

# The Effect of a Change in Legislation on the Wage Gap in Brazil

Jorge Saba Arbache

University of Brasília, Brasil

E-mail: jarbache@unb.br

Paulo R. A. Loureiro

University of Brasília, Brasil

E-mail: pauloloureiro@unb.br

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## Abstract

The article investigates the existence of wage gap for gender in the Brazilian labor market. The introduction of compulsory open exams applied in Brazil to public service job candidates as a way to prevent clientelism and nepotism. Our hypothesis is that if there is discrimination, so we should observe gender wage gap reduction after the introduction of the open exams. We find evidence in favor of this hypothesis, thus suggesting that there is discrimination against women, even if we assume that male and female employees have the same human capital characteristics within each public sector.

**Keywords:** Discrimination, Gender, Public service, Compulsory open exams

JEL: J7

## 1. Introduction

In 1988, a new Federal Constitution was instituted in Brazil which established the obligation of open exams for the selection of civil servants. According to this precept, only the candidates who obtained the best grades on the tests become eligible to fill a pre-determined number of job positions in public service. The principal motive of the legislators was to prevent clientelism and nepotism, which are common practices in Brazil. Until this law was put into effect, there had been no need of open exams to select public employees. This permitted vacancies to be filled via criteria chosen by the managers of the areas needing employees. Although not being the original intention of the authors of the Constitution, open exams created an entrance rule in the public sector, that is, they impeded occupational and wage discrimination because the entrance criteria became and continues to be totally impersonal.

This paper takes advantage of the occurrence of this open exam to verify if there was a decrease in the gender wage differential in the public sector after the establishment of the tests. We use data from before and after the promulgation of the Constitution and find that the gender wage gap decreased after the institution of the new rule, thus providing evidence of discrimination. As stated by Card (1999) and Hamermesh (1999), these occurrences are especially suitable to investigate phenomena that involve preferences and unobservable characteristics, as is the case of discrimination.

We provide a new view on the nature of the gender wage gap (GWG) by analyzing the wage differentials within establishments. Based on linked employer–employee data for Germany, we show that the GWGs vary tremendously across establishments, even if we assume that male and female employees have the same human capital characteristics within each establishment. This heterogeneity is linked to firm and institutional characteristics: For instance, firms with works council and those covered by collective wage agreements have smaller GWGs. Furthermore, we find some evidence that firms operating under strong product market competition behave in a more egalitarian way.

The article is organized in the following way: Section 2 presents institutional issues related to the contracting of personnel for public administration in Brazil. Section 3 reviews the literature on gender gap in pay in Brazil. Section 4 presents the data, methodology and descriptive statistics. Section 5 shows the results. Section 6 presents the conclusions.

## 2. Institutional Aspects Concerning Entrance to Public Service

Until 1988, there were no definite criteria regarding the selection of human resources for public administration in Brazil. To contract personnel, the ministries and other civil administration organs followed their own criteria which were frequently idiosyncratic. Costa (2002) examines a sample of 42,540 federal civil servants contracted between 1980 and 1988 and discovers that only 51% of them entered the public sector by open exams. Among the men, 48.1% were selected by open test, while among women this number was 53.9%.

The Federal Constitution of Brazil of 1988 states that “the nomination to employment in public service depends upon previous approval by way of open exams or exams and titles, according to the nature and complexity of the position or employment, according to law, except in the case of nominations to commissioned positions in commission declared in law of free nomination and exoneration” (Article 37 (II) of the Federal Constitution of Brazil, 1988)). Thus, rigid criteria were established for the selection of personnel based on meritocratic principles. The main objective of the authors of the Constitution in introducing open tests as a criterion for the entrance into public service was to protect the State from clientelism and nepotism, a very common feature in Latin American politics. Note, however, that Article 37 of the Constitution permits that nominations to commissioned positions continue to be the prerogative of the administrators. (Note 1) According to Costa (2002), for each 10 nominations to commissioned positions between the years of 1980 and 1988, 7 were men. In the period following 1988, this proportion fell to 6 men per 10 people nominated. The SIAPE (Integrated System of Administration of Civil Servants), part of the Ministry of Planning, the body responsible for the management of federal public administration personnel, shows that in 2001 men held the great majority of highly-paid commissioned positions, while women had greater participation in commissioned positions of lesser pay. For example, 86.5% and 79.9% of the DAS 6 and DAS 5, respectively, which are the two highest-paid commissioned positions, were held by men, while 50.9% and 58.4% of the DAS 1 and DAS 2, respectively, which are the lowest-paid commissioned positions, were held by women.

