

Gender and Racial Discrimination in Hiring: A Pseudo Audit Study for
Three Selected Occupations in Metropolitan Lima

by

Martin Moreno
Hugo Nopo
Jaime Saavedra
Maximo Torero

December 2003

MIDDLEBURY COLLEGE ECONOMICS DISCUSSION PAPER NO. 04-04



DEPARTMENT OF ECONOMICS
MIDDLEBURY COLLEGE
MIDDLEBURY, VERMONT 05753

<http://www.middlebury.edu/~econ>

Gender and Racial Discrimination in Hiring: A Pseudo Audit Study for Three Selected Occupations in Metropolitan Lima

Martin Moreno, Hugo Ñopo, Jaime Saavedra and Maximo Torero*

December 14, 2003

Abstract

In this paper, we adapt the audit studies methodology to analyze gender and racial differences in hiring for a particular segment of the market of three selected occupations in Metropolitan Lima: salespersons, secretaries and (accounting and administrative) assistants. The adapted pseudo-audit study methodology allow us to reduce the room for existence of statistical discrimination. The results suggest the existence of no significant differences in hiring rates for different gender-race groups but some systematic (and significant) differences in the aimed wages of the individuals in their job search processes.

Keywords: Field Experiments, Discrimination, Occupational Segregation.

JEL Classification Codes: C93, D63, J4, J7.

*The study was performed while the authors were researchers at GRADE. The Inter-American Development Bank financed a substantial component of this project. The comments of Loujia Hu, Claudia Piras, Andrew Morrison, Jacqueline Mazza and Chris Taber are deeply acknowledged. For comments and questions, please contact the corresponding author, Hugo Ñopo at hnope@middlebury.edu

1 Introduction

Despite social advances and a movement towards modernization of labor markets, there are still substantial differences in earnings and opportunities for individuals from different gender and racial groups. Casual observation of job openings posted in local newspapers reflects the existence of occupations for which employers request only male or only female employees. In other postings, the euphemism “good presence” is used to refer to specific racial preferences of those posting the job openings.

Occupational differences linked to racial differences among white, indigenous and mestizo individuals persists due to the existence of stereotypes and prejudices, that are reinforced by differences in the opportunities of access to education and other assets. To these differences based on phenotypical characteristics, one should also add cultural differences, observable through differences in behavior and speech. Sometimes the employers make their decisions using these racial and ethnic differences as proxy measures of other characteristics that they desire, but that are harder to observe in a job interview. As a result, the employers discriminate individuals on the basis of their racial characteristics, but not because they have a “taste for discrimination” instead because they use race as a signaling device (statistical discrimination).

In Peru, there are also substantial differences in occupational structures among gender and racial groups and, to some extent, these differences explain the wage differences that have been documented by Ñopo, Saavedra and Torero (2002). Occupational segregation is also linked to differences in asset ownership of the individuals and their families. Blau and Ferber (2002) report that gender differences in occupational structures in Latin America, measured by the Duncan index, are higher than those found in other regions of the world. Occupational segregation, is the result of a sorting equilibrium that may involve the existence of discrimination (either taste-based or statistical) from the employers or from the applicants (through their decisions to apply only to those occupations for which they feel they have higher chances of being accepted). By analyzing the figures of segregation only, it is not possible to identify whether the result has a taste-based or statistical cause.

In this study we isolate and explore the first reason (employers decisions¹), by analyzing the hiring processes for some specific occupations, using information of real job applicants from the CIL-PROEMPLEO network, the job intermediation service of the Peruvian Ministry of Labor and Employment Promotion. For that purpose we followed males and females in the process of job seeking. Specifically, we focused on salespersons, secretaries and accounting and administrative assistants. For those occupations, we captured information about the gender and racial characteristics of applicants, as well as the characteristics that would make them employable in the occupations for which they were applying. For every job posting, all

¹Even more, as we will explain later in the paper, the design of the experiment leaves a small room for the existence of statistical discrimination.

the applicants had to fulfill a minimum set of requirements for age, schooling and occupational experience that the firms required in their job postings. Hence, by construction, our sample has a reduced variance in age, schooling and occupational experience (compared to the variance of those variables found at a national level). Nonetheless, there is still a noticeable variance in family income, ownership of certain durable assets and access to private schools. On the other hand, with respect to ethnic and racial differences of the individuals, there is considerable heterogeneity in the population under study, even though it represents only a bounded portion of all the racial diversity that can be found in Lima. Individuals who can be typically regarded as “Whites” do not seek employment through this intermediation service. Then, this study is not oriented to analyze the possible segregation processes that occurs between a White elite and the rest of the population, but to study the potential discriminatory processes that may affect the majority of the population. The typically indigenous individuals, who have recently migrated to Lima, do not go to the intermediation service either. In general, the population under study can be regarded as typical mestizos with some degree of heterogeneity.

In this experiment we compare the performance of mestizo individuals (with different degrees of “mestizaje”) that have similar characteristics in age, schooling and occupational experience. The heterogeneity of the racial characteristics allow us to form, at the interior of the sample, groups of individuals such that, in terms of their comparable differences, can be labeled as indigenous, mestizos and whites.

This study shares many of the characteristics present in traditional audit studies,² but has overcome some of the critiques given by Heckman.³ The paper first introduces the occupational segregation found in Urban Peru and evaluates the methodology for this study. After this we show the characteristics of the sample, results obtained from the study and finally we conclude by discussing the scope of this study in the understanding of discrimination in the labor markets of Peru.

2 Occupational Segregation by Gender and Race in Peru

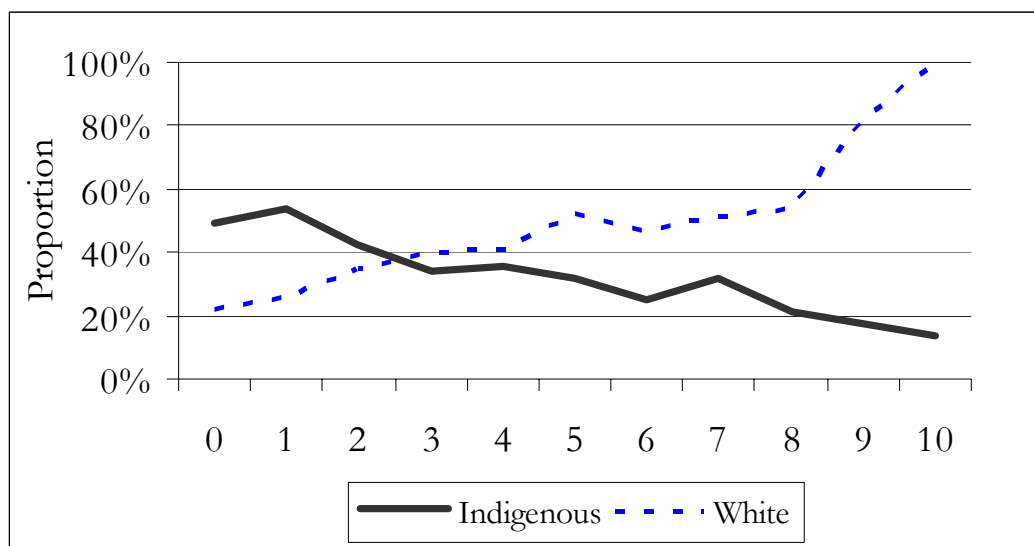
Blau and Ferber (1992) pointed out that Latin America reports the highest levels of occupational segregation by gender in the world, measured by the Duncan index.⁴ However such high segregation occurs not only by gender, but also by race. As there are some typically “male dominated” and “female dominated” occupations, recent data allows us to document the existence of “white dominated” and “indigenous dominated” occupations.

²Turner et al. (1991)

³Heckman (1998)

⁴This index is interpreted as the minimum percentage of individuals of one of the comparing groups that should change their occupations in order to equalize the distributions of individuals across occupations for both groups. See Fluckiger y Silber (1999) for a detailed description of the Duncan index as well as some other segregation measures.

Figure 1: Proportion of White Collars by Racial Intensities



Using a classification of seven occupational groups,⁵ the segregation index between males and females reaches 0.3265. That is, it would be necessary that at least 32.65% of the working males (females) switch occupations, to those that have higher female (male) participation, in order to achieve a non-segregated work force (that is, to achieve a situation in which the distributions of males and females across occupations are the same). One may raise the question, is that figure large or small? In that regard, the estimated figures obtained by Deutsch, Morrison, Piras and Ñopo (2001) for a selection of three Latin American countries (Costa Rica, Ecuador and Uruguay) during the nineties and using a classification that considered ten occupational groups is in the range 0.32-0.42. According to those figures the segregation would not be so high compared with the rest of the region, but taking into consideration that the Duncan index depends on the number of occupational groups⁶ we can probably conclude that the occupational segregation in Peru is comparable to the rest of the region.

