# The Economics of Social Exclusion in Peru: An Invisible Wall?[1]

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## 1. Introduction

Social exclusion is a concept that recognizes the multidimensional character of deprivation and poverty. Many groups in society are subject of economic, political or cultural exclusion through different mechanisms and institutions. In an economic perspective, they may be excluded from markets for certain goods and services developing a process that may affect economic outcomes through different channels. For example, it may affect the access to public and private assets (education, physical, financial, or organizational capital). It may also affect the rate of return of those assets: for instance, similarly educated people may show differences in their economic returns, obtained from education, if there is occupational segregation or if certain groups do not have access to better paid jobs.

Social exclusion in the access to different markets is a crucial issue in a multiracial and multilingual country as Peru. Discrimination and exclusion related to ethnicity, culture, physical appearance and religion are very notorious but at the same time it is a subtle phenomenon. Indigenous or ethnic minorities are more likely to be poor than any other group. While overall poverty rate is 54% (according to the 2000 LSMS), the poverty rate of the population whose mother's tongue is Quechua, Aymara or other native language is 70%. Moreover, more than 75% of this group can be found in the three bottom deciles of the income distribution.

Many studies account for the various forms of social exclusion that take place in Peru. Gender discrimination has been studied in reference to the access of women to political leadership (Alfaro, 1996); in educational enrollment and attainment (Oliart, 1989; Rossetti, 1989; Guillén, Soto and Yáñez, 1996; and Mendoza, 1995), and in labor participation and wage differentials (Guzmán, 1987 and Saavedra, 1997]. Ethnic discrimination has also been studied, usually through case studies. Callirgos (1993) gives a global overview of the origins and particular characteristics on the Peruvian racism. Oliart (1989), Pozzi (1989), Callirgos (1993), and Mendoza (1993) tried to tackle ethnic and cultural discrimination. Finally, using case studies Sulmont (1995) has documented some of the elements of social exclusion that may be present in Peruvian labor markets.

This brief literature review shows that racial, ethnic and cultural discrimination has been the focus of attention of numerous sociological and anthropological studies and debates. However, many unanswered questions remain, in particular regarding the economic effects of social exclusion.

Despite of the obvious importance of the topic for a country like Peru, there are very few data sources that can capture ethnic discrimination, and empirical work that tries to tackle exclusion and discrimination issues from a quantitative perspective is very scarce. Most of the work that has been done tries to approximate racial and ethnic discrimination with supposedly easily observable variables, in most of the cases, mother tongue as in several of the World Bank studies. MacIsaac (1993), for instance, finds that more than 80% of non-indigenous people -defined as those whose mother tongue is Spanish- have access to public water supply or access to electricity while less than 45% of indigenous people -defined as those whose mother tongue is Quechua or Aymara- have access to the same type of public services; and that years of schooling is 8.1 for non-indigenous people and 5.5 for indigenous people, just to mention two of the most striking differences. World Bank (1999) shows that, controlling for other covariates, the marginal effect of ethnic background, again using as a proxy mother's

tongue, over learning outcomes is significant. In particular, Quechua speaking students tend to do worse in school than Spanish speakers. Interestingly, there seems to be not a significant difference in educational attainment between those with Aymara background and Spanish speakers. Own calculations using the 1993 Census data shows that over-aged student rates, that is the percentage of students that are in a grade below from what is expected for their age, is considerably larger in indigenous population than in native Spanish speaker population. Other studies (Glewwe, 1988 and World Bank, 1999) show that if the head of household has an indigenous background, other things equal, the budget share of food and education will be higher.

However, the approximation of ethnicity using mother tongue is clearly incomplete, as there are ethnic differences within the Spanish and Quechua speaking populations. In this research , ethnicity is approximated using variables related to several dimensions of the concept, such as mother tongue, parental background, race, and religion[4]. Specifically, in the case of race, we approximate it using indicators based on self-report data and pollsters' data.[5]

The following sections summarize the findings of a project aimed to study the extent and consequences of certain aspects of social exclusion. It is studied, how some groups may be explicitly or implicitly excluded from acquiring education and credit, the elements behind the impossibility of certain groups of improving their well being by their own. This is probably one of the factors that explain the high level of inequality in Peru. The effect of ethnic exclusion over earnings [6] is also studied. Learning how these forms of exclusion impact on the access to opportunities for socioeconomic advancement and also how it could increase the probability of discrimination will shed light on the discussion and on potential elements for the formulation of policies.


## 2. Measuring Ethnicity

In the anthropology literature, the concept of ethnicity is defined in a general way as the community of individuals that share cultural elements and that organize their daily life around these. Generally it is associated with the idea of native communities that are isolated or that have a reduced contact with other communities. In urban settings, ethnic characteristics are associated, in a complex and hotly debated relationship, with culture, religion, language, traditions and race, among other dimensions.

As mentioned above, we use information on mother tongue, religion and parental background to approximate ethnic differences. A more complex issue is the use of race indicators. Several disciplines debate the complex interplay that exists between race and ethnicity. Here, it is recognized that there is a social construction called race that is for many researchers one dimension of ethnicity. Race, together with other ethnic characteristics, may generate differences among people that may have measurable consequences over economic opportunities. In order to approximate what can be called racial differences a score-based procedure was used. Each individual received a score for each of the four categories Asiatic, White, Indigenous, and Black. These are groups that are more easily recognized by people as

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[4] Other attempts to approximate ethnic characteristics are found in some household surveys. As an example, the last Living Standards Measurement Survey (LSMS 2000) inquires about racial characteristics. More than 98% of the rural population is self-reported as "Mestiza" (mixed race), and only a tiny percentage of the sample self-report themselves as Indigenous, Asian, Black or White.

[5] See  Angel and Gronfein (1998) and Anderson,  Silver and  Abramson (1998).

[6] For details on the analysis for  each of the market see Escobal, and Torero(2002) for credit market, Saavedra, and Torero(2002) for education market and Ñopo, Saavedra, and Torero (2002) for the labor market.

distinct racial groups. Scores were given by each individual and independently by the pollster. This score went from 0 to 10, with zero meaning that the individual did not have physical characteristics that resembled a say, Indian and 10 if she had mostly all the features of that group. With these continuous racial intensity indicators, it was possible to characterize a person as a *mestizo*, but within that category, there could still be possible racial variance. For certain econometric procedures, it was also useful to discretize our continuous measure and identify three different groups: "indigenous", "whites" and "*mestizos*"[7].

The self-report of race has been used in other countries with some success due to the fact that the classification of races in other places tends to be easier or more direct (see Hirshman and Alba, 1998 and Telles and Lima, 1998). In contrast, in the Peruvian case the majority of the population tends to define themselves as *"Mestiza"*, category which include people who actually have very different characteristics and are perceived by the others also as very different. A second source of information, was used, the pollsters' perception, it is a technique supported by arguments as the ones exposed by Angel and Gronfein (1998) and Anderson, Silver and Abramson (1998). Due to the fact that this method might be also subjected to various criticisms, an intensive pre-fieldwork training carried out to try to reduce the problems associated to the inter-observer reliability, as suggested by Boergerhoff-Mulder and T. M. Caro (1985) and using photography's as instruments to standardize the pollsters reporting following Allport and Kramer (1946), Scodel and Austrin, (1957), and Toch, Rabin and Wilkins (1962).

