Race and Social Mobility in Brazil

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Introduction

In this paper we discuss the relations between racial inequality and social mobility in Brazil and present a case study to illustrate them with empirical data. In order to do it, we start by presenting some descriptive statistics about the positioning of the Black Brazilian in the socioeconomic structure and on the extent of racial inequalities. This is done in the second section of the paper.

Then, we make an overview of the Brazilian debate on race in the third section. We start back in colonial times, when race was considered to be a legitimate factor of social stratification, and the black population was deemed as being inferior because of religion, of biology, of culture, or by any mix of these three characteristics. Then we move to the period after the forties, when race was not seen as a legitimate factor of stratification anymore. In this period, the recently established Brazilian social sciences took the racial inequalities as a privileged subjected, giving birth to the explanatory theories of race as a factor of social stratification that are still important today. We finish this section reviewing part of the recent literature and its affiliation to a particular theoretical framework.

After highlighting the main characteristics of the mobility process in Brazil, and how race relates to social origins, we present a case study in the fourth section to illustrate it. In the study we follow the cohort born 1973-1977 from 1982 up to 2005, to see how social origins interplay with race affecting the process of educational achievement, by modeling some outcomes that are expected to be reached in given ages. The fourth section is followed by concluding remarks where we try to wrap up all the findings and to draw some policy implications out of them.

The black Brazilians in the socioeconomic structure

Brazil is regarded as one of the most unequal countries in the world. Indicators of the degree of income concentration have always ranked Brazil one of the top five in
inequality, although the stability of the inequality level has been challenged recently\(^1\). But when one talks about inequality in Brazil, there are other dimensions to consider besides income. In fact, Brazil has huge regional/spatial disparities, educational disparities, a high degree of intergenerational status dependence, and ethnic and racial disparities. As other former colonies, geographical origin was a strong factor of stratification during colonial times. Racism was originally forged in this period, emerging from the asymmetric social relations between indigenous peoples, enslaved Africans, and European adventurers and settlers. And the racist ideas, drivers of prejudice, got so entrenched in culture that race and ethnicity are nowadays still important factors of social stratification.

However, race as a factor of social stratification in Brazil has the contour of a paradox. Brazilians, as polls have showed\(^2\), do not see themselves individually as racists, but they recognize that racism is widespread in society. Brazilians do not manifest overt prejudice in public, this is though off as being rude and not polite. But in the private sphere, among friends and relatives, they express prejudice with ease. Because of this rather strange etiquette of social relations, many Brazilians don’t feel comfortable if they somehow have to talk to a black person about her color – they feel as though they were remembering a handicapped of its handicap, even when the black person herself don’t feel handicapped in anyway because of her color. And although they recognize its existence, at the same time, they think racism has no consequences over the life of individuals, and that the merit of the individual prevails over his color, that hard study, hard work, endurance and willingness, are the only things a person needs to stand out in society, regardless of race and social origins. This rather strange mix of beliefs frankly in conflict with practices makes up the so called ideal of racial democracy. Most Brazilians have a thorough commitment to this ideal, even those who, conscientiously or not, exercise racial prejudice.

The ideal of racial democracy is deemed by many as a myth, to depict how this ideal, no matter how noble and desirable, is detached from reality, particularly, from the

\(^1\) On the recent fall of income inequality in Brazil, see Barros, Foguel & Ulyssea (forthcoming).
\(^2\) See Turra & Venturi (1995)
everyday experience of black Brazilians. However, foreigners that came to Brazil with knowledge of the racial relations in countries where the racial divide is or have been more explicitly, notably the United States and South Africa, are unanimous in pointing out that here relations among racial groups have a friendly, pacific and tolerant tone. This is a true and rather amazing fact: there are blacks in the upper echelons of Brazilian society; there is interracial marriage and friendship, there is not a great degree of residential segregation (although the favelas are predominantly black neighborhoods, they are not black ghettos). There is also the cultural syncretism, which gave Brazilians a genuine distinct culture built on the heritage of all peoples that came here – carnival, a mix of European and African traditions represents well the blending of cultural traits. In spite of all these positive and auspicious characteristics, race is a factor of social stratification although not an ex-ante condemnation to poverty. Poverty is higher among black Brazilians, and it has been so throughout our republican history, even without legal grounds for segregation and discrimination, but not all blacks are poor and race is not the single structural source of all inequality.

To literally give a picture of the position of blacks in socioeconomic structure, we produced Chart 1 below that covers the period 1976-2005. We chose the income distribution as a representative dimension of the socioeconomic structure, and did the standard partitioning of it in twenty equal-sized population groups ranked by per capita household income. Then we calculated the odds of finding a black person in the whole distribution, and the odds of finding one in each group, and divided the latter by the former. The twenty odds-ratios thus yielded were normalized for symmetry and to lie between -1 and 1, with zero indicating the perfect balance between the odds. Needless to say that in a society where race is not a factor of social stratification, the odds-ratios are expected to be equal to zero or to float randomly around zero. It is easy to see that this does not happen at all.
What is really impressive in Chart 1 is the stability of the relative positioning of blacks in the income distribution. The Black population as a whole has experienced no mobility at all in thirty years. Although for sure black individuals have experienced mobility, it is as they had been exchanging positions solely with other blacks. The decreasing representation of blacks as we move towards the top of the income distribution is almost monotonic and linear. It is as for every vintile (5% chunk) of the income distribution, there is a fixed level of over or under-representation of blacks that does not change along the period. This has some very important implications, one of which is that for any given poverty line all poverty measures will be greater for the black population.
Between-group income inequality has also been very stable. Setting 1976 aside for it is a somewhat distinct year in terms of data collection\(^3\), one can see in Chart 2 (right y-axis) that, measured by the Theil T, between-group inequality accounted for around 11% of total income inequality. On the left y-axis of Chart 2 we plotted the ratio between the average income of Whites and that of Blacks. Average income of Whites in 2005 is still twice that of Blacks, but as national income inequality started to fall, and as blacks are concentrated on the bottom of the income distribution, one can see that the distance between the averages started to decrease after 1997.