A first look at the distribution of the occupied population by the blue-collar/white-collar criterion shows some interesting results. Figure 1 shows the proportion of white-collar workers by racial intensity for 0 to 10 for the white and indigenous dimensions of the urban Peruvian population in 2000.⁷

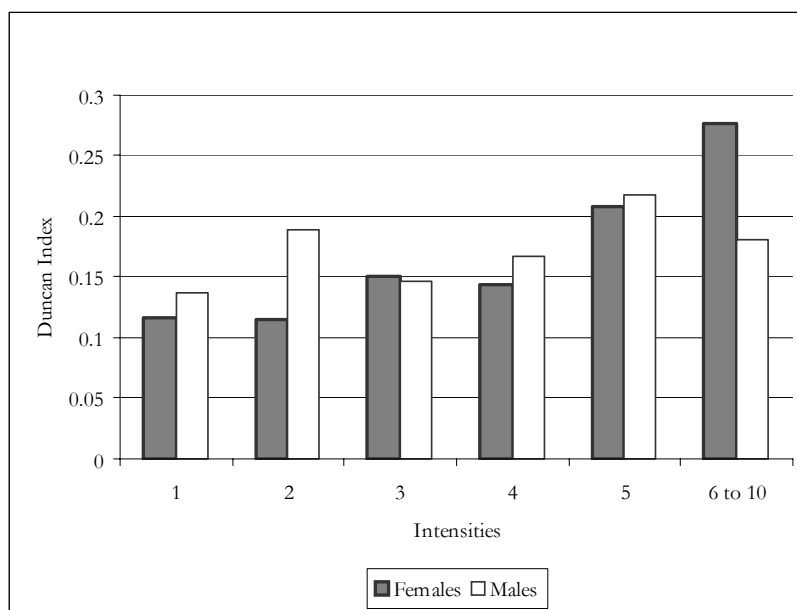
As individuals report higher intensities in the white dimension, the likelihood they are employed in

⁵ “Professionals and Technicians,” “Managers,” “Administrative Personnel,” “Merchants and Salespersons,” “Service Workers,” “Agricultural Workers” and “Non-Agricultural Workers.”

⁶ For the same population, a coarser classification of the occupations tends to lower the Duncan index. See Fluckiger and Silber (1999).

⁷ This information comes from module of ethnic and racial characteristics of the National Household Survey 2000. For additional details see Ñopo, Saavedra y Torero (2002).

Figure 2: Duncan Index of Occupational Segregation by Intensities in the Indigenous Dimension (Base Group= Intensity 0)

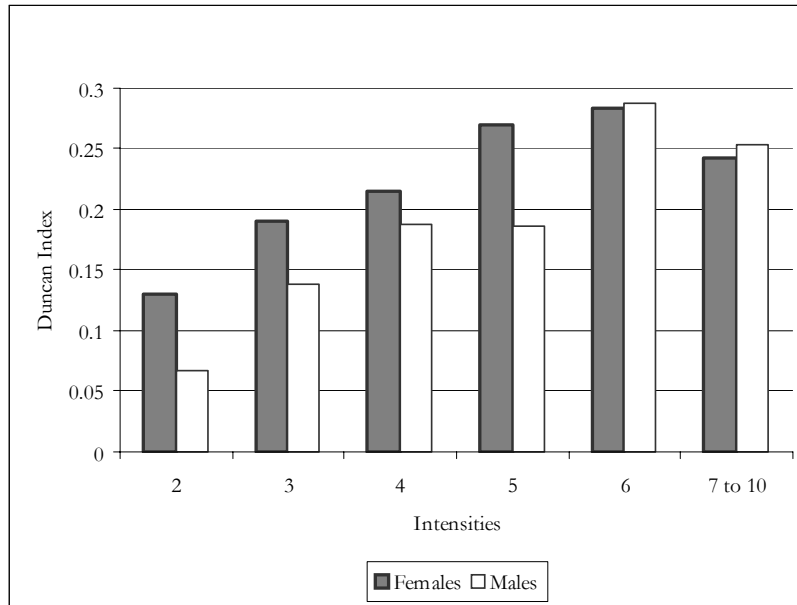


white-collar occupations increases rapidly. If only 20% of the individuals with white intensity equal to zero work in white-collar occupations, that figure is almost 100% of individuals with white intensity equal to ten. In the indigenous dimension the relationship is the opposite, the higher the intensity the lower the share of white-collars.

Analyzing the seven occupational categories with a racial perspective will shed some light about the segregation that exists in urban Peruvian labor markets. For that purpose, we compute the Duncan indices that result from the comparison of those individuals that report intensity zero with different groups of higher intensities, separating the comparison by gender. The results of the comparison in the indigenous dimension are reported in Figure 2

As differences in the racial characteristics of individuals increase, the differences in their occupations also increase. This result is more pronounced among females than among the males. In that sense, if it is necessary that at least 12% (14%) of females (males) reporting indigenous intensity one switch occupations with the group that has zero indigenous intensity in order to be distributed across occupations in the same way, it would be necessary that at least 28% (18%) of females (males) that have intensity six or more do so. The analogous analysis of the white dimension shows even more pronounced results. The levels of occupational segregation increase as we compare individuals that report more characteristics that would make them be perceived as indisputably white.

Figure 3: Duncan Index of Occupational Segregation by Intensities in the White Dimension (Base Group= Intensities 0 and 1)



In summary, national statistics show that Peruvian labor markets are segregated, not only by gender, but also by race. From the information we have yet shown, it is not possible to distinguish whether these results are the outcome of a series of individual decisions (self-segregation) or the result of discriminatory practices of the employers in their hiring decisions (discrimination in any of its forms, either statistically-based or taste-based).

Given the nature of our study, which concentrates on some occupations for particular segments of the market, it is expected that a great part of the “self-segregation effect” has already operated on the individuals that belong to our sample. Hence, the gender and racial differences that we can find, if any, will not be affected by the typical criticisms related to the existence of self-segregation or self-exclusion from the labor markets.

3 Methodology of the Pseudo Audit Study.

3.1 Design of the study

This study is inspired by the audit studies proposed and then improved on by the researchers at the Urban Institute.⁸ These studies try to verify the hypothesis of discriminatory behavior by a decision maker (the interviewer for a job posting) by simulating the arrival of a group of observationally similar applicants (called “auditors”) to the face of the decision maker. The simulation is repeated for many decision makers and, if the outcome statistically favors (hurts) individuals with a particular set of characteristics, the conclusion is that the individuals who show that particular set of characteristics are discriminated in favor (against). As this audit study methodology has received some criticism,⁹ the specific methodology for the study we present here represents a substantial improvement in the approach of verifying such discriminatory hypothesis in the setup of hiring processes.

Typically, auditors are individuals specially hired for the purposes of the study. They show up to the job interviews carrying CV’s that are specially tailored for the study in a way that the auditors that apply to the same position have similar CV’s (therefore, they bring synthetic CV’s to their interviews). The typical auditors who work for these studies are college students that look at their participation in the study as a source of income. They are trained to show up to the interviews and make the pretense of being interested in getting a job. In addition, they have to act as if they have the education and experience that their CV’s claim. Interestingly enough, the occupations to which these studies are made typically require minimal skills (this is done in order to keep to a minimum the possible differences in observable characteristics). Finally, the job openings are found by the designers of the study in the newspapers.

These characteristics of the audit studies imply the following problems:

1. An auditor does not necessarily put in the same level of effort to get a job that a real job-seeker would. Also, it is not possible to assure that the auditor will experience the same pressure and anxiety that would be present in a real job interview.
2. The auditor knows the purpose of the study and, as is documented in the literature of experimental psychology literature,¹⁰ this may generate incentives (conscious or unconscious) to bias the results towards those that the researches are looking for.
3. Description of job requirements that appear in newspapers are typically very brief and rarely exhaustive. In that case, the role of unobservable characteristics (which in this case would be those characteristics

⁸Cross et al. (1990); Turner et al. (1991).

⁹Heckman pointed out that the results obtained from audit studies are, in general, unclear and unconvincing. See Heckman (1993, 1998) and Heckman and Siegelman (1993) for a critical description of the results from a detail analysis of the identification assumptions behind the audit study model.

¹⁰See Lindzey and Aronson (1975) and Rosenthal (1976).

that the employers look after in the interviews, but the designers of the audit study do not take into account to form the groups of auditors) can play prevalent role.

4. A college student who applies to a low skill position will, involuntarily, show personal characteristics that eventually could make him/her be seen as an over-qualified applicant. As a consequence, the employers may decide not to hire the over-qualified applicant because they may get afraid that he/she would not last in the position.

For these reasons, one has to be suspicious about the results that come from the audit studies. There are many sources of noise that could invalidate the results.

We overcome some of these critiques by designing a pseudo-audit study in which, instead of hiring auditors to go to the job interviews, we select them from a pool of applicants to a job intermediation service in Lima, Peru, the CIL-PROEMPLEO network. For that reason:

1. As opposed to taking the demand side of the labor market as given and simulate the supply side with auditors, we simply monitor both sides of the market without simulating any behavior among the agents. This is crucial for alleviating the problems related to issues 1 and 2 above.

2. Since the CIL-PROEMPLEO network (the intermediation service of the Ministry of Labor and Employment Promotion) has direct contact with the firms that post the job openings, they know the details of the full requirements attached to every job posting. The information related to the observable characteristics that the firms require is more complete than the information one could obtain from the reading of a job posting in the newspaper. Having a richer set of information about observable characteristics, the room for unobservables (in the sense enunciated in point 3 of the list of problems) is substantially smaller. Hence, PROEMPLEO can send homogeneous groups of applicants to the interviews, more than what we could expect from a traditional audit study. This alleviates the potential problems coming from points 3 and 4 in the previous list.

Given these considerations, the figures obtained from the data set of this pseudo-audit study would have less room for noise than those reported in the previous literature. As a result, their validity is more certain than the figures that were previously reported using traditional audit studies.

Nonetheless, this study has also the advantage that it is not based upon simulated behaviors of the individuals. We did not need to hire a pool of auditors, but only a pool of monitors to observe the job postings, as well as the applicants and the interviewers at each firm. consequently, we were able to afford fieldwork that captures information (for job openings, interviewers and applicants) in numbers that are substantially above those that the literature has for the studies of discrimination in hiring.¹¹

¹¹As it can be understood, the cost of each “observation” (a job posting with all its applicants) in the typical audit studies is substantially higher than the cost of each observation in this pseudo-audit study. That cost reduction per observation allows us to manage a bigger data set.