There are three additional aspects through which ethnic characteristics were captured. First, language, a variable that has been typically used as the sole indicator of ethnicity in many labor studies in Latin America. Here language information is used for the own individual and for his/ her parents. The second aspect is migration, short term (5 years or less) migration and the migration from the place of origin was considered, this is important in Peru due to the migratory process that took place in this country during the last 50 years. Finally, the religion that the individual professes is relevant due to the increase of new confessions - many of Protestant origin and other adapted ones in function of the local idiosyncrasy - that have been taking place specifically among the poorest sectors of Peruvian society.

*The Data.*

The data used comes from the urban households of the LSMS for 2000 and from an additional module carried out by GRADE in 2001. The latter was applied to a significant fraction of the urban household members with eighteen years old or older and was designed to explore in depth the racial and ethnic characteristics[8].

A novel and interesting feature of this additional module is the way the "race" variable was surveyed as previously mentioned. The race of each individual had been considered as a four-dimensional vector (White, Indigenous, Black and Asian) with an ordinal measure of intensity in each dimension. For example, a predominantly white individual will be one with intensities

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[7] Also Asian and Black were identified but the sample sizes were too small.

[8] The module covered the 70% of the original people surveyed (5,700 individuals) and there were not significant differences in the main characteristics of the sample with the total population because of the 30% of cases lost by attrition. In addition, the special module elaborated for this project included questions regarding physical characteristics, linguistic uses, geographic origin, religious habits, information related to its parents (mother tongue, geographic origin, religion and education). The survey also included a section dedicated to questions about credit, the ability to have access to social capital of the people surveyed and their cultural consumption. Finally, questions related to discrimination episodes were included. For more detail on the module see Ñopo, Saavedra, Torero (2002).

7, 1, 0 and 1 for the categories White, Indigenous, Black and Asian respectively. An example of a predominantly indigenous individual will be one with intensities 2, 8, 0 and 1 in the same dimensions. With this feature, we are able to capture better the racial diversity and the different degrees of "mestizaje" present in the Peruvian society.

Graph 1 shows the distribution of the different race categories by intensity, using the perceptions of the pollsters. As observed, the white intensity distribution is skewed towards the right, suggesting that the majority of individuals are characterized by pollsters as having some white characteristics, but are not predominantly white, while the indigenous intensity distribution is more centered. Due to the fact that populations with a strong Asian or Black ancestry are relatively small, the LSMS is not necessarily representative of these groups. Still, a small number of individuals have, according to the pollsters perceptions racial features that characterize these groups.

## Graph 1

### Racial Intensity Distributions in Urban Peru - Pollster's Perception
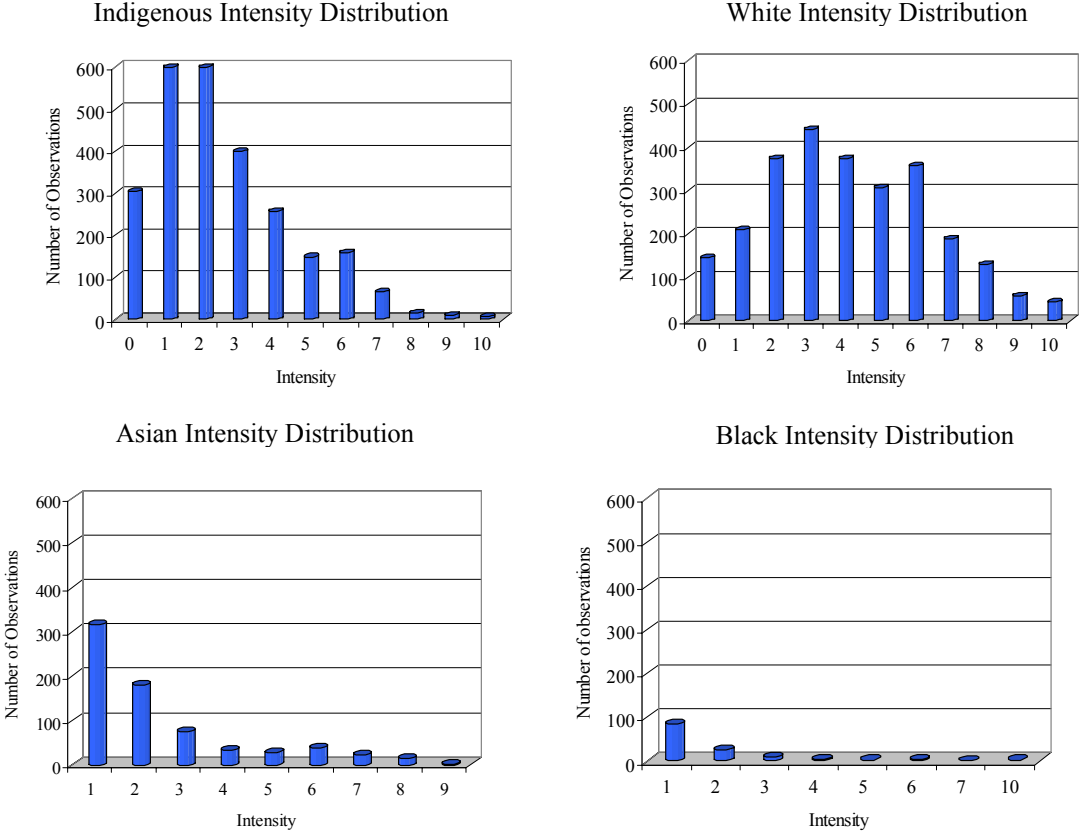


Indigenous Intensity Distribution

White Intensity Distribution

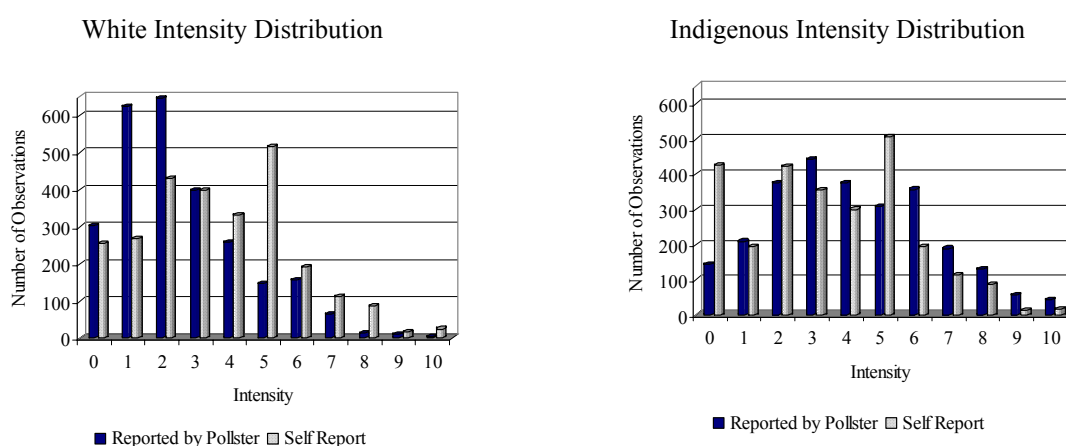Asian Intensity Distribution

Black Intensity Distribution

Elaboration: Own
Source: Living Standard Measurement Survey (ENNIV 2000) and Additional Ethnic Module
Note: "0" is not reported for the intensity distributions in the Asian and Black dimension given that this value represent the vast majority of observations.