With the implementation of the Constitution of 1988, the public employees who had passed the open tests earned the right to employment stability and could only be fired for serious offences. Wages, promotions and ascensions in careers began to follow strict rules, which were defined by law, and it became illegal for administrators to determine wages for employees.

## 3. Reviews the Literature

In his seminal work Becker (1957) argues that if the individual has a taste for discrimination, he must act as if you were willing to pay something, either directly or indirectly, in exchange to discriminate. The author has argued that this type of prejudice is expected to be eliminated by competition among employers in the labor market. Akerlof (1985) observes that discrimination can persist even in competitive markets in the presence of transaction costs.

Statistical discrimination theory, related to Phelps (1972) and Arrow (1973), emphasize the role of employers' beliefs and expectation on workers' productivity. The statistical discrimination arises from the problem of imperfect information. This theory shows that employers use race, sex, place of residence, and ethnical group as signals of productivity.

Changes in the international economic environment can reduce wage disparities among groups of employers in developing countries. Weichselbaumer and Winter-Ebmer (2007) show the effect of competition and equal treatment law on the gender wage gap. Authors apply the techniques of meta-analysis to investigate the role of product market competition and international equal treatment conventions in covering 1530 studies of gender wage gap in both OECD and non-OECD countries. According to authors one of the main features of globalization is that countries with a higher economic freedom have a lower gender wage gap. However, in relation to Brazil, Carneiro and Arbache (2002) conclude that trade liberalization alone will not be sufficient to significantly reduce poverty and inequality in the country.

Some studies indicate a reduction in the wage differential by skills in the period of trade liberalization. Corseuil and Muendler (2003) show the impact of traded investment goods, technical change and capital accumulation on labor demand. The empirical strategy is based on data set for the Brazilian manufacturing sector during 1992-98, a period immediately following trade liberalization. This study shows significant productivity gains in total factor productivity and greater use of skilled labor. The authors found that the wage differential between college graduates and workers with secondary schooling is not due to capital accumulation. Finally, they conclude that the widening wage differential of workers with college education in relation to workers with intermediate schooling levels cannot be explained by immaterial technical change.

Loureiro and Carneiro (2001) show the existence of discrimination in the urban and rural labor markets in Brazil. The authors used the Blinder-Oaxaca decomposition analysis on data from the 1998 PNAD. The earnings differential was decomposed into two parts through the Oaxaca-Blinder methodology and concluded that there are substantial wage differentials between men and women by gender and race.

Arabsheibani, Carneiro, and Henley (2003) observe the rates of return to human capital for gender in Brazil through the period of trade liberalization, using data from the PNAD household surveys. They note a substantial reduction in gender wage differentials over the last two decades, improvements in observable endowments and in returns to those endowments have all contributed positively to a reduction in the men-women wage gap. Differently from other papers, we estimate the public sector wage gap only for college education public employee workers.

Our papers verify that the legal institutional mechanisms established by the Brazilian Federal Constitution beginning in 1988 have now largely eliminated clientelism and male-nepotism, and have created a convergence in the gender average wage for public service job candidates.