3.2 Description of the fieldwork

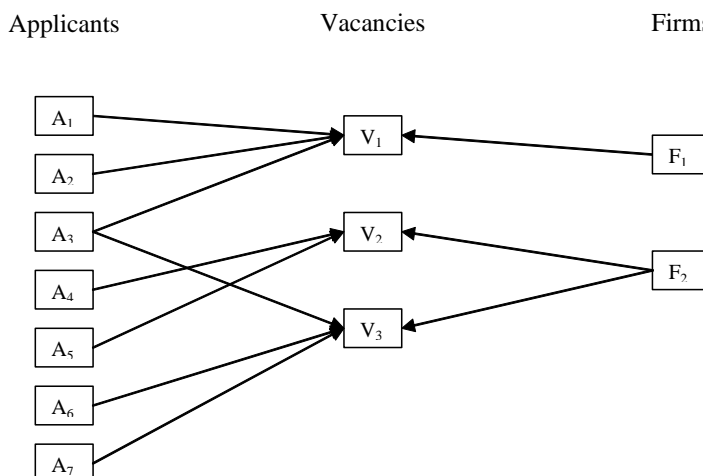
Most of the information of the applicants to the occupations of interest was taken at the headquarters of PROEMPLEO. The process was as follows. First, the intermediation specialists received the job postings from the firms. Simultaneously, applicants that showed up to the offices of PROEMPLEO were interviewed by the intermediation specialists who matched the individual characteristics of the applicants with the requirements of the job postings available at the moment of the applicant's arrival. The applicants were sent to the firm for job interview only when they satisfied the minimum set of requirements for a posting. The intermediation specialists were prohibited, by law, from using age, race or gender as characteristics that define a match between applicants and postings. Even more, the application forms that the firms filled to post their vacancies do not give space for these data. However, informally, many firms ask for applicants of determined sex, and the intermediation specialists use this information. Before the applicants were sent to the firms for their interviews, they were interviewed by our pool of monitors. There, they were asked about some additional labor and socio-demographic characteristics (duration of the unemployment spell, and family income among others), a picture was taken and their racial characteristics were registered in our database. In other cases in which the applicant was sent to a job interview from an office other than the headquarters, our pool of monitors visited the applicant at home. Part of our pool of monitors were sent to the firms to give a questionnaire to the job interviewers. Pretending to conduct a survey about the quality of the services of PROEMPLEO, our monitors obtained information about personal characteristics of the interviewers such as schooling, tenure, and age. The emphasis of this process, however, was on observing their gender and racial characteristics.

With all the information collected through field work, there are three possible units for analysis in this study: the applicants, the postings and the interviewers. Since we are interested in quantifying to what extent the chances of getting hired for an individual are affected by their gender and racial characteristics, after controlling for a set of observable covariates, we will analyze the job postings and all its applicants.

One firm may post more than one vacancy on the system, simultaneously or not. Additionally, one applicant may apply to more than one posting, as long as he/she satisfies the requirements of each posting.

According to the scheme in Figure 4, we have a first hypothetical case in which firm 1 (F1) posts a vacancy (V1) and three applicants go for the job interviews (A1,A2 and A3). For a second vacancy (V2), offered by another firm (F2), there are two applicants (A4 and A5). In a more complex situation, the same firm (F2) post another vacancy (V3) and three individuals apply (A6, A7 and A3, being the case that this last applicant also applied to other vacancy).

Figure 4: Relationships Among Applicants, Vacancies and Firms



4 Characteristics of the Sample

With the purpose of seeking the highest possible number of observations, we selected three occupations with high levels of intermediation through PROEMPLEO. For that reason we selected job postings for accounting and administrative assistants, secretaries and salespersons.¹²

We interviewed 1557 applicants between September 2002 and March 2003. They represented 2650 different applications to the 435 job postings offered by 202 different firms.

In some cases, the initial postings were cancelled by the firm (43% of them), either because the firm hired somebody else from out of the system or because the opening was closed without any hiring. The observations linked to those postings were not used. Also, for some other postings, PROEMPLEO sent only one applicant to the firm (either by request of the firm or because there were no other applicants satisfying the requirements at the moment of the posting). These observations were also left apart because it is not possible to detect discrimination when an applicant has no competitors. For those reasons, the number of observations was reduced to 882 applicants, 1713 applications and 292 postings.

On the other hand, 55 of the 202 firms surveyed had to be left unused because of missing observations for one or more of the applicants to their postings. Finally, combining the restrictions imposed on the data, we are left with 91 firms, 113 postings, 565 applicants and 760 applications, as seen in Figure 5.

¹²Initially we also considered data-entry assistants, but the number of job openings that were posted into the system was too small to be considered.

Figure 5: The Sample

Sample Size

	Total Sample ^{a/}	Valid Sample ^{b/}	Constrained Sample ^{c/}
Applicants	2650	1713	760
Individuals	1557	882	565
Postings	435	292	113
Firms	202	146	91

a/ Includes applicants sent to postings that were cancelled by the firm or to postings with only one applicant

b/ Includes postings for which we have information about all the applicants sent

c/ Includes postings for which we have all the information about the applicants and the interviewers

Figure 6: The Sample by Occupations

Distribution of Applicants by Occupations

	Frequency	%	Accumulated
SALESPERSONS	227	29.87	29.87
ACCOUNTING ASSISTANT/ ADMINISTRATIVE ASSISTANT	183	24.08	53.95
SECRETARY	350	46.05	100
Total Applicants	760	100	

4.1 Characteristics of the applicants

The sample of individuals for this study is composed of technicians and professionals from the middle and lower income classes of metropolitan Lima, they are relatively young and generally have an above high-school education. The average number of years of schooling is 13.6 (with a standard deviation of 1.9). Only 20% of the individuals did not study after high-school. 23% graduated from a private high-school. Their parents' education was on average less than their own. Among the parents, those who just finished high-school are in the majority, especially among mothers. Two thirds of the applicants are females.

Almost all the applicants have some labor experience, 87% have worked during the last twelve months in some dependent position and 50% have been self-employed. This also reveals a prevalence of individuals with secondary occupations. The average monthly earnings of the individuals in their last occupation as an employee exceeds minimum wages by 50% and is close to the average monthly earnings in Metropolitan Lima. The average unemployment spell of the applicants is 3.5 months. 36% report to have the required experience for the position at which they apply and those figures are substantially higher among secretaries and accounting assistants. Only 17% of the applicants were hired.

Females in the sample, on average, are one year younger than males and come from families with a higher average income (although this difference is not significant). The percentage of females with unemployment periods during the last 12 months is smaller than the analogous percentage of males.

Family and per-capita income are generally higher for those individuals who attended high-school at a private institution, have taken some technical or professional studies at a university and whose parents got post-high-school diplomas (either at universities or occupational institutions). The individuals who attended private institutions for their technical or professional degrees have earnings that, on average, are not substantially above the earnings of those who attended public institutions for the same degree.¹³

In terms of asset ownership, we found the expected patterns: the higher the monthly family income quintile, the higher the asset ownership in the household. There is small dispersion in the ownership of stoves and color TV's, but it is higher for the rest of the assets. Even though the sample of applicants for our study is drawn from a specific segment of the Limenian population that has relatively homogeneous schooling, experience, and age; we observe high dispersion in earnings for both the applicants and their families, that has a correlation with asset ownership, as can be seen in Figure 8.

¹³This is probably related to the fact that the private institutions that this segment of the population typically attends are not of better quality than the public institutions. Actually, graduates from the elite Limenian universities do not use the services of PROEMPLEO in their job search processes.

Figure 7: Average per-capita household income by characteristics of the applicant (in S/.)

	Per-Cápita Income		
	Average	Standar Deviation	N
<i>Attended High School in a:</i>			
Private Institucion	348.4	201.1	173
Public Institucion	280.5	205.2	566
<i>Attended Profesional or Technical studies in a:</i>			
Private Institucion	317.0	204.5	242
Public Institucion	297.5	233.9	285
<i>Attended Profesional or Technical studies in a:</i>			
Superior Technological Institit	268.7	167.3	233
University	336.8	243.1	329
<i>Applicant's father maximun achievement:</i>			
High School	269.5	188.4	503
College and higher	353.6	229.6	236
<i>Applicant's mother maximun achievement:</i>			
High School	284.3	203.7	595
College and higher	346.1	209.1	144

Figure 8: Selected assets of the applicant's household by monthly household income quintile

Assets	Total	Applicant's Family Income Quintile				
		I	II	III	IV	V
Stove	94%	85%	96%	93%	98%	99%
Color TV	88%	78%	83%	93%	96%	99%
Dryer	61%	47%	50%	63%	70%	86%
Boiler	42%	20%	32%	41%	51%	81%
Cable	34%	19%	23%	26%	49%	56%
Phone line	27%	10%	23%	24%	35%	52%
Washing machine	19%	7%	18%	13%	28%	30%
Savings	16%	10%	9%	15%	18%	32%
Car	16%	4%	8%	11%	24%	36%
Microwave oven	2%	0%	1%	2%	3%	7%

Figure 9: Comparison of characteristics between the applicants to PROEMPLEO and the sample of the National Survey of Households (ENAHO) 2001