One immediate implication of this will be our inability to establish statistical regularities regarding these latter groups. Consequently, we will concentrate the discussion on the consequences of racial differences among people with white and indigenous traits. In some statistical application where it is informative to divide the sample in groups, these three analytical categories are used: predominantly white, predominantly indigenous and *mestizo*.

As it is documented in the literature and as shown in Graph 2, there are significant differences between the race variable self-reported by the individuals surveyed and the same variable reported by the pollster. The self reported white intensity distribution is skewed to the right of the same distribution reported by the trained pollster, while the self-reported indigenous intensity distribution is skewed to the left of the same distribution reported by the pollster. Overall, respondents tend to score themselves with higher values of white intensity and lower values of indigenous intensities than pollsters. This suggests that pollsters tend to trace indigenous characteristics systematically more frequently than respondents. That is, individuals consider themselves "less indigenous" than they are actually perceived by pollsters.

**Graph 2**
**Comparison between Race Reported by Pollster and Self Reported**

White Intensity Distribution                    Indigenous Intensity Distribution



Another interesting issue of the distribution of the self-reported intensity is the considerable share of population self-reporting themselves as having a median intensity of 5. This may be considered just as a consequence of the lack of judging elements that individuals have at the moment to classify themselves. They perceive themselves as a mixture of races and so they report themselves as having a median intensity, but it is hard for them to differentiate among the other possible intensities. Given that in this paper the main objective is to identify the dimension of exclusion over observed ethnic characteristics and not of self-exclusion, we will concentrate on the pollster scores rather than the self reported scores. Although, this differences could have strong implications on the quantification of the racial wage gaps, the probability of access to credit or education attainment[9].

It is important to note that the use of racial intensities as part of the set of variables that characterize an individual may be seen by sociologists and anthropologists as an artificial construct. We are relying in the fact that people associate the words White, Indigenous,

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[9] As it is shown by Tellez (1998) for the Brazilian case, while the White-Brown gap is around 26% using the pollster perception, it is reduced to 17% if the self-report is used (both gaps are calculated controlling for human capital and labour market characteristics).

Black and Asian, for reasons  that we do not try to understand here, with different sets of phenotypic characteristics. Given other individual traits, these characteristics, as perceived by a third person, may or may not be associated to other socioeconomic variables or outcomes. If we find that these characteristics together with other ethnicity related variables explain part of the differences in schooling, access to credit or earnings, it will imply that there is evidence of discrimination or that these indicators are capturing unobservables that are correlated with race, or at least with the perception that a second person has regarding the race of the subject that is being analyzed.  Race, together with other ethnic related characteristics, may have real effects, which will be approximated, without dwelling into the specific sociological or economic mechanisms behind.

### 3.  How important are Ethnicity Differences in Access to Education, Credit and Income?

Table 1 shows levels for a set of demographic and ethnicity related variables and their interaction with race intensity indicators along the White and Indigenous dimensions. Quintiles are defined dividing the sample according to the ranking implicit in the intensity scores given by the pollster.  Individuals perceived as predominantly White report higher levels of education, and a smaller family size (fewer children). Individuals that are predominantly Indigenous are less educated, and have more children.

Individuals perceived as having more Indigenous features report more frequently that their mother tongue is a native language, they are slightly more likely to be Christian non catholic, and they are much more likely to be migrants.  Regarding parental background, as the White intensity increases, mother's education is notoriously higher , and the likelihood of the mother having a native language as a mother tongue is lower.

Graph 3 shows a correlation between the racial intensities and poverty. In the horizontal axis the intensities of race as perceived by the pollster are reported and on the vertical axis the average poverty rate. It is clear that the higher the intensity of White the less poor are the households, and even this difference increases as the race differences between White and Indigenous increase.
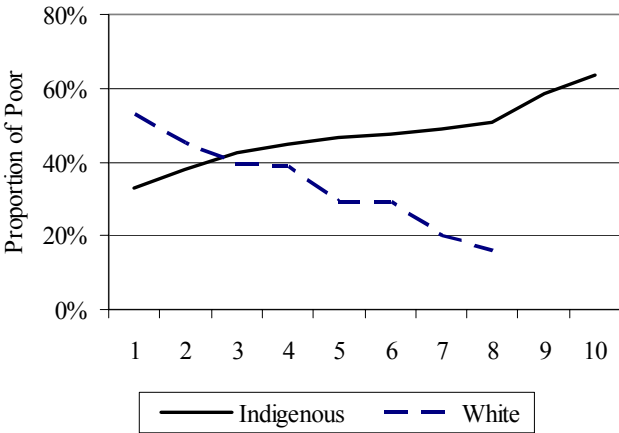
**Graph 3**
**Poverty Index**

**Table 1    Descriptive Statistics by Quintiles of Racial Intensity**

| | White | | | | | | Indigenous | | | | |
| | Quintile of Racial Intensity | | | | | | Quintile of Racial Intensity | | | | |
| | First | Second | Third | Fourth | Fifth | | First | Second | Third | Fourth | Fifth |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PERSONAL AND FAMILY CHARACTERISTICS** | | | | | | | | | | | |
| Education (Years of schooling) | 8.9 | 10.0 | 10.7 | 11.1 | 11.3 | | 11.6 | 10.9 | 10.2 | 10.3 | 8.8 |
| Family size | 5.8 | 5.6 | 5.7 | 5.6 | 5.2 | | 5.5 | 5.7 | 5.8 | 5.5 | 5.7 |
| Number of children | 2.9 | 2.7 | 2.7 | 2.7 | 2.5 | | 2.5 | 2.7 | 2.8 | 2.8 | 2.8 |
| | | | | | | | | | | | |
| **ETHNIC NON - LABOUR RELATED CHARACTERISTICS** | | | | | | | | | | | |
| **MOTHER TONGUE** | | | | | | | | | | | |
| Spanish | 82.8% | 86.3% | 93.5% | 94.4% | 96.5% | | 97.4% | 96.9% | 95.3% | 83.2% | 79.0% |
| Native language | 17.2% | 13.7% | 6.5% | 5.6% | 3.5% | | 2.6% | 3.1% | 4.7% | 16.8% | 21.0% |
| **RELIGION** | | | | | | | | | | | |
| Catholic | 84.6% | 86.3% | 88.1% | 87.1% | 90.2% | | 90.9% | 89.6% | 83.7% | 86.3% | 84.6% |
| Christian non Catholic | 13.4% | 11.5% | 9.8% | 11.4% | 8.3% | | 7.5% | 8.5% | 13.6% | 12.4% | 13.3% |
| Other religions | 1.0% | 0.3% | 0.5% | 0.3% | 0.2% | | 0.3% | 0.3% | 0.4% | 0.3% | 1.1% |
| No religion | 1.1% | 1.8% | 1.6% | 1.2% | 1.4% | | 1.2% | 1.6% | 2.4% | 1.0% | 1.1% |
| **BIRTHPLACE** | | | | | | | | | | | |
| Migrant | 42.3% | 39.5% | 38.2% | 35.3% | 33.6% | | 30.8% | 34.3% | 37.6% | 40.7% | 46.4% |
| Born in a rural or semi rural area | 17.8% | 12.1% | 11.1% | 10.2% | 7.9% | | 7.7% | 10.1% | 11.4% | 12.6% | 18.4% |
| | | | | | | | | | | | |
| **MOTHER'S EDUCATIONAL AND ETHNIC CHARACTERISTICS** | | | | | | | | | | | |
| **EDUCATION** | | | | | | | | | | | |
| Primary School | 55.3% | 66.3% | 75.3% | 77.3% | 84.9% | | 86.6% | 79.7% | 71.5% | 67.0% | 50.2% |
| Secondary School | 12.0% | 16.4% | 22.1% | 27.8% | 40.5% | | 40.1% | 26.4% | 19.2% | 20.4% | 8.5% |
| College | 1.8% | 2.7% | 4.6% | 7.8% | 11.4% | | 11.0% | 5.7% | 4.4% | 4.1% | 1.7% |
| **MOTHER'S MOTHER TONGUE** | | | | | | | | | | | |
| Native Language | 43.7% | 32.2% | 19.5% | 16.3% | 10.6% | | 8.2% | 12.3% | 19.6% | 33.7% | 52.7% |
| **BIRTH PLACE** | | | | | | | | | | | |
| Born in a rural or semi rural area | 25.2% | 18.5% | 17.9% | 16.3% | 12.0% | | 15.9% | 15.4% | 17.6% | 18.6% | 24.3% |

Graph 4[10] presents the relationship between racial intensities and key variables. It should be noted that the pollster records her own perception about racial intensities independently of the answers that the respondent gives about her characteristics. Years of schooling are positively correlated with the White intensity indicator and clearly negatively correlated with the Indigenous intensity. Similarly, the same pattern is observed regarding attending a private institution, access to phone lines and access to health insurance. On the other hand, migrant status and family size are positively correlated with the Indigenous intensity indicator and negatively correlated with White intensity.

*(a) Access to Education and Credit*

Enrollments in Peru in all educational levels have increased massively during the last four decades. Saavedra and Valdivia (2000) report that only 25% of those born in the 1930s had secondary or higher education. For the cohort born in the early 1970s, that figure had doubled. Still, 20% of that cohort -the youngest adult cohort in their study- has only primary or incomplete primary. If this educational expansion has been observed in a context of inequality of opportunities we could expect a different pattern depending on ethnic background. In fact, as reported in Graph 5 individuals whose mother tongue is not Spanish have less years of schooling attainment than those whose mother tongue is Spanish. Also, migrants and those born in rural areas are less schooled.
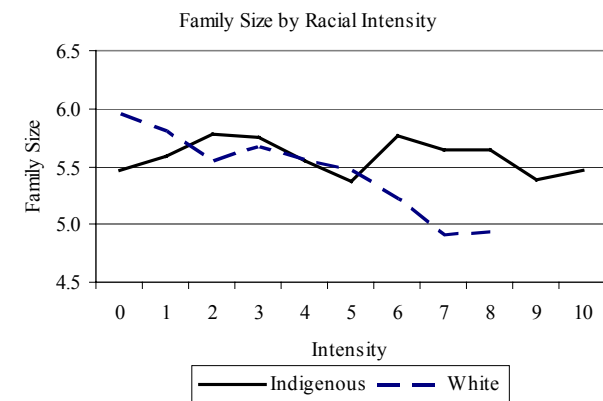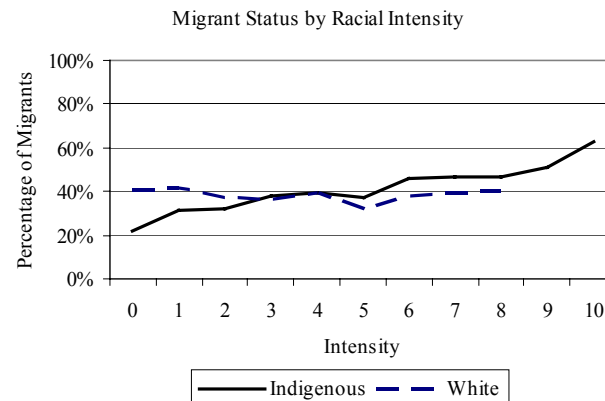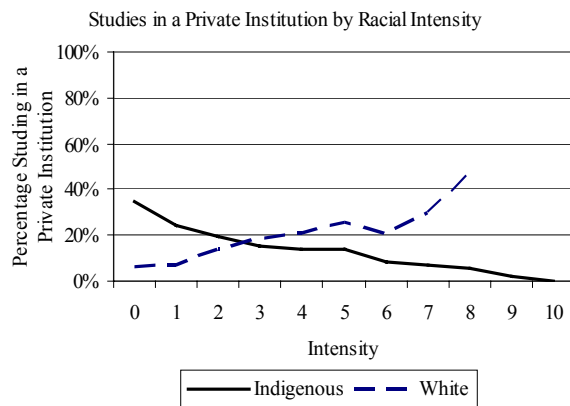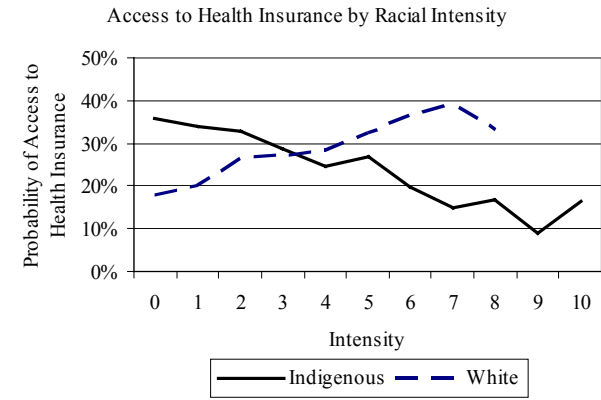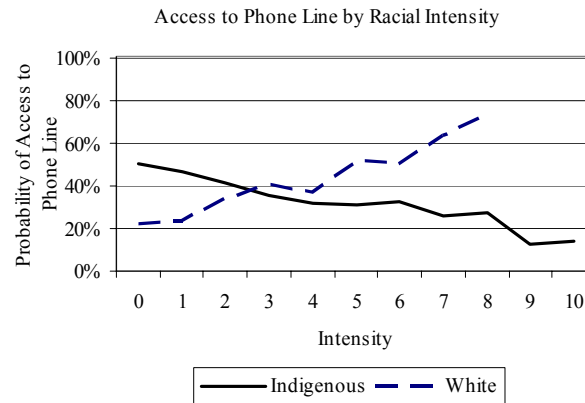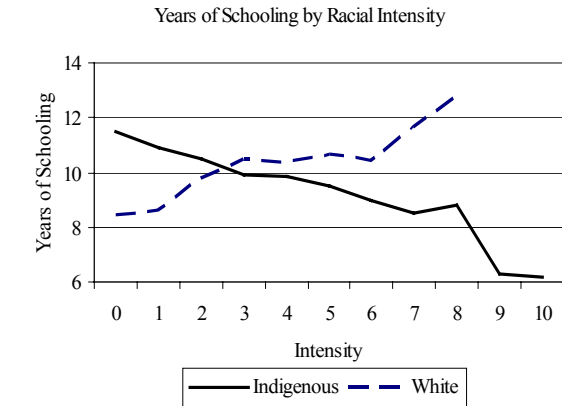
Analyzing the data using racial intensities we find that years of schooling increase with the White intensity indicators in the three cohorts, while they decrease with the Indigenous intensity (see Graph 6). The slopes however are slightly flatter for the younger cohorts. As expected, schooling is higher for younger cohorts. When we look to the percentage of individuals that finish in a private institution, usually of higher quality than public institutions, the pattern is more pronounced. The middle panels of Graph 6 show private institution attendance for all educational levels, including higher education. In this case, attendance to private institutions rises sharply with the White intensity indicator, such that for individuals predominantly White, a large proportion will attend a private institution, while individuals predominantly Indigenous attend exclusively pubic institutions. When we limit the sample to basic education, we find a similar, although less pronounced pattern. There is a clear monotonic relationship between racial intensity and private education attendance, probably related to differences in the possibilities of individuals to afford a private higher quality education when they were young

As shown in Diaz, Ñopo, Saavedra and Torero (2002), when education attainment is modeled controlling for gender, cohort effects, religion, mother tongue and race, the results in terms of the negative (positive) relationship between Indigenous (White) intensity and years of education hold.

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[10] For this informal overview of the correlation between variables we are not reporting the average characteristics and earnings that correspond to white intensities of 9 and 10 due to a lack of observations for these intensities. In the econometric models we estimated, this would not represent a problem thanks to the treatment we performed on the race variables as will be explained later.

# Graph 4

## Characteristics by Racial Intensity

Years of Schooling by Racial Intensity



Access to Phone Line by Racial Intensity



Access to Health Insurance by Racial Intensity



Studies in a Private Institution by Racial Intensity



Migrant Status by Racial Intensity



Family Size by Racial Intensity



Elaboration: Own

Source: Living Standard Measurement Survey (ENNIV 2000) and Additional Ethnic Module
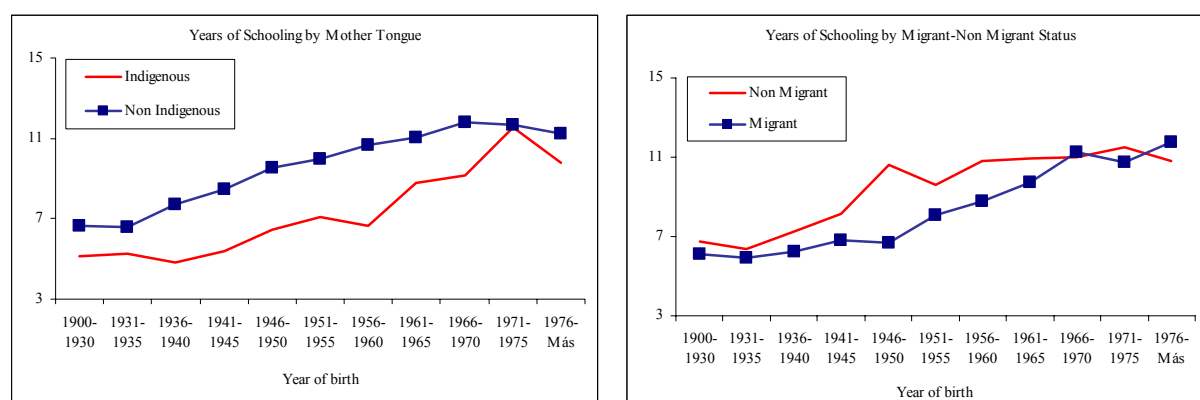
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**Graph 5**



Table 2 summarizes these results for different combinations of quartiles of White and Indigenous racial intensities[11]. The numbers shown are the effects over schooling of belonging to each combination of White and Indigenous quartile of the respective individual. The control categories are those individuals in the quartile of higher White intensity and lower Indigenous intensity. All coefficients are negative and most of them are significant. The size of the negative effect increases for quartiles where perceptions of Indigenous characteristics are more pronounced.

**Table 2**
Schooling Effects of Different Combinations of Quartiles of
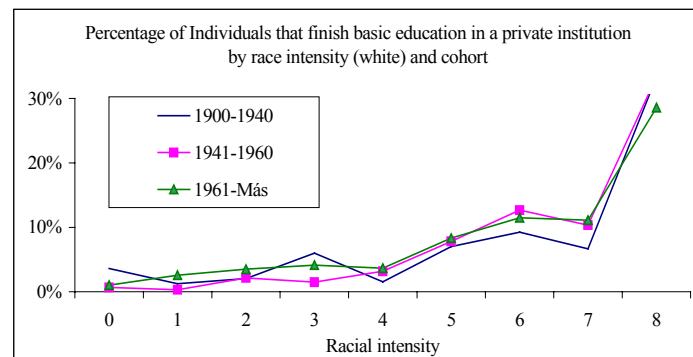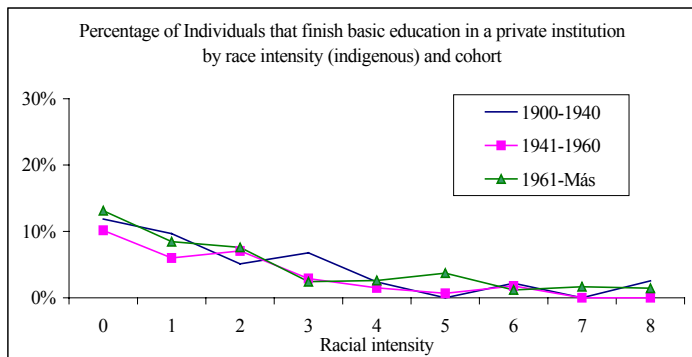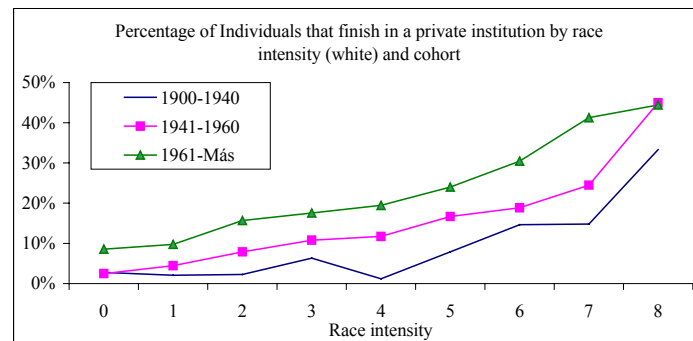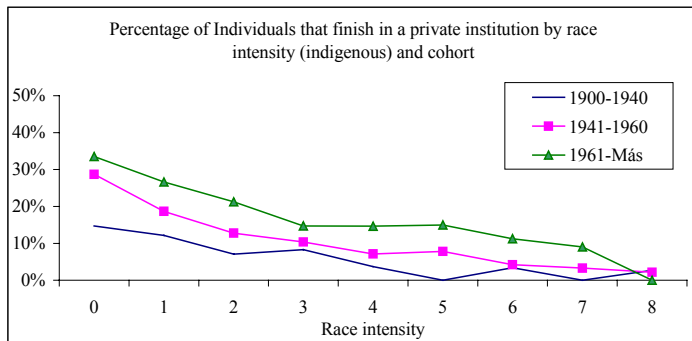White and Indigenous Racial Intensities

|  |  | Indigenous | | | |
|---|---|---|---|---|---|
|  |  | Quartile I | Quartile II | Quartile III | Quartile IV |
|  | Quartile I | -1.12 | -1.62 | -1.06 | -1.55 |
|  |  | (2.41)* | (3.03)** | (4.95)** | (8.53)** |
|  | Quartile II | -0.76 | -1.04 | -0.35 | -0.77 |
| White |  | (1.76) | (5.49)** | (1.63) | (3.35)** |
|  | Quartile III | -0.50 | -0.55 | -0.37 | -0.78 |
|  |  | (1.76) | (5.49)** | (1.63) | (3.35)** |
|  | Quartile IV | 0.00 | -0.22 | -0.95 | -0.47 |
|  |  | 0.00 | (0.94) | (3.16)** | (0.69) |

Note: The regression include controls on gender, age cohort, mother tongue, religion, languages, migration experience, place of birth (urban or rural) and mother characteristics (race, education, place of birth). T statistics in parenthesis.

Summarizing, there is a significant correlation between educational attainment and ethnicity. In spite of increases in overall educational attainment, the results confirm the prevalence of dispersion in educational investments, in terms of quality and quantity that are correlated with ethnic characteristics, even among young adult cohorts.

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[11] The quartiles are defined for each race intensity of each individual in the database the corresponding quartile for white and indigenous intensity is assigned so that dummies could identify to which quartile they correspond. These dummies are then used as exogenous variables together with all the other controls. To see the regressions refer to Saavedra, Torero (2002).

# Graph 6



Years of Schooling by Race Intensity (indigenous) and cohort



Years of Schooling by Race Intensity (white) and cohort



Percentage of Individuals that finish in a private institution by race intensity (indigenous) and cohort



Percentage of Individuals that finish in a private institution by race intensity (white) and cohort



Percentage of Individuals that finish basic education in a private institution by race intensity (indigenous) and cohort



Percentage of Individuals that finish basic education in a private institution by race intensity (white) and cohort

11

With respect to access to credit there is a significant discussion in the economic literature regarding the presence of discrimination. The analytical framework for measuring discrimination was first developed by Becker (1971) to study racial discrimination in labour markets and then applied to credit markets by Peterson (1981). In the context of a credit market, lenders with a taste for discrimination might forgo profitable loans to unfavored applicants by applying stricter credit standards, charging higher interest rates, or requiring more collateral on loans to unfavored borrowers than equally creditworthy favoured borrowers (Elliehausen and Lawrence, 1990).

However, there may be a misconception in the way this theoretical work is used to address the problem of discrimination in credit markets, i.e. a belief that theoretical results developed for labor markets apply directly to credit markets as well. This, however, is often not the case. In labor markets, the employer's problem is typically to select the most desirable applicant. In contrast, lenders generally approve all applicants that exceed a given threshold. In other words, labor market discrimination arises from the treatment of individuals in the upper tail of the distribution of applicant characteristics, while credit market discrimination arises from the treatment of individuals who fall somewhere in the middle of this distribution. As a consequence, a given market friction can result in vastly different outcomes in labour and credit markets (Longhofer Peters, 1998).

Consistently with this literature, when Escobal and Torero (2002) look in more detail to the issue of social exclusion in the financial market they found no conclusive evidence of discrimination in credit access. Although it shows some indication of a non-linear effect between race intensity and credit access that could be related to a self-exclusion mechanism in both extremes of the race scale, this evidence is not very robust when they control by other household characteristics. Even more, when looking to credit applications there is no clear difference between White intensities and Indigenous intensities in explaining the decision to apply to a credit in a formal institution or the decision of not requesting a credit.[12] Similar non-conclusive results are obtained when a similar regression analysis to the case of access to education with quartiles of intensities and different household controls are used.

**Graph 7**
**Access to Credit**
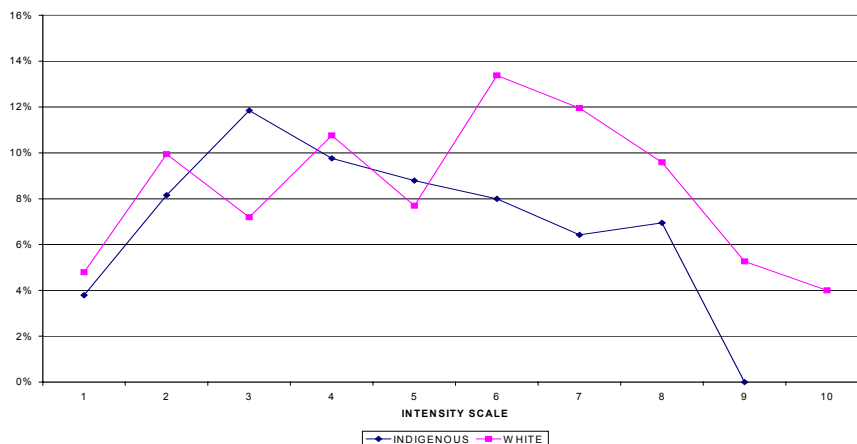


When we include as a explanatory variable (for details see Escobal and Torero 2002), of a probit regression of access to credit, the difference between the intensity of White and Indigenous reported by each household head[13], as a single proxy of race perception, a positive and significant sign is obtained, meaning that the Whiter the household head is perceived the higher the probability that the household will access to credit. However, the marginal effect of this coefficient is extremely small (0.0047) which implies that there is really no major direct effect of ethnicity over access to credit once we control for financial assets and other private assets of the household (household ownership, value

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[12] There is some evidence, however, that the people perceived as whiter prefer not to request too many credits.
[13] The race for household head is used because the variable of access to credit is at the level of the household.

of assets, possession of financial savings[14]). In addition, other indicators of ethnicity (like mother's tongue and religion) were also non significant in explaining access to credit. The latter results are consistent with the results obtained by Longhofer and Peters(1998).

Moreover, results are consistent with the fact that the observed racial differentials might stem exclusively from individual differences in earnings instability or volatility, a characteristic that may be closely correlated with race. If true, then race could merely be proxying for earnings instability in models where direct measures of instability were omitted and so once controlling for these variables the race variables will not be significant. Therefore, if there is some evidence of systematic discrimination, it may well be statistical; that is, arising from lending risk differences across race, possibly with race acting as a "cheap" signal for other available but costly information (Scalera and Zazzaro, 2001; Wachter, 1997).

Obviously, ethnic characteristics may well explain some of the other explanatory variables that are assumed exogenous in the estimation of the determinants of credit access like education, ownership of private assets or access to public goods. If this were the case, social exclusion may be operating through indirect channels in the credit market. This is clearly the case of education and labor income, as is shown in this study, and may well be the case of other key variables related to the ownership of private assets and the access to public goods.

*(b). Race and Earning Differentials.*

Ñopo, Saavedra and Torero (2002) explored earnings differentials and their relationship to ethnicity in Urban Peru. Analysing raw averages for the self-employed and private wage earners the log hourly wage is positively correlated with the White intensity indicator and negatively correlated with Indigenous intensity in both cases and at the same time the average levels of earnings are lower for the self-employed than for the private wage earners (see Graph 8).

To try to formally estimate the differences in per-hour earnings according to race and ethnic differences a semi-parametric technique was used, it allowed obtaining linear parametric estimators for the typical mincerian wage equations coefficient and non-linear, non-parametrical, estimators for the racial intensity related effects (see Ñopo, Saavedra and Torero 2002 for details on the estimations)[15]. Since the race indicator is in an ordinal scale, it is not possible to treat it parametrically and perform arithmetic operations with it. Thus, a semi-parametric technique was used for the estimation of differences in hourly earnings according to race and ethnic differences that allowed to obtain linear parametric estimators for the typical wage equations and non-linear, non-parametrical, estimators for the racial intensity effects.

Two variables were constructed for each individual. These new variables will be denoted as $Z_W$ and $Z_I$, and for each individual, they represent the intensity quintile in which the individual is situated in the White and Indigenous intensity distribution respectively, being the first quintile the one with the lowest intensity in both cases. In this way, if an individual is situated in the first intensity quintile

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[14] All these variables were significant and with the expected signs. For details on the regression analysis see Escobal and Torero (2002).

[15] We also carry the Blinder Oxaca decomposition. It was found that for the self-employed, two thirds of the raw race earnings gap is explained by differences in individual characteristics, while the rest is explained by differences in returns and unobservables (or discrimination). Labor related characteristics (economic activity, occupation and firm size) constitute the more important explanatory category. Among wage earners, the largest part of the earnings gap is explained by differences in characteristics. When we analyze the decomposition within these differences, it appears that personal and human capital related characteristics are important explanatory variables for the earnings gap between *Mestizos* and Indigenous, but labor markets characteristics are important in explaining the gap between Whites and *Mestizos*. Although, the Blinder-Oaxaca approach has been an object of criticism as it takes into account only average values of individual characteristics without considering the probability distributions of such characteristics.

according to the White distribution and in the fourth intensity quintile according to the Indigenous distribution, he will receive the values 1 and 4 for $Z_W$ and $Z_I$ respectively. With the construction of these two variables the model was estimated: $y = \beta x + \varphi(z_W, z_I) + \varepsilon$, where $y$ is the hourly wage rate, the first term of the right-hand side of the equation constitutes the linear specification of a typical wage equation and the second term is the non-parametrical estimator for differences in the hourly wage rate accrued to racial differences of the individuals. For the non-linear component of the equation an empirical joint distribution was constructed for all the possible 25 effects using a bootstrap technique[16]. With these empirical distributions hypotheses about the significance of the difference between different groups were tested. Given that self-employed and wage earners[17] differ in their structure of earnings and in their interactions in the labour market the analysis was performed separately for each group.

**Graph 8**
**Hourly Earnings by Racial Intensity and Type of Employment**
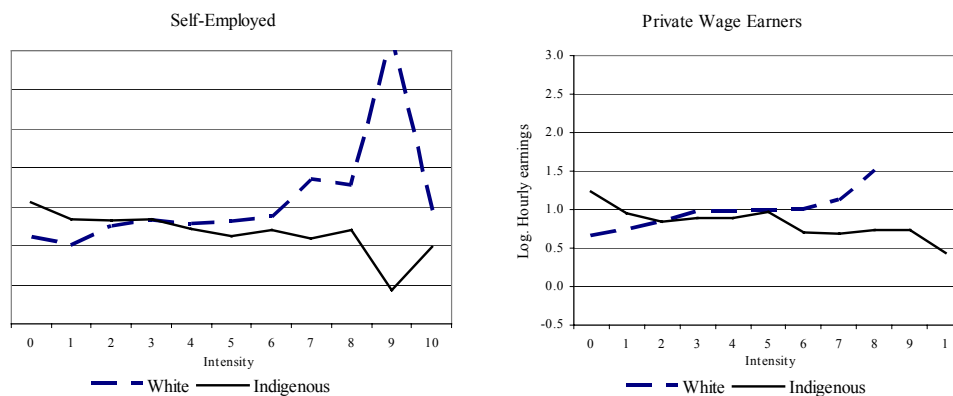


Elaboration: Own
Source: Living Standard Measurement Survey (ENNIV 2000) and Additional Ethnic Module

In the urban areas, no effects on ethnic related variables such as religion, birthplace, migrant or native tongue are found[18]. There is, however, a positive effect of the mother's education. A racial diversity indicator shows that among wage earners, the more racially diverse the household, the lower the salary of the individual. Graph 9 shows the nonparametric effect over earnings of belonging to different racial intensity groups, controlling for personal characteristics, other ethnic variables, mother characteristics, occupation, sector of economic activity and firm size. Among wage earners the earnings effect is larger for workers in the fifth White intensity than for those in the first white intensity                                                                                                  quintile.

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[16] For a general discussion of the bootstrap technique see Efron (1991, 1993) or Horowitz (forthcoming).
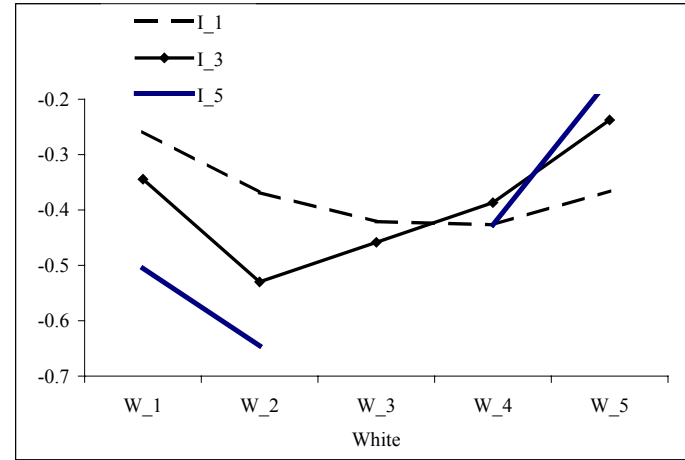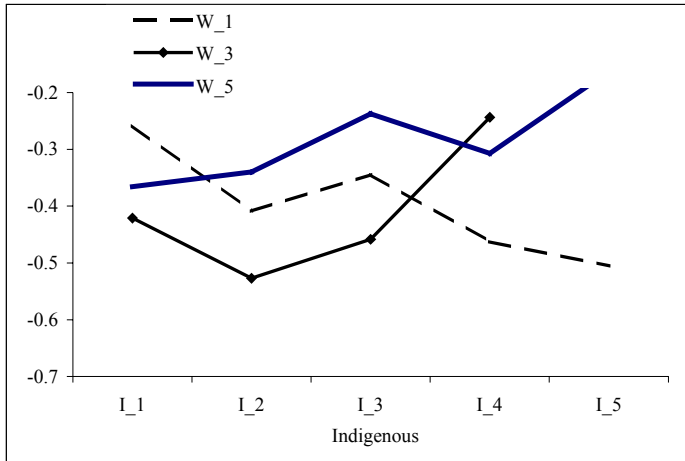[17] The sample is restricted to wage earners in the private sector.
[18] This is somewhat surprising, as in the previous literature, native tongue implies a negative premium in earnings equations. This result holds when we use the whole sample of the LSMS 2000, but disappears when the sample is limited to urban areas.
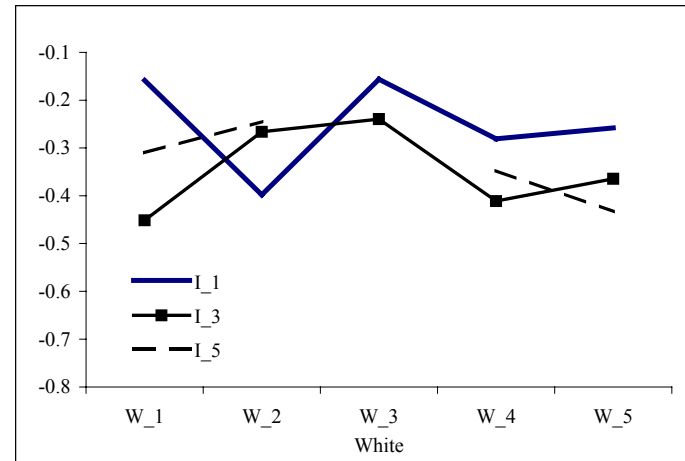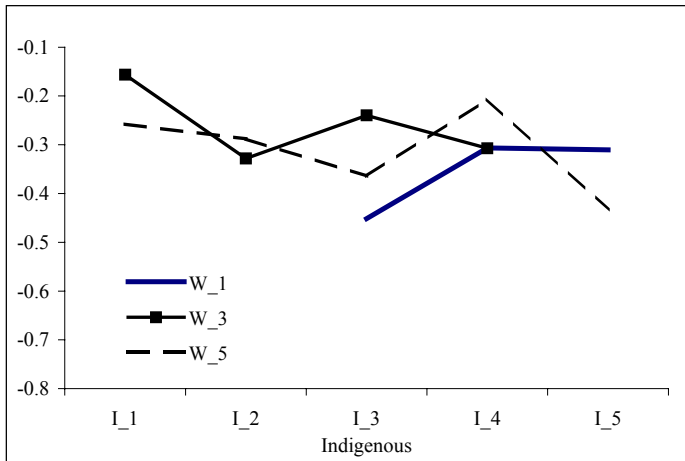
# Graph 9

## Non-Linear Estimation

### Private Wage Earners

### Self-Employed

Among the whites in the first white intensity quintile, the effect is smaller the higher they are in the Indigenous intensity scale. Looking at the same effect but for different levels of the Indigenous scale, it appears that the earnings effect increases the higher the worker is in the White intensity scale. Among the self-employed, however, no clear patterns emerge.

The significance of the differences observed in these four graphs can be estimated using a bootstrap technique[19]. With these we compute empirical distributions for several pairs of differences earnings effects. Among wage earners, the difference $\varphi(5,1)- \varphi(1,5)$, where $\varphi(5,1)$ is the earnings effect for the predominantly White and $\varphi(1,5)$ is the predominantly Indigenous, is significantly different from zero in 97.1% of the cases. The difference $\varphi(4,2)-\varphi(2,4)$, is different from zero in 37% of the cases and the difference $\varphi(5,1)- \varphi(3,3)$, in 75.2% of the cases. This suggests that after controlling for a large set of characteristics, there are racially related earnings differences in favor of predominantly White individuals. In the case of the self-employed, none of the empirical distribution of differences differs from zero in any case.

## 4. Final Remarks

This chapter summarizes the results of three papers that dealt with different aspects of the economic impact of social exclusion in Urban Peru. Exclusion, in the sense that constitutes an impediment for individuals to access to certain markets, to acquire specific assets, or to hold specific jobs is an important phenomena in Peru, with crucial implications in terms of the possibility of many sectors of the population of escaping poverty, and increasing their well being. Being Peru an extremely diverse country where ethnic groups cannot be easily identified, the ethnic diversity of the country was approximated using a large set of variables like language, religion, origin and race. Regarding race, a continuous indicator was used; it tried to capture the variety of racial characteristics of Peruvians. This continuous indicator is clearly related to poverty variables and specific assets. For instance, individuals who have higher levels in the white intensity scale have a lower poverty index, higher schooling, more access to phone lines, more access to health insurance and to private education.

It is found that there are ethnic related differences, mainly captured by race, in the access to schooling and in particular to private schools, differences that are smaller for the younger cohorts, but that are still significant. In the case of credit, it is found that there is no major direct effect of ethnicity over access to credit once it is controlled for financial assets and other private assets of the household (household ownership, value of assets, possession of financial savings), suggesting that ethnic differences that are observed in the access to credit are correlated with observable characteristics that explain differences in access. Finally, when earning differentials are analysed among wage earners, after controlling for personal, labour market (occupation, sector and firm size) and ethnic characteristics different from race, significant differences between predominantly white and predominantly indigenous workers are found. These differences are not observed among the self-employed. However, using a decomposition technique, it is found that for the self-employed, a large part of the raw race earnings gap is explained by differences in individual characteristics, suggesting that exclusion mechanisms operate at the moment individuals are acquiring skills and also in the labor market.

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[19] That is, at each bootstrap iteration, the differences between any two effects were computed and then the empirical distribution of these new random variables was found. The empirical probability of having positive values for such difference variables will constitute the bootstrap estimators for the confidence levels.

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