#### 4. Data and Methodology

The source of data used in our investigation is the National Household Survey (PNAD), conducted by the Brazilian Institute of Geography and Statistics (IBGE). The years examined were those from 1981 to 1999, (Note 2) a period which covers the new regime – of obligatory open tests – and the old regime – which did not. We investigate active civil servants in the federal administration who had university degrees. The aim of this education filter was to lessen possible measurement errors resulting from the lack of information on PNAD concerning the professional category of the individuals. The filter reduced the potential heterogeneity of the sample, thus allowing a better use of the data. (Note 3)

The data were analyzed according to the following cut: men and women; periods before and after the Constitution of 1988; and three age cohorts. It was assumed that the youngest generation entered the public administration by open tests; that the oldest generation entered without it; and that the intermediate generation entered partly with and partly without open testing. Our hypothesis is that the obligation of open tests reduces the wage differential by gender for the new generation more than for the other generations.

For each generation the observations were identified by gender and by age. Cohort\_1 corresponds to individuals from 22 to 32 years of age; Cohort\_2 corresponds to individuals from 33 to 43; and Cohort\_3 covers the ages 44 to 54. Thus, we have 17 annual observations and 3 age groups divided by gender ( $T=17$  and  $N=3$ , respectively). The annual samples were aggregated in periods before and after the Constitution. (Note 4)

The control variables used in the regressions were: age, age squared, children, geographic regions and dummies by year. (Note 5) Table 1 shows the real monthly average wages in log, and the characteristics of the individuals in the pre-Constitution period of 1981 to 1988. (Note 6) The differential of average wages by gender for Cohort\_1 was 27%, for Cohort\_2, 38.7%, and for Cohort\_3, 49.5%. Besides the growth of the wage gap, it is observed that the level of wages grows with the age cohort. The average age of men is greater than that of women in all age groups, which could positively influence the wages of men.

Insert Table 1 Here

Table 2 presents the descriptive statistics of 1989-1999. The wage gaps by gender and by age are 16.2%, 25.3% and 40% for, respectively, Cohort\_1, Cohort\_2, and Cohort\_3. In the post-Constitution period, the wage differentials suffer quite a fall in all the age groups, and the proportion of men and women shows a strong tendency of convergence, even in the oldest cohorts. While during the pre-Constitution period there were around 60.5% of men in the cohort Cohort\_2, in the post-Constitution period this proportion fell to 50%. These statistics suggest that there had been significant changes in the wage formation and in the participation by gender in the second period. The hypothesis examined in this paper is that open tests contributed to wage leveling.

Insert Table 2 Here

With the objective of investigating the different effects of the Constitution by cohort, we estimate pseudo-panels (Deaton, 1985), which was possible due to the large sample sizes. To investigate wage discrimination by gender, we employ the decomposition of Oaxaca and Ransom (1994).

#### 5. Results

##### 5.1 Wage Equations

Initially, Chow tests indicate structural changes in the parameters of the wage equations of civil servants between the pre and post-Constitution periods. (Note 7) Tables 3 and 4 present the results of the pseudo-panel analyses for men and women with and without year dummies. F tests reject

the hypothesis of nullity of the aggregated parameters, and the hypothesis (unreported) that the model parameters are equal. The age variable and age squared (age2) are used as proxy of experience at work. The coefficients of age and age2 are significant and suggest that men's return to experience is superior to that of women's.

The positive sign of the year dummies suggests an increase in average public administration wages. During the period of 1981 to 1988, the average wages for women increased more than the average wages for men, which suggests a decrease in the gender wage gap even before the institution of the new rule of personnel selection. As one may see below, although the trajectory observed indicates a decrease in the gender wage differentials, more substantial advances happened after the constitutional change. From 1989 to 1999, the year dummy coefficients indicate a trend change, and suggest that wages for men were higher than for women.

The geographic variable seeks to examine the existence of wage differentials by region and suggests relative heterogeneity for the period 1981-1988. The Northeastern region, the poorest of the country, has a positive wage premium. This result may be capturing an elevated concentration of commissioned positions in relation to the population of civil servants of the region. From 1989 to 1999, however, the wages in the Center East became the highest, possibly reflecting an effect referring to the Federal District there located. The wages in the Northeastern region were the lowest during this same period.