	Survey to the applicants to Proempleo	Enaho 2001-III (a)	Enaho 2001-III (b)
Years of education	13.6	12.3	12.1
Female	71%	53%	56%
Age (in years)	27.5	29.9	25.4
Household size (persons)	4.9	4.3	4.4
Monthly household income (S/.)	1355.8	1583.1	1464.1
Monthly household income, per-capita (S/.)	306.5	420.4	375.1
Superior Studies in:			
Public University	15%	9%	6%
Private University	18%	6%	5%
Public Superior Technological Institute	14%	7%	6%
Private Superior Technological Institute	28%	30%	32%
Others	4%	12%	14%
Without superior studies	20%	37%	36%
Born in Lima	75%	66%	69%
Born in Lima and never migrated	66%	66%	69%
Has worked once in his life	100%	100%	100%
Worked as a dependent during the last 12 months	86%	75%	80%
Worked as a self-employed in the last 12 months	50%	28%	22%
Number of observations	565	122	94

4.2 Comparing the sample drawn from PROEMPLEO with the sample of the National Household Survey.

With the purpose of comparing the applicants of PROEMPLEO with similar segments of the labor force in the greater metropolitan Lima population, we present a comparison of our sample with a sub-sample of the National Household Survey 2001 (ENAHO 2001). The first column of Figure 9 reports averages for a set of variables from the sample of applicants. The second column comes from a sub-sample of individuals of the ENAHO 2001 who reached a high-school diploma, who were looking for employment during the week previous to the survey and worked as a dependent at least one of the last twelve months. The third column reports the averages for a sample that is similar to the second but restricted to individuals between 18 and 37 years old (the age range of the applicants to PROEMPLEO). The group of the third column is younger, less educated and has worked less in the self-employed sector than the applicants at PROEMPLEO. The average income of the applicants of our sample is approximately 20% lower than the averages of the corresponding ENAHO samples.

4.3 Characterization of the Interviewers

The main demographic, academic and labor characteristics of the interviewers that were surveyed makes them a relatively homogeneous group. However, it is possible to note some differences in these characteristics that are linked to the size of the firm for which they work. Hence, if the interviewers are equally split by gender, as the firm size increases, the prevalence of males increases (40% in small firms compared to 60% in big firms). The average age shows a similar pattern. The average for the whole group is 40 years old, being the case that the average for males is above the average for females (42 and 35 respectively). In the smaller firms the average age of interviewers are higher than the average age of those in medium and big firms.

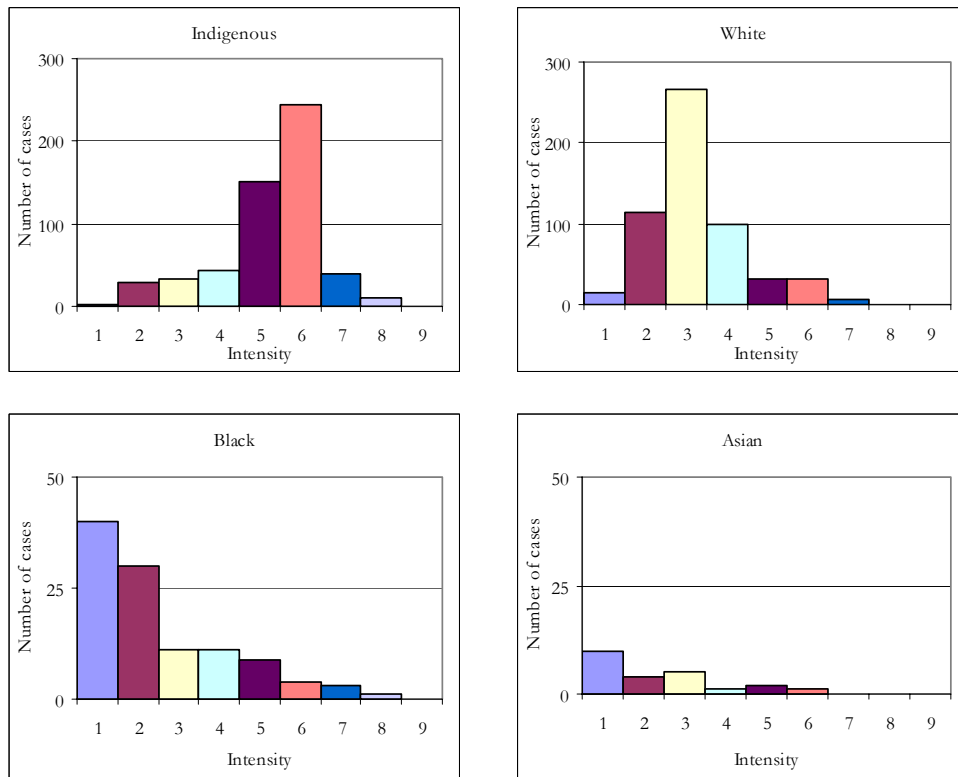
Regarding the schooling of the interviewers, 80% have achieved a college degree. In the bigger firms, this percentage is higher, as is the percentage of individuals with post-graduate studies. The distribution of professional degrees varies by firm size. In the smaller firms the area of expertise of the interviewers coincides with the areas for which they are requiring applicants: accounting, administration, economics or engineering; meanwhile, in the bigger firms, the area of expertise of the interviewers is related to the positions that are typically in charge of the processes of selection of personnel: psychologist or industrial relations professionals. Finally, males have longer tenure, at the firm and at the position, than females (7 and 5 years against 5 and 4 years respectively).

5 Characterization of the Applicants by Gender and Race

Following the same criterion described in Ñopo, Saavedra and Torero (2002), information about racial characteristics of the individuals was collected according to racial intensities. In our sample, individuals perceived as indigenous have a significant presence. The distribution of racial intensities along the Indigenous dimension is concentrated around 5 and 6. On the other hand, the distribution of racial intensities along the White dimension is concentrated around 3.

A comparison of the distributions of racial intensities of the sample obtained for this study and the sample of the ENAHO used in Ñopo et al. (2002) reveals that the PROEMPLEO applicants show racial characteristics of higher intensity in the indigenous dimension and lower intensity in the white dimension than the national averages. There are no substantial differences between both samples with regard to the distribution of intensities along the Asian and Black dimensions.

Figure 10: Racial Intensity Distributions of the Applicants



5.1 Classifying the population under study into racial groups.

5.1.1 Criterion for a partition of the sample

As in Ñopo et al. (2002) it is necessary to define a criterion in order to classify the population according its racial characteristics. The criterion has to take into account the number of observations in the total sample and the resulting numbers of observations in each of the newly defined groups. In this paper, considering that the population under study is a particular segment of the national population, we decided to use a relative cut-off criterion. The cut-off is defined using the distribution of racial characteristics of the sample. In that sense, if in Ñopo et al. (2002) the cut-off criterion was:

If an individual has her/his Indigenous intensity variable greater than or equal to a cut-off “c” and her/his White intensity variable smaller than the same cut-off “c”, she/he will be considered as an Indigenous.

Analogously, if an individual has her/his White intensity variable greater than or equal to a cut-off “c” and her/his Indigenous intensity variable smaller than the same cut-off “c”, she/he will be considered as a White.

An individual that is considered neither Indigenous nor White will be considered a Mestizo.

First, we use the median of the distributions of intensities in the White and Indigenous dimensions respectively as a cut-off point. In order to analyze the sensitivity of the results, we will also use the 75th percentile as a cut-off.

Consequently, for the case of the median, if an individual reports intensity in the Indigenous dimension that is above the median of the distribution of the variable “Indigenous intensity” and intensity in the White dimension that is below the median of the distribution of the variable “White intensity” he/she will be considered as an Indigenous. Analogously, if an individual reports intensity in the indigenous dimension that is below the median of the distribution of the variable “Indigenous intensity” and intensity in the White dimension that is above the median of the distribution of the variable “White intensity” he/she will be considered as a White. An individual who is neither in the group of Indigenous nor in the group of Whites will be considered in the group of Mestizos.

5.1.2 Characterization of the Applicants by Racial Groups

We defined racial groups following the criterion described above for two different cut-offs: the median (50th percentile) and the 75th percentile. Using the median cut-off, 45% of the population can be classified as Indigenous, 10% as mestizo and 45% as White. With the cut-off in the 75th percentile the resulting percentages are 21%, 56% and 23% respectively. With both cut-offs we found a prevalence of indigenous applicants among the accounting and administrative assistants and a prevalence of white individuals among

Figure 11: Number of Applications and Individuals by Definition of Race

Percentile 50				
	Total Applications			
	Total	Salespersons	Secretaries	Assistants
Indigenous	344	90	62	192
Mestizo	77	13	24	40
White	339	124	97	118
Total	760	227	183	350

Percentile 75				
	Total Applications			
	Total	Salespersons	Secretaries	Assistants
Indigenous	160	40	27	93
Mestizo	424	120	100	204
White	176	67	56	53
Total	760	227	183	350

Percentile 50				
	Total Individuals			
	Total	Salespersons	Secretaries	Assistants
Indigenous	255	86	43	126
Mestizo	45	12	15	18
White	265	107	75	83
Total	565	205	133	227

Percentile 75				
	Total Individuals			
	Total	Salespersons	Secretaries	Assistants
Indigenous	105	38	17	50
Mestizo	327	110	75	142
White	133	57	41	35
Total	565	205	133	227

the salespersons and secretaries.

In Table 12 we report a set of individual and family characteristics for the three racial groups defined according to the cut-off of the medians. For most of the variables, a comparison of the applicants from different racial groups does not denote the existence of clearly defined patterns. However we find some differences in the asset ownership of the households, in the type of education of the applicants (public/private) and in the schooling level of the parents for different racial groups.

