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Ethnic wage gaps in Peru: What drives the particular disadvantage of indigenous women?

Alexandre KOLEV* and Pablo SUÁREZ ROBLES*

Abstract. *Ethnic inequality in labour market outcomes has long been on the policy agenda across Latin America. Using National Household Survey data, the authors analyse Peru's ethnic wage gap by sex over the period 2005–11. Although the gender wage gap is smaller than the ethnic gap, indigenous women compound both disadvantages. Interpreting the unexplained component of the gap as an upper-limit measure of ethnic discrimination, the authors then decompose the explained component into the discrete effects of individual, job and locational characteristics. Since more of the ethnic wage gap can be explained on these grounds among women, they conclude with targeted policy proposals.*

Ethnic gaps in employment, wages and career progression are a matter of great concern in Latin America, one of the most unequal regions in the world. In Peru, widespread ethnic inequality in labour market outcomes has been on the national policy agenda for decades. The country has ratified the ILO's Indigenous and Tribal Peoples Convention, 1989 (No. 169), and since 2001, it has taken active measures aimed at integrating indigenous people in local elections, public institutions and the central government, and in some social programmes tackling poverty and exclusion; at the local and national levels, it has also legislated penalties for discrimination (Sulmont Haak, 2010). Yet, despite the Government's efforts to protect ethnic minorities, indigenous people – and indigenous women in particular – remain among the most vulnerable groups in the labour market, especially when it comes to wages.

From a policy perspective, it is important to explore the extent to which ethnic wage gaps can be attributed to differences in observable characteristics, such as human capital and job characteristics, or to discrimination. Evidence of

* ERUDITE (Research team on the use of individual temporal data), Faculty of Economic Sciences and Management, University Paris-Est Créteil Val de Marne, and International Training Centre of the International Labour Organization (ITC-ILO), Turin, Italy, emails: kolev@u-pec.fr and pablo.suarezrobles@gmail.com (corresponding author).

discrimination in pay can be derived from wage data decomposition analysis. Specifically, the share of the ethnic wage gap that is not explained by observable characteristics (i.e. the unobserved component) is a ceiling estimate of what can result from wage discrimination. If the wages earned by indigenous people fall short of the wages earned by the ethnic majority group, after accounting for differences in human capital and job characteristics, then there is a strong case for supporting the enforcement of equal pay measures, along with other interventions aimed at addressing ethnic disparities in educational attainment and ethnic segregation in labour markets.

Economic theory tells us that there are two lead causes of discrimination. "Taste-based" discrimination, which was first modelled by Becker (1957), refers to a situation where economic agents have a taste or a preference for some persons and prefer not to interact with particular groups of people. Such discrimination is costly but can nonetheless persist in competitive markets because some individuals are willing to pay to avoid interacting with particular groups. Another form of discrimination is based on imperfect information about workers' abilities – so-called statistical discrimination. According to this theory, which was pioneered by Arrow (1973) and Phelps (1972), sex or ethnicity is believed to be connected with workers' productivity and thus explains a different treatment of some particular groups. Within this theoretical framework, decomposing the wage gap based on ethnicity can provide information on the extent to which wage discrimination against particular ethnic groups is an issue.

Few studies have empirically analysed ethnic wage gaps in Latin America, so little is known about the factors that drive ethnic inequality in wages, the changing patterns of such inequality and their determinants over time. This is partly due to the absence of information on ethnicity in many household surveys and national censuses. Yet, existing studies suggest that the ethnic wage gap in Latin America is large, persistent, and wider than the gender wage gap. For instance, in their analysis of seven countries with data on ethnicity (Bolivia, Brazil, Chile, Ecuador, Guatemala, Peru and Paraguay), Atal, Ñopo and Winder (2009) find that the average wage premium for men compared to women stands at 10 per cent, but rises to nearly 38 per cent for non-minorities compared to minorities. They also establish that disparities in education and occupational segregation account for the largest portion of this ethnic wage gap. On average, however, one-third of the gap remained unexplained across the seven countries.

Beyond the ethnic wage gap, even less is known about the links between gender and ethnicity. Indeed, the gender dimension of ethnic wage gaps is often ignored by researchers exploring the sources of these wage differentials in Latin America. The few studies available point to significant gender disparities within ethnic groups. In an analysis of four countries (Bolivia, Brazil, Guatemala and Guyana), Cunningham and Jacobsen (2008) use Oaxaca-Blinder decomposition to analyse the wage differentials between whites and non-whites and also compare men and women by ethnicity. They find that the portion of the ethnic wage gap that can be attributed to differences in observed characteristics differs between the sexes.

In the case of Peru, studies of ethnic inequality in labour market outcomes typically find that while there are large inter-ethnic wage differentials, discrimination may only explain a tiny portion of wage inequality. For instance, in her analysis of the links between poverty and ethnicity, Trivelli (2005) undertakes an Oaxaca decomposition of the ethnic wage gap using data from the 2001 National Household Survey (ENAHO). She reports a substantial wage gap between indigenous and non-indigenous workers – about 49 per cent – but finds that differences in human capital endowments account for 43 per cent of this gap. Barrón (2008) uses the 2003 ENAHO to analyse the impact of exclusion and discrimination on income inequality. He also finds a large ethnic wage gap, with the mean labour income of indigenous workers standing at only 56 per cent of that of non-indigenous workers, but that most of the gap is explained by disparities in observed characteristics. In a subsequent study based on the 2006 ENAHO, Atal, Ñopo and Winder (2009) estimate at 45 per cent the raw wage gap between indigenous and non-indigenous people. They find that when accounting for differences in observable characteristics, the wage gap falls to 14 per cent. In contrast, Ñopo, Saavedra and Torero (2007), using the 2000 Living Standard Measurement Survey and an extension of Oaxaca-Blinder decomposition, find that a substantial part of the differentials between racial groups cannot be explained by differences in individual characteristics. They conclude that such results may be consistent with employer discrimination.

In this article, we use annual data from the ENAHO for the period 2005–11 to study the possible role of ethnic discrimination in generating wage differences between indigenous and non-indigenous workers. The article contributes to the literature on ethnic inequality in three ways. First, we provide new evidence on the magnitude of discrimination against indigenous workers in Peru. Second, we explore the gender dimension of ethnic wage gaps. Third, our analysis casts new light on the trends in the ethnic wage gap and the changing nature of its determinants over the period 2005–11. One important objective of this article is to uncover the factors driving the particular disadvantage of indigenous women in Peru, drawing attention to the way in which ethnic segregation and discrimination may differ between men and women.

The remainder of this article is organized into four sections. The first introduces the data and addresses methodological issues. The second presents basic descriptive statistics. The third section discusses our results, and the fourth section concludes.

Data and methodology

To study the possible role of ethnic discrimination in generating wage differences between indigenous and non-indigenous workers in Peru, we use annual cross-section data from the ENAHO for the period 2005–11. The ENAHO has been conducted on a continuous basis since May 2003 and is representative at the national level: it covers both urban and rural areas in

Peru's 24 administrative districts and in the constitutional province of Callao. It contains a wide range of information on households and household members' characteristics, education, health, employment and earnings.

Measuring ethnicity

Currently, only nine Latin American countries include a question on ethnicity in their national surveys or censuses, either by asking about respondents' mother tongue or through self-ascription to an ethnic group (Atal, Ñopo and Winder, 2009). However, there is no Latin American consensus on the most appropriate definition of the concept of indigenous identity (Sulmont Haak, 2010). The distribution of racial categories in Peru was last measured in a census in 1940. Since then, except for a few ad hoc surveys, official statistics have focused on ethnic and cultural indicators that are less controversial and more objective, such as language.[1] Thus, the only way to measure ethnicity in Peru using a continuous national household survey such as the ENAHO is through place of birth or mother tongue.[2]

Sulmont Haak (2010) argues that using the latter as a proxy for ethnicity – rather than self-ascription to an ethnic group – can result in underestimating the size of the indigenous population. Moreover, Barrón (2008), Figueroa and Barrón (2005), and Ñopo, Saavedra and Torero (2004) have pointed out that using mother tongue as a proxy of ethnicity in Peru is not appropriate because, while native language speakers are mostly indigenous, the converse is not true. In the absence of alternatives, however, mother tongue has, despite its shortcomings, typically been used as the sole indicator of ethnicity in most of the empirical literature on Latin America, especially Peru.

In this article, we follow previous studies and use the information on mother tongue available in the ENAHO to analyse wage disparities between indigenous and non-indigenous people in Peru over the period 2005–11. We classify as indigenous all surveyed individuals who reported a native language (e.g. Quechua or Aymara) as their mother tongue. All those who reported Castilian as their mother tongue are considered to be non-indigenous. We exclude the very few respondents who reported that their mother tongue was English, Portuguese or another foreign language, or that they were deaf-mute. Restricting our sample to workers in wage employment, we then conduct our analysis of the ethnic wage gap based on hourly wages from their main job.

Estimation methods

We run OLS wage regressions and Simultaneous Quantile wage regressions (first quartile, median and third quartile) to account for individual heterogeneity along the wage distribution, separately for indigenous and non-indigenous

[1] Studies using ethnic markers other than mother tongue have failed to provide a comprehensive picture of ethnic discrimination since they focus on a specific point in time and on limited geographical areas, usually urban areas.