The coefficients referring to the cohorts capture the fixed effects of the age groups. The coefficients are substantially greater in the post-Constitution period, suggesting that there were substantial changes in the wage formation of all cohorts. The fixed effect for men became quite larger than for women, which suggests that they received higher wage raises than the latter. The fixed effect which refers to the cohort 1 of women in period 2 is greater than the other cohorts, which can be reflecting a favorable effect of the open tests on the wages of new employees. Besides this case, the fixed effect of cohort 3 is always greater than the rest of the cohorts, which can be capturing the effect of seniority and experience in the wage formation and access to commissioned positions.

Insert Tables 3 and Table 4 Here

### *5.2 The Decomposition of the Wage Differential*

Table 5 shows the decomposition of the wage differential by gender. The differential among men in cohort 1 is 0.267 in 1981-1988. The results of the decomposition shows that taking the estimated regressions (1) and (2) as a reference, 51.1% and 52.6% of the wage gap cannot be explained by productive characteristics, while 48.9% and 47.4% reflect differences in the productive attributes of men and women, respectively. For cohort 2, the wage differential is 0.397. This result suggests discrimination against women of 65.4% and 51.8%, respectively. The remaining 34.6% and 48.2% of the average wage differential between men and women are attributed to individual traits (education, experience, etc.). The average wage differential between men and women in cohort 3 is 0.495. Of this amount, 68.8% and 66.4%, respectively, for the models (1) and (2) can be explained by individual traits, while the remaining 31.2% and 33.5%, respectively, correspond to discrimination.

For the second period, the average wage differential between men and women in cohort 1 is 0.162. The results reported for models (1) and (2) indicate that 65.1% and 66.9%, respectively, of the wage differential are explained by the differences in the individual productive characteristics, and the rest of the wage gap, 34.9% and 33.1%, are attributed to discrimination. The wage differential in cohort 2 is 0.253. Of the wage gap between men and women, the percentages attributed to the individual characteristics of the models (1) and (2) are 60.7% and 62.3%, respectively. The remaining 39.3% and 37.7% are due to discrimination.

The wage gap between men and women in cohort 3 shows a wage difference in favor of the men of 0.406. The portion of the wage gap explained by differences in attributes is 54.5% and 58.2%, respectively, while the portion of the differential attributed to discrimination is 45.5% and 41.8%. The portion of the wage gap supposedly referring to discrimination shows a tendency to decline between the age ranges from 1989 to 1999 (models 3 and 4). Thus, empirical evidence suggests that discrimination between men and women reduced when open exams were introduced, what is in line with the Becker's (1957) proposition that competition works against discrimination.

Insert Table 5 Here

Table 5 also indicates that the individual and time-specific effects (models 3 and 4) are important in explaining the wage differential. The models suggest a strong influence of individual attributes on the wage gap. For example, the exclusion of education and experience variables from the models (3) and (4) leads to the increase of the wage differential explained by discrimination. One can observe, in some cases, the favoring of men in the highest cohorts. In the absence of these control variables, discrimination becomes an especially relevant factor for the wage formation. The inverse effect of the coefficient of education for men and women might be capturing the fact that

education for women causes positive externalities for the whole group of workers, while in the case of men, education would essentially bring private benefits, which increases wage inequality.

Insert Table 6 Here

## 6. Conclusion

The article investigates the existence of wage discrimination for gender in the Brazilian labor market. The introduction of open tests for the selection of personnel for the Brazilian public administration, as a means of preventing clientelism and nepotism. The hypothesis under examination was that impersonal selection criteria reduce the gender wage differential. We found empirical evidence that supported this hypothesis, as the gender wage gap was significantly diminished after the introduction of the open exams, thus suggesting the existence of gender discrimination.