**CHART 2 – Between group inequality and average income ratio. Brazil 1976-2005**

Source: PNAD/IBGE, 1976-2005

The stylized facts depicted in Charts 1 and 2 can not be solely explained by the presence in society of a racist ideology manifesting itself as prejudice in interpersonal relations. There is more to it than just the concealed influence of the myth of the racial democracy. Recent studies in income mobility have shown that the generational income persistence, the influence of parental income on the future income of their offspring, is

\(^3\) Color information was surveyed only for a sub-sample.
intense, ranging from 0.85 (Pero & Szerman, 2005) to 0.58 (Ferreira & Veloso, 2006). Therefore social origins are important in Brazil, and given the starting point of the black population this should be taken into account.

The racial composition of population varies sharply across regions. The population whitens as one move towards the richer southern regions of the country and this produces a racial gap in national averages that can not properly due to race. A good theory of race as a factor of social stratification and inequality in Brazil can not rely only in the denounce of racism, it must call into play history, socioeconomic development during the twentieth century, regional, educational and class/income disparities, as well as individual social mobility. Let’s examine some of the theories that have been set forth to explain the racial inequalities in Brazil.

Theories on race as a factor of social stratification in Brazil

In this section we will briefly review the Brazilian debate on race. First we will cover the initial period, roughly from the beginning of colonization up to World War II, when race was seen as a legitimate factor of social stratification. Then we will cover a second period when the idea that Brazil was a racial democracy was established and race denied as an important factor of stratification, although still de facto being. From this last period emerge the main explanatory theses of contemporary racial inequality in Brazil that we will analyze more carefully.

Race as a legitimate factor of social stratification: 1500-1940

In the XIX century, Gobineau (1816-62), one of the champions of pseudo-scientific racism that served as French diplomat in Rio de Janeiro, would not hesitate in pointing out Brazil as an example of the bad consequences of miscegenation, purportedly a process that would lead to decadence of a nation and to a disruption of its potentialities. In its early centuries Brazilian colonization was led, as Freyre (1994) stated, under the absence of European women, and the Portuguese adventurers took hold of the fact that God had no jurisdiction south of Equator to indulge, sometimes by violence, sometimes by consent, in the pleasures of flesh with Indigenous and African women. Many of them
returned to Europe leaving behind huge offspring as a result of their sexual encounters. As a byproduct, most of the Brazilians today, even those that are regarded as Caucasians, have some African or Native American descent, something that shows off in genetic studies of mitochondrial DNA (Pena et al, 2000).

After the independence from Portugal in 1822, as in other Latin-American countries, the Brazilian intelligentsia undertook the task of nation building. Brazil was not a colony anymore, and had to come up with its own identity. Historians that study this period are unanimous in pinpointing the lead role of the intellectuals in the nation building process. The Brazilian intelligentsia was very concerned in directing this process towards European standards of social organization, and with the maintenance of the enormous territory inherited from the Portuguese. Some efforts are very representative of the willingness to accomplish this task: the effort to unify the territory\(^4\) ("giant by its own nature"); the effort to unify language and impose Portuguese – by that time, the General Language developed by the Jesuits based on the Tupi indigenous language was the most widely spoken; and later in the XIX century, the effort to unify race.

Race was not a great challenge in the beginning of the XIX century, but as time elapsed, it became a major concern. Indeed, a great shift in the perceptions of race took place in that century. Not that prejudice against Native Americans, Africans, and mixed people was inexistent until then: there was a racial prejudice, but its contents were radically different, for religion was the main driver of discrimination. The prejudice was against pagans, and as so, victimized also people of Portuguese descent that were Jews forcefully converted to Christianity (Carneiro, 1983). Of course this kind of prejudice had then the same functionality as later when it became pseudo-scientifically based. Jesuit Priest Antônio Vieira (1608-97), in his famous "Sermon to the Slaves" made this ideology crystalline clear when stating that slavery was an abject trade; yet was justified because it brought the pagan Africans to contact with the true God, not surprisingly the

\(^4\) Although this has been cast into shadows in the name of territorial unity by historians of the XIX century, there were two Portuguese colonial enterprises in the territory nowadays occupied by Brazil: Brazil and the Grão-Pará e Maranhão.
one he believed in, and so they were better in slavery, but close to the light, than lost in
the hellish shadows of idolatry and akin beliefs.

Up to the XIX century, race was a matter of religion, to be solved through
 evangelization. It is curious to note that José Bonifácio de Andrade e Silva (1763-1838),
the Patriarch of Independence, a leading intellectual and politician that was one of the
most powerful men of his period was an advocate of miscegenation as an instrument to
preserve and integrate the territory. In his “Projects for Brazil” (1998) he defended the
idea that free blacks, mixed people, and poor whites should be settled close to Indigenous
tribes, so that through miscegenation the Indians would be progressively integrated and
their cultures would be diluted. Just some decades later, such a position would be deemed
irresponsible and dangerous to the developmental prospects of the newborn nation.