[2] In 2009, the ENAHO included for the first time a question on self-ascription to an ethnic group. But this was not reproduced in subsequent years.

people, and, within each of these two groups, separately for men and women. The dependent variable is the natural logarithm of net hourly wages in the workers' main job.

Our explanatory variables include human capital and other individual characteristics, job characteristics and location variables. Human capital and other individual characteristics comprise dummies for five levels of educational attainment (primary incomplete, primary complete, secondary incomplete, secondary complete and tertiary education), potential work experience (age minus years of schooling minus six) and its square (to account for the possibility of decreasing returns), job tenure (number of months in the current main job), and a dummy for marital status. Job characteristics include dummies for industry, occupation, and terms of contract. Finally, our location variables comprise urban and regional (coast, mountains and forest) dummies.[3]

Since our sample excludes workers who are not in wage employment, it is not a random sample of the labour force. The ensuing problem of potential selectivity bias is not easily addressed. We tried to correct potential selectivity bias in our OLS regressions by using Heckman's (1979) two-step estimation model. This procedure, however, requires the availability of valid instruments, the most widely used in empirical studies being the number of children, age, region, and the education and occupation of parents (Beblo et al., 2003). Few of these instruments were available in our data, but those that could be identified turned out to be endogenous when performing exogeneity tests. Accordingly, we decided not to account for the Heckman two-step selection model. Nor do we attempt to correct potential selectivity bias in our Simultaneous Quantile regressions as there is currently no consensus in the literature on the most appropriate way of doing so. All of our findings are therefore based solely on OLS and Simultaneous Quantile regressions which do not deal with potential selectivity bias.

Wage gap decomposition

In this article, we use the decomposition technique developed by Neumark (1988). This technique has been widely used in the literature and has the advantage of overcoming the so-called index number problem encountered in the decomposition technique proposed by Blinder (1973) and Oaxaca (1973).

Replicating Neumark's original argument on the gender wage gap in terms of ethnicity, it turns out that employers may practice nepotism toward non-indigenous workers or discrimination against indigenous workers. Under nepotism, indigenous workers are paid the competitive wage but non-indigenous workers are overpaid. The coefficients from the indigenous workers' wage equation then provide an estimate of the non-discriminatory wage structure. In the discrimination scenario, non-indigenous workers are paid the competitive

[3] In our OLS regressions, we estimate robust standard errors (using the Huber/White/Sandwich estimator of variance), and in our Simultaneous Quantile regressions we estimate bootstrapped standard errors (200 replications).

wage but indigenous workers are underpaid. The coefficients from the non-indigenous workers' wage equation then provide an estimate of the non-discriminatory wage structure. In reality, however, employers may practice both nepotism and discrimination. With the restriction that employers only care about the proportions of indigenous and non-indigenous employees (i.e. employer preferences are homogeneous of degree zero), the non-discriminatory wage structure β^*, which is a weighted average of the non-indigenous and indigenous wage structures, can be obtained from a wage equation estimated over the pooled sample (that is, including both indigenous and non-indigenous workers).

We decompose the ethnic wage gap as follows:

$$\ln(\overline{Y}_{NI}) - \ln(\overline{Y}_{I}) = \hat{\beta}^*(\overline{X}_{NI} - \overline{X}_{I}) + \overline{X}_{NI}(\hat{\beta}_{NI} - \hat{\beta}^*) + \overline{X}_{I}(\hat{\beta}^* - \hat{\beta}_{I}) \quad (1)$$

The first component on the right-hand side represents the part of the ethnic wage gap attributable to differences in characteristics evaluated for the hypothetical market that would prevail in a non-discrimination scenario. The second and third components constitute the treatment or discrimination component and represent, respectively, the amount by which non-indigenous workers' characteristics are over-valued (i.e. non-indigenous workers' treatment advantage) and the amount by which indigenous workers' characteristics are under-valued (i.e. indigenous workers' treatment disadvantage), in wage employment.

Using this procedure, we decompose the ethnic wage gap for the overall sample of wage employed workers, and separately for men and women, and workers at the first quartile, median and third quartile of the wage distribution.

Summary statistics

Table 1 reports the share of wage employment in total employment by sex, ethnicity and year for the period 2005–11. It shows a significant ethnic gap in wage employment throughout the period, with the wage employment ratio of non-indigenous workers being twice that of indigenous workers. The gender gap in wage employment is also particularly pronounced among indigenous workers.

The unadjusted ethnic hourly wage gaps for the period 2005–11 are provided in table 2, for the overall sample and separately for men and women. The data show that Peru's ethnic wage gaps were consistently wide over the period, although they narrowed over time, which echoes other findings from Latin America (see, for instance, Atal, Ñopo and Winder, 2009). On average, the hourly wages of indigenous workers amounted to only 58 per cent of those of non-indigenous workers in 2005, and 73 per cent in 2011. For comparison, Barrón (2008) found that the proportion was 56 per cent in 2003.

What is remarkable is that Peru's ethnic wage gap was also markedly wider than its gender wage gap throughout the period 2005–11, as shown in table 3. In 2011, for instance, the raw ethnic wage gap reached nearly 27 percentage points, compared to 15 percentage points for the raw gender wage gap.

Table 1. Wage employment ratios by sex and ethnicity, 2005–11 (percentages)

Year	All	Men	Women	Non-indigenous			Indigenous		
				All	Men	Women	All	Men	Women
2011	42.4	47.3	36.8	47.6	51.7	42.9	23.8	31.0	16.5
2010	42.2	47.9	35.8	46.8	51.5	41.2	25.8	34.0	17.4
2009	42.6	48.5	35.9	47.5	52.6	41.3	25.5	32.7	18.1
2008	42.5	47.9	36.2	47.4	52.0	41.9	24.9	32.2	17.4
2007	42.0	47.6	35.6	46.7	51.4	41.0	25.7	33.3	17.7
2006	40.8	46.5	34.0	45.8	50.9	39.3	24.5	30.5	18.3
2005	38.9	44.5	32.3	43.7	48.6	37.6	23.0	29.7	15.8

Note: Individuals aged 14 and above. Weighted data.
Source: ENAHO 2005–11.

Table 2. Unadjusted ethnic hourly wage gap by sex, 2005–11 (percentages)

Year	Men	Women	All
2011	79.7	56.5	73.1
2010	73.5	53.0	68.0
2009	73.9	55.5	68.5
2008	72.3	48.1	65.3
2007	73.5	53.2	67.9
2006	67.1	54.6	63.1
2005	61.2	48.7	58.0

Note: Indigenous average hourly wage from main job as a percentage of the corresponding non-indigenous average hourly wage. Individuals aged 14 and above. Weighted data.
Source: ENAHO 2005–11.

Table 3. Unadjusted gender wage gap by ethnicity, 2005–11 (percentages)

Year	Non-indigenous	Indigenous	All
2011	86.7	61.4	85.1
2010	83.7	60.4	82.4
2009	82.7	62.1	81.2
2008	86.1	57.3	84.4
2007	88.2	63.8	86.8
2006	86.1	70.1	84.7
2005	83.6	66.5	83.0

Note: Female average hourly wage from main job as a percentage of the corresponding male average hourly wage. Individuals aged 14 and above. Weighted data.
Source: ENAHO 2005–11.

Indigenous women face a particular disadvantage, however, both vis-à-vis indigenous men and vis-à-vis non-indigenous women. For 2011, for example, we found that indigenous men earned 163 per cent, non-indigenous women 177 per cent, and non-indigenous men 204 per cent of the wage of indigenous

Table 4. Average real wages by sex and ethnicity, 2005–11 (2005 = 100)

Year	All	Men	Women	Non-indigenous			Indigenous		
				All	Men	Women	All	Men	Women
2011	130.3	130.0	133.2	126.7	125.9	130.5	159.6	164.0	151.5
2010	126.9	127.9	127.0	124.5	125.1	125.3	146.0	150.3	136.6
2009	124.7	126.1	123.3	122.2	123.0	121.7	144.4	148.6	138.8
2008	114.5	114.3	116.2	112.6	111.9	115.2	126.8	132.1	113.8
2007	112.7	111.3	116.4	110.8	109.1	115.1	129.7	131.1	125.8
2006	107.8	107.1	109.3	107.0	105.9	109.1	116.4	116.2	122.5

Note: Individuals aged 14 and above. Weighted data.
Source: ENAHO 2005–11.

women. As shown in table 2 for the period 2005–11, the ethnic wage gap in Peru is indeed much more pronounced among women (earning from 49 to 57 per cent of non-indigenous wages) than among men (61 to 80 per cent). The gender dimension of the ethnic wage gap is further illustrated in table 3, which shows that over the same period the gender wage gap was substantially wider among indigenous workers (with women earning from 57 to 70 per cent of male wages), than among non-indigenous workers (82 to 88 per cent of male wages). We also notice from table 2 that the ethnic wage gap seems to be narrowing over time, but at a slower and less regular pace for women than for men. These findings, which highlight the particular wage disadvantage of indigenous women, are in line with other findings from the region (Atal, Ñopo and Winder, 2009; Piras, 2004; Contreras and Galván, 2003; Lovell, 2000). Lastly, although indigenous workers are catching up with their non-indigenous counterparts because their real wages are growing faster, indigenous women are losing further ground to indigenous men, who exhibit the highest increase in real wages (see table 4).

