations	968	1317	213	1922	1778	989	10270	5409	26037	26071	7231	890
R-squared	0.081	0.085	0.224	0.065	0.169	0.183	0.079	0.104	0.162	0.106	0.080	0.074

Standard errors in parent

*** p<0.01, ** p<0.05, *

DECOMPOSITION ESTIMATES

	Bolivia		Nicaragua		Guatemala		Peru		Brazil		Ecuador	
	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Male	0.0090335 (0.01)	-0.0900427 (0.04)	0.0002478 (0.00)	0.029479 (0.08)	-0.08121 (0.02)	-0.0731106 (0.05)	-0.001975 (0.00)	0.0137489 (0.02)	-0.0068631 (0.00)	0.0325746 (0.01)	-0.0004374 (0.00)	0.0926814 (0.04)
Secondary	0.0263146 (0.01)	0.0279954 (0.04)	-0.0114676 (0.01)	0.0834784 (0.04)	0.0738185 (0.01)	-0.0417293 (0.03)	0.071884 (0.00)	-0.0133431 (0.02)	0.0608065 (0.00)	0.0206708 (0.00)	0.0403557 (0.01)	-0.0119446 (0.03)
Tertiary	0.0116205 (0.01)	0.0059037 (0.01)	-0.0104489 (0.01)	0.0164947 (0.01)	0.0220565 (0.01)	0.0026645 (0.01)	0.0193647 (0.00)	0.0018816 (0.00)	0.0249642 (0.00)	0.0003774 (0.00)	0.0384904 (0.01)	-0.0073009 (0.01)
Married	-0.0031119 (0.00)	0.0404669 (0.07)	0.0045235 (0.01)	-0.060471 (0.10)	-0.0021399 (0.00)	0.0575007 (0.07)	0.0012754 (0.00)	0.0128759 (0.03)				
Health	0.0007097 (0.0017)	-0.0131372 (0.02)	-0.0024522 (0.0040)	-0.2842646 (0.08)								
Experience	-0.1034049 (0.03)	0.0613583 (0.23)	-0.0228381 (0.04)	0.417895 (0.43)	-0.1479124 (0.0383)	-0.4430852 (0.32)	-0.104246 (0.0143)	0.2122667 (0.10)	0.0052817 (0.0053)	0.0937682 (0.04)	-0.0129244 (0.0210)	-0.231057 (0.17)
Experience Square	0.100281 (0.03)	-0.0192365 (0.12)	0.0323109 (0.04)	-0.2656463 (0.20)	0.1786662 (0.04)	0.0880013 (0.18)	0.1314646 (0.01)	-0.1366274 (0.06)	-0.0093897 (0.00)	0.0040852 (0.02)	0.012459 (0.02)	0.1438917 (0.09)
Migrant	0.0000101 (0.00)	0.1029277 (0.05)	-0.0006243 (0.01)	-0.0323966 (0.07)			0 0.00	0 0.00	0.0004992 (0.00)	-0.0554914 (0.01)	-0.0001196 (0.00)	0.0125877 (0.02)
Household members					0.04398 (0.02)	-0.1416588 (0.05)	0.0121151 (0.00)	-0.2927224 (0.04)			0.0033547 (0.00)	-0.0166519 (0.06)
Constant		0.0300062 (0.15)		0.1064364 (0.28)		0.7811189 (0.17)		0.4377812 (0.08)		0.2543766 (0.02)		0.1028113 (0.14)
Wage Differential	0.0414527 (0.01)	0.1462417 (0.04)	-0.010749 (0.02)	0.0110051 (0.08)	0.087259 (0.03)	0.2297014 (0.05)	0.1298829 (0.01)	0.2358614 (0.02)	0.0752988 (0.00)	0.3503614 (0.01)	0.0811783 (0.01)	0.0850178 (0.03)
Total Wage Differential	0.1876944		0.0002561		0.3169604		0.3657443		0.4256602		0.1661961	