By the end of the XIX century, throughout which many rebellions all across the
country were suffocated, the problem of national unity seemed not to be a big issue
anymore, and the Brazilian intelligentsia was then puzzled by a new problem, that of
development. At that time, the United States, also a former colony with many similarities
to Brazil, was emerging as a powerful nation and was often taken as a reference, and the
question became why were they succeeding in development and we don’t? Under the
strong influence of pseudo-scientific racism and social Darwinism, the answer came out
straight forward: we had a generous nature and a great territory, so the population was to
be blamed for our lack of development. Due to the centuries of slave traffic and to
miscegenation, the population was predominantly composed of blacks and all possible
combinations of mixed people. In the United States, there was no miscegenation (or
much less than here), and so they could develop under the “superior” guidance of the
white European descendants.

Nina Rodrigues, a leading intellectual of the “1870 generation”, said that very clear
in his book in which he studied the cultures of the many black peoples forcefully brought
to Brazil. For him, the Black element, either alone or through mixture, was one that
brought inferiority. That is why he not only advocated for incentives to European

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5 Only 38% of the population was white in 1872; in 1940, 63%. 
immigration, but also for the administration of the distribution of the immigrants equally throughout the land, to prevent the whiter regions to secede from the blacker ones (1988). Nina and his fellows thought that blacks were a biologically inferior race, and that miscegenation would spoil the eugenics of the white population and our prospects for developing into a modern nation in European molds. Sadly, Nina was a mixed person himself. Although with some variations, this perception was widespread. Some thought, as Silvio Romero (1949), that in contact with the whites and through miscegenation, a genuine Brazilian type would emerge, with the eugenics of the Europeans, though not necessarily white, but tanned, for the black and the native American elements of the population would simply go extinct because of their allegedly inferiority that would make impossible for them to compete with the Whites.

The somewhat more optimistic vision Romero had of the future became hegemonic up to the 1940’s. It can be seen as the seed of the ideal of racial democracy. But by the beginning of the XX century one could already found isolated discordant voices such as those of Manuel Bomfim (2004) and Alberto Torres (1982), who, albeit distant in the ideological spectrum, shared the idea, later to be found in Freyre’s (1994) masterpiece, that the obstacles to development were not to be found in race, but in the abandon of the black and the mixed people to their own fortune. They would defend that Brazil was wasting its human potential and that instead of stimulating immigration, the State should be figuring out how to incorporate the masses into modernity and develop their capacities. And in the same period, influenced by the work of Lévi-Bruhl, some intellectuals began to think of the “negative” impact of the black element not in terms of biology, but of culture. It was the pre-logic thought and the fetichist/animist views of the world that the black brought with them that were an obstacle for their integration and for development.

It is a very interesting exercise to compare the social thought about race of the first four decades of the XX century with the intellectual production after 1940. The importance of race as a factor of social stratification was not only clearly stated, it was considered to be legitimate, by religion, biology and culture. The debate on development was clearly intertwined with race: to develop, Brazil would have to get rid of the negative influences of the indigenous and the black element, particularly the last one. But after the forties, it seems that almost all the intelligentsia was bewitched by the myth of racial
democracy. The cultural contribution of the blacks to nation building was acknowledged, and their position in society was regarded as being low because of the proximity to slavery. The integration of blacks and of mixed people became a matter of increasing social mobility by the upsurging of a modern class structure to be brought about by economic development. Racism and prejudice were residual aspects, destined to fade away. And so, the situation of the black population, most of it in the lower echelons of Brazilian society became a matter of class instead of race.

**The emergence of the race or class debate: 1940 onwards**

By 1940, the ideas about white supremacy were under strong attack, and it was not possible anymore to defend the inferiority of other races due to religious, biological or cultural traits, at least in learned circles. Leading anthropologists such as Benedict (1940) and Montagu (1997) as well as geneticists made strong cases for the absence of any hierarchy, genetic or cultural, showing that good science, even that of the XIX century, did not allow it in any way. Gobineau, Chamberlain and the likes were put in their due place of dilettantes. Montagu even wrote UNESCO’s Statement on Race, which was to be acknowledged by all countries that associated to the United Nations. As the Brazilian intelligentsia has always been prone to incorporate fast the ideas that came from Europe and the United States, soon it was not possible anymore to openly defend racist ideas, albeit it was not a problem to keep on being racist in everyday life. In 1951, bill Afonso Arinos was approved by the National Congress and racial discrimination became an illicit, although it is known that the law was not effective at all.

After World War II, the defeat of the Nazis had put the grand winners of the War in a somewhat delicate political situation: the United States did have a regime of explicit segregation of Blacks which had an inferior status in society. UNESCO, then a new institution, sought for a democratic model of racial relations, and under the influence of Freyre’s “Masters and Slaves” (1994), and of Pierson’s “Negroes in Brazil” (1945),

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6 This bill was motivated by an episode of discrimination against a foreigner black opera singer – what mattered then, was the international repercussion of the case that would challenge the representation of the country as a racial paradise… A similar legal instrument was proposed just five years before, for the 1946 Constitution, but was then rejected based on the grounds that racial prejudice did not exist.
thought that this model could be found in Brazil. The fact that the Brazilian anthropologist Arthur Ramos\(^7\) became Head of the Social Sciences Department of UNESCO surely helped, and UNESCO went for a comprehensive study of the race relations in many regions of Brazil.

They hired local and foreign social scientists to conduct the research, and the UNESCO project yielded many studies that are still important references, for they are the origins of the race or class debate that still puzzles contemporary social thought. The first wave of studies related to the UNESCO project, however, revealed that far from being a racial democracy, Brazilian society had a very idiosyncratic form of prejudice that acted in subtle ways. This was not a unanimous conclusion though. Some of the researchers endorsed the thesis of Pierson that racial prejudice was mild, with almost no impact on the lives of people, but class prejudice was strong. This was the case of Azevedo (1996) and Wagley (1952). On the other side, Nogueira (1985), Costa Pinto (1952), and Bastide & Fernandes (1959), even if with different arguments, defended the view that there was racial prejudice and that it was far from being innocuous.