To understand how the wage gap evolves along wage distributions, we have constructed Generalized Lorenz Curves separately for men and women, indigenous and non-indigenous people, for each year over the period 2005–11.[4] Consistent with the glass ceiling hypothesis, we observe that the ethnic wage gap is more pronounced at the upper ends of the wage distributions, especially among women. The same goes for the gender wage gap among indigenous workers, but not among non-indigenous ones for whom the gap appears to narrow at both extremes of wage distributions. Atal, Ñopo and Winder (2009) also find evidence that indigenous workers in Latin America are confronted with a "glass ceiling" or access barriers to high-paid jobs.

To some extent, the ethnic wage gaps reported in table 2 could be explained by differences in observable socio-economic characteristics. Our list of covariates and their definitions are given in Appendix A, table A1; and the

[4] Owing to space constraints, the graphs are not reproduced here but are available from the corresponding author on request.

covariate values are reported in table A2. The data indicate substantial ethnic disparities in education and job-related characteristics that may explain some of the ethnic wage gap in Peru. Over time, moreover, ethnic disparities in education have declined, thereby possibly contributing to the narrowing of the ethnic wage gap. The contribution of the different factors will now be further analysed using the decomposition technique described above.

Results

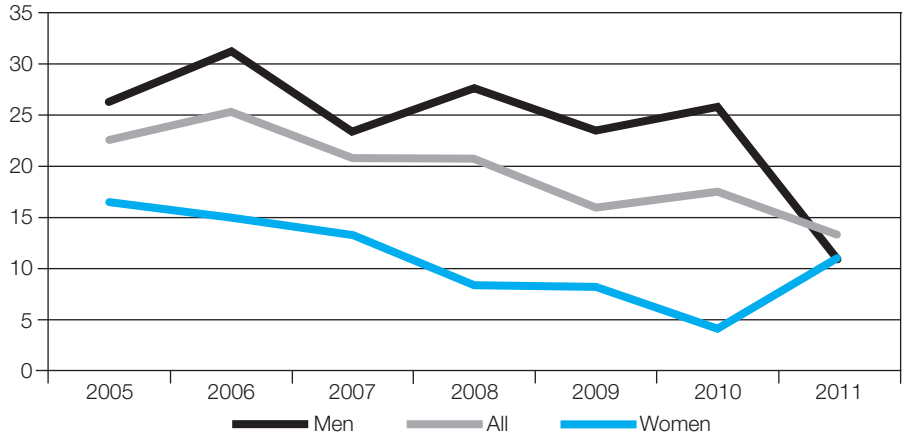
We now turn to the central question of this article: To what extent can discrimination and ethnic segregation explain wage differentials between indigenous and non-indigenous workers in Peru, and how do those differentials vary by sex? To address this question, we conduct a decomposition analysis of the wage differentials between indigenous and non-indigenous workers.

We start by investigating the magnitude and the trend of the ethnic wage gap that remains unexplained after controlling for differences in observable characteristics in order to establish the extent to which wage discrimination against indigenous workers could be an issue. The unexplained component is a residual measure of potential wage discrimination. Beyond actual wage discrimination, it is also very likely to capture differences in other unobserved characteristics, such as social and cultural norms, which negatively affect women and ethnic minorities. Before joining the labour market, the latter often face various forms of discrimination – e.g. in access to education and nutrition – that limit their human capital development and subsequently reduce their employability. Such "prior" discrimination predetermines some of the observed differences in workers' characteristics and is therefore reflected in the explained component.

We then focus on the explained component of the ethnic wage gap and present three sets of decomposition exercises. First, we explore the contribution of differences in productivity-related individual characteristics (education, potential work experience, job tenure) and marital status, which are related to wages. Second, we look at the contribution of job-related characteristics (industry, occupation, terms of employment) to assess the extent of ethnic segmentation of the labour market. We then include geographical variables (regions, rural/urban divide) to uncover the possible effects of spatial inequalities on the ethnic wage gap.

Figure 1 takes a first look at the results of the ethnic wage gap decomposition by presenting the unexplained component over the period 2005–11 based on Neumark's (1988) approach and OLS estimates of the log hourly wage. A substantial proportion of the raw ethnic wage gap cannot be explained by differences in observable characteristics in our data and remains unexplained. However, the unexplained component decreased significantly over time – from 23 per cent in 2005 to 13 per cent in 2011. Until 2010, this downward trend was quite linear among women and rather serrated among men. In 2011, the decline of the unexplained component was abruptly reversed for

Figure 1. Unexplained component of the ethnic mean observed log hourly wage gap by sex in Peru, 2005–11 (percentages)



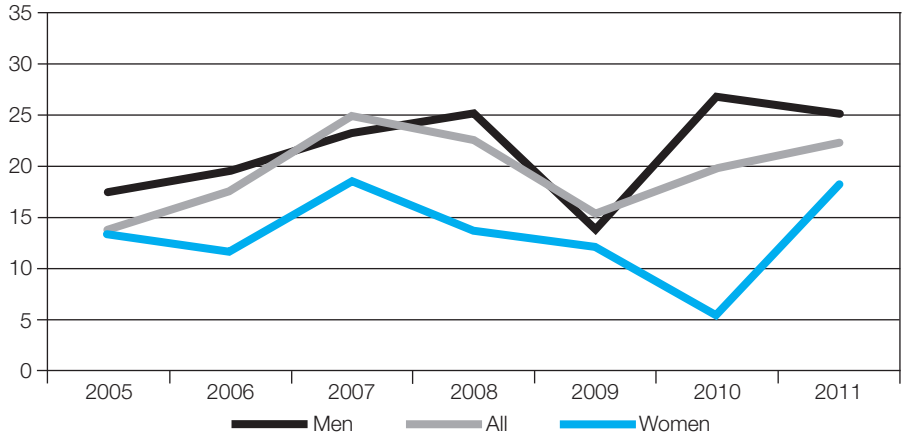
Note: Individuals aged 14 and above.
Source: ENAHO 2005–11.

women (with a 6 per cent increase compared to 2010) and accelerated dramatically for men (with a 15 per cent decrease compared to 2010). Over the period 2005–10, only a tiny percentage of the ethnic wage gap is unexplained among women (from 16 per cent in 2005 to 4 per cent in 2010), while the unexplained component among men is much larger (26 per cent in both 2005 and 2010). In 2011, the unexplained component reached the same level for both men and women at 11 per cent.

These results diverge quite substantially from those of some previous research on Latin America, which finds that most of the ethnic pay differential remains unexplained (Patrinos, 2000; Hall and Patrinos, 2006). However, these studies only account for productively related factors and leave aside differences in job characteristics, although the latter obviously play a crucial part in developing countries with segmented labour markets. In line with our results, Atal, Ñopo and Winder's (2009) study of seven Latin American countries found that accounting for job-related factors substantially diminished the unexplained component of the ethnic wage gap. Barrón (2008), in turn, found that no more than 20 per cent of Peru's ethnic wage gap was unexplained. Finally, Ñopo, Saavedra and Torero (2004) found that, after accounting for differences in observable (demographic and job) characteristics, the wage premium of non-indigenous workers over indigenous ones was no more than 12 per cent in urban Peru.

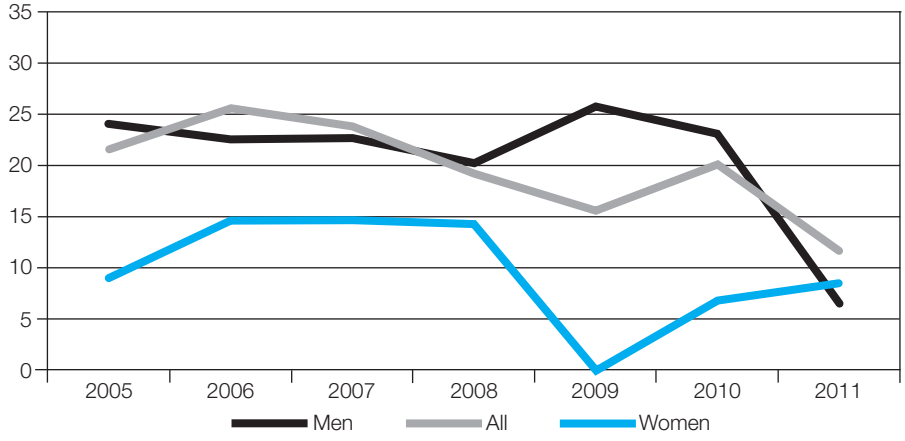
Going beyond the analysis of the wage gap "at the mean", we further conduct quantile regressions to analyse the ethnic wage gap at different points of the wage distribution. Figures 2 to 4 respectively show measures of the unexplained component of the ethnic wage gap by sex for the first, second and third quartiles of the estimated log hourly wage over the period 2005–11.

Figure 2. Unexplained component of the ethnic predicted log hourly wage gap by sex in the first quartile, 2005–11 (percentages)



Note: Individuals aged 14 and above.
Source: ENAHO 2005–11.