Figure 12: Household and Individual Characteristics of the Applicants by Race

	Race of the Applicant (Percentile 50)			
	Total	Indigenous	Mestizo	White
<i>Demographic characteristics</i>				
Females	73%	63%	77%	82%
Age (in years)	28.13	28.26	29.23	27.75
<i>Migratory Experience</i>				
Born in Lima	77%	72%	94%	78%
Born in Lima and never migrated	70%	66%	81%	71%
<i>Socio-Economic Characteristics</i>				
Household size (persons)	5.08	5.08	5.17	5.05
Monthly household income (S/.)	1370.49	1308.57	1372.21	1432.75
Monthly household income, per-capita (S/.)	296.38	288.03	278.78	308.95
<i>Household Assets</i>				
Microwave oven	20%	19%	19%	21%
Washing machine	33%	30%	38%	35%
Dryer	4%	2%	3%	6%
Car	17%	17%	4%	19%
<i>Educational background (individual)</i>				
Years of education	13.63	13.99	13.09	13.40
<i>Attended High School in a:</i>				
Public Institution	77%	83%	71%	72%
Private Institution	23%	17%	29%	28%
<i>Pursued Superior Studies in:</i>				
Public University	19%	21%	29%	14%
Private University	16%	15%	13%	18%
Public Superior Technological Institute	14%	18%	12%	11%
Private Superior Technological Institute	26%	27%	18%	27%
Others	6%	4%	13%	5%
Without superior studies	19%	15%	16%	24%
<i>Educational background (family)</i>				
<i>Father's Educational Level</i>				
Elementary	23%	25%	26%	20%
High School	45%	49%	32%	43%
College or higher	33%	26%	42%	37%
<i>Mother's Educational Level</i>				
Elementary	33%	42%	34%	24%
High School	47%	42%	53%	50%
College or higher	20%	16%	13%	26%
<i>Labor History</i>				
Has worked once in his life	99%	100%	100%	99%
Labor Experience (in years)	3.86	3.81	4.15	3.85
Worked as a dependent during the last 12 months	87%	87%	91%	86%
Monthly Earnings in their last dependent occupation	654.13	639.20	726.31	653.52
Last employment spell (years)	12.74	12.23	10.57	13.77
Worked as a self-employed in the last 12 months	50%	56%	47%	44%
<i>Job search</i>				
Unemployment spell (months)	3.47	3.31	3.25	3.69
Months looking for a job	2.11	2.09	1.89	2.18
Applications sent to Proempleo	1.88	1.87	3.16	1.60
Has prior experience at the job	36%	39%	40%	32%
Hired (%)	17%	15%	16%	19%
<hr/>				
Number of Applicants	760	344	77	339

6 Results of the Pseudo Audit

6.1 Characteristics of the Hired Applicants

A comparison of the individual characteristics between the hired and non-hired applicants initially reveals a higher hiring rate for females than for males. The hired applicants are slightly older and belong to bigger families with higher income.

It is important to note that the previously reported results should be understood “globally.” In the sense that for the computation of the basic statistics we have considered all the applicants without taking into consideration the number of interviews that each applicant got.

6.2 The Percentages of Hired Applicants by Gender and Race.

A natural approach at the synthesis of data from the fieldwork consists simply in computing the success rates for different groups in our sample.¹⁴ The data tell us that out of 760 applications (individuals who were sent to job interviews), 127 were hired. This is translated into a global success rate of 16.71%. Looking separately at the three occupations under consideration, we can report success rates of 14.54% for the applicants to the salespersons positions, 20.22% for the secretaries and 16.29% for the assistants.¹⁵ In this section, we will analyze the gender and racial differences that are present among the success rates of different sub-groups.

First, a gender approach to the success rates suggests the existence of some mechanisms in the hiring processes that may reinforce the gender occupational segregation found in the Peruvian labor market. Among the applicants to assistants, the success rate for males is above the success rate for females (18% compared to 15.3%). However for the applicants to salespersons the result is exactly the opposite, the success rate for females is substantially above the same rate for males (19.2% compared to 8.3%). It is interesting to note that the national percentage of female participation in the occupations of assistants is around 37.15% while the female participation among the sales persons is around 53.35%.¹⁶ That is, the occupation for which we find a higher success rate for females in our audit study (salespersons) has a higher female participation rate on the national level. Given the nature of our audit study, which was not designed to be representative of the national statistics, we do not pretend to claim a direct statistical link between these two pieces of information. We present both pieces together here just as an interesting empirical finding that, to some extent, suggests one of the possible mechanisms that operate towards the

¹⁴For every group, the success rate is defined as the ratio number of applicants hired to the number of applicants.

¹⁵The standard errors for these success rates are 2.3%, 3.0% and 2.0% for salespersons, secretaries and assistants respectively.

¹⁶These figures were estimated from the National Household Survey for 2000.

Figure 13: Characteristics of the Hired and Non-Hired Applicants

	Hired	
	No	Yes
Hired (%)	83	17
<i>Gender (%)</i>		
Male	88	12
Female	81	19
Age (years)	27.9	28.3
Household size (persons)	4.9	5.3
Monthly household income (S/.)	1308.7	1485.2
Rate: Hired/Number of Applications	0.9	0.9
Number of applications	1.4	1.3
<i>Attended High School in a (%):</i>		
Public Institution	83	17
Private Institution	84	16
<i>Pursued Superior Studies in a (%):</i>		
Public University	88	12
Private University	82	18
Public Superior Technological Institute	81	19
<i>Monthly Household Income (S/.) (%)</i>		
Between 100-700	92	8
Between 701-1050	84	16
Between 1051-1400	77	23
Between 1750-+	80	20
<i>Father's Educational Level (%)</i>		
Elementary	84	16
High School	84	16
College or higher	82	18
<i>Mother's Educational Level (%)</i>		
Elementary	82	18
High School	86	14
College or higher	80	20

determination of an occupational segregation by gender in Peru.

It is also interesting to note that these differences in success rates by gender show particular patterns after the incorporation of the sex of the interviewer into the analysis. While, among the salespersons, the highest success rate occur when female interviewers evaluated female applicants, the reverse is true for the assistant applicants. The highest success rates are found when male interviewers evaluated male applicants, as illustrated in Table 14.¹⁷

Following the criterion of the median cut-off for a partition of the population into three racial groups, we can also report differences in success rates. While the 13.3% of Indigenous who applied to salesperson positions were hired, the success rate for whites in those occupations is 14.5%. Slightly bigger differences are found in the success rates of the applicants to assistant positions. For those occupations, 15.1% of indigenous applicants got a job, but 18.6% of whites had success. The differences in success rates by race attain a maximum among the secretarial positions, for which there are only female applicants. While 16.1% of indigenous applicants got a job (one out of six), their white competitors had a higher success rate, 24.7% (one out of four).

Disaggregating these success rates by racial characteristics of the interviewers also produces notable results, especially among the secretaries. For this occupation, the interviewer-applicant racial combination has a minimum success rate when the interviewer is mestizo and the applicant indigenous (10.0%). By comparison, when the interviewer is mestizo and the applicant is white, the success rate is 33%, a maximum.

Combining applicant's gender and racial characteristics, reveals that among the salespersons (Tables 16 and 17) the male applicants in general, and the indigenous males in particular, have the lowest success rates (6.4%). Among the accounting and administrative assistant applicants, white males have superior success rates while indigenous females have the lowest rate of 14.2%.

These success rates have been computed without consideration of some observable characteristics (there is no perfect alignment of all the observable characteristics for all the applicants at each occupation). Since these differences in characteristics may have an impact in the success of the applicants, it is necessary to control for them. That will be the purpose of the next sub-section. For that reason we will use discrete models which will seek to explain the hiring outcomes in terms of individual and family characteristics of the individuals, occupations, firms and interviewers.

¹⁷For this and the next tables reported in this section, we will report three basic statistics: the success rate (percentage of hired individuals), the standard error of such a percentage (in parenthesis) and finally the number of observations.

Figure 14: Success Rates by Occupation and Gender

		Salespersons		
		Interviewer		
		Male	Female	Total
Applicant	Male	5.9% (4%) 34	9.5% (4%) 63	8.3% (3%) 97
	Female	15.9% (5%) 63	22.4% (5%) 67	19.2% (3%) 130
Total		12.4% (3%) 97	16.2% (3%) 130	14.5% (2%) 227

		Secretaries		
		Interviewer		
		Male	Female	Total
Applicant	Male			
	Female	21.6% (5%) 74	19.3% (4%) 109	20.2% (3%) 183
Total		21.6% (5%) 74	19.3% (4%) 109	20.2% (3%) 183

		Assistants		
		Entrevistador		
		Hombre	Mujer	Total
Postulante	Hombre	20.4% (6%) 49	17.0% (5%) 59	18.5% (4%) 108
	Mujer	14.3% (3%) 119	16.3% (3%) 123	15.3% (2%) 242
Total		16.1% (3%) 168	16.5% (3%) 182	16.3% (2%) 350

Figure 15: Success Rates by Race of the Applicant and the Interviewer

		Salespersons			
		Interviewer			Total
		Indigenous	Mestizo	White	
Applicant	Indigenous	16.7%	6.1%	18.2%	13.3%
		(8%)	(4%)	(7%)	(4%)
		24	33	33	90
	Mestizo	100.0%	0.0%	33.3%	23.1%
		(0%)	(0%)	(19%)	(12%)
		1	6	6	13
	White	17.4%	9.3%	17.2%	14.5%
		(8%)	(4%)	(5%)	(3%)
		23	43	58	124
Total	18.8%	7.3%	18.6%	14.5%	
	(6%)	(3%)	(4%)	(2%)	
	48	82	97	227	