Of the above mentioned\(^8\), Pierson’s thesis had great influence, and still nowadays, even if many don’t know about it, provides the core arguments of the discourses that deny the existence of racism and racial discrimination in Brazil, defending that Brazilians have a racial democracy and that what is deemed by black activists and some intellectuals as racial inequalities are in fact class or income inequalities. A little later Florestan Fernandes, who became one of the greatest names of Brazilian sociology of all time wrote a masterpiece, “The Integration of Blacks in the Class Society” (1965), which cast into shadow other works of the period and became the main explanatory thesis of racial inequalities up to the end of the seventies, when it was challenged by newer evidences of

\(^7\) In 1949, he became the Director of the Department of Social Sciences of the United Nations Organization for Education, Science and Culture (Unesco), and as such had a decisive role in the realization of the Unesco Project in Brazil due to his view of Brazil as a paradise for race relations (see Maio, 1999). As a result, the majority of studies that dealt with the social mobility of blacks done in the 1950s in Brazil were sponsored by the Unesco Project.

\(^8\) For a detailed review, see Osorio (2004).
race as a persistent factor of social stratification. Let us spend a couple of paragraphs explaining these theses, both still important for the contemporary debate.

As the other important theories about race relations in Brazil, Pierson’s (1945) theory is based on an account of race relations up to the abolition of slavery (1888) and afterwards. He was deeply influenced by his reading of the historical report of the formation of Brazilian culture and society during colonial times made by Freyre (1994). It is worth remembering that in Freyre’s report (in which the permissiveness of the relationship between masters and slaves receives more emphasis than the conflict), physical and cultural miscegenation had been occurring intensely since the beginning because it was stimulated by colonial policy and mainly by the absence of white women. This led to a situation which allowed many mestizos to stand out and ascend in the social structure.

Besides the presence of a few blacks and a little more mixed people in prestigious social positions, Pierson (1942) considered that he had not seen in Salvador, Bahia, where he had conducted his research, the type of racial prejudice which was predominant in the United States at that time. He recognized the existence of prejudice against blacks, but it was not racial prejudice, it was class prejudice, since in Brazil blacks and whites were not separated into “castes”, as they were in his native country. However, Pierson pondered the fact that perhaps the absence of racial prejudice could occur as a result of the fact that blacks hadn’t, at that point in time, entered into effective competition with whites. Arthur Ramos, in the introduction to the Brazilian edition of Pierson’s book, endorsed the ideas of the author and clarified them: darker-skinned blacks had been slaves for a longer time, and being from the inferior positions, they suffer more from class prejudice than mulattos, who had representative members who had already ascended, socially speaking.

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9 “There are no castes based on race; there are only classes. This does not mean that there is not something which you can properly call ‘prejudice’, but that the prejudice which exists is a prejudice of class and not of race” (Pierson, 1945, p. 402).

10 “Blacks with darker colored skin seem to have emerged from slavery more recently and for this reason still occupy the lower rungs on the ladder of economic and social life, so they suffer from class prejudice more intensely” (Ramos, In: Pierson, 1945, p. 24).
The concept of race prejudice deployed by Pierson, however, made him blind to the fact that there was strong racial prejudice in Brazil, however of a different nature. For researchers like him, who came from a society in which, to use the terms of Oracy Nogueira (1985, 1998), discrimination was the result of the unconditional exclusion of the members of the discriminated group, Freyre’s historical Brazilian past and the present with a small number of mestizos and blacks in the highest strata of society were taken as evidence of the absence of racial barriers against upward mobility once slavery was abolished. And so his prospects for the Brazilian society were optimistic: the rapid economic development of the country would be capable of providing numerous opportunities for the improvement of the socioeconomic status of Brazilians of all colors, and the blacks from the lowest strata of society would have the necessary conditions to go up to the middle layers, then to the top, which would make race no longer a factor of stratification.

Fernandes’ interpretation shared Pierson’s beliefs about the integrative powers of modernization and economic development, and all the other factors that came packaged with them, such as urbanization, industrialization, rationalization, and mass education. But he was not keen on the idea that there was no racial prejudice. On the contrary, he saw racial prejudice as present and very strong. Along his detailed historical account, Fernandes (1965) develops the argument that slavery was not driven by racism, instead, racism emerged as an ideology to legitimate slavery, and functioned very well for this purpose. After the abolition of slavery, however, racism did not disappear. It stayed as an irrational legacy of the previous order, as an “archaism”. One could say that in Fernandes’ view superstructure was suffering from inertia, not accompanying the changes in infrastructure. Soon, the flagrant incompatibility between the rationality of the industrial society and the irrationality of racism and its uselessness for the new production mode would make race no longer a factor of social stratification.

However, racism seemed to persist, and although there were no good data sources to study how racial inequalities driven by prejudice were faring, a new generation of social scientists felt that Fernandes’ theory, particularly in its consideration of racism as an archaism, was not able to explain the socioeconomic racial divide. The critique of the notion of racism as an archaism is well represented by Hasenbalg’s (2005) interpretation.
of racial inequality. Not only Hasenbalg revisited the work of Fernandes under the lights brought about by newer historical evidences, but also complemented them with quantitative evidences about social mobility, a true novelty in Brazilian sociology at that time. For Hasenbalg, rather than being an archaism, racism was being reproduced and rationalized, and every new generation of Blacks was to suffer its consequences, regardless of social origins.