However, we didn't find evidence of elimination of the gender wage differential. This could be the result of the lack of appropriate data, which did not permit the identification of the impacts of the commissioned positions on wages. It seems that the unequal distribution of commissioned positions by gender can explain, at least in part, the persistence of the wage gap even after the introduction of the open exams. It remains to be seen if the distribution of commissioned positions is due to discrimination or to some other factor.

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### Notes

Note 1. Commissioned positions correspond to leadership positions in different levels of administration.

Note 2. There are no PNADs for the years 1991 and 1994.

Note 3. It is reasonable to suppose that all the people with completed college education in public administration perform functions that demand university degrees, although the contrary could not be a motive for legal impediment. One may notice that dummies of the professional category were not included in the models. The reason was that the greater part of the positions that demand university-level education in the public sector refer to typical activities of the State, and they are not available in the data bank.

Note 4. A methodological alternative would be to compare the gender wage gap between the public and private sectors before and after the implementation of the Constitution. In other words, we would have a treatment group and a control group. This comparison, however, does not seem appropriate to us because the nature of the occupations is different. The fiscal policies had significant impact upon the wage formation of civil servants in the examined period (Carvalho, 2000). Economic reform in the 90's directly affected wage formation in the private sector, but not the salaries of the public sector (Arbache et al, 2004).

Note 5. The variables referring to the number of children of various ages, and male and female children try to capture the different effects for men and women regarding the attention and education given to the children.

Note 6. The wages were deflated by the IPC/FGV.

Note 7. Tables displaying the results of the models used in the Chow test may be obtained from the authors upon request.

Table 1. Descriptive Statistics: Public Sector – Stacked Data, 1981 – 1988 (pre-Constitution)

Variables	Cohort_1	Cohort_1	Cohort_2	Cohort_2	Cohort_3	Cohort_3
	Man	Woman	Man	Woman	Man	Woman
Wage per hour	7.903 (0.889)	7.634 (0.926)	8.445 (0.931)	8.058 (0.957)	8.872 (0.972)	8.377 (1.062)
Hours Worked	39.186 (9.433)	35.751 (8.265)	40.376 (8.638)	36.386 (8.142)	40.483 (9.155)	37.351 (7.994)
North	0.110 (0.312)	0.066 (0.249)	0.115 (0.319)	0.078 (0.269)	0.130 (0.337)	0.105 (0.306)
Northeast	0.097 (0.296)	0.110 (0.313)	0.099 (0.299)	0.085 (0.280)	0.091 (0.288)	0.083 (0.276)
South	0.071 (0.257)	0.097 (0.297)	0.083 (0.276)	0.113 (0.316)	0.103 (0.304)	0.121 (0.326)
Southeast	0.165 (0.371)	0.152 (0.359)	0.167 (0.373)	0.156 (0.363)	0.164 (0.370)	0.155 (0.362)
Midwest	0.057 (0.232)	0.067 (0.257)	0.053 (0.224)	0.060 (0.237)	0.046 (0.209)	0.064 (0.245)
Age	27.751 (2.966)	27.423 (3.006)	37.813 (3.125)	37.410 (3.150)	48.230 (3.084)	47.810 (2.981)
Participation by Gender	0.517 (0.500)	0.483 (0.500)	0.606 (0.489)	0.394 (0.489)	0.716 (0.451)	0.284 (0.451)
N	3,041	2,844	3,535	2,295	1,998	793

Note: Standard error in parentheses.

Table 2. Descriptive Statistics: Public Sector – Stacked Data, 1989– 1999 (post-Constitution)

