PRELIMINARY VERSION

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A Cohort Analysis of Educational Stratification by Race and Gender in XXth Century Brazil*

Letícia Junqueira Marteleto♣
Vitor Felipe O. de Miranda♦

Keywords: education; stratification; race; gender; Brazil

Abstract:

During the 20th century there was an overwhelming improvement in Brazilian education. However, the country still presents high educational inequalities. In this paper, we investigate educational stratification by gender and race for cohorts of adults born during the last century. Our goal is to identify how gender and race operate and interact in shaping schooling, using data from 1977-2002 nationally representative household surveys (PNADs).

We find that male advantage in schooling was reversed by cohorts born since the 1950s. Female advantage increases within younger cohorts. The schooling gap between whites and non-whites remains. These figures lead to research questions we then address by estimating regression models: Male advantage on schooling was reversed for both whites and non-whites? With the same magnitude? Racial educational inequalities within gender prevailed across cohorts? By addressing these questions, this work contributes for a better understanding of educational patterns of Brazilian cohorts throughout the last century.

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♣ Research Investigator at the Population Studies Center, The University of Michigan.

♦Research Assistant at Cedeplar/UFMG, Profix/CNPQ Project (vitorf@cedeplar.ufmg.br)

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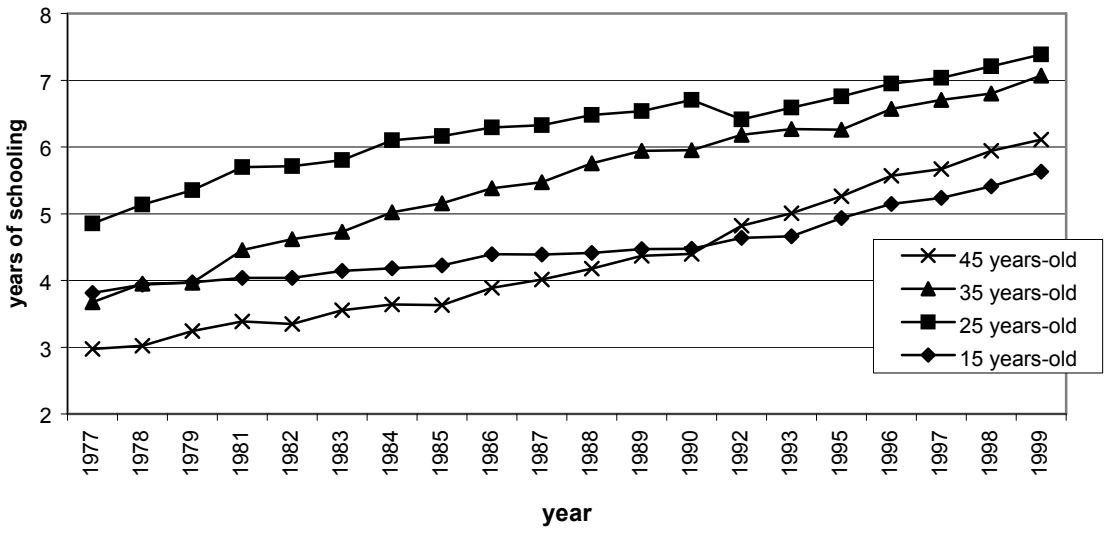
1. Introduction

During the XXth century there was a general improvement on Brazilian's years of schooling. However, Brazil still presents low levels of schooling and high levels of inequalities on educational opportunities when compared to other developed und developing countries. Graphic 1 shows a general overview of adult and youngster's education over time in Brazil.

Graph 1
Mean of years of schooling, by age: Brazil, 1977-1999



The low levels of schooling and the high inequality in educational opportunities have been traditionally associated with socio-economic, demographic and family background elements, such as income, number of siblings and parent's schooling (BARROS and LAM 1996; MARTELETO 2002). However, a great part of distribution of opportunities also comes from ascribed characteristics, such as race and gender. In this article, educational inequalities generated by these two factors are investigated among cohorts of adults born throughout the XXth century. The central question is the identification of levels and patterns of educational inequality generated by these two ascribed characteristics. This work still has an additional concern. In addition to analyzing separately the role of gender and race, we will investigate the evolution of educational inequalities taking into account race and gender simultaneously. For

example, we will verify if the pattern observed in the levels of schooling of black adults is similar to the one verified separately for black male and black female. Similarly, we also investigate whether there are different patterns of schooling when we look into each gender separately by race.

2. Literature Review

The differences between whites and non-whites related to the access to formal education in Brazil have been widely documented, as well as the differences on school achievement of these racial groups. There has been a body of work showing racial disparities in the context of socio-economic inequalities and poverty in Brazil (HENRIQUES 2001; SILVA and HASENBALG 1992). Research that investigates the determinants, consequences and socio-economic impacts of racial inequality has showed that the non-white population has been under an intense inequality of social opportunities. This has been showed through indicators of well-being and welfare. For example, there is evidence of high inequality in the access to qualified work for non-whites when compared to whites (BELTRÃO 2003). In terms of household conditions, despite an improvement for non-whites, the levels of precariousness of their household conditions are higher than for whites. The same occurs with indicators of consumption standards, where households headed by whites have higher ownership of durable goods than the ones headed by non-whites (HENRIQUES 2001). The analysis of these indicators allows us to conclude the narrow relation existing between poverty and racial composition of the population. There is evidence of an over-representation of the non-white community among the poor and indigent in all age groups (HENRIQUES 2001).

Non-white children and youngsters have a large disadvantage in terms of access to the school system. The ratio between blacks and browns that do not have access to the educational system is three times higher than for whites (SILVA and HASENBALG 1992). In addition, non-white children start school latter than white children.

One of the reasons of this racial disparity in the probability to start school is the family socio-economic profile. However, it has been found that the educational differentials still persist among children of different racial groups even when keeping socio-economic conditions constant (taking families with the same per capita income, for example) (HENRIQUES 2001, SILVA and HASENBALG 1992). Besides inequalities in the access to school, there are also differences in the school performance of children, as non-whites have had, in average, lower performance than whites. This racial difference is higher in the case of black children (compared to the rest of non-whites), even after controlling for socio-economic

conditions. The negative effect associated to race indicates that non-whites not only have fewer educational possibilities to be part of the educational system, but also have greater probabilities of having a worse school performance than their white colleagues.