Even more important, Hasenbalg’s work gave birth to a series of studies on racial inequalities and social mobility that dwelt on sound empirical evidences, mainly obtained from various rounds of the Brazilian national household survey. Besides his PhD thesis of the seventies (Hasenbalg, 2005), alone (Hasenbalg, 1983, 1988, 1999, 2006) or with his colleague Nelson do Valle Silva, (Hasenbalg & Valle Silva 1988, 1999), who also had a leading role in the new generation of studies (Valle Silva 1988, 2000), produced many works that became necessary references to everyone interested in this subject. The studies of Hasenbalg and Valle Silva had also an important political impact. Black activists preferred their theoretical framework, for in it racism was not an archaism destined to disappear, but a present and driving factor of racial inequality. And their claims also benefited from the uncontestable evidences of persisting racial inequalities yielded by those studies. Now their cry was statistically based – there was proof of racism, in turn their adversaries were then with the duty of proving otherwise.

Regarding social mobility, the theoretical framework deployed by Hasenbalg and Valle Silva is very close to the classical sociological approach. Social origins are deemed to have an impact on educational achievements, which by their turn influence the position in the labor market that will largely determine the status of the individual in his adult life. Concomitantly, social origins also exert some direct (i.e. not mediated by educational achievements) influence in the positioning of the adult individual in the labor market, through social networks and values and beliefs. This framework was not always implemented with the same methodology and statistical tools. In some studies they used path analysis\(^\text{11}\) in others they stratify the adult individuals based on occupation, present

\[^{11}\text{Following the lead of Blau & Duncan (1978)}\]
education and income, and contrast their status thus given with that of their fathers, again using occupation, and doing the standard mobility table analysis commonly deployed by sociologists. Despising the variations in the methodological approach, every new study seemed to confirm the original findings of Hasenbalg (2005), from which his theory of the cumulative racial disadvantages over the life cycle was developed.

The theory of cumulative disadvantages can be seen as a version of the general theory of mobility. Basically it states that race is an additional factor that superposes class (social origins). Black kids have a higher likelihood of being born poor. So in the first stage of their life cycle, they are more prone to suffer poverty than white kids. In the next stage, their chances of attending school are smaller than that of white kids; and when they get to attend, they will most likely be if not in a bad school, in one that is not as good as the ones attended by white kids. Add to that the fact that when in school they will suffer the prejudice of their teachers and colleagues, and even with their own internalized prejudice that will reduce their self-esteem. When they get to the third stage of their life cycle, their lower educational achievements will lead them to low pay, insecure and informal jobs. When a new cohort of blacks gets to the labor market, the differences between their educational profile and that of whites of the same birth cohort is so intense that there’s no much need for additional discrimination in the labor market. Their offspring then will be, as they were once, more likely to be born in poverty, and the cycle will restart for this new generation.

Since Hasenbalg’s (2005) first formulation of this theory, many specific studies on education and on labor have confirmed it. Most of the studies on education were of qualitative strain and concentrated on the racist imagery and ideas embedded in teaching materials (Hasenbalg & Valle Silva, 1990). The absence of positive content about blacks, always represented as slaves, or as savages, opposed to the representation of white Europeans as conquerors, adventurers and bearers and disseminators of civilization and culture were though of as factors that reduced the self-esteem of black kids impairing their educational achievements with long term consequences.

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Studies of quantitative strain came up with complementary hypotheses on the worst educational performance of black kids. Rosemberg (1987; 1990) suggested that other phenomena such as spatial segregation, selection of students by schools, and truncated educational trajectories should be taken into account in order to understand the racial disparities in education. Lack of good data has prevented further development of in-depth studies of these issues for a long time, but recently the situation is changing. Availability of new data sources allowed researchers to dig a little deeper in the synergies of race and class in the educational system (Soares et al., 2005), but there is still much to do in this area. But although the structural determinants of the differentiation between black and white kids on the process of educational achievement remain shrouded, it is not possible to deny its existence, for it shows off easily in indicators of education (as we will see in the next section).

Black Brazilians enter the labor market with a disadvantaged educational profile. Studies that focused on determinants of labor income have shown that, as almost everywhere, variations on education are the main structural drivers of income variation. But even when education and many other factors (region, area, sex, occupational groups, experience, and branches of economic activity…) are controlled for, there’s always non-negligible and significant explanatory power left for the race parameter. Reviewing these studies, Hasenbalg (2006) teaches that no matter the variations in the methodological approaches, race explains around 10 to 30% of labor income variation. Recent studies such as Soares (2000); Beltrão et alii (2003); Campante, Crespo & Leite (2004); Arias, Yamada & Tejerina (2005) and Osorio (2006) are no exceptions to Hasenbalg’s conclusions.

As Soares (2000) stated, discrimination in the labor market is not sufficient to explain the overall racial inequalities, for it is in the process of educational achievement that the fate of black Brazilians is sealed. Add to that the fact that the few studies of occupational mobility (from entrance in the labor market to a consolidated position in it) done in Brazil (Pastore, 1979; Pastore & Valle Silva, 2000) showed that entrance in labor market is generally in a position very similar to the one that will characterize a worker for the rest of his productive life.
In spite of all evidences revealed by the above mentioned studies, many people still think that racial inequalities are a kind of residual problem, that does not affected younger cohorts of Brazilians, and that the overall racial inequalities depicted by social indicators are in fact products of income, parental education and regional disparities, and that race just captures these other dimensions, not being itself a cause of the inequalities. As we stated before, this is a half-truth. In the following section we will do a case study of the process of educational achievement for a particular birth cohort of Brazilians, in order to see whether race really has power to explain variations in achievement, and how it compares to other factors, such as the ones just listed.