Variables	Cohort_1 Man	Cohort_1 Woman	Cohort_2 Man	Cohort_2 Woman	Cohort_3 Man	Cohort_3 Woman
Wage per hour	7.977 (0.994)	7.815 (1.205)	8.339 (0.886)	8.086 (1.024)	8.590 (0.936)	8.184 (0.796)
Hours worked	39.222 (9.601)	35.372 (8.372)	39.838 (8.825)	36.235 (7.858)	39.881 (9.410)	36.272 (8.762)
North	0.085 (0.280)	0.087 (0.282)	0.111 (0.314)	0.088 (0.284)	0.096 (0.295)	0.076 (0.266)
Northeast	0.188 (0.390)	0.200 (0.400)	0.195 (0.396)	0.233 (0.423)	0.202 (0.401)	0.296 (0.457)
South	0.151 (0.358)	0.148 (0.355)	0.142 (0.349)	0.141 (0.348)	0.146 (0.353)	0.135 (0.342)
Southeast	0.275 (0.447)	0.270 (0.444)	0.286 (0.452)	0.288 (0.453)	0.299 (0.458)	0.283 (0.451)
Midwest	0.114 (0.318)	0.130 (0.336)	0.134 (0.340)	0.131 (0.337)	0.161 (0.367)	0.127 (0.333)
Age	28.240 (2.826)	28.186 (2.865)	38.085 (3.172)	37.893 (237.542)	48.102 (3.040)	47.691 (2.938)
Participation by Gender	0.492 (0.500)	0.508 (0.500)	0.501 (0.500)	0.499 (0.500)	0.595 (0.491)	0.405 (0.491)
N	1,626	1,681	2,572	2,565	1,637	1,113

Note: Standard error in parentheses.

Table 3. Wage Equations with Individual Effects and Individual and Time-Specific Effects, 1981 – 1988 (pre-Constitution)

Variables	Men				Women			
	Individual Effects (1)		Individual Effects and Time (2)		Individual Effects (3)		Individual Effects and Time (4)	
Lw	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
North	0.017	0.031	0.027	0.031	-0.030	0.047	-0.017	0.046
South	-0.077	0.036	-0.062	0.036	-0.153	0.041	-0.147	0.040
Southeast	-0.038	0.027	-0.032	0.027	-0.070	0.035	-0.073	0.034
Center East	-0.143	0.045	-0.139	0.044	-0.195	0.051	-0.191	0.050
Age2	-0.002	0.000	-0.002	0.000	-0.002	0.000	-0.002	0.000
Age	0.166	0.015	0.158	0.015	0.154	0.019	0.152	0.019
Cohort_1	4.397	0.285	4.422	0.285	4.606	0.342	4.473	0.341
Cohort_2	4.347	0.311	4.377	0.311	4.532	0.366	4.397	0.363
Cohort_3	4.522	0.306	4.535	0.305	4.701	0.350	4.560	0.348
Time1	-	-	0.139	0.042	-	-	0.144	0.052
Time 2	-	-	0.170	0.040	-	-	0.242	0.050
Time3	-	-	0.191	0.040	-	-	0.085	0.049
Time4	-	-	-0.168	0.042	-	-	-0.104	0.051
Time5	-	-	0.135	0.040	-	-	0.108	0.049
Time6	-	-	0.305	0.046	-	-	0.483	0.054
Time7	-	-	0.102	0.045	-	-	0.247	0.053
rho	0.010	-	0.008	-	0.008	-	0.008	-
$\sigma$	0.090	-	0.081	-	0.085	-	0.081	-
F	32.37	-	29.61	-	21.17	-	22.49	-
N	8,574	-	8,574	-	5,932	-	5,932	-

Note: covariates of number, age and sex of children not reported. Variables “time” refer to year dummies.

Table 4. Wage Equations with Individual Effects and Individual and Time-Specific Effects, 1989–1999 (post-Constitution)