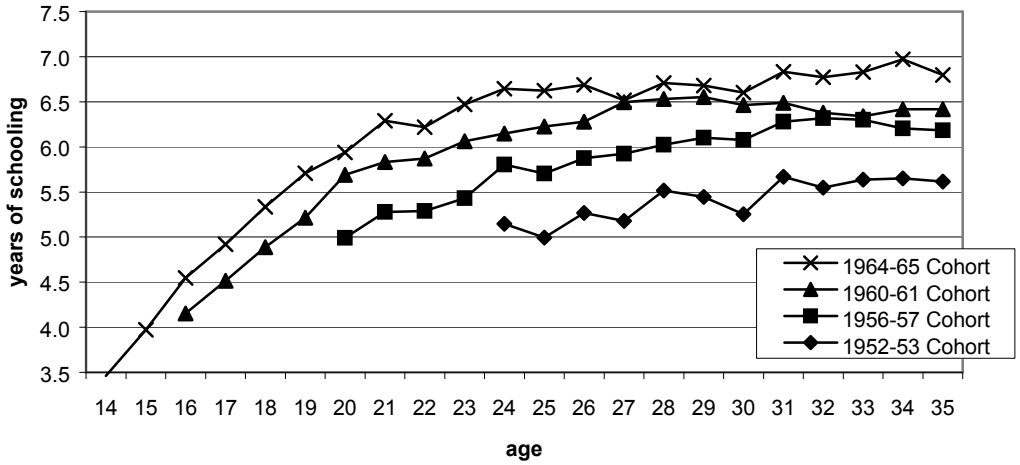
It has been also sufficiently registered in the literature, cases of educational inequality between sexes. In some countries, as China, women are in educational disadvantage in relation to men in childhood and adolescence (HANNUM 1999). In other countries, men are in disadvantage (MENSCH and LLOYD 1998). These facts are used to defend policies in favor of investments directed to each gender, which makes it necessary to understand well the specific context of inequality between the sexes in a given society before establishing policies (KNODEL 1996). This inequality of opportunities in the beginning of the educational career leads to future educational inequalities, which will documented in this work.

3. Data and Methodology

3.1. Data

In this paper we use data from the annual PNADs (Pesquisa Nacional por Amostra de Domicílio), collected by the Brazilian Census Bureau, IBGE (Instituto Brasileiro de Geografia e Estatística). We use data from 1977 to 2002, with the goal of following cohorts of adults who have been born between 1927 and 1974. We select information from individuals 25 to 50 years of age. Graph 2 illustrates the fact that schooling gains are most significant from 7 to 25 years of age and that after age 25 the level of schooling stays relatively constant. For this reason, we choose, in many occasions, to consider individuals 25 to 50 years-old as a group, which provided a large analytical sample.

Graph 2
Years of schooling of individuals of 14 to 35 years-old: Brazil, 1952-53, 1956-57, 1960-61 and 1964-65 cohorts



There are two important points to keep in mind about race in the PNADs. First, the PNAD questionnaires include five races: white, black, browns, yellow and native indians. Due to the fact that yellow and native indians constitute a statistically small group (Table 1) and to the additional visual complexity of working with five categories, we analyze only white, black and browns individuals. In most occasions blacks and browns have been grouped as non-whites. Second, the question on race has only been available in the PNAD since 1987, or in terms of cohorts, since the 1937 cohort.

Table 1
Racial Composition of Brazilian population according to PNADs: 1987, 1992 and 1999.

Race	Year		
	1987	1992	1999
White	52.52 %	51.59 %	50.73 %
Black	5.44 %	5.48 %	5.48 %
Browns	41.58 %	42.53 %	43.24 %
Yellow	0.45 %	0.32 %	0.35 %
Native Indians	**	0.09 %	0.19 %
[N]	299,704	317,354	352,393

Source: PNADs 1987, 1992 and 1999.
** The PNAD from 1987 doesn't include native indians.

Table 2 shows the population composition of adults 25 to 50 years-old, according to socio-economic and demographic characteristics and their respective standard deviation.

Table 2
Selected Socio-economic Characteristics for Adults Age 25 to 50: Brazil, 1987-99

Year	%	Average	%	%	%	Região (%)				
	[N]	schooling	Woman	White	Urban	North	Northeast	Southeast	South	Midwest
1987	7.91	5.35	51.6%	60.2%	76.9%	2.9%	24.8%	48.8%	16.6%	6.9%
1988	8.15	5.53	51.9%	59.4%	77.2%	2.9%	24.7%	48.7%	16.7%	7.0%
1989	8.42	5.62	51.9%	59.2%	77.7%	3.1%	24.7%	48.5%	16.6%	7.1%
1990	8.74	5.77	51.8%	58.7%	77.6%	3.1%	24.6%	48.7%	16.5%	7.1%
1992	8.79	5.83	51.7%	57.3%	81.2%	4.1%	25.5%	47.1%	16.5%	6.8%
1993	8.97	5.96	51.7%	57.7%	81.5%	4.0%	25.4%	47.0%	16.6%	6.9%
1995	9.42	6.14	51.9%	57.4%	81.9%	4.3%	25.7%	46.7%	16.3%	7.0%
1996	9.61	6.31	52.1%	58.3%	82.1%	4.4%	25.7%	46.6%	16.3%	7.1%
1997	9.82	6.41	51.9%	57.5%	82.4%	4.3%	25.6%	46.5%	16.4%	7.2%
1998	10.00	6.55	51.9%	56.8%	82.2%	4.4%	25.5%	46.5%	16.3%	7.3%
1999	10.16	6.67	52.0%	56.7%	82.3%	4.5%	25.6%	46.2%	16.4%	7.3%
1987-1999	100.00	6.04	51.9%	58.0%	80.4%	3.9%	25.3%	47.3%	16.5%	7.1%
SD	--	4.55	0.500	0.494	0.397	0.193	0.435	0.499	0.371	0.256
[N]	1,199,208									

Source: PNADs 1987 to 1999

Table 3 shows the average years of schooling according to the same variables as Table 2. It shows that whites have more years of schooling than non-whites throughout the whole period of 1987 to 1999, with the white advantage reaching 2.4 years in 1999, and the gender difference in schooling is of 0.35 years of schooling in favor of women. Table 3 also shows that the general female educational advantage among adults is a phenomenon of the 1990s. In 1990 the average schooling of adult females was greater than that of adult males for the first time - women have 5.79 years of schooling and men 5.74. We can also notice that there was a schooling increase in all the regions, with the exception of the North, which presented a decrease in 1992 and 1993.