		Secretaries			
		Interviewer			Total
		Indigenous	Mestizo	White	
Applicant	Indigenous	17.9%	10.0%	16.7%	16.1%
		(7%)	(9%)	(8%)	(5%)
		28	10	24	62
	Mestizo	15.4%	0.0%	11.1%	12.5%
		(10%)	(0%)	(10%)	(7%)
		13	2	9	24
	White	19.5%	33.3%	25.7%	24.7%
		(6%)	(10%)	(7%)	(4%)
		41	21	35	97
Total	18.3%	24.2%	20.6%	20.2%	
	(4%)	(7%)	(5%)	(3%)	
	82	33	68	183	

		Assistants			
		Entrevistador			Total
		Indigena	Mestizo	Blanco	
Postulante	Indigena	16.7%	13.3%	14.3%	15.1%
		(4%)	(4%)	(5%)	(3%)
		90	60	42	192
	Mestizo	18.8%	6.7%	22.2%	15.0%
		(10%)	(6%)	(14%)	(6%)
		16	15	9	40
	Blanco	20.4%	20.9%	11.5%	18.6%
		(6%)	(6%)	(6%)	(4%)
		49	43	26	118
Total	18.1%	15.3%	14.3%	16.3%	
	(3%)	(3%)	(4%)	(2%)	
	155	118	77	350	

Figure 16: Success Rates of Males by Race

		Salespersons			Total
		Interviewer			
		Indigenous	Mestizo	White	
Applicant	Indigenous	0.0% (0%) 16	5.0% (5%) 20	18.2% (12%) 11	6.4% (4%) 47
	Mestizo		0.0% (0%) 5	50.0% (35%) 2	14.3% (13%) 7
	White	25.0% (13%) 12	4.2% (4%) 24	0.0% (0%) 7	9.3% (4%) 43
Total		10.7% 28	4.1% 49	15.0% 20	8.3% 97

		Assistants			Total
		Entrevistador			
		Indigena	Mestizo	Blanco	
Applicant	Indigenous	14.3% (6%) 35	20.0% (9%) 20	16.7% (8%) 24	16.5% (4%) 79
	Mestizo	33.3% (27%) 3	0.0% (0%) 4	25.0% (22%) 4	18.2% (12%) 11
	White	22.2% (14%) 9	33.3% (27%) 3	33.3% (19%) 6	27.8% (11%) 18
Total		17.0% 47	18.5% 27	20.6% 34	18.5% 108

Figure 17: Success Rates of Females by Race

		Salespersons			
		Interviewer			Total
		Indigenous	Mestizo	White	
Applicant	Indigenous	50.0% (18%) 8	7.7% (7%) 13	18.2% (8%) 22	20.9% (6%) 43
	Mestizo	100.0% (0%) 1	0.0% (0%) 1	25.0% (22%) 4	33.3% (19%) 6
	White	9.1% (9%) 11	15.8% (8%) 19	19.6% (6%) 51	17.3% (4%) 81
	Total	30.0% (10%) 20	12.1% (6%) 33	19.5% (5%) 77	19.2% (3%) 130

		Secretaries			
		Interviewer			Total
		Indigenous	Mestizo	White	
Applicant	Indigenous	17.9% (7%) 28	10.0% (9%) 10	16.7% (8%) 24	16.1% (5%) 62
	Mestizo	15.4% (10%) 13	0.0% (0%) 2	11.1% (10%) 9	12.5% (7%) 24
	White	19.5% (6%) 41	33.3% (10%) 21	25.7% (7%) 35	24.7% (4%) 97
	Total	18.3% (4%) 82	24.2% (7%) 33	20.6% (5%) 68	20.2% (3%) 183

		Assistants			
		Entrevistador			Total
		Indigena	Mestizo	Blanco	
Applicant	Indigenous	18.2% (5%) 55	10.0% (5%) 40	11.1% (7%) 18	14.2% (3%) 113
	Mestizo	15.4% (10%) 13	9.1% (9%) 11	20.0% (18%) 5	13.8% (6%) 29
	White	20.0% (6%) 40	20.0% (6%) 40	5.0% (5%) 20	17.0% (4%) 100
	Total	18.5% (4%) 108	14.3% (4%) 91	9.3% (4%) 43	15.3% (2%) 242

6.3 Race, gender, wages and aimed wages

In the hiring and job search processes, there is a complex relationship among the aimed wages (the wage that the individuals would like to get at their new job), the reservation wages (the minimum wage the individuals are willing to accept in order to work), the entry wages (the wages at which the individuals start their new jobs) and the gender and racial characteristics of the individuals.

In the Peruvian labor markets, there are some sorting mechanisms operating (for example, occupational segregation). It should be expected that the agents in this system —employers, employees and job seekers— make their decisions based on the assumption that there is, at least, some statistical discrimination in the market. Then, at the equilibrium, it would not be surprising to find differences in the distribution of wages offered and in the distribution of the unemployment spells by gender and race. The individuals that belong to a discriminated group, anticipating differentiated treatment, adjust their beliefs and as a consequence they go on their job search processes by choosing reservation wages that are below those of the non-discriminated group.

On the other side of the market, employers assume the same prior common beliefs, and know that individuals from the discriminated groups are willing to accept lower wages. In such a way, an equilibrium is achieved and the beliefs of the individuals are confirmed ex-post, creating a typical “self-fulfilling prophecy.”

These theoretical predictions of the search models¹⁸ are related to reservation wages but not aimed wages. There is an interesting issue about aimed wages that we want to analyze and expand upon in this paper. Aimed wages capture the value (in monetary units) of a set of individual characteristics that are not observable by the econometrician and in many situations, not even by the employer. For this reason, aimed wages have the “human capital” of the individuals as a component that is typically not captured by a Mincerian model.

The data obtained from this study allows us to explore, at least partially, the complex relationship that may involve wages, aimed wages and gender and racial characteristics of the individuals. We have information about the wages of the individuals in their previous jobs as well as their aimed wages for the jobs they are applying to. To analyze the relationship between these two variables, controlling for a set of individual characteristics (including gender and race) will shed some light on the processes of adjustment of beliefs and expectations of the individuals in the Peruvian labor market. For that purpose, in a simple linear model, we try to explain the logarithm of the aimed wages of the individuals from a set of individual characteristics, including gender, race and their wages in their last occupations.¹⁹ Figure 18 shows the results. The statistical relationship between the last wage and aimed wages is clearly positive. The other

¹⁸Mortensen and Pissarides (1994).

¹⁹With the purpose of minimizing some possible statistical noises, we restrict the analysis to those individuals with no more than 12 months unemployed who did not work as self-employed in their last job.

Figure 18: Determinants of the Aimed Wages

Determinants of the Aimed Wages of the Individuals
For Different Cut-Offs of Race Intensity

	Percentile 50	Percentile 75
Ln earnings in the Last Occupation	0.143 (8.04)**	0.147 (8.25)**
Ln Family Monthly Income	0.033 (2.20)**	0.038 (2.50)**
Father's Schooling	0.032 (3.69)**	0.035 (3.99)**
Single	0.08 (2.79)**	0.074 (2.58)**
Age	0.011 (5.56)**	0.011 (5.63)**
Occupation (Salespersons)	-0.199 (9.01)**	-0.192 (8.70)**
Occupation (Secretaries)	-0.065 (3.01)**	-0.06 (2.81)**
Indigenous	-0.009 -0.49	0.043 -1.62
Mestizo	0.049 -1.71	-0.005 -0.24
Female	-0.079 (3.70)**	-0.065 (3.06)**
Constant	4.964 (32.42)**	4.89 (31.65)**

controls we introduced in the regression show clear relationships with the aimed wages. First, the logarithm of the family income which has the purpose of controlling for the effects of family or social pressure that may experience the individuals in order to look after better paying jobs. Second, the schooling of the father which aims to capture “role model” effects as individuals with better educated parents would aspire for a better career. Third, the marital status of the individuals as a proxy measure of the urgency the applicants have to generate income (we presume that an individual who is single has less pressure to find a job than somebody who is married, and for that reason, they can indulge to go to their job search processes with higher pretensions). Finally we included the age of the individuals, two controls for the occupations to which the individuals were applying and the controls that are the object of our study: dummy variables for race and gender of the individuals.

All the proposed controls have statistically significant impacts in determining aimed wages. The role of family pressure, parent education and marital status are positive. Our estimation suggests that females

adjust their aims by 7% to 8% below the average aimed wages of males. However there is no evidence of racial differences in aimed wages.

6.4 Controlling gender and racial differences in hiring by observable characteristics: logit estimates

The design of our pseudo audit study requires that all applicants who are sent to the same job interview satisfy a minimum set of requirements (which are established by the posting firm and verified by PROEMPLEO). But, we cannot assure that all the applicants that go to the same interview have exactly the same set of observable characteristics. Analyzing the data we have found that there are some small differences among applicants to the same position. If applicants for the same position differ in observable characteristics as well as in racial characteristics, it is necessary to explore to what extent the differences found in the success rates of gender and racial groups can be explained by those differences in observable characteristics, what can be directly explained by the differences in racial characteristics and what remains unexplained.

For that purpose, we estimate discrete choice models (logit) where the explained variable is whether the individual is hired or not. This hiring outcome is explained by a set of observable characteristics: sex and race of the applicant, sex and race of the interviewer, age of the applicant, schooling, marital status, a dummy indicating whether the applicant is chief of a household or not, migratory condition, unemployment spell, education of their parents, a dummy indicating if the individual currently has a job by the time of the interview. In addition, we have two proxy measures of the ability of the applicants: the logarithm of their wages at their last job and the difference between the logarithm of the aimed wages and the logarithm of the wages in their last main occupation. The logarithm of the wages of the applicants works as a proxy variable for their “human capital.” It is expected that those individuals who had higher earnings in their last occupations are better trained than those who had lower earnings. The difference between the logarithm of the aimed wages and the logarithm of their wages at their last occupation pretends to capture the effect of characteristics that are observed by the individual but unobservable for the econometrician and the labor market.