Figure 3. Unexplained component of the ethnic predicted log hourly wage gap by sex at the median, 2005–11 (percentages)

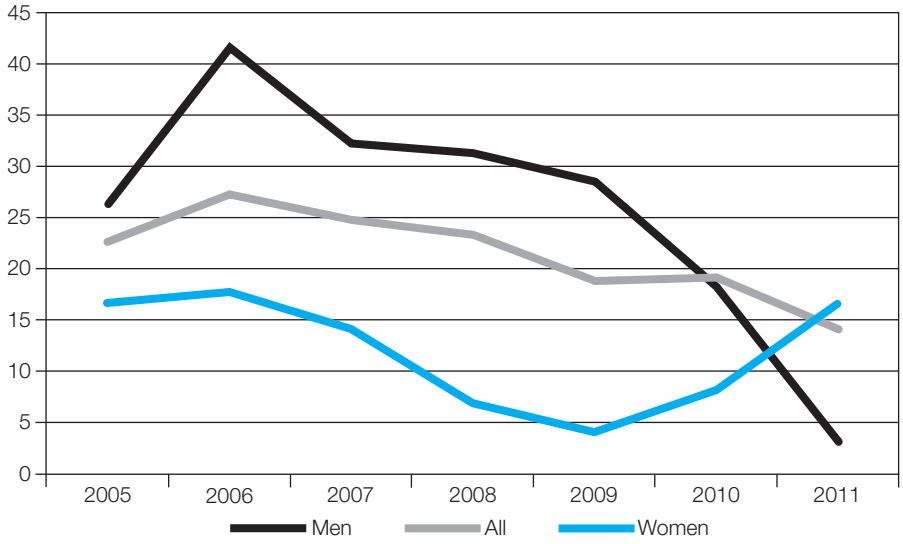


Note: Individuals aged 14 and above.
Source: ENAHO 2005–11.

First, the proportion of the ethnic wage gap that remains unexplained does not follow a linear trend across the wage distribution over time. Over the years, the unexplained component of the gap was rather volatile among lower paid workers (first quartile), albeit with an increase since 2009. By contrast, the gap narrowed among higher paid workers (median and third quartile) throughout the period.

Second, aggregate trends in the unexplained component of the ethnic wage gap hide significant gender disparities. Remarkably, between 2009 and

Figure 4. Unexplained component of the ethnic predicted log hourly wage gap by sex in the third quartile, 2005–11 (percentages)



Note: Individuals aged 14 and above.
Source: ENAHO 2005–11.

2011, when Peru suffered from external shocks due to the global financial and economic crisis, the share of the ethnic wage gap that is unexplained by observable characteristics contracted dramatically for male workers at the upper end of the wage distribution (median and third quartile), but suddenly and sharply increased for the corresponding female workers. These findings indicate that economic and employment strains may increase ethnic wage discrimination against women and low-paid workers.

Third, the magnitude of the unexplained component differs greatly by sex. In most cases, the unexplained component appears to be greater for men than for women. However, at the median and the third quartile of the wage distribution, the unexplained component shrank substantially between 2005 and 2011 for men, but displayed no steady decline for women. As a result, in 2011, the unexplained part of the ethnic wage gap observed among women exceeded that observed among men for the first time. Among lower paid workers (first quartile), the unexplained share of the wage disadvantage of indigenous workers has been always greater for men.

We now turn to the analysis of the explained component of the wage differentials between indigenous and non-indigenous workers, accounting for three different sets of controls. The results of our OLS estimates are reported in Appendix B, tables B1.1 to B1.7; those of our Simultaneous Quantile estimates are reported in tables B2.1 to B2.7. The first set of controls comprises human capital variables, including education, potential work experience and job tenure.

Our OLS estimates indicate that differences in education account for a substantial share of the ethnic wage gap: between 35 and 42 per cent over the period 2005–11. Among men, the portion of the gap attributable to differences in schooling initially contracted from 39 per cent in 2005 to 28 per cent in 2007, and then increased from 30 per cent in 2008 to 38 per cent in 2011. Among women, the contribution of differences in education to the ethnic wage gap generally exhibits a decreasing pattern, from 41 per cent in 2005 to 35 per cent in 2011.

The results based on the Simultaneous Quantile estimates further indicate that, especially for women, the contribution of differences in educational attainment to the ethnic wage gap generally increases as we move up the wage distribution. Over the years, this educational component tended to decrease among lower paid workers (first quartile). Among higher paid workers (median and third quartile), the educational component for men declined from 2005 to 2007 and then increased from 2008 to 2011, while for women it declined somewhat in the beginning of the period and then steadily from 2008 to 2011. Two other findings deserve to be mentioned. First, the educational component for men exceeded that for women for the first time in 2011. Second, this shift is observed among higher paid workers (median and third quartile), but not among lower paid workers (first quartile). Overall, our results show that lower educational attainment among indigenous workers is an important source of the explained ethnic wage gap, especially at the upper ends of the wage distribution.

In contrast to education, potential work experience tends to play in favour of indigenous workers, particularly among men and, in recent years, higher paid workers. Indeed, indigenous workers appear to have substantially longer potential work experience than their non-indigenous counterparts, which could indicate that access to wage employment is more competitive for them.

The second set of controls consists of job-related characteristics. The variables considered are industry, occupation, and terms of employment. The job component of the ethnic wage gap varied between 22.5 and 31 per cent over the period 2005–11, representing a proportion that was in most cases larger than the human capital component (education, potential work experience and job tenure). Between 2005 and 2011, the job component increased from 15 to 23 per cent among men, and from 33 to 39 per cent among women. The job component is thus clearly greater for women and at the upper ends of wage distributions (median and third quartile). At the first quartile, the job component increased from 9 to 17 per cent among men, and from 33 to 34 per cent among women over the period 2005–11. At the median, it grew from 14 to 22 per cent among men, while remaining around 38 per cent among women. At the third quartile, the job component increased from 17 to 25 per cent among men, and from 33 to 40 per cent among women. All these results explicitly show that differences in job characteristics are important – and increasingly strong – determinants of the ethnic wage gap, especially among women and higher paid workers.

Within the job component, we observe that differences in industry allocation act in favour of indigenous workers and reduce the ethnic wage gap, particularly among women and workers in lower paid jobs: their contribution to the gap varies between –6 and 0 per cent for men as against –11 and –6 per cent for women, and between –4 and –1 per cent at the third quartile, compared to –12 and –4 per cent at the first quartile. These findings refute the hypothesis that industry segregation positively contributes to the ethnic wage gap.

By contrast, occupational differences accounted for a large share of the ethnic wage gap in 2005–11, with contributions ranging between 5 and 14 per cent for men and 20 and 23 per cent for women at the mean, and between 14 and 19 per cent at the third quartile and 13 and 21 per cent at the first quartile. Furthermore, in the more recent years of the period, the share of the ethnic wage gap explained by occupational differences increased towards the upper ends of the male and female wage distributions (median and third quartile). This confirms that occupational segregation is an important source of the ethnic wage gap, especially for women and among higher paid workers.

Disparities in workers' terms of employment also contribute significantly to the ethnic wage gap, particularly for women. Among male workers, between 5 and 14 per cent of the ethnic wage gap over the period 2005–11 can be explained by differences in terms of employment; and, among female workers, the contribution is between 19 and 26 per cent. This is mainly driven by the relatively higher concentration of indigenous workers in precarious jobs with no contract and lower wages.

The last set of controls included in our decomposition exercises relates to spatial disparities. It turns out that differences in location account for the second largest portion of the ethnic wage gap, just after education, with contributions ranging from 29 to 37 per cent. These contributions are also higher for men (between 37 and 48 per cent) than for women (between 19 and 23 per cent), and at the first quartile (between 30 and 46 per cent) than at the third quartile (between 24 and 32 per cent) of wage distributions. The contribution of spatial disparities has declined over time, however. While these findings reflect the fact that a higher proportion of indigenous workers are located in rural and mountainous areas, where wages are lower, they also confirm that recent internal migratory flows have contributed to reducing the ethnic wage gap.

Conclusion

This article has measured and analysed ethnic wage gaps in Peru over the period 2005–11. Our objective was to uncover the extent to which discrimination and ethnic segregation can explain wage differentials between indigenous and non-indigenous workers, and how the effects of these factors may differ by sex and along the wage distribution. We applied Neumark's (1988) decomposition technique to ethnic wage gaps using annual data from Peru's National Household Survey over the period 2005–11.

First, our results indicate that raw ethnic wage gaps are large, and far wider than gender wage gaps. There is also clear evidence that the wage gap between indigenous and non-indigenous workers widens along the wage distribution. Looking at the trends over the period 2005–11, however, we observe an overall narrowing of the ethnic wage gap.

Second, we find that both the magnitude and the trends in ethnic wage differentials are heavily gendered. The ethnic wage gap is markedly wider among women than among men. At the same time, gender wage gaps are much more significant among indigenous workers than among the non-indigenous. Our results further indicate that indigenous women are at a particular disadvantage: not only are they paid the lowest absolute wages but their relative situation, in terms of wage gaps, has seen little, if any, improvement over time, contrary to what we observe among men.