Table 3
Mean Years of Schooling according to selected characteristics by year: Brazil, 1987-99

	1987	1988	1989	1990	1992	1993	1995	1996	1997	1998	1999	1987-99
National Mean	5,35	5,53	5,62	5,77	5,83	5,96	6,14	6,31	6,41	6,55	6,67	6,04
Race												
white	6,30	6,49	6,56	6,76	6,87	6,95	7,15	7,27	7,44	7,59	7,69	7,03
non-white	3,83	4,05	4,17	4,28	4,38	4,56	4,72	4,94	4,98	5,12	5,29	4,62
Sex												
female	5,27	5,50	5,60	5,79	5,86	6,01	6,24	6,41	6,53	6,70	6,84	6,11
male	5,43	5,56	5,63	5,74	5,79	5,91	6,02	6,20	6,27	6,39	6,49	5,97
Urban												
urban	6,20	6,37	6,44	6,60	6,53	6,65	6,80	6,97	7,07	7,22	7,34	6,78
rural	2,51	2,68	2,75	2,86	2,81	2,96	3,14	3,31	3,30	3,46	3,58	3,03
Region												
North	6,17	6,14	6,33	6,45	5,98	5,84	6,10	6,25	6,30	6,37	6,64	6,24
Northeast	3,72	3,87	4,01	4,11	4,35	4,58	4,65	4,85	4,91	5,04	5,17	4,52
Southeast	6,04	6,28	6,31	6,49	6,49	6,61	6,82	7,02	7,12	7,27	7,37	6,74
South	5,53	5,61	5,76	5,92	6,13	6,25	6,51	6,62	6,70	6,85	7,03	6,30
Mid-west	5,56	5,64	5,83	5,85	5,93	6,07	6,18	6,31	6,55	6,68	6,76	6,16
Father's schooling												
None	--	--	--	--	--	--	--	3,75	--	--	--	--
1st to 3rd grades	--	--	--	--	--	--	--	6,08	--	--	--	--
4th grade	--	--	--	--	--	--	--	8,51	--	--	--	--
5th to 7th grades	--	--	--	--	--	--	--	9,19	--	--	--	--
8th grade	--	--	--	--	--	--	--	10,70	--	--	--	--
High school incomplete	--	--	--	--	--	--	--	11,65	--	--	--	--
High school complete	--	--	--	--	--	--	--	12,12	--	--	--	--
College incomplete	--	--	--	--	--	--	--	12,18	--	--	--	--
College complete or more	--	--	--	--	--	--	--	13,74	--	--	--	--
Mother's schooling												
None	--	--	--	--	--	--	--	3,97	--	--	--	--
1st to 3rd grades	--	--	--	--	--	--	--	6,30	--	--	--	--
4th grade	--	--	--	--	--	--	--	8,68	--	--	--	--
5th to 7th grades	--	--	--	--	--	--	--	9,39	--	--	--	--
8th grade	--	--	--	--	--	--	--	11,40	--	--	--	--
High school incomplete	--	--	--	--	--	--	--	11,94	--	--	--	--
High school complete	--	--	--	--	--	--	--	12,51	--	--	--	--
College incomplete	--	--	--	--	--	--	--	13,29	--	--	--	--
College complete or more	--	--	--	--	--	--	--	13,89	--	--	--	--
[N]	94.147	94.605	96.933	100.324	106.493	108.684	115.365	115.025	121.397	121.530	124.705	1.199.208

Source: PNADs 1987 to 1999

3.2. Methodology

Three models are estimated in this work (Section 6) to verify the existence of a significant relationship between adult schooling and sex and race. The first two models (Equation 1 and 2) cover 1987-1999 and 1996 only, respectively, and their results are presented in Table 4. Both include 8 dummy variables to investigate the effect of: sex, race, area of residence (rural/urban), region and age. The first model also includes a variable of annual trend. Equations 1 and 2 are estimated through Ordinary Least Square Regressions as follows:

$$Y_i = a + bD_i + cT_i + e_i \qquad \textbf{(Equation 1)}$$
$$Y_i = a + bD_i + cT_i + dI_i + e_i \qquad \textbf{(Equation 2)}$$

Where Yi corresponds to years of schooling for each adult i, "a" is a constant, Di is a vector with the 8 dummy variables described above, Ti is the term of linear year trend, ei is a term of error normally distributed.

The third model (Equations 3) is a reproduction of the second models, but including controls for parents' schooling, one of the most important determinants of schooling. This variable is available only in the 1996 PNAD and we develop separate models for this year in

order to evaluate the prediction of our previous model of year trend. In Equations 3, Ei is a vector of dummy variables representing mother and father's years of schooling, according to the categories used in Table 5.

$$Y_i = a + bD_i + fE_i + e_i \qquad \textbf{(Equation 3)}$$

4. Differences in schooling according to sex and race

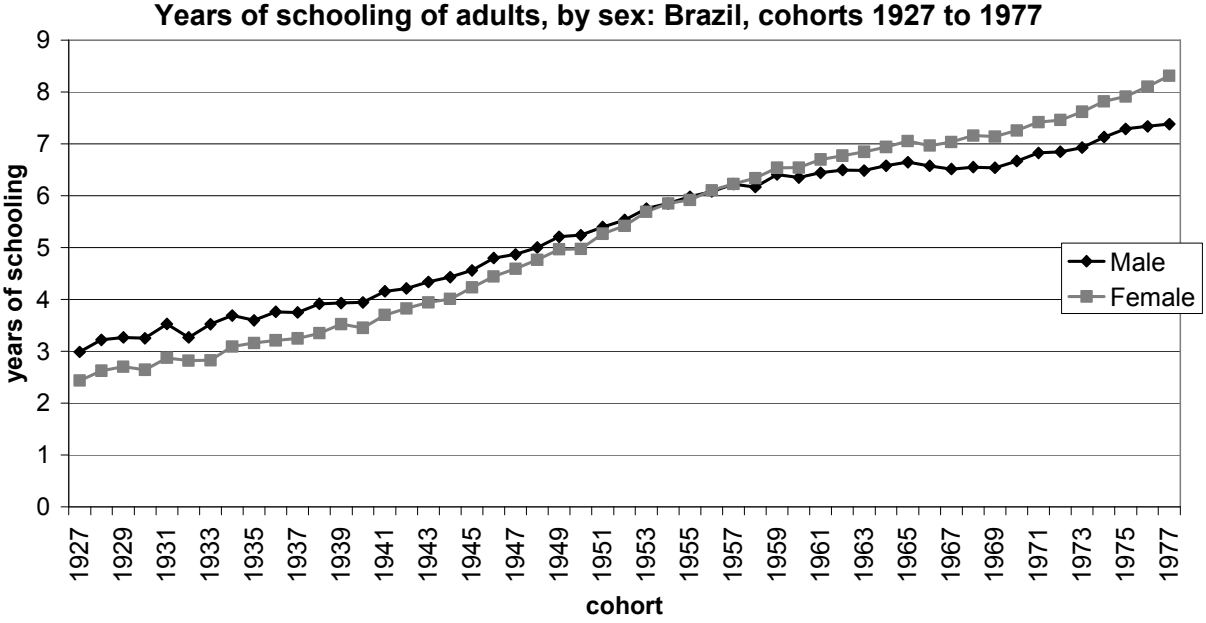
When the analysis of levels of schooling is elaborated according to sex, we notice that in the cohorts from the first half of 20th century there was a male superiority in years of schooling, which was reversed by women from cohorts born in the second half.

Graphs 3 shows the mean years of schooling for cohorts 1927 to 1977 according to sex. The average schooling of each cohort was calculated through arithmetic mean of the schooling of its individuals along the ages 25 to 50[1]. As schooling gains aren't expressive after the age of twenty-five, we considered the mean as a representative indicator for this age group.

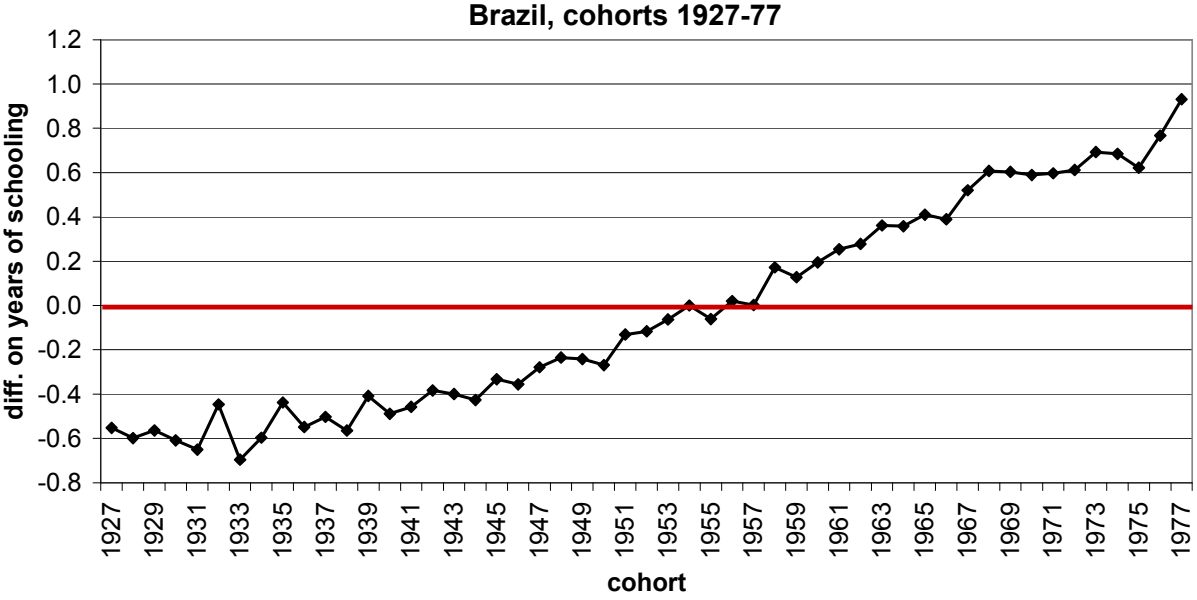
Graph 3 shows that there was an increase in the years of schooling for both sexes. Apesar do período ter sido quase inteiramente marcado por aumentos de escolaridade em ambos os sexo, notamos que a escolaridade das mulheres aumentou mais que a dos homens. Among females it increased from 2.44 years of schooling on cohort 1927 to 8.31 in cohort 1977. Among males it jumped from 2.99 to 7.33. This corresponds to an increase of 241% for females and 145% for males in this 50 years period.

[1] This was done because it is not possible to obtain information on schooling at a given age for every cohort for the whole period using the PNAD. For the 1938 cohort, for example, there is information on years of schooling only for individuals at 49 and 50 years old (1977 and 1978 PNAD, respectively). The schooling for this cohort was considered the arithmetic mean of these two values. The same was done in all cohort graphs in this paper.

Graph 3
Years of schooling of adults, by sex: Brazil, cohorts 1927 to 1977



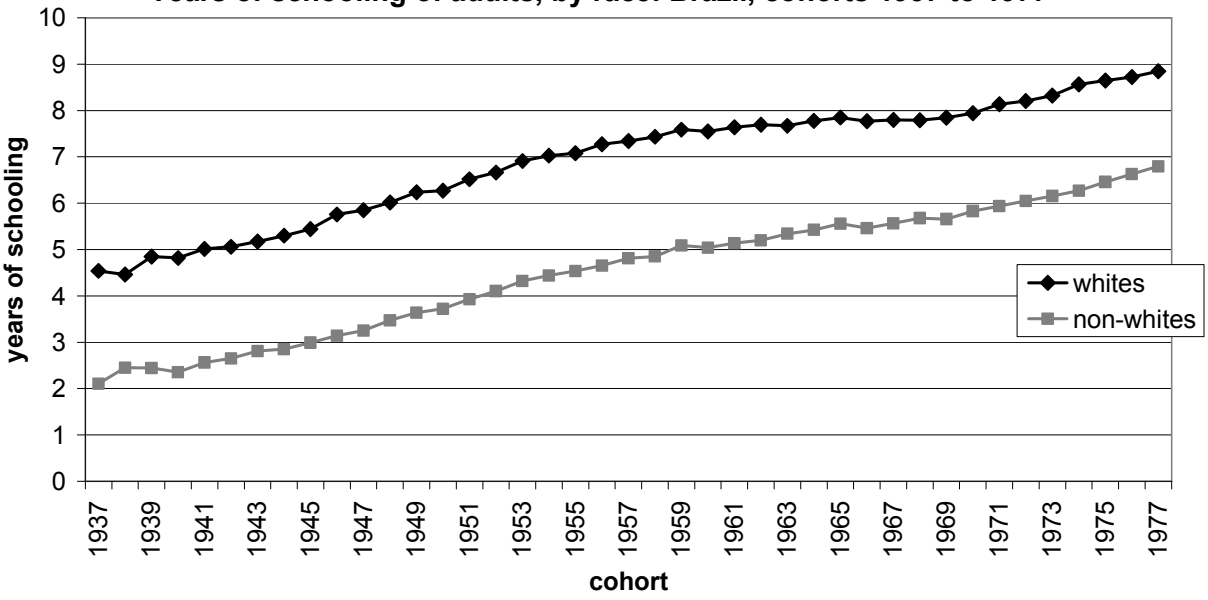
Graph 4
Differences on years of schooling of females in comparison to males: Brazil, cohorts 1927-77



In Graph 4 we can se even more clearly that the female schooling catch-up occurred for the first time in the cohorts born in the 1950s. As this graph indicates the advantage or disadvantage females have on years of schooling in comparison to males, we can see that a female surpass occurred for the first time in the 1952 cohort. The graph also indicates that the female surpass became stronger across time. While among the 1920s and 1930s cohorts the gap between the sexes did not show a clear sign of decline, it started to reduce in the 1940s cohorts but only began to rise more sharply in the 1950s cohorts and continued thereafter.

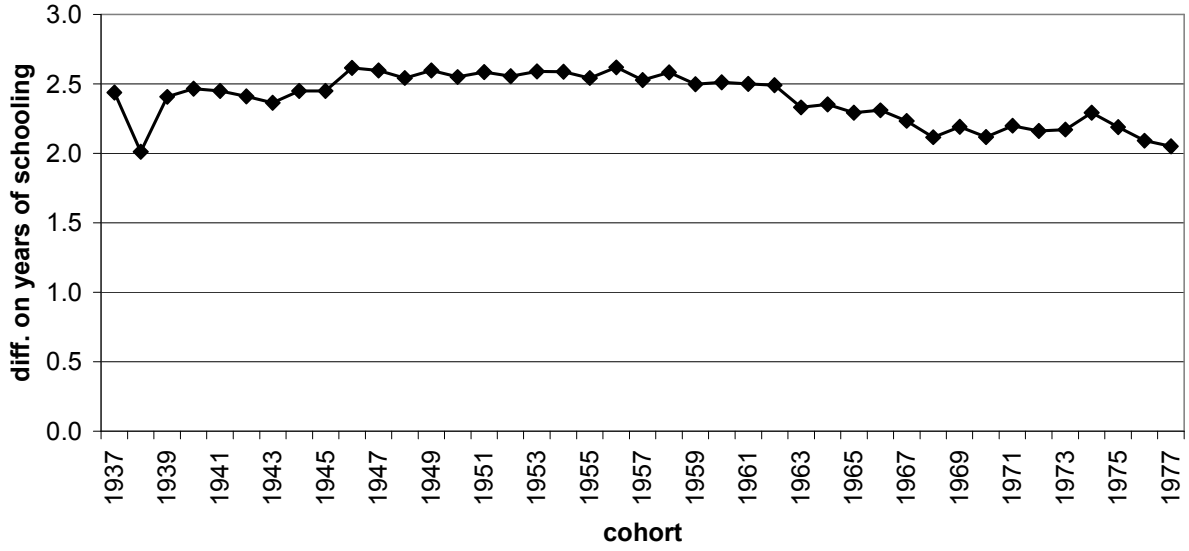
In relation to schooling differences by race, the process of educational catching up that occurred between the sexes was not reproduced. Graph 5 shows that both races had an overwhelming increase in years of schooling in this 40 years period. Whites had on average 4.54 years of schooling in the 1937 cohort and reached 8.84 in the 1977 cohort. Non-whites, on the other hand, had 2.10 years of schooling in the 1937 cohort, reaching 6.79 in the 1977 cohort. This shows that besides the fact that the non-whites schooling has increased much more in relative terms than the whites schooling (223% against 95%, respectively) the difference is still higher than 2 years of schooling after 40 years.

Graph 5
Years of schooling of adults, by race: Brazil, cohorts 1937 to 1977



Graph 6 illustrates this reality more clearly. Besides the decrease of the white advantage in the younger cohorts, the difference persisted higher than 2 years of schooling for the entire period.

Graph 6
Differences on years of schooling of whites in comparison to non-whites: Brazil, cohorts 1937-77



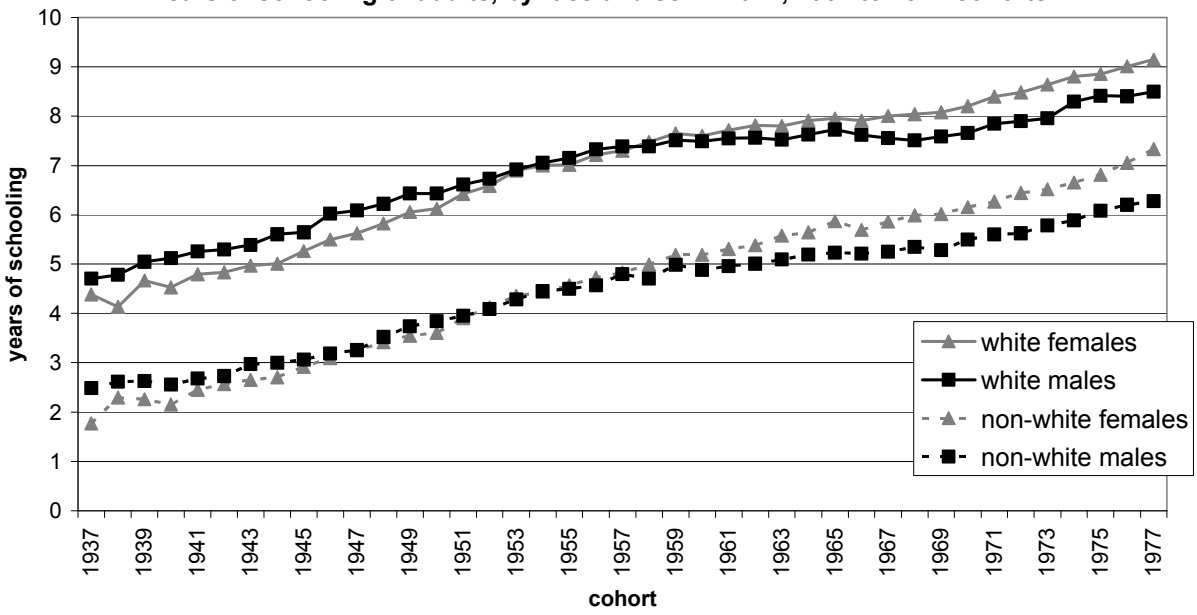
5. Analyses of race and gender simultaneously

In the last section we showed that there was a reversion in the schooling advantage of males compared to females, while there was a persistence of the white advantage.

It is interesting to observe the process when gender and race differences are taken into account together. Our next goal is to analyze the data in order to answer four questions: 1. Is the female schooling surpass a phenomenon of both whites and non-whites? 2. Has the female schooling advantage happened at the same time and with the same intensity in each of these racial groups? 3. Was there maintenance of race inequality in schooling for both men and women? 4. Has the race inequality in schooling happened in different moments and with different intensities within each gender?

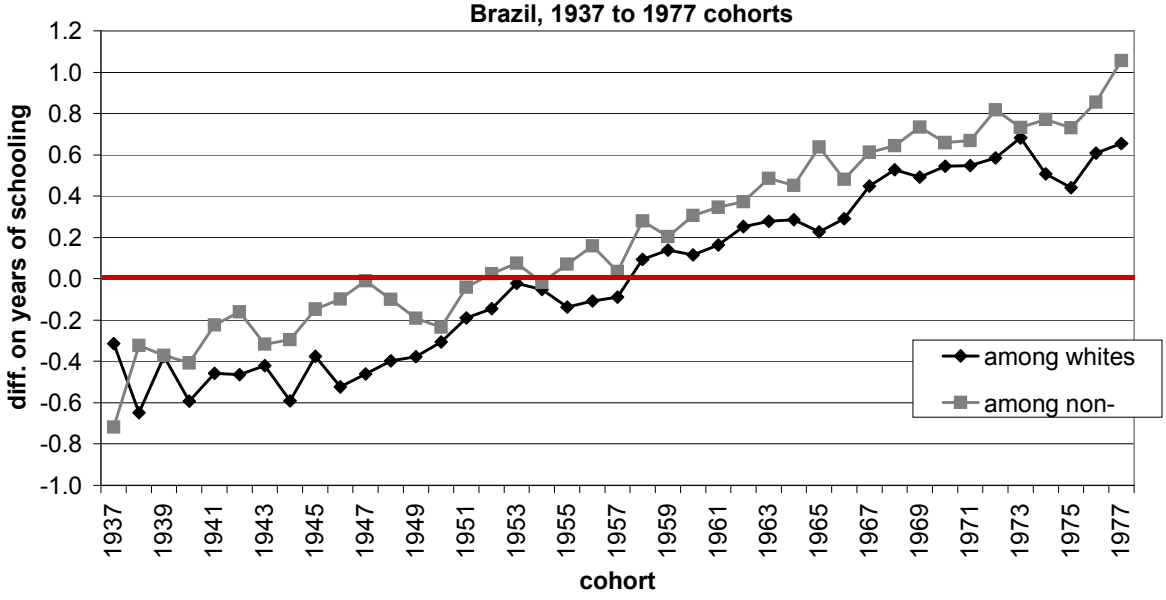
Graph 7 shows the mean years of schooling for 1937 to 1977 cohorts considering race and gender. Considering the 1937 and 1977 cohorts, not only the white males jumped from 4.70 to 8.50 years of schooling and white females from 4.39 to 9.15, but also non-white males jumped from 2.40 to 6.28 and their counterparts from 1.77 to 7.33.

Graph 7
Years of schooling of adults, by race and sex: Brazil, 1937 to 1977 cohorts



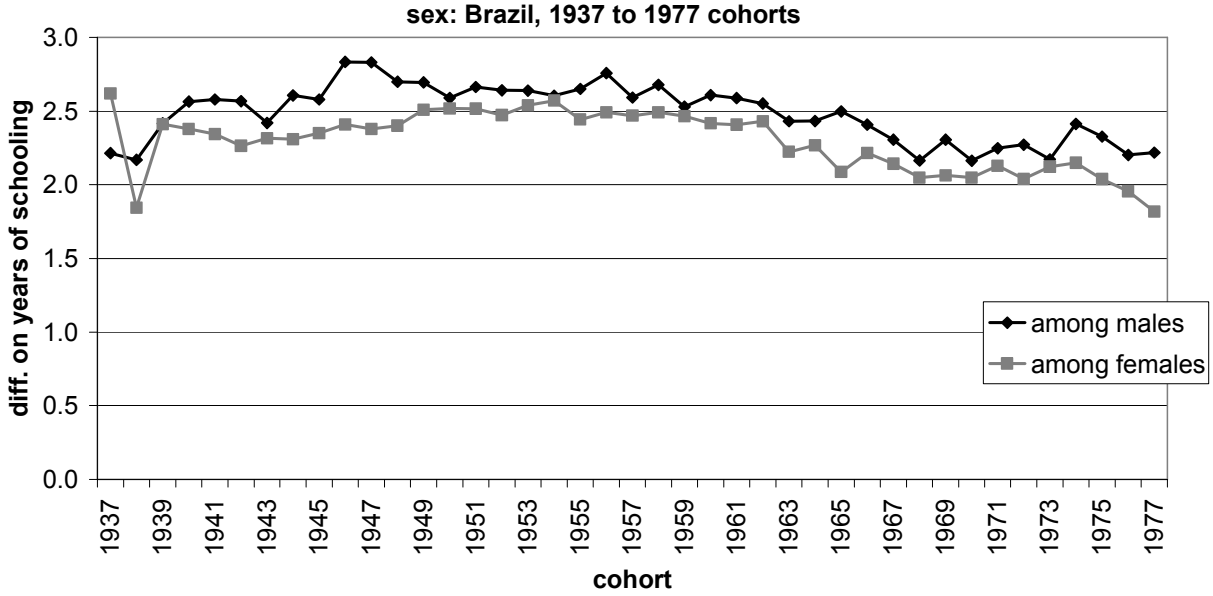
All the 4 groups mentioned have more years of schooling in the younger cohorts. This process happened in parallel with the female surpass both races. However, graph 8 shows that such processes happened first among non-white and latter expanded to whites. Among non-whites, the first female cohort to overcome male's schooling is the 1952 cohort, while among whites the first change in the direction of a higher female schooling is perceived only for the 1958 cohort. The most interesting fact, however, is to noticed that the surpass among non-whites is higher than among whites for all cohorts unceasingly.

Graph 8
Differences on years of schooling of females in comparison to males, by race: Brazil, 1937 to 1977 cohorts



Graph 9 is similar to Graph 8 except that this time the schooling difference is calculated in relation to race for each gender. Graph 9 shows that the schooling gap in favor of whites persisted in both genders for cohorts born from 1937 to 1977, in spite of being higher among men in almost all cohorts.

Graph 9
Differences on years of schooling of whites in comparison to non-whites, by sex: Brazil, 1937 to 1977 cohorts



6. Estimation of Models

In this section we estimate the models describe in section 3, in order to illustrate the effect of gender and race in determining years of schooling for adult individuals. In table 4 we present results of two regressions estimated by Ordinary Least Square Models for years of schooling of 25 to 50 year-olds. The first model is for the period 1987 to 2002 and the second is for the year 1996 – as the 1996 PNAD is the only one among the other PNADs utilized in this work that has a supplement with variables relative to parents schooling. This separate model for 1996 was included in table 4 to allow comparisons with the 1987-2002 time series model.

Table 4. Coefficients and Standard Deviations of Ordinary Least Square Regression Adults' Years of Schooling – Brazil, 1987-2002 and 1996

	1987-2002		1996	
	Coef.	Standard Dev.	Coef.	Standard Dev.
Woman=1	0.089***	0.0003	0.096***	0.0011
White=1	2.039***	0.0003	1.982***	0.0013
Urban=1	3.274***	0.0004	3.211***	0.0015
Region (Southeast omitted)				
South	-0.351***	0.0004	-0.435***	0.0017
Central-West	0.026***	0.0006	0.120	0.0023
North	-0.105***	0.0008	0.169***	0.0029

Northeast	-0.736***	0.0004	-0.233***	0.0015
Age	-0.094***	0.0000	-0.751***	0.0001
Year	0.127***	0.0000	--	--
Constant	-6.030***	0.0032	5.895***	0.034
Adjusted R^2	0.2008		0.1378	
[N]	1,461,146		114,014	

Source: PNADs 1977 to 2002.
Notes: ***Significant to 1%; **Significant to 5%; *Significant to 10%.

The results on Table 4 suggest that the effect of race in determining schooling is stronger than the one of sex. They confirm the fact that between 1987 and 2002 individuals with similar characteristics (same gender, region, area of residence – rural/urban - and during the same year) but of different races presented distinct mean years of schooling. The regression shows that whites had approximately 2 years of schooling more than non-whites. The female educational advantage was only 0.058 years. The effect of area of residence is still higher than gender or race. Nevertheless, the regressions show that, as proposed in the beginning of this paper, both ascribed characteristics are important in determining adult schooling, being race a much more determinant characteristic than gender.

The regressions on Table 4, however, don't include a variable that has been traditionally considered by the literature as very influent in the study of individual education: parents' schooling (MARTELETO, 2001). This effect can be seen in the model presented in Table 5 for 1996.

This last regression shows that, after controlling by father and mother schooling, gender and race continue being statistically significant in determining the level of adult schooling. The pattern remains: whites and women have higher levels of education and race has a stronger impact on schooling than gender. The value of the R^2 statistic is much higher after the addition of mother and father's schooling, going from 0.1378 to 0.2893.

An additional fact is worth mentioning. Mother's schooling was more important than father's schooling in explaining adult schooling in any level of parents schooling. This finding is interesting since several works have utilized only father's schooling to analyze children's schooling, although mother and father's schooling are highly correlated.

Table 5. Coefficients and Standard Errors by Ordinary Minimum Squares Regression. Adults' Years of Schooling – Brazil, 1996

	Coefficients	Standard Errors
Woman=1	0.065***	0.023
White=1	1.323***	0.025
Urban=1	2.754***	0.032
Region (Southeast omitted)		
South	-0.316***	0.033
Central-West	0.028	0.040
North	0.100**	0.048
Northeast	-0.259***	0.030

Father's Schooling (no concluded a 1st)		
1st to 3rd grades	0.151***	0.034
4th grade	1.374***	0.042
5th to 7th grades	1.731***	0.091
8th grade	2.521***	0.084
High school incomplete	3.179***	0.174
High school complete	3.145***	0.085
College incomplete	3.250***	0.270
College complete and more	4.162***	0.105
Mother's Schooling (no concluded a 1st)		
1st to 3rd grades	0.601***	0.034
4th grade	1.785***	0.043
5th to 7th grades	2.150***	0.086
8th grade	3.247***	0.084
High school incomplete	3.695***	0.171
High school complete	3.950***	0.084
College incomplete	4.289***	0.372
College complete and more	4.570***	0.137
Constant	2.415***	0.039
R^2 adjusted	0.2893	
[N]	114,014	

Source: PNAD 1996.
Notes: ***Significant to 1%; **Significant to 5%; *Significant to 10%.

7. Conclusions and discussion

This work shows that the mean schooling of Brazilians has sharply increased for cohorts of adults born throughout the XXth century. However, educational inequalities are still present. A large part of such inequality is clearly related to ascribed characteristics such as gender and race. Educational inequality by gender favored males in cohorts born before mid 1950s. After that, women show an educational advantage that continues to increase. Educational inequality between races has persisted throughout last century and still persists, favoring whites.

When we investigate gender and race simultaneously we notice two interesting aspects of educational inequality in Brazil. First, female education overcome happened first among non-whites than among whites. The first non-white female cohort to show schooling advantage compared to non-white males was the 1952 cohort. Between whites, the first female cohort to present educational advantage was the 1958 cohort. The second important finding is that non-white males present, in almost all cohorts analyzed, a higher educational disadvantage when compared to non-white women.

Regression models estimated in this work confirm the continuing importance of gender and race in determining adult schooling in Brazil and its inequalities. It is noteworthy that, although female educational disadvantage has been eliminated, such gap was reversed into

poorer levels of male schooling, meaning that males should become the focus of educational policies. Which factors are preventing men to achieve levels of schooling equal to women in Brazil? There are studies indicating that these factors can be found in the beginning of the educational career. The trade-off between school and work seems to be higher for boys (LEME and WAJNMAN 2000). However, other works suggest that there is some level of protection of girls in Brazilian society, keeping them in the family sphere caring for household work and younger siblings, which could decrease their schooling averages (LEME and WAJNMAN 2000; MARTELETO 2002). Works on other countries also suggest that girls are more dedicated to school in general (KNODEL 1996). Nevertheless, there are several events in female's life trajectory – marriage, motherhood – which have definitely been proved in the literature to be an obstacle to female schooling. It is important to find in which specific ages and conditions boys/men fail to keep up pace with girls/women. This way, it is essential to remember that the reversion of gender educational inequality in Brazil should not be taken as a good thing in itself, but as some deficiency in the educational system guaranteeing equal opportunities to all individuals.

We demonstrate in this paper that non-white males currently present the lowest schooling in Brazil. This way, it is important to investigate the factors associated with the perpetuation of educational inequality in Brazil, particularly the one related to race.

We will expand this work by adding interactions between year and race, as well as year and gender, in order to investigate whether educational inequalities have been different yearly across the last three decades.

8. References

BARROS, R. e LAM, D. Income and Educational Inequality and Children's Schooling Attainment, *Opportunity Foregone: Education in Brazil*, edited by Nancy Birdsall and Richard Sabot, Inter-American Development Bank. 1996.

BIANCHI, S. The Changing Economic Roles of Women and Men. in Reynolds Farley (ed*.) State of the Union: America in the 1990s. Vol.1: Economic Trends*. New York: Russell Sage Foundation. 1995.

BIRDSALL, N., SABOT, R. *Opportunity Foregone: Education in Brazil.* Washington: Inter-American Development Bank, 1996.

BLOSSFELD, H. P., SHAVIT, Y. Persisting barriers: changes in educational opportunities in thirteen countries. In: SHAVIT, Y., BLOSSFELD, H. P. (eds.). *Persistent Inequality: Changing Educational Attainment in Thirteen Countries*. Westview Press, 1993.

DURYEA, S. *Family Labor Supply and Schooling in Brazil*. PhD thesis, University of Michigan, 1997. Ann Arbor: University of Michigan, Population Studies Center, 1997.

GRUSKY, D. B. *Social Stratification: Class, Race and Gender in Sociological Perspective*. Westview Press, 2001.

HANNUM, E. Political change and the urban-rural gap in basic education in China, 1949-1990. *Comparative Education Review*, us, 43 (2), p.193-211, 1999.

HENRIQUES, R. *Desigualdade racial no Brasil: evolução das condições de vida na década de 90*. Rio de Janeiro: Texto para Discussão n. 807, IPEA, 2001.

KNODEL, J. e JONES, G. Post-Cairo population policy: does promoting girls' schooling miss the mark? *Population and Development Review*, vol. 22, n. 4, p. 683-702, 1996.

KNODEL, J. The closing of the gender gap in schooling: the case of Thailand. *Comparative Education*, n. 33, p.61-86, 1997.

LAM, D., DURYEA, S. Effects of schooling on fertility, labor supply, and investments in children, with evidence from Brazil. *Journal of Human Resources*, v. 34(1),p. 160-192, 1999.

LAM, D., LEVISON, D. Declining inequality in schooling in Brazil and its effects on inequality in earnings. *Journal of Development Economics*, n. 37, p. 199-225, 1991.

LEME, M., WAJNMAN, S. *A Alocação do Tempo dos Adolescentes Brasileiros entre o Trabalho e a Escola*. Anais do XII Encontro Nacional de Estudos Populacionais da ABEP, v.1. Caxambú, 2000.

MARE, R. Social Background and School Continuation Decisions. *Journal of the American Statistical Association*, v. 75, p.295-305, 1980.

MARTELETO, L. *The Role of Demographic and Family Change on Children's Schooling: Evidence from Brazil*. PhD thesis: The University of Michigan, 2001.

MARTELETO, L. O Papel do Tamanho da Família na Escolaridade dos Jovens. *Revista Brasileira de Estudos de População*, vol. 19, n. 2, 2002.

MENSCH, B. e LLOYD, C. Gender differences in the schooling experiences of adolescents in low-income countries: the case of Kenya. *Studies in Family Planning*, 29 (2), p. 167-84, 1998.

PSACHAROPOULOS, G., ARRIAGADA, A.M. The determinants of early age human capital formation: Evidence from Brazil. *Economic Development and Cultural Change,* v.37, p. 683-708, 1989.

RIGOTTI, I. *A Transição da Escolaridade no Brasil e as Desigualdades Regionais*. Trabalho apresentado na Conferência da IUSSP, Salvador, Brasil, 2001.

ROSEMBERG, F. Raça e desigualdade educacional no Brasil. In: AQUINO, Julio G. (org.). *Diferenças e preconceito na escola: alternativas teóricas e práticas*. São Paulo: Summus, 1998.

SEWELL, W. H., HALLER, A. O., PORTES, A. The educational and early occupational attainment process. *American Sociological Review*, v. 34, p. 82-92, 1969.

SILVA, N., HASENBALG, C. (orgs.). *Relações raciais no Brasil contemporâneo*. Rio de Janeiro: Rio Fundo, 1992.

SILVA, N., MELLO e SOUZA, A. Um Modelo para Análise da Estratificação Educacional no Brasil. *Cadernos de Pesquisa,* August, v.58, p.49-57, 1986.

WOOD, C., CARVALHO, J. A. *The Demography of Inequality in Brazil*. Cambridge: Cambridge University Press, 1988.