**Social mobility and race - a case study of the cohort born 1973-1977**

In order to depict the mobility process and the racial differentiation at its beginning and throughout it, we chose to follow a particular cohort of Brazilians, those who were born from 1973 to 1977. People belonging to this birth cohort were aged 28-32 years in 2005; therefore, most of them had already finished their education, had a stable position in the labor market, had left their parental households to form their own, and had become parents themselves. As in Brazil there are no panel data sources that allow this kind of exercise, we will actually follow a pseudo-cohort built from cross-section data yielded by the National Household Survey (PNAD). The sample size of the PNAD is large, and the cohort born 1973-1977 is well represented, and its general characteristics are consistent throughout the many rounds of the survey.

Educational characteristics of the household members were not surveyed for those aged four or less years prior to the 1992 round of the PNAD. Because of that, the first time point in which we will observe the selected cohort is 1982, when they were aged 5-9 years old. Then we will meet them again in 1987 (10-14 years old); in 1992 (15-19 years old); in 1996 (19-23 years old); and in 2005 (28-32 years old). The choice of 1996 instead of 1997 was dictated by the availability of information on father’s education, for in 1996 around 7% of the cohort had already left parental home. 2005 was chosen for being the last time point currently available.
We will start by presenting some descriptive statistics of this cohort on education, broken-down by a dichotomous black/white racial classification: the relative frequency distribution of school attendance and level attended, and of the educational level already achieved in each chosen time point. Then we will present the ratios between the per capita household income averages of the whole black and of the whole white population to compare them with the ratios between the averages of the black and white members of the cohort. We end the descriptive part by locating the whole black population, the cohort 1973-1977, and the blacks of the cohort in the Brazilian per capita household income distribution. To do this last exercise, we will calculate the following odds-ratios:

1) odds of finding a black person in each vintile of the income distribution by the odds of finding a black person in the whole population (already presented in Chart 1)
2) odds of finding a person born 1973-1977 in each vintile of the income distribution by the odds of finding a person born 1973-1977 in the whole population
3) odds of finding a black person born 1973-1977 in each vintile of the income distribution by the odds of finding a black person born 1973-1977 in the whole cohort

Odds are the ratio between the probability of occurrence of a given event, and the probability of non occurrence: \( p/(1-p) \). The odds-ratio calculated from the odds were all normalized for symmetry and imposition of upper (1) and lower (-1) bounds by applying the transformation \( (OR-1)/(OR+1) \). Values close to zero indicate no association. Values close to 1 indicate either strong positive or negative association, depending on the sign.

Then we will dig through the data to better understand the extent and nature of racial differentials by modeling some educational outcomes that are expected to be achieved in given ages. These outcomes will be represented by dichotomous dependent variables that will change at each time point. We used standard probit models which yield good interpretations. The set of independent variables included controls for age within the cohort, geographical regions (North, Northeast, Southeast, South and Western-Central), area (urban or rural), and sex. The explanatory variables we were interested in are race, parental education, and household income. Race enters the model as a dichotomous variable, having whites as base. Parental education is represented by the highest
educational level achieved by the head of the household; for around 7% of the cohort, we used father’s education in 1996, for they had already left parental home. Educational levels are: Illiterate; Literate; Elementary (4-5 schooling years); Primary (certificate/diploma - 8-9 schooling years); Secondary (certificate/diploma - 11-12 schooling years); Tertiary (college/university diploma - 15 or more schooling years); Masters/Phd (not necessarily completed). The classification was not based in schooling years, which were presented just for reference. Per capita household income was represented by its logarithm.

After following the 1973-1977 cohort to adult life in 2005, we perform the same analysis conducted for them in 1982 and in 1987 to their offspring aged 7-9 and 11-14 in 2005, to investigate whether the factors that differentiated their parents are still producing inequalities with the same intensity.

**Results**

Chart 3 presents the relative frequency of cohort members not attending school on its left panel. From 1982 up till 1996 the likelihood of blacks being out of school is always higher than that of whites. Difference ranges from 11 to six percentage points. In 2005, when almost all the cohort is not attending school anymore, the racial difference disappears. About the overall levels, it is important to notice that in 1982 school was not mandatory for children under 7 and this explains partially the fact that 42% of the cohort was out of school. But there are other reasons, such as entrance delay.

The distribution by educational levels of those that were attending school is represented in the right panel of Chart 3 (value labels do not add up to 100% because they refer to the total). It is easy to spot that blacks are always disadvantaged. In 1982, besides having a greater percentage out of school, in school their percentage attending pre-school and primary is smaller than that of whites, and greater in other courses (startling, “other” for this age bracket means adult literacy classes). In 1987 almost everyone is attending a primary course, but blacks are still more likely to be out of school, and we can infer that they are more delayed in terms of age-grade lag, as their entrance was retarded. The fact that in 1992 the relative frequency of whites attending secondary
school is more than twice that of blacks, and that blacks attending school are still concentrated in primary level confirms the previous inference.


Distinction reaches its heights in 1996, when the relative frequency of whites attending university or college courses is more than five times greater than that of blacks. On the other side, the proportion of blacks still in primary school (aged 19-23 years old!) is twice that of whites. Finally, in 2005, more than half of the whites still attending school are in tertiary or post-graduate courses, against less than one third of the blacks.