Third, our analysis indicates that the determinants of the ethnic wage gap differ greatly between men and women. Up to 2010, we find that most of the female ethnic wage gap can be explained by disparities in observable characteristics. In 2011, however, the unexplained part of the ethnic wage gap was the same for both sexes, after a sudden narrowing of the gap among men, and a widening of the gap among women. This suggests that wage discrimination practices may actually have been stronger for indigenous males, at least until recent years.

Fourth, disparities in education, location, terms of employment and occupation are the major observable determinants of the ethnic wage gap. By contrast, differences in potential work experience and industry allocation work in favour of indigenous workers and tend to reduce the ethnic wage gap. Ethnic segmentation by education and location play a more visible role among men, while ethnic segmentation by terms of employment and occupation has a stronger effect on women. There are also important variations in the determinants of the wage gap across the wage distribution. Education, terms of employment (only in recent years) and occupation explain a more substantial share of the ethnic wage gap at the top of the wage distribution, while spatial disparities explain more of the ethnic wage gap at the bottom end of the distribution.

All in all, these results underscore the extent to which ethnic disparities in Peru need to be analysed through a gender lens. From a policy perspective, they have several implications. First, although there is a case for supporting the enforcement of equal pay measures, ethnic wage discrimination does not seem to be as important a factor for women as it is for men. Other interventions aimed at addressing ethnic segmentation in the work place and supporting education parity among ethnic minorities are thus needed, especially to address the particular disadvantage of indigenous women. Second, as spatial disparities explain a substantial component of the wage gap, local economic development strategies could also contribute to reducing the ethnic wage gap.

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Appendix A. Summary statistics

Table A1. List and definition of covariates

Covariate Female	Definition Women
edu1 (ref.)	No education
edu2	Primary incomplete
edu3	Primary complete
edu4	Secondary incomplete
edu5	Secondary complete
edu6	Tertiary education
exppot	Potential work experience: age minus years of schooling minus 6
exppot2	Squared potential work experience divided by 100
job_tenure	Job tenure: number of months in main job
married	Married
industry1 (ref.)	Primary production activity
industry2	Manufacturing
industry3	Services (public administration and public companies)
industry4	Services (private companies, entrepreneurs, worker cooperatives, special services' companies, and domestic workers)
occupa1 (ref.)	Low-skilled blue-collar
occupa2	High-skilled blue-collar
occupa3	Low-skilled white-collar
occupa4	High-skilled white-collar
terms1 (ref.)	No contract
terms2	Fixed-term contract & others (excluding service contract)
terms3	Permanent contract
urban	Urban
region1 (ref.)	Lima metropolitan area
region2	Coast (north, centre and south)
region3	Mountains (north, centre and south)
region4	Forest

Table A2. Mean covariate values by ethnicity and sex, 2005–11

	2011						2010					
	Non-indigenous			Indigenous			Non-indigenous			Indigenous		
	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women
female	0.39	—	—	0.34	—	—	0.39	—	—	0.33	—	—
edu1 (ref.)	0.01	0.01	0.01	0.06	0.03	0.11	0.01	0.01	0.02	0.05	0.02	0.11
edu2	0.06	0.07	0.06	0.16	0.14	0.21	0.07	0.07	0.06	0.17	0.16	0.20
edu3	0.08	0.09	0.07	0.13	0.13	0.13	0.08	0.09	0.08	0.14	0.14	0.14
edu4	0.14	0.16	0.11	0.21	0.22	0.19	0.16	0.17	0.13	0.23	0.24	0.21
edu5	0.29	0.31	0.25	0.24	0.28	0.18	0.29	0.32	0.24	0.23	0.24	0.20
edu6	0.41	0.36	0.50	0.19	0.20	0.19	0.40	0.35	0.47	0.17	0.19	0.14
exppot	17.12	17.62	16.34	23.05	22.96	23.24	16.71	17.20	15.94	22.26	22.96	20.84
exppot2	4.93	5.23	4.45	8.25	8.10	8.53	4.74	5.01	4.32	7.85	8.14	7.27
job_tenure	56.80	56.78	56.83	58.66	64.98	46.21	54.62	55.32	53.50	51.70	58.32	38.27
married	0.24	0.25	0.21	0.31	0.33	0.26	0.24	0.26	0.21	0.31	0.35	0.22
industry1 (ref.)	0.18	0.24	0.09	0.33	0.35	0.30	0.17	0.23	0.08	0.33	0.34	0.30
industry2	0.11	0.13	0.08	0.08	0.09	0.07	0.12	0.14	0.09	0.08	0.09	0.07
industry3	0.19	0.15	0.25	0.17	0.19	0.14	0.18	0.15	0.24	0.17	0.19	0.13
industry4	0.52	0.48	0.58	0.42	0.38	0.49	0.53	0.48	0.59	0.42	0.38	0.50
occupa1 (ref.)	0.46	0.52	0.36	0.66	0.67	0.66	0.47	0.53	0.38	0.69	0.68	0.71
occupa2	0.10	0.13	0.04	0.09	0.12	0.05	0.10	0.13	0.04	0.09	0.11	0.05
occupa3	0.22	0.16	0.31	0.12	0.09	0.18	0.21	0.16	0.30	0.11	0.08	0.16
occupa4	0.23	0.19	0.29	0.12	0.12	0.11	0.23	0.19	0.29	0.11	0.13	0.08
terms1 (ref.)	0.54	0.56	0.52	0.71	0.66	0.80	0.57	0.57	0.56	0.71	0.66	0.83
terms2	0.29	0.29	0.29	0.17	0.20	0.12	0.28	0.29	0.27	0.18	0.20	0.12
terms3	0.17	0.16	0.18	0.12	0.14	0.08	0.15	0.14	0.17	0.11	0.14	0.05
urban	0.83	0.80	0.88	0.59	0.58	0.60	0.82	0.80	0.87	0.58	0.56	0.63
region1 (ref.)	0.19	0.18	0.22	0.10	0.09	0.12	0.20	0.18	0.23	0.11	0.10	0.12
region2	0.36	0.37	0.34	0.15	0.15	0.17	0.34	0.35	0.33	0.13	0.13	0.14
region3	0.24	0.24	0.24	0.63	0.64	0.62	0.25	0.25	0.24	0.65	0.66	0.64
region4	0.21	0.22	0.19	0.11	0.12	0.09	0.21	0.22	0.20	0.10	0.11	0.10

Table A2. Mean covariate values by ethnicity and sex, 2005–11 *(cont.)*

	2009						2008					
	Non-indigenous			Indigenous			Non-indigenous			Indigenous		
	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women
female	0.38	—	—	0.34	—	—	0.38	—	—	0.32	—	—
edu1 (ref.)	0.01	0.01	0.01	0.06	0.03	0.13	0.01	0.01	0.01	0.06	0.03	0.12
edu2	0.07	0.07	0.06	0.17	0.15	0.21	0.07	0.08	0.07	0.19	0.17	0.23
edu3	0.08	0.09	0.07	0.15	0.15	0.14	0.09	0.09	0.07	0.13	0.13	0.12
edu4	0.15	0.17	0.12	0.21	0.22	0.18	0.15	0.17	0.13	0.22	0.23	0.20
edu5	0.28	0.30	0.24	0.24	0.26	0.19	0.29	0.31	0.27	0.22	0.24	0.18
edu6	0.41	0.35	0.49	0.18	0.19	0.14	0.38	0.34	0.45	0.18	0.20	0.15
exppot	16.44	16.99	15.54	22.01	22.14	21.77	16.32	16.90	15.37	21.99	22.60	20.71
exppot2	4.57	4.86	4.10	7.71	7.73	7.67	4.50	4.81	4.00	7.53	7.74	7.10
job_tenure	55.54	54.84	56.70	51.33	55.10	43.99	54.47	55.20	53.30	53.60	57.74	44.86
married	0.25	0.26	0.22	0.30	0.34	0.23	0.25	0.26	0.22	0.30	0.34	0.21
industry1 (ref.)	0.18	0.23	0.08	0.33	0.34	0.32	0.18	0.24	0.09	0.31	0.32	0.28
industry2	0.12	0.14	0.09	0.09	0.10	0.06	0.13	0.15	0.09	0.09	0.10	0.06
industry3	0.19	0.15	0.24	0.17	0.19	0.14	0.18	0.15	0.23	0.19	0.21	0.13
industry4	0.52	0.48	0.59	0.41	0.37	0.48	0.51	0.46	0.59	0.42	0.37	0.52
occupa1 (ref.)	0.47	0.52	0.38	0.68	0.67	0.70	0.46	0.51	0.39	0.69	0.67	0.72
occupa2	0.10	0.14	0.04	0.10	0.13	0.04	0.12	0.16	0.05	0.10	0.13	0.05
occupa3	0.21	0.16	0.29	0.11	0.08	0.15	0.20	0.14	0.28	0.10	0.08	0.14
occupa4	0.23	0.19	0.29	0.12	0.12	0.10	0.22	0.19	0.28	0.12	0.13	0.10
terms1 (ref.)	0.56	0.56	0.56	0.71	0.66	0.81	0.57	0.57	0.58	0.70	0.64	0.82
terms2	0.27	0.29	0.25	0.18	0.21	0.12	0.26	0.28	0.24	0.19	0.22	0.12
terms3	0.16	0.15	0.19	0.11	0.13	0.07	0.16	0.15	0.18	0.12	0.14	0.06
urban	0.84	0.81	0.88	0.57	0.57	0.58	0.83	0.81	0.87	0.62	0.62	0.61
region1 (ref.)	0.21	0.19	0.23	0.11	0.10	0.14	0.21	0.19	0.25	0.12	0.11	0.14
region2	0.34	0.34	0.32	0.12	0.12	0.13	0.33	0.35	0.31	0.14	0.14	0.13
region3	0.25	0.25	0.24	0.65	0.67	0.63	0.25	0.24	0.25	0.62	0.62	0.62
region4	0.21	0.21	0.20	0.11	0.11	0.10	0.21	0.22	0.19	0.12	0.13	0.11