These discrete models are estimated for different partitions of the sample: by occupations, by firm size, by race of the interviewer and by sex of the interviewer. In order to control for the set of unobservable characteristics that are common to all the individuals that apply to the same job posting, we will include posting fixed effects. Due to the typical identification problem of these types of discrete models, we will report only the partial derivatives of the estimated coefficients.

Tables 19, 20 and 21 show some selected coefficients of the estimations: the coefficients related to the

Figure 19: Marginal Effects on Hiring. Selected Coefficients (1)

By Occupation

Percentile 50				
	Total	Salespersons	Secretaries	Assistants
Mestizo Applicant	0.002 (0.03)	0.049 (1.31)	-0.084 (0.70)	0.040 (0.57)
White Applicant	0.033 (1.10)	-0.003 (0.16)	0.009 (0.11)	0.060 (1.34)
Female Applicant	0.022 (0.61)	0.054 (1.53)		-0.034 (0.68)
Ln Last Earnings at the Main Occupation	0.170 (2.76)**	0.050 (0.87)	0.208 (1.42)	0.189 (2.09)*
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.131 (2.03)*	0.036 (0.66)	0.082 (0.50)	0.154 (1.73)
Percentile 75				
	Total	Salespersons	Secretaries	Assistants
Mestizo Applicant	0.106 (2.60)**	0.017 (0.60)	0.186 (1.52)	0.093 (1.79)
White Applicant	0.105 (2.18)*	0.012 (0.38)	0.144 (1.11)	0.154 (2.23)*
Female Applicant	0.010 (0.28)	0.035 (1.22)		-0.047 (0.95)
Ln Last Earnings at the Main Occupation	0.180 (2.99)**	0.053 (0.90)	0.221 (1.56)	0.196 (2.18)*
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.143 (2.27)*	0.037 (0.68)	0.128 (0.80)	0.173 (1.92)

gender and race variables, as well as the coefficients associated with the earnings of the individuals in their last occupations and the difference between aimed wages and their last earnings.

For the racial classification that uses the 75th percentile, the coefficients for the mestizo and white dummies are statistically significant in the aggregate. After disaggregating the estimations by occupations and race of the interviewer, no marginal effect is statistically significant. Only in the small firms is there some evidence that white individuals perform better. Whenever the interviewer is male, mestizos and white individuals do better as well. Changing the cut-off from the 75th percentile to the median alters the results slightly, but the effect found on the mestizo and white applicants facing male interviewers is robust.

In Tables 22, 23 and 24 we show a slightly different specification in which we interacted race and gender of the applicants. We found some evidence of significant differences in the likelihood of being hired only when the interviewer is male (in favor of male mestizos) and among the salespersons (where evidence indicates indigenous males perform poorly).

It is important to note the positive and statistically significant role of the earnings of the last occupation on the hiring. This variable is likely to encompass the effect of some individual characteristics that are

Figure 20: Marginal Effects on Hiring. Selected Coefficients (2)

By Firm Size

Percentile 50

	Total	Small Firms	Medium Firms	Big Firms
Mestizo Applicant	0.002 (0.03)	0.006 (0.14)	-0.080 (0.69)	0.032 (0.61)
White Applicant	0.033 (1.10)	0.060 (1.92)	-0.043 (0.69)	0.028 (0.74)
Female Applicant	0.022 (0.61)	0.026 (0.60)	0.093 (1.00)	-0.021 (0.54)
Ln Last Earnings at the Main Occupation	0.170 (2.76)**	-0.025 (0.43)	0.237 (1.73)	0.114 (1.61)
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.131 (2.03)*	-0.032 (0.50)	0.187 (1.33)	0.071 (1.02)

Percentile 75

	Total	Small Firms	Medium Firms	Big Firms
Mestizo Applicant	0.106 (2.60)**		0.044 (0.54)	0.044 (1.02)
White Applicant	0.105 (2.18)*	0.027 (2.88)**	0.079 (0.77)	0.015 (0.28)
Female Applicant	0.010 (0.28)	0.001 (0.63)	0.045 (0.48)	-0.007 (0.17)
Ln Last Earnings at the Main Occupation	0.180 (2.99)**	0.001 (0.43)	0.247 (1.78)	0.131 (1.89)
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.143 (2.27)*	0.001 (0.43)	0.190 (1.33)	0.082 (1.19)

Figure 21: Marginal Effects on Hiring. Selected Coefficients (3)

By Interviewer's Characteristics

Percentile 50

	Total	Indigenous Interviewer	Mestizo Interviewer	White Interviewer	Male Interviewer	Female Interviewer
Mestizo Applicant	0.002 (0.03)	-0.035 (0.43)		0.060 (0.97)	0.178 (2.30)*	-0.101 (1.53)
White Applicant	0.033 (1.10)	0.009 (0.16)	0.062 (1.17)	0.005 (0.12)	0.109 (2.19)*	-0.009 (0.23)
Female Applicant	0.022 (0.61)	0.072 (1.06)	0.053 (0.82)	0.004 (0.08)	-0.060 (0.97)	0.072 (1.50)
Ln Last Earnings at the Main Occupation	0.170 (2.76)**	0.177 (1.57)	0.192 (1.62)	0.081 (0.93)	0.158 (1.54)	0.206 (2.65)**
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.131 (2.03)*	0.122 (1.09)	0.233 (1.71)	0.017 (0.18)	0.076 (0.73)	0.198 (2.36)*

Percentile 75

	Total	Indigenous Interviewer	Mestizo Interviewer	White Interviewer	Male Interviewer	Female Interviewer
Mestizo Applicant	0.106 (2.60)**		0.058 (1.31)	0.020 (0.68)	0.197 (2.93)**	0.036 (0.70)
White Applicant	0.105 (2.18)*		0.069 (1.35)	0.020 (0.67)	0.121 (1.47)	0.084 (1.47)
Female Applicant	0.010 (0.28)		0.029 (0.72)	0.000 (0.08)	-0.062 (1.06)	0.056 (1.15)
Ln Last Earnings at the Main Occupation	0.180 (2.99)**		0.153 (2.10)*	0.003 (0.38)	0.140 (1.41)	0.204 (2.63)**
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.143 (2.27)*		0.125 (2.09)*	-0.001 (0.44)	0.083 (0.81)	0.202 (2.37)*

Figure 22: Marginal Effects on Hiring. Race and Gender Interactions (1)

By Occupations

Percentile 50				
	Total	Salespersons	Secretaries	Assistants
Male and Indigenous Applicant	-0.023 (0.49)	-0.085 (2.35)*		0.041 (0.70)
Male and Mestizo Applicant	0.007 (0.08)	-0.012 (0.33)		0.013 (0.11)
Male and White Applicant	0.003 (0.04)	-0.052 (1.78)		0.115 (1.27)
Female and Mestizo Applicant	-0.007 (0.12)	0.022 (0.63)	-0.084 (0.70)	0.079 (0.93)
Female and White Applicant	0.035 (1.04)	-0.019 (1.03)	0.009 (0.11)	0.057 (1.11)
Ln Last Earnings at the Main Occupation	0.171 (2.78)**	0.055 (1.44)	0.208 (1.42)	0.190 (2.05)*
Diff Ln(Aimed Wages)-Ln(Last Earnings)	0.133 (2.06)*	0.040 (1.04)	0.082 (0.50)	0.147 (1.62)
Percentile 75				
	Total	Salespersons	Secretaries	Assistants
Male and Indigenous Applicant	-0.036 (0.48)			0.020 (0.22)
Male and Mestizo Applicant	0.093 (1.51)	-0.074 (1.40)		0.131 (1.57)
Male and White Applicant	0.075 (0.86)	-0.062 (1.27)		0.200 (1.40)
Female and Mestizo Applicant	0.092 (1.82)	-0.029 (0.87)	0.186 (1.52)	0.076 (1.09)
Female and White Applicant	0.095 (1.66)	-0.046 (1.21)	0.144 (1.11)	0.137 (1.67)
Ln Last Earnings at the Main Occupation	0.180 (2.99)**	0.075 (1.08)	0.221 (1.56)	0.195 (2.16)*
Diff Ln(Aimed Wages)-Ln(Last Earnings)	0.145 (2.29)*	0.049 (0.82)	0.128 (0.80)	0.175 (1.93)

Figure 23: Marginal Effects on Hiring. Race and Gender Interactions (2)

By Firm Size

Percentile 50				
	Total	Small Firms	Medium Firms	Big Firms
Male and Indigenous Applicant	-0.023 (0.49)	-0.055 (0.97)	-0.131 (1.29)	0.072 (1.46)
Male and Mestizo Applicant	0.007 (0.08)	-0.006 (0.10)		0.055 (0.64)
Male and White Applicant	0.003 (0.04)	0.038 (0.56)	0.081 (0.41)	0.027 (0.42)
Female and Mestizo Applicant	-0.007 (0.12)	-0.020 (0.35)	-0.078 (0.68)	0.074 (1.11)
Female and White Applicant	0.035 (1.04)	0.046 (1.38)	-0.057 (0.91)	0.071 (1.53)
Ln Last Earnings at the Main Occupation	0.171 (2.78)**	-0.021 (0.36)	0.238 (1.76)	0.120 (1.72)
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.133 (2.06)*	-0.025 (0.40)	0.190 (1.37)	0.082 (1.17)
Percentile 75				
	Total	Small Firms	Medium Firms	Big Firms
Male and Indigenous Applicant	-0.036 (0.48)		-0.103 (0.69)	0.046 (0.59)
Male and Mestizo Applicant	0.093 (1.51)	0.162 (1.73)	-0.040 (0.28)	0.071 (1.09)
Male and White Applicant	0.075 (0.86)	0.164 (1.68)	0.384 (1.40)	-0.008 (0.09)
Female and Mestizo Applicant	0.092 (1.82)	0.168 (1.70)	0.036 (0.41)	0.060 (1.03)
Female and White Applicant	0.095 (1.66)	0.167 (1.69)	0.049 (0.45)	0.051 (0.75)
Ln Last Earnings at the Main Occupation	0.180 (2.99)**	0.005 (0.31)	0.224 (1.64)	0.136 (1.95)
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.145 (2.29)*	0.006 (0.31)	0.173 (1.24)	0.090 (1.29)