WAGE DECOMPOSITION BY INDIGENOUS AND NON INDIGENOUS IN FORMAL SECTOR
REGRESSION ESTIMATES

	Bolivia		Nicaragua		Guatemala		Peru		Brazil		Ecuador	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Male	0.127** (0.0579)	0.330*** (0.0545)	0.176 (0.162)	0.123*** (0.0415)	0.360*** (0.0395)	0.536*** (0.0840)	0.137*** (0.0224)	0.163*** (0.0448)	0.306*** (0.00734)	0.249*** (0.00898)	0.167*** (0.0193)	0.210*** (0.0774)
Secondary	0.369*** (0.0849)	0.358*** (0.0689)	0.817*** (0.183)	0.380*** (0.0453)	0.678*** (0.0452)	0.479*** (0.0999)	0.430*** (0.0297)	0.472*** (0.0507)	0.662*** (0.00892)	0.616*** (0.00984)	0.426*** (0.0253)	0.348*** (0.0825)
Tertiary	1.037*** (0.0813)	1.134*** (0.0671)	1.443*** (0.222)	1.164*** (0.0538)	1.267*** (0.0506)	0.845*** (0.143)	0.907*** (0.0299)	0.857*** (0.0545)	1.591*** (0.00994)	1.515*** (0.0160)	0.925*** (0.0254)	0.853*** (0.0932)
Married	0.0808 (0.0644)	0.000613 (0.0607)	0.430** (0.174)	0.150*** (0.0415)	0.0967** (0.0437)	0.104 (0.0934)	0.0514** (0.0241)	-0.0250 (0.0479)				
Health	-0.168** (0.0799)	-0.0586 (0.0625)	-0.205 (0.156)	-0.0172 (0.0407)								
Experience	0.0435*** (0.00669)	0.0171*** (0.00606)	0.0222 (0.0165)	0.0162*** (0.00483)	0.0425*** (0.00416)	0.0141* (0.00819)	0.0230*** (0.00241)	0.0318*** (0.00430)	0.0445*** (0.000852)	0.0414*** (0.00105)	0.0261*** (0.00202)	0.0251*** (0.00731)
Experience Square	-0.000685*** (0.000131)	-0.000149 (0.000111)	-0.000305 (0.000266)	-0.000112 (0.0000895)	-0.000758*** (0.0000735)	-0.000377*** (0.000122)	-0.000343*** (0.0000418)	-0.000488*** (0.0000646)	-0.000552*** (0.0000174)	-0.000552*** (0.0000204)	-0.000319*** (0.0000378)	-0.000322** (0.000129)
Migrant	-0.0463 (0.0548)	-0.0302 (0.0504)	0.123 (0.169)	0.149*** (0.0411)	0.0609 (0.0374)	0.393*** (0.0747)			0.0354*** (0.00724)	0.0800*** (0.00856)	0.0790*** (0.0206)	0.148* (0.0779)
Household members							-0.0242*** (0.00420)	-0.000834 (0.00810)			-0.0279*** (0.00420)	0.00841 (0.0130)
Constant	0.832*** (0.110)	0.694*** (0.0974)	1.080*** (0.273)	1.488*** (0.0671)	6.142*** (0.0585)	6.083*** (0.128)	0.415*** (0.0459)	0.0675 (0.0850)	-0.0602*** (0.0126)	-0.233*** (0.0152)	-0.657*** (0.0423)	-0.868*** (0.146)
Observations	904	892	162	1536	2265	651	7309	2158	40219	24543	7089	542
R-squared	0.251	0.301	0.298	0.261	0.296	0.207	0.158	0.145	0.417	0.314	0.203	0.153

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

DECOMPOSITION ESTIMATES

	Bolivia		Nicaragua		Guatemala		Peru		Brazil		Ecuador	
	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained	Explained	Unexplained
Male	-0.0117569 (0.01)	-0.1362966 (0.05)	-0.0017311 (0.01)	0.0333704 (0.11)	-0.0430494 (0.01)	-0.1145099 (0.060)	-0.0056661 (0.00)	-0.0176931 (0.03)	-0.0150779 (0.00)	0.0351063 (0.01)	-0.016256 (0.01)	-0.0281877 (0.05)
Secondary	-0.0040256 (0.03)	0.0040589 (0.04)	0.0146993 (0.04)	0.1597824 (0.07)	0.0639381 (0.02)	0.0656233 (0.036)	0.0116096 (0.01)	-0.0152844 (0.02)	0.0183734 (0.00)	0.018634 (0.01)	-0.0018342 (0.02)	0.02656 (0.03)
Tertiary	0.0946664 (0.03)	-0.0413161 (0.05)	-0.0172546 (0.04)	0.047848 (0.04)	0.1262597 (0.02)	0.0849177 (0.031)	0.1487066 (0.01)	0.0193799 (0.02)	0.2325782 (0.00)	0.0138398 (0.00)	0.1411852 (0.02)	0.0282075 (0.04)
Married	-0.0019623 (0.00)	0.0552557 (0.06)	0.0076001 (0.01)	0.1725058 (0.11)	-0.0102286 (0.01)	(0.005) (0.064)	0.000252 (0.00)	0.0468674 (0.03)				
Health	0.0064364 (0.0036)	-0.0179177 (0.02)	(0.00) (0.00)	(0.08) (0.07)								
Experience	-0.0712021 (0.02)	0.467416 (0.16)	0.0200666 (0.02)	0.1221542 (0.35)	-0.1019308 (0.04)	0.5254235 (0.170)	-0.125137 (0.02)	-0.1720306 (0.10)	-0.0389376 (0.00)	0.0593897 (0.03)	-0.041295 (0.0204)	0.0183931 (0.15)
Experience Square	0.0456113 (0.02)	-0.2566657 (0.08)	-0.0134189 (0.01)	-0.1231975 (0.18)	0.1264067 (0.04)	-0.2069544 (0.077)	0.1227573 (0.02)	0.0846006 (0.04)	0.0200309 (0.00)	-0.0003299 (0.01)	0.0331422 (0.02)	0.0020538 (0.08)
Migrant	0.0036149 (0.00)	-0.0089528 (0.04)	-0.0018473 (0.01)	-0.0076912 (0.05)	0.05 (0.01)	-0.1696689 (0.043)			-0.0011713 (0.00)	-0.0235846 (0.01)	0.0018619 (0.00)	-0.0176684 (0.02)
Household members							0.0002243 (0.00)	-0.1215464 (0.05)			-0.0029828 (0.01)	-0.1721002 (0.06)
Constant		0.1377958 (0.15)		(0.41) (0.28)		0.060 (0.141)		0.3477153 (0.10)		0.1726375 (0.02)		0.2110912 (0.15)
Wage Differential	0.061382 (0.02)	0.2033775 (0.04)	0.0054594 (0.0364238)	-0.0785671 (0.08)	0.2137169 (0.03)	0.2398706 (0.0467451)	0.1527467 (0.01)	0.1720087 (0.02)	0.2157958 (0.00)	0.2756927 (0.01)	0.1138214 (0.02)	0.0683492 (0.04)
Total Wage Differential	0.2647595		-0.0731077		0.4535875		0.3247554		0.4914885		0.1821706	