Now in Chart 4 we can see that in terms of achievement the difference is even higher. For instance, in 1982 the proportion of whites that were already literate is twice that of blacks. And as the cohort grows old, we always find blacks concentrated in the lower levels of education. So we find out that in 1987, when the members of the cohort were aged 10-14 years old and all of them should already be literate, and all those 11 and over should already have completed the elementary level, 25% of the blacks are still illiterate.
(three times the percentage of whites). On the end of the period, 2005, the proportion of blacks and whites with primary completed is more or less the same, but the relative frequencies of blacks below this level is higher, and above is smaller. The proportion of whites with a college/university degree is almost four times higher.


The data presented on education just confirms for the particular cohort we are following findings that have already been revealed by previous studies: the educational system in Brazil is bad, generally speaking, but it is even worse for black kids. Black kids are more likely to be out of school, and when in school they lag behind more frequently than whites.

Other factor that interests us is income. Chart 5 shows in distinct sequences the ratios between the per capita household income averages of the whole black and of the whole white population, and the same figures for the cohort 1973-1977 in the selected observation years. Not much to comment: the black/white income ratio of the cohort is always slightly smaller than that of the whole population, but they follow the same trend.
We have seen in Chart 1 that the ratio between the odds of finding a black person in a given vintile and in the whole population decreases almost in a linear and monotonic way as we move towards the top of the income distribution. We plotted on the left panel of Chart 6 the ratio between the odds of finding someone born 1973-1977 in a given vintile of the per capita income distribution and in the whole population. As expected, in 1982 and in 1987, when kids, members of this cohort are concentrated in the poorer vintiles, but as they age, we find them concentrated first in the intermediate vintiles (1992), and then in the top ones (1996 and 2005).

At last, we present in the right panel of Chart 6 the ratio between the odds of finding a black person born 1973-1977 in each vintile of the income distribution and the odds of finding a black person born 1973-1977 in the whole cohort. Strikingly we find again the same pattern of Chart 1. This means that the position of blacks born 1973-1977 relative to whites of the same cohort in the global income distribution is the same as in the whole population, even when the cohort is concentrated on richer vintiles. And we are again led to the conclusion that although blacks might be experiencing individual mobility, the group as a whole seems to be immobile in the socioeconomic structure, at least when we choose the income dimension as its representation.
As stated before, these stylized facts are not novelties. They have been known and supported by sound empirical evidences since the end of the 1970s. Black activists have been using them to denounce the racial inequalities and to claim for criminal punishment of racists and for affirmative actions in the last thirty years. The difference in the data just presented is that it refers to a single and young cohort, showing that whatever is driving these differences, it is not going away, it is reproducing itself regardless of all progress experienced by Brazil in many dimensions of socioeconomic well-being.

However most people, notably those who are contrary to the adoption of affirmative action policies in Brazil, are prone to think that the differences presented are not really due to racism, but a product of regional disparities, of the low level of income of black parents, and of the inefficiency of the educational system. They are not entirely wrong in saying that, but they are wrong in despising race as a factor of stratification. No matter how one dislikes it, you can throw in as many variables as you wish in a model, and race almost always comes out as a significant factor. Conversely, no matter how much black activists cry out that racial inequalities are the source of all remaining inequalities, the fact is that race is important for stratification, but other determinants of social position should be considered as well to understand the broader racial gaps.
The question is, if we introduce controls for other dimensions that might be presenting themselves as racial without being so, will race still have explanatory power of variations in educational achievements that later will translate into variations in income? In order to answer this question we fitted the same probit models for different educational outcomes that the cohort 1973-1977 was expected to achieve in the selected observation years. In 1982 we expect that those aged 7-9 years are already literate, so the model for 1982 has as dependent the variable literate, and it was run just for a partition of the cohort (1973-1975). Five years later, we expect to see them achieving completion of half of the primary education cycle (fourth grade), except those born in 1977, who were expected to be still attending the fourth grade: so in 1987 the dependent variable is completed elementary education, and the model was run just for those aged 11-14 years. We meet again our cohort in 1992, when we expect all of them to have completed primary education: this time our dependent variable is completion of primary education. Finally, four years later, in 1996, ideally all of them should have completed their secondary education, and therefore the completion of this level is the probability to model.

We present in the appendix the complete results of the four probit models described, to focus from now on exclusively on the set of explanatory variables we are interested in, starting by parental education (all parameters represented on the charts are significant at 1%, unless otherwise stated). We can see on Chart 7 that parental education is an important determinant of the educational achievements of their offspring: the higher its level, the higher the probability, *ceteris paribus*, that the cohort member will achieve the expected educational outcome for his age. The values presented in Chart 7 were transformed to depict the effect on the probability of the outcome for an average individual when the dummy variable changes discreetly (not marginally) from 0 to 1. For instance, the model fitted to explain literacy in 1982 has a predicted probability of 41% (see appendix) for average members of the cohort, which rises to 93% if the head of the household has superior education.
Per capita household income is other important determinant of variations in educational achievements. Chart 8 depicts the estimated parameters for the effect of a one percent change in household income over the probability of the outcomes. Family income is less important for the achievement of primary education than for the other outcomes. This happens because when the 1973-1977 cohort was young, the supply of preschooling was very restricted in the public system, so many poor children entered schools at 7 years, or later, without having gone through literacy classes that are standard for 5-6 years-old children in private schools. This delay in entrance and in literacy reflects itself in timely completion of elementary education. But when it comes to primary education, not only the supply was more abundant, but also in 1992, when the cohort was aged 15-19, even those who lagged during primary had a higher likelihood of having completed it, so our choice of observation years affected the income effect, for a person with a perfect educational trajectory completes primary education when 14 years old. The importance of household income rises again when we move to the completion of secondary education in 1996, for secondary education was, and still is, plagued by supply constraints.
Finally we get to the race parameter represented in Chart 9. As predicted by theory, regardless of all controls, being black impacts negatively and significantly the probability of achieving a desired outcome at the right age. The parameters are for the discreet change of the dummy variable therefore representing the loss in probability of achieving the outcome for the average black relative to the average white person. Although the difference in the probabilities of secondary education completion seems to be smaller, this can be attributed to the fact that achieving this level was hard for both blacks and whites – the predicted probability of secondary completion for the cohort born 1973-1977 was just 15% (22% observed).
We have seen in the descriptive statistics differences that were higher than the ones revealed by the models. For instance, from chart 5 we learned that 27% of the cohort had achieved primary education or a higher level in 1992, but among whites this percentage rose to 38% and among blacks goes down to 16%. Our probit model for completion of primary education in 1992, however, clearly shows that prejudice is not the only reason for the 22 percentage points that separates the groups: in a rather free interpretation, one could say that about 9 percentage points are due to other factors, and that race would be responsible for around 13 percentage points – assuming the model did not omit important variables which effects might be being captured by the race dummy. Still, even if one sees it not as the “real” effect, but as a ceiling to the impact of race, it can not be ruled out as an important driver of inequalities in educational achievements.