(continued overleaf)

Table A2. Mean covariate values by ethnicity and sex, 2005–11 *(cont.)*

	2007						2006					
	Non-indigenous			Indigenous			Non-indigenous			Indigenous		
	All	Men	Women	All	Men	Women	All	Men	Women	All	Men	Women
female	0.38	—	—	0.32	—	—	0.37	—	—	0.32	—	—
edu1 (ref.)	0.01	0.01	0.02	0.05	0.03	0.11	0.01	0.01	0.01	0.05	0.03	0.10
edu2	0.07	0.08	0.07	0.18	0.16	0.21	0.08	0.08	0.07	0.19	0.18	0.22
edu3	0.09	0.10	0.07	0.15	0.15	0.15	0.10	0.11	0.08	0.15	0.14	0.17
edu4	0.16	0.18	0.13	0.20	0.22	0.16	0.16	0.18	0.13	0.22	0.23	0.20
edu5	0.29	0.31	0.26	0.23	0.26	0.19	0.30	0.32	0.27	0.21	0.24	0.16
edu6	0.37	0.33	0.44	0.18	0.19	0.18	0.35	0.30	0.44	0.17	0.18	0.15
exppot	16.43	17.10	15.37	22.19	22.74	20.99	15.99	16.71	14.77	21.97	22.49	20.88
exppot2	4.51	4.83	3.99	7.54	7.81	6.95	4.34	4.69	3.73	7.48	7.73	6.95
job_tenure	54.95	55.51	54.06	56.13	57.56	53.03	57.30	58.38	55.44	59.38	64.96	47.55
married	0.25	0.27	0.23	0.33	0.37	0.24	0.25	0.27	0.21	0.32	0.36	0.25
industry1 (ref.)	0.18	0.24	0.08	0.32	0.34	0.26	0.21	0.29	0.09	0.34	0.37	0.27
industry2	0.12	0.15	0.09	0.09	0.10	0.07	0.11	0.13	0.08	0.07	0.07	0.07
industry3	0.19	0.15	0.24	0.20	0.21	0.18	0.18	0.14	0.24	0.21	0.23	0.16
industry4	0.51	0.46	0.59	0.39	0.35	0.48	0.50	0.44	0.59	0.39	0.33	0.50
occupa1 (ref.)	0.49	0.54	0.41	0.70	0.69	0.72	0.51	0.57	0.42	0.70	0.70	0.70
occupa2	0.10	0.14	0.05	0.09	0.11	0.05	0.10	0.13	0.04	0.08	0.09	0.05
occupa3	0.19	0.14	0.26	0.08	0.07	0.11	0.18	0.12	0.26	0.09	0.07	0.12
occupa4	0.22	0.18	0.28	0.13	0.13	0.12	0.21	0.17	0.28	0.13	0.13	0.12
terms1 (ref.)	0.58	0.59	0.58	0.70	0.66	0.78	0.61	0.63	0.60	0.72	0.68	0.81
terms2	0.25	0.26	0.24	0.18	0.21	0.12	0.23	0.23	0.23	0.15	0.17	0.11
terms3	0.16	0.15	0.18	0.12	0.14	0.09	0.15	0.14	0.17	0.13	0.16	0.08
urban	0.83	0.80	0.88	0.62	0.60	0.66	0.80	0.76	0.86	0.60	0.57	0.66
region1 (ref.)	0.21	0.20	0.24	0.11	0.10	0.15	0.20	0.18	0.22	0.10	0.08	0.14
region2	0.34	0.35	0.33	0.13	0.12	0.16	0.37	0.38	0.35	0.17	0.17	0.17
region3	0.24	0.24	0.23	0.64	0.67	0.59	0.22	0.22	0.23	0.60	0.61	0.58
region4	0.21	0.21	0.20	0.11	0.12	0.10	0.21	0.23	0.20	0.12	0.13	0.11

Table A2. Mean covariate values by ethnicity and sex, 2005–11 *(concl.)*

	2005					
	Non-indigenous			Indigenous		
	All	Men	Women	All	Men	Women
female	0.36	—	—	0.31	—	—
edu1 (ref.)	0.01	0.01	0.02	0.06	0.03	0.12
edu2	0.08	0.09	0.07	0.20	0.19	0.24
edu3	0.10	0.11	0.09	0.16	0.16	0.13
edu4	0.17	0.19	0.13	0.23	0.23	0.21
edu5	0.30	0.31	0.27	0.21	0.23	0.15
edu6	0.34	0.29	0.42	0.15	0.15	0.15
exppot	16.15	17.01	14.65	22.17	22.67	21.05
exppot2	4.42	4.83	3.69	7.51	7.71	7.08
job_tenure	56.96	58.38	54.45	60.65	67.04	46.25
married	0.26	0.29	0.21	0.33	0.38	0.23
industry1 (ref.)	0.23	0.30	0.10	0.36	0.39	0.30
industry2	0.11	0.12	0.09	0.07	0.08	0.05
industry3	0.19	0.15	0.25	0.20	0.21	0.17
industry4	0.48	0.43	0.57	0.37	0.33	0.48
occupa1 (ref.)	0.52	0.57	0.43	0.70	0.69	0.72
occupa2	0.10	0.13	0.05	0.10	0.13	0.04
occupa3	0.17	0.13	0.24	0.09	0.08	0.12
occupa4	0.21	0.17	0.28	0.11	0.11	0.12
terms1 (ref.)	0.62	0.63	0.61	0.71	0.66	0.81
terms2	0.22	0.23	0.22	0.17	0.20	0.11
terms3	0.15	0.14	0.17	0.12	0.14	0.08
urban	0.79	0.75	0.84	0.57	0.54	0.63
region1 (ref.)	0.15	0.13	0.17	0.07	0.06	0.09
region2	0.38	0.38	0.39	0.18	0.18	0.17
region3	0.24	0.24	0.24	0.63	0.63	0.62
region4	0.23	0.24	0.20	0.13	0.13	0.11

Note: Individuals aged 14 and above.
Source: ENAHO 2005–11.

Appendix B. Wage gap decomposition

Table B1.1. Neumark decompositions of the ethnic mean observed log hourly wage gap, 2011 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.278**	**0.183**	**0.498**
Explained (%)	**86.8**	**89.2**	**88.9**
Female	–6.2	—	—
Human capital characteristics	30.4	22.8	30.9
Of which:			
Education	39.2	38.4	35.4
Experience	–8.8	–15.8	–4.1
Job tenure	0.1	0.2	–0.4
Marital status	–1.1	–2.1	–0.4
Job characteristics	31.1	23.4	38.7
Of which:			
Industry	–4.4	–1.2	–7.1
Occupation	16.7	10.5	21.1
Terms of employment	18.8	14.1	24.6
Location	32.5	45.1	19.8
Unexplained (%)	**13.2**	**10.8**	**11.1**
Of which:			
Non-indigenous treatment advantage	1.9	1.7	1.5
Indigenous treatment disadvantage	11.3	9.1	9.6

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2011.

Table B1.2. Neumark decompositions of the ethnic mean observed log hourly wage gap, 2010 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.322**	**0.244**	**0.527**
Explained (%)	**82.5**	**74.2**	**96.0**
Female	–6.3	—	—
Human capital characteristics	30.9	21.6	33.9
Of which:			
Education	40.0	36.2	37.3
Experience	–9.2	–14.6	–3.7
Job tenure	0.0	0.0	0.3
Marital status	–1.0	–2.3	–0.1
Job characteristics	28.3	15.1	43.1
Of which:			
Industry	–3.0	–0.5	–5.7
Occupation	14.2	5.3	23.0
Terms of employment	17.1	10.3	25.8
Location	30.6	39.8	19.1
Unexplained (%)	**17.5**	**25.8**	**4.0**
Of which:			
Non-indigenous treatment advantage	2.7	4.4	0.6
Indigenous treatment disadvantage	14.7	21.5	3.4

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2010.