Variables	Men				Women			
	Individual Effects (1)		Individual Effects and Time (2)		Individual Effects (3)		Individual Effects and Time (4)	
Lw	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
North	-0.011	0.044	-0.011	0.044	0.103	0.054	0.113	0.054
South	0.096	0.038	0.112	0.039	0.104	0.044	0.110	0.045
Southeast	0.013	0.031	0.024	0.032	0.042	0.036	0.063	0.037
Center East	0.226	0.039	0.249	0.041	0.227	0.046	0.251	0.047
Age2	-0.002	0.000	0.000	0.000	-0.001	0.000	-0.001	0.000
Age	0.036	0.021	0.039	0.020	0.079	0.025	0.081	0.025
Cohort_1	7.126	0.377	7.054	0.378	6.198	0.443	6.209	0.444
Cohort_2	7.222	0.415	7.144	0.415	6.173	0.481	6.159	0.481
Cohort_3	7.262	0.411	7.196	0.411	6.123	0.470	6.108	0.470
Time1	-	-	-0.037	0.052	-	-	-0.074	0.062
Time 2	-	-	0.067	0.052	-	-	-0.031	0.061
Time3	-	-	-0.266	0.057	-	-	-0.411	0.065
Time4	-	-	-0.239	0.056	-	-	-0.278	0.064
Time5	-	-	0.105	0.055	-	-	-0.044	0.062
Time6	-	-	0.048	0.054	-	-	-0.007	0.061
Time7	-	-	0.046	0.054	-	-	0.050	0.061
rho	0.005	-	0.072	-	0.001	-	0.002	-
$\sigma$	0.069	-	0.006	-	0.038	-	0.050	-
F	10.9	-	12.23	-	8.12	-	9.44	-
N	5,835	-	5,835	-	5,359	-	5,359	-

Note: covariates of number, age and sex of children not reported. Variables “time” refer to year dummies.

Table 5. Wage Decomposition by Gender, 1981–1999

1989-1999		1981-1988					
Specification		Cohort_1	Cohort_2	Cohort_3	Cohort_1	Cohort_2	Cohort_3
Lnw	Men	7.903	8.445	8.872	7.977	8.339	8.590
	Women	7.634	8.058	8.377	7.815	8.086	8.184
Model (1)	% Attributed to Discrimination	48.9	65.4	68.8	34.9	39.3	45.5
	%Attributed to Skills	51.1	34.6	31.2	65.1	60.7	54.5
Model (2)	% Attributed to Discrimination	47.4	51.8	66.4	33.1	37.7	41.8
	%Attributed to Skills	52.6	48.2	33.6	66.9	62.3	58.2
Model (3)	% Attributed to Discrimination	34.6	49.9	51.2	51.7	56.7	62.2
	%Attributed to Skills	65.4	50.1	48.8	48.3	43.3	37.8
Model (4)	% Attributed to Discrimination	36.3	51.5	66.2	37.4	56.7	61.0
	%Attributed to Skills	63.7	48.5	33.8	62.6	43.3	39.0

Note: For the calculation of the decomposition only the explicative variables which were statistically different from zero were considered.

Model (1): Discrimination based on individual effects (and other explicative variables).

Model (2): Discrimination based on individual effects and time (and other explicative variables).

Model (3): Discrimination based on individual effects.

Model (4): Discrimination based on individual effects and time.

Table 6. Wage Differential with Individual Effects, 1981–1999

Dependent variable: wage differential	Coefficient (1)	Men Standard Error	Coefficient (2)	Women Standard Error	All Sample Coefficient (3)	Standard Error
Education	0.160	0.001	-0.159	0.002	-0.222	0.006
Age	0.078	0.005	-0.087	0.008	-0.195	0.029
Age2	-0.001	0.000	0.001	0.000	0.003	0.000
North	0.021	0.011	-0.008	0.019	1.075	0.071
South	-0.066	0.010	-0.036	0.017	0.555	0.065
Southeast	-0.044	0.009	-0.004	0.014	0.764	0.054
Center	-0.105	0.012	0.080	0.018	0.042	0.073
Cohort_1	4.100	0.081	-3.764	0.133	7.466	0.502
Cohort_2	4.100	0.090	-3.686	0.146	7.638	0.557
Cohort_3	4.186	0.088	-3.723	0.142	8.040	0.545
N=	72,206		33,680		105,886	
F=	2,636		1,010		1,549	
$\sigma_{\mu}$ =	0.050		0.039		0.294	
rho=	0.003		0.002		0.002	

Note: covariates of number, age and sex of children not reported.