Up till now, the differentiation of blacks and whites born 1973-1977 in the process of educational achievement behaved exactly as the theory of cumulative disadvantages predicted: there are differences due to social origins (here represented by the education of the head of the household and by household income) to which further differences due to race are superposed. Next step is to verify whether the cycle will really restart for the next generation, the offspring of those born 1973-1977, or if it seems to be losing intensity or to be being halted.
In order to do so, we jump to 2005 to meet again our cohort, now mature adults aged 28-32. By 2005 70% of them were either heads of their own households, or spouses of a household head. Around 47 million of the 181 million Brazilians lived in a household with at least one of the 13 million members of the cohort 1973-1977 still alive in 2005. A considerable part of them was already into the troublesome and expensive hobby of growing children. So we will repeat for the offspring of the cohort, divided in two age brackets, 7-9 and 11-14 years, the same analysis conducted for at least one of their parents. For the first group, we will model the probability of being literate; for the second, the probability of having achieved completion of elementary education. The complete results for these two models can be found in the appendix.

Starting with the effects of the education of the head of the household, on Chart 10, we see that although the head not being illiterate rises the probability of the children aged 7-9 being literate, and that of the children aged 11-14 achieved completion of elementary education, the variation of the probability of these outcomes by the educational level of the household head is not as sharp as what we have seen on Chart 7.

CHART 10– Models 5-6, Parental education parameters

This is a very positive finding: the education of the head of the household does not influence the outcomes of the offspring of the cohort 1973-1977 as it influenced the
outcomes of their parents in the past. However, one should be careful before drawing optimistic conclusions out of that. We are just looking at the beginning of the educational trajectories of these children. In 1982, only around 43% of the children aged 7-9 were already literate; for their offspring in the same age bracket in 2005, this percentage was much higher, 82%; in 1987 42% had achieved elementary completion, whilst in 2005 we had 73% of the offspring aged 11-14 with completed elementary education. Therefore the loss of influence of parental education can be explained by the huge expansion of the educational system which augmented the supply of primary schooling – if an outcome becomes close to universality, it is no surprise that parental education, or other factors, will no longer be strong determinants of it.

Same happens with income as can be seen in the left panel of Chart 11, and for the same reasons. And race also diminishes its importance as a factor of variation in the outcomes, as represented in Chart 11, right panel. In fact, besides being close to zero, the race parameter is not significant at 1% in the literacy model (it is at 5%).

**CHART 11 Models 5-6, Income (left) and race (right) parameters**

![Chart 11 Models 5-6, Income (left) and race (right) parameters](image)

Source: see Appendix.
Unfortunately, these findings do not mean at all that the cycle of cumulative disadvantages is not restarting for the offspring of the cohort 1973-1977. The overall level of education has increased a lot along the period covered by this study, with literacy and elementary schooling becoming almost universal for younger cohorts. The expansion of the educational system in all levels can be just pushing up the differentiation to higher levels, such as secondary and superior education. Alas, the incomplete data we have suggests this, for it is clear that the factors associated with social origins – parental education and per capita household income – and with race, are more important determinants of completion in due time of elementary school than of being literate.

We end this section by performing again the exercise of locating groups in the national per capita income distribution. Chart 12 shows ratio between the odds of finding a black kid, aged 5-14 years, with at least one parent born 1973-1977 in each vintile of the income distribution by the odds of finding a black kid in the whole offspring of the cohort 1973-1977 in the 5-14 age bracket. The pattern is the same we’ve seen in Chart 1 and in Chart 6. It is not a surprise, because at this point of their lives, these kids do not have their own income, and so their relative positioning is close to what we have seen in the right panel of Chart 6. But will they be able to get out of the cycle of cumulative disadvantages they just entered? We can not answer this now, but looking retrospectively to what happened to their parents born in the seventies, it is hard to bear optimistic views about the future of racial inequalities.
Concluding Remarks

During colonial times economic production in Brazil was based on slave work. This historical fact has shaped the socioeconomic structure in such a way that race became a factor of stratification influencing mobility processes. Many studies have showed that being black, or being a mixed person whose appearance identifies her as being the offspring of Africans and Europeans, or any other mixture that produces people that do not look Caucasoid, is something that reduces opportunities of upward mobility and increases the risk of downward mobility. Brazilian society is rather immobile for everyone, for social origins are strong determinants of socioeconomic status regardless of