Table B1.3. Neumark decompositions of the ethnic mean observed log hourly wage gap, 2009 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.325**	**0.231**	**0.536**
Explained (%)	**84.1**	**76.6**	**91.9**
Female	–4.3	—	—
Human capital characteristics	28.7	18.6	34.9
Of which:			
Education	37.5	33.3	36.1
Experience	–9.0	–14.7	–2.4
Job tenure	0.2	0.0	1.1
Marital status	–1.0	–2.3	–0.1
Job characteristics	31.3	23.6	35.1
Of which:			
Industry	–4.2	–0.1	–10.7
Occupation	17.6	9.9	23.2
Terms of employment	17.9	13.8	22.6
Location	29.4	36.8	21.9
Unexplained (%)	**15.9**	**23.4**	**8.1**
Of which:			
Non-indigenous treatment advantage	2.5	3.9	1.2
Indigenous treatment disadvantage	13.4	19.6	7.0

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2009.

Table B1.4. Neumark decompositions of the ethnic mean observed log hourly wage gap, 2008 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.337**	**0.258**	**0.557**
Explained (%)	**79.2**	**72.4**	**91.7**
Female	–6.4	—	—
Human capital characteristics	28.5	17.2	38.8
Of which:			
Education	39.4	30.2	45.9
Experience	–10.9	–12.8	–7.6
Job tenure	0.1	–0.2	0.5
Marital status	–1.5	–3.6	0.2
Job characteristics	27.5	18.1	34.0
Of which:			
Industry	–4.6	–2.3	–7.5
Occupation	17.8	11.0	21.4
Terms of employment	14.3	9.4	20.2
Location	31.1	40.7	18.7
Unexplained (%)	**20.8**	**27.6**	**8.3**
Of which:			
Non-indigenous treatment advantage	3.2	4.6	1.1
Indigenous treatment disadvantage	17.5	23.0	7.2

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2008.

Table B1.5 Neumark decompositions of the ethnic mean observed log hourly wage gap, 2007 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.351**	**0.281**	**0.555**
Explained (%)	**79.2**	**76.7**	**86.8**
Female	–6.7	—	—
Human capital characteristics	23.3	14.3	30.2
Of which:			
Education	34.8	28.1	37.3
Experience	–11.4	–13.6	–7.1
Job tenure	–0.1	–0.2	0.1
Marital status	–1.3	–2.4	–0.2
Job characteristics	27.1	19.3	33.4
Of which:			
Industry	–3.4	0.0	–8.8
Occupation	16.3	9.8	20.8
Terms of employment	14.3	9.5	21.5
Location	36.9	45.6	23.3
Unexplained (%)	**20.8**	**23.3**	**13.2**
Of which:			
Non-indigenous treatment advantage	3.4	4.1	1.8
Indigenous treatment disadvantage	17.4	19.2	11.4

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2007.

Table B1.6. Neumark decompositions of the ethnic mean observed log hourly wage gap, 2006 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.325**	**0.245**	**0.522**
Explained (%)	**74.7**	**68.8**	**85.1**
Female	–4.5	—	—
Human capital characteristics	26.7	17.7	33.0
Of which:			
Education	41.3	36.0	43.8
Experience	–14.4	–17.2	–11.1
Job tenure	–0.2	–1.0	0.2
Marital status	–1.8	–2.9	–0.7
Job characteristics	22.5	12.1	34.0
Of which:			
Industry	–6.1	–5.7	–7.4
Occupation	16.3	11.5	19.6
Terms of employment	12.3	6.2	21.8
Location	31.7	41.9	18.8
Unexplained (%)	**25.3**	**31.2**	**14.9**
Of which:			
Non-indigenous treatment advantage	4.3	5.6	2.2
Indigenous treatment disadvantage	21.0	25.6	12.7

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2006.

Table B1.7. Neumark decompositions of the ethnic mean observed log hourly wage gap, 2005 (OLS estimates)

	All	Men	Women
Ethnic mean observed log hourly wage gap	**0.307**	**0.217**	**0.547**
Explained (%)	**77.4**	**73.7**	**83.6**
Female	–5.7	—	—
Human capital characteristics	24.1	15.6	29.7
Of which:			
Education	42.1	38.7	40.8
Experience	–17.7	–22.2	–11.4
Job tenure	–0.3	–0.9	0.4
Marital status	–1.7	–4.4	–0.1
Job characteristics	25.5	15.0	33.2
Of which:			
Industry	–5.5	–4.4	–6.9
Occupation	18.9	14.0	20.8
Terms of employment	12.1	5.4	19.3
Location	35.2	47.5	20.8
Unexplained (%)	**22.6**	**26.3**	**16.4**
Of which:			
Non-indigenous treatment advantage	3.9	4.9	2.5
Indigenous treatment disadvantage	18.7	21.5	13.9

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.

Source: ENAHO 2005.

Table B2.1. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2011

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.313**	**0.212**	**0.546**	**0.221**	**0.133**	**0.417**	**0.217**	**0.134**	**0.422**
Explained (%)	**77.7**	**74.9**	**81.8**	**88.4**	**93.4**	**91.5**	**85.8**	**96.8**	**83.4**
Female	–5.3	—	—	–7.6	—	—	–7.7	—	—
Human capital characteristics	28.8	21.4	29.1	33.7	28.6	33.6	31.7	26.9	28.6
Of which:									
Education	33.2	29.9	32.1	41.7	46.2	36.3	45.9	55.2	36.6
Experience	–4.4	–8.3	–3.0	–8.1	–18.6	–2.6	–14.3	–28.5	–7.2
Job tenure	0.0	–0.2	0.0	0.1	1.0	–0.2	0.1	0.2	–0.7
Marital status	–0.8	–2.0	–0.3	–1.6	–2.4	–0.7	–1.3	–1.8	–0.7
Job characteristics	23.7	16.7	33.5	30.8	22.1	37.9	35.3	25.3	39.8
Of which:									
Industry	–6.1	–1.2	–7.3	–6.1	–2.4	–11.0	–3.8	–1.6	–9.6
Occupation	13.0	6.4	16.9	16.6	8.3	23.4	19.1	11.9	25.6
Terms of employment	16.8	11.5	24.0	20.3	16.2	25.5	20.1	15.1	23.8
Location	31.2	38.8	19.5	33.0	45.2	20.7	27.9	46.4	15.6
Unexplained (%)	**22.3**	**25.1**	**18.2**	**11.7**	**6.6**	**8.5**	**14.2**	**3.2**	**16.6**
Of which:									
Non-indigenous treatment advantage	2.9	1.6	2.5	0.7	2.0	–0.2	0.1	–1.1	0.5
Indigenous treatment disadvantage	19.4	23.5	15.7	10.9	4.6	8.7	14.1	4.3	16.1

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2011.

Table B2.2. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2010

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.329**	**0.231**	**0.532**	**0.284**	**0.191**	**0.490**	**0.286**	**0.203**	**0.489**
Explained (%)	**80.3**	**73.3**	**94.7**	**79.7**	**76.9**	**93.2**	**80.8**	**81.8**	**91.8**
Female	–5.7	—	—	–7.1	—	—	–6.8	—	—
Human capital characteristics	30.6	20.4	35.8	31.4	25.7	34.5	32.0	23.4	36.1
Of which:									
Education	38.0	33.2	38.1	42.3	44.7	38.2	45.1	41.9	41.3
Experience	–7.5	–12.8	–3.1	–10.8	–19.1	–4.3	–13.1	–18.5	–5.3
Job tenure	0.1	0.0	0.9	0.0	0.1	0.7	0.0	0.1	0.1
Marital status	–0.9	–2.2	–0.1	–0.7	–1.4	0.0	–1.0	–2.1	–0.1
Job characteristics	24.9	14.0	38.6	27.5	12.8	40.0	30.0	18.7	40.7
Of which:									
Industry	–4.1	–1.5	–4.8	–4.0	–1.2	–8.6	–1.4	0.1	–9.0
Occupation	12.9	4.9	19.4	16.2	4.2	25.6	14.2	6.8	24.6
Terms of employment	16.0	10.6	24.0	15.3	9.8	23.1	17.2	11.8	25.0
Location	31.3	41.1	20.3	28.5	39.7	18.6	26.5	41.8	15.1
Unexplained (%)	**19.8**	**26.7**	**5.4**	**20.3**	**23.1**	**6.8**	**19.2**	**18.2**	**8.2**
Of which:									
Non-indigenous treatment advantage	3.5	4.3	0.9	2.4	4.1	0.4	1.7	2.2	0.1
Indigenous treatment disadvantage	16.2	22.5	4.5	18.0	19.0	6.4	17.5	16.0	8.1

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2010.

Table B2.3. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2009

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.295**	**0.175**	**0.551**	**0.288**	**0.209**	**0.446**	**0.313**	**0.234**	**0.480**
Explained (%)	**84.7**	**86.2**	**87.8**	**84.4**	**74.2**	**100.2**	**81.2**	**71.5**	**95.9**
Female	–4.7	—	—	–4.7	—	—	–4.4	—	—
Human capital characteristics	32.0	26.9	36.8	30.9	20.8	37.6	29.6	20.6	37.0
Of which:									
Education	40.0	38.9	37.4	40.8	34.7	40.1	38.5	35.2	42.0
Experience	–8.4	–12.0	–1.7	–10.3	–13.9	–3.8	–9.0	–14.7	–5.7
Job tenure	0.5	0.0	1.1	0.4	0.0	1.4	0.1	0.0	0.6
Marital status	–0.9	–3.3	0.0	–1.2	–2.5	–0.1	–1.5	–2.1	–0.1
Job characteristics	28.3	22.3	28.8	30.2	21.8	36.1	33.0	24.1	37.0
Of which:									
Industry	–7.4	–2.2	–14.8	–3.9	2.5	–17.5	–1.6	2.4	–12.7
Occupation	17.0	6.9	20.4	17.2	7.2	28.9	17.8	10.1	26.3
Terms of employment	18.7	17.6	23.3	16.9	12.1	24.8	16.7	11.6	23.4
Location	29.9	40.4	22.2	29.1	34.2	26.6	24.5	28.9	22.0
Unexplained (%)	**15.3**	**13.8**	**12.2**	**15.7**	**25.8**	**–0.2**	**18.8**	**28.5**	**4.1**
Of which:									
Non-indigenous treatment advantage	2.8	1.0	1.6	2.1	5.1	0.8	2.5	3.2	–0.4
Indigenous treatment disadvantage	12.5	12.8	10.7	13.6	20.7	–1.1	16.4	25.3	4.6

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2009.

Table B2.4. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2008

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.335**	**0.231**	**0.586**	**0.294**	**0.209**	**0.527**	**0.331**	**0.262**	**0.510**
Explained (%)	**77.4**	**74.9**	**86.3**	**80.7**	**79.8**	**85.7**	**76.6**	**68.7**	**93.1**
Female	–6.6	—	—	–7.1	—	—	–6.3	—	—
Human capital characteristics	28.8	20.8	33.7	30.5	19.8	36.2	28.3	16.7	44.3
Of which:									
Education	37.3	30.4	39.4	41.9	34.7	41.7	40.3	29.1	56.0
Experience	–8.6	–9.3	–6.3	–11.5	–14.6	–6.0	–12.0	–12.3	–11.6
Job tenure	0.1	–0.3	0.7	0.0	–0.2	0.5	0.0	–0.1	–0.1
Marital status	–1.5	–4.2	0.2	–1.7	–3.8	0.2	–1.1	–3.1	0.1
Job characteristics	22.7	14.9	31.4	27.3	16.6	32.3	26.7	17.1	31.8
Of which:									
Industry	–6.1	–3.8	–7.8	–5.1	–4.4	–10.4	–3.7	–2.7	–11.0
Occupation	15.6	9.1	18.1	18.5	12.1	23.0	17.6	11.3	23.8
Terms of employment	13.2	9.6	21.2	13.9	9.0	19.7	12.8	8.4	19.0
Location	34.0	43.5	21.0	31.7	47.2	16.9	29.0	38.0	16.9
Unexplained (%)	**22.6**	**25.1**	**13.7**	**19.3**	**20.2**	**14.3**	**23.4**	**31.3**	**6.9**
Of which:									
Non-indigenous treatment advantage	3.3	1.2	1.4	2.8	4.5	1.0	3.7	7.8	0.5
Indigenous treatment disadvantage	19.3	23.9	12.2	16.5	15.7	13.3	19.8	23.5	6.4

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2008.

Table B2.5. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2007

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.348**	**0.276**	**0.573**	**0.327**	**0.247**	**0.516**	**0.338**	**0.288**	**0.536**
Explained (%)	**75.1**	**76.8**	**81.4**	**76.1**	**77.3**	**85.3**	**75.2**	**67.7**	**85.8**
Female	–7.3	—	—	–6.9	—	—	–5.8	—	—
Human capital characteristics	22.0	13.1	29.1	22.3	14.6	31.5	23.2	14.0	32.8
Of which:									
Education	31.8	23.8	35.0	34.8	29.8	39.4	37.1	29.3	42.1
Experience	–9.6	–10.4	–5.9	–12.3	–15.0	–8.0	–13.9	–15.2	–9.4
Job tenure	–0.2	–0.4	0.1	–0.1	–0.2	0.1	–0.1	–0.1	0.0
Marital status	–1.3	–2.6	–0.2	–1.4	–2.1	–0.2	–1.5	–2.4	–0.2
Job characteristics	21.9	15.8	29.0	26.7	17.2	32.3	27.3	17.3	32.4
Of which:									
Industry	–6.5	–1.3	–12.3	–4.7	–2.1	–13.9	–2.6	–0.2	–9.7
Occupation	14.8	8.2	17.0	17.7	10.2	24.2	16.4	8.5	26.0
Terms of employment	13.6	8.9	24.3	13.7	9.1	22.0	13.6	9.0	16.1
Location	39.8	50.5	23.5	35.4	47.6	21.8	32.0	38.8	20.9
Unexplained (%)	**24.9**	**23.2**	**18.6**	**23.9**	**22.7**	**14.7**	**24.8**	**32.3**	**14.2**
Of which:									
Non-indigenous treatment advantage	3.0	4.2	2.0	3.8	3.6	1.6	3.2	4.3	1.3
Indigenous treatment disadvantage	21.9	19.0	16.6	20.1	19.2	13.1	21.6	28.1	12.9

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2007.

Table B2.6. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2006

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.273**	**0.195**	**0.488**	**0.293**	**0.194**	**0.490**	**0.313**	**0.254**	**0.513**
Explained (%)	**82.4**	**80.5**	**88.4**	**74.3**	**77.4**	**85.3**	**72.6**	**58.4**	**82.2**
Female	–5.9	—	—	–5.0	—	—	–4.1	—	—
Human capital characteristics	29.9	19.6	34.7	26.7	19.9	34.5	25.2	15.8	30.5
Of which:									
Education	45.6	40.4	43.7	39.9	38.4	46.6	40.3	33.6	42.5
Experience	–15.4	–19.4	–9.4	–13.0	–17.4	–12.1	–15.0	–17.1	–12.2
Job tenure	–0.3	–1.4	0.4	–0.2	–1.1	0.0	–0.1	–0.7	0.2
Marital status	–1.7	–2.1	–0.8	–1.4	–2.9	–0.4	–1.8	–2.4	–0.6
Job characteristics	22.4	8.1	32.8	20.7	9.3	32.4	23.9	11.8	36.8
Of which:									
Industry	–11.6	–11.6	–13.8	–7.4	–9.8	–10.9	–4.3	–4.4	–3.3
Occupation	19.9	11.9	22.9	16.2	12.3	21.2	15.8	11.5	19.4
Terms of employment	14.1	7.8	23.6	11.9	6.8	22.1	12.4	4.7	20.7
Location	37.7	54.9	21.6	33.3	51.1	18.8	29.4	33.3	15.6
Unexplained (%)	**17.6**	**19.5**	**11.6**	**25.7**	**22.6**	**14.7**	**27.4**	**41.6**	**17.8**
Of which:									
Non-indigenous treatment advantage	2.0	1.5	1.7	4.3	5.3	1.6	4.6	7.9	0.7
Indigenous treatment disadvantage	15.6	18.0	10.0	21.4	17.3	13.1	22.8	33.6	17.0

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2006.

Table B2.7. Neumark decompositions of the ethnic predicted log hourly wage gap by quartile, 2005

	First quartile			Median			Third quartile		
	All	Men	Women	All	Men	Women	All	Men	Women
Ethnic predicted log hourly wage gap	**0.265**	**0.179**	**0.516**	**0.279**	**0.183**	**0.474**	**0.300**	**0.218**	**0.503**
Explained (%)	**86.1**	**82.5**	**86.7**	**78.3**	**76.0**	**91.1**	**77.3**	**73.7**	**83.3**
Female	–6.6	—	—	–6.3	—	—	–5.4	—	—
Human capital characteristics	26.5	12.4	31.9	25.9	17.1	31.7	25.1	17.5	32.4
Of which:									
Education	46.5	40.8	41.4	42.7	38.9	44.1	43.3	41.2	45.5
Experience	–19.6	–27.3	–10.2	–16.4	–20.4	–13.0	–18.0	–23.1	–13.2
Job tenure	–0.4	–1.2	0.7	–0.4	–1.4	0.6	–0.2	–0.6	0.2
Marital status	–1.9	–4.1	–0.2	–1.5	–3.5	–0.1	–1.1	–2.9	0.0
Job characteristics	22.6	9.1	32.6	24.6	14.5	37.9	26.3	17.2	33.1
Of which:									
Industry	–12.3	–11.1	–10.9	–8.5	–6.5	–10.8	–3.3	–2.7	–8.0
Occupation	20.6	13.9	20.4	20.8	15.4	27.6	18.3	15.4	22.3
Terms of employment	14.3	6.3	23.1	12.3	5.5	21.1	11.3	4.6	18.8
Location	45.5	65.2	22.5	35.5	47.9	21.7	32.3	41.9	17.8
Unexplained (%)	**13.9**	**17.5**	**13.3**	**21.7**	**24.1**	**9.0**	**22.8**	**26.3**	**16.7**
Of which:									
Non-indigenous treatment advantage	4.2	4.0	2.4	4.4	5.3	0.8	3.2	6.0	3.7
Indigenous treatment disadvantage	9.8	13.5	10.9	17.3	18.7	8.1	19.5	20.3	12.9

Note: Individuals aged 14 and above. Positive value indicates advantage to non-indigenous and negative sign indicates advantage to indigenous.
Source: ENAHO 2005.