Figure 24: Marginal Effects on Hiring. Race and Gender Interactions (3)

By Interviewer's Characteristics

Percentile 50

	Total	Indigenous Interviewer	Mestizo Interviewer	White Interviewer	Male Interviewer	Female Interviewer
Male and Indigenous Applicant	-0.023 (0.49)	-0.148 (1.79)	-0.055 (0.66)	0.033 (0.57)	0.009 (0.12)	-0.053 (0.88)
Male and Mestizo Applicant	0.007 (0.08)	-0.023 (0.12)		0.089 (0.91)	0.280 (2.29)*	
Male and White Applicant	0.003 (0.04)	0.019 (0.18)	0.009 (0.11)	-0.089 (0.91)	0.211 (1.95)	-0.088 (1.10)
Female and Mestizo Applicant	-0.007 (0.12)	-0.068 (0.79)		0.066 (0.88)	0.144 (1.53)	-0.068 (0.93)
Female and White Applicant	0.035 (1.04)	-0.034 (0.58)	0.061 (0.90)	0.035 (0.75)	0.093 (1.74)	0.002 (0.06)
Ln Last Earnings at the Main Occupation	0.171 (2.78)**	0.142 (1.27)	0.191 (1.61)	0.072 (0.85)	0.155 (1.50)	0.216 (2.68)**
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.133 (2.06)*	0.100 (0.89)	0.233 (1.71)	0.009 (0.10)	0.082 (0.78)	0.204 (2.33)*

Percentile 75

	Total	Indigenous Interviewer	Mestizo Interviewer	White Interviewer	Male Interviewer	Female Interviewer
Male and Indigenous Applicant	-0.036 (0.48)		-0.052 (0.66)		0.063 (0.48)	-0.109 (1.21)
Male and Mestizo Applicant	0.093 (1.51)		0.028 (0.41)		0.272 (2.68)**	-0.028 (0.35)
Male and White Applicant	0.075 (0.86)		0.023 (0.25)		0.106 (0.57)	0.002 (0.02)
Female and Mestizo Applicant	0.092 (1.82)		0.045 (0.81)	0.063 (1.73)	0.199 (2.24)*	0.017 (0.27)
Female and White Applicant	0.095 (1.66)		0.061 (0.98)	0.065 (1.76)	0.130 (1.27)	0.066 (0.97)
Ln Last Earnings at the Main Occupation	0.180 (2.99)**		0.160 (2.31)*	0.013 (1.90)	0.161 (1.60)	0.198 (2.56)*
Diff Ln(Aimed Wages)-Ln>Last Earnings)	0.145 (2.29)*		0.155 (2.12)*	0.009 (1.33)	0.099 (0.98)	0.206 (2.42)*

unobservable by the econometrician but observable by the interviewer.

7 Discussion and conclusions

In this study we explore the role of gender and race in the explanation of differences in hiring, for particular occupations, using information of real applications and job interviews obtained from the CIL-PROEMPLEO network, the intermediation system of the Ministry of Labor and Employment Promotion. We studied salespersons, secretaries and accounting and administrative assistants. The racial information was captured following the same approach used in Ñopo, Saavedra and Torero (2002).

The experiment consists of comparing the relative performance in the job seeking process of mestizo individuals that are heterogeneous in terms of observable racial characteristics but somewhat homogeneous in other observable characteristics such as age, schooling and experience. The racial heterogeneity of the sample allows us to form groups of individuals that we labeled as whites mestizos and indigenous. The construction of those groups depended on a cut-off criterion and we performed the analysis for two different cut-offs.

The design of this pseudo-audit study left small room for the existence of statistical discrimination as the differences in observable characteristics are small.

A first look at the hiring rates shows some evidence that may suggest the existence of discriminatory patterns against females and in favor of whites. On the other hand, an analysis of the hiring rates by occupation reveals a result that is aligned with the evidence for occupational segregation by gender that exists in Peru. Among secretaries, an occupation for which there are only female applicants, the racial differences in hiring rate are higher than in any other occupation. Even though, by the nature of this experiment, the observable differences among the applicants that go to the same job interview are expected to be small, we can not guarantee that there are in fact no such differences.

Logit estimations that control for these differences in observable characteristics among the individuals, which may influence the hiring decision of the interviewers, wash out some of the discriminatory evidences. The statistically significant differences in hiring rates among groups are not robust to different specifications of the logit model or different partitions of the population. Although, we recognize that this may be a consequence of the sample size. It would be necessary to increase the sample size of the study to reach definitive conclusions.

Nevertheless, provided that in this study we have controlled for differences in observable characteristics in a very detailed way, not only in the formation of the groups of applicants per posting but also in the econometric models, can we affirm that there is no discrimination in hiring practices in Peru?

At the very specific level of the occupations analyzed, the answer is probably yes, there is no evidence of

discrimination. The question then becomes, why is there high occupational segregation by gender and race in the aggregate national figures? And why are there such substantial differences in earnings for individuals with different gender and racial traits?

The answer is two-fold. First, there are large discrepancies in access to education, asset ownership, and social networks according to the race and gender of individuals. Second, there should be some pre-sorting mechanisms operating in the Peruvian society that influence individuals of the traditionally dominated groups to “choose” not to even apply to certain occupations. Along the same line of thought, some individuals of the traditionally discriminated groups, anticipating their poor expectancies for their future careers, find less profitable to invest in education and human capital in general and decide not to invest, later, they will find themselves into a “poverty trap” from which it is not easy to escape. These two explanations represent important research avenues towards the future understanding of the inequalities in Peruvian labor market.

References

- [1] Blau, Francine and Marianne Ferber (1992). “The Economics of Women, Men and Work.” 2nd Ed. Englewood Cliffs, NJ: Prentice-Hall.
- [2] Blau, Francine and Lawrence Khan (1996). “International Differences in Male Wage Inequality: Institutions versus Market Forces.” *Journal of Political Economy*, 104(4), 791-837.
- [3] Blau, Francine D. and Lawrence M. Khan; (1997). “Swimming Upstream: Trends in the Gender Wage Differential in 1980s.” *Journal of Labor Economics*, January, 15:1 (Part 1), 1-42.
- [4] Chay, Kenneth (1998). “The Impact of Federal Civil Rights Policy on Black Economics Progress: Evidence From The Equal Employment Opportunity Act of 1972.” *Industrial and Labor Relations Review*, 51(4), July 1998, pp. 608-632.
- [5] Cross, Harry, Ganevieve Kenney, Jane Mell and Wendy Zimmerman (1990). “Employer Hiring Practices: Differential Treatment of Hispanic and Anglo Job Seekers”. The Urban Institute Press, Washington D.C.
- [6] Deutsch, Ruthanne, Andrew Morrison, Claudia Piras and Hugo Ñopo (2002). “Working Within Confines: Occupational Segregation by Gender in Three Latin American Countries.” *Inter-American Development Bank. Sustainable Development Department. Technical Papers Series No. 126*. Washington D.C.

- [7] Fluckiger, Y. and Silber, J. (1999). "The measurement of segregation in the labor force." Heidelberg: Physica-Verlag.
- [8] Gottschalk, Peter; (1997). "Inequality, Income growth and Mortality: The Basic Facts" *Journal of Economic Perspectives*, Spring, 11:2, 21-40.
- [9] Heckmann, James and Peter Siegelman (1993). "The Urban Institute Audit Studies: Their Methods and Findings". In: *Clear and Convincing Evidence: Measure of Discrimination in America*. Michael Fix and Raymond Struyk, editors. The Urban Institute Press, Washington D.C.
- [10] Heckman, James (1998). "Detecting Discrimination". *The Journal of Economic Perspectives*, Vol 12, Issue 2 (Spring 1998), 101-116.
- [11] Lindzey, G. and E. Aronson (1975). "The Handbook of Social Psychology" 2nd. Ed. Vol 2. Addison-Wesley. Reading Mass.
- [12] Mortensen Dale and C.A. Pissarides (1994), "Job Creation and Job Destruction in the Theory of Unemployment", *Review of Economic Studies*, 61, pp. 397-415.
- [13] Ñopo, Hugo, Jaime Saavedra and Maximo Torero (2002). "Ethnicity and Earnings in Urban Peru". Unpublished. GRADE.
- [14] Rosenthal, R. (1976). "Experimenter Effects in Behavioral Research" 2nd. Ed. Irvington Publishers. New York.
- [15] Turner, Margey, Michael Fix and Raymond Struyk (1991). "Opportunities Denied, Opportunities Diminished: Racial Discrimination in Hiring". UI Report 81-9. The Urban Institute Press, Washington D.C.
- [16] Waldfogel, Jane; (1998). "Understanding the 'Family Gap' in Pay for Women with Children." *Journal of Economic Perspectives*, Winter, 13:1,137-56.
- [17] Yinger, John, 1998. "Evidence on Discrimination in Consumer Markets," *Journal of Economic Perspectives*, Vol. 12 (2) pp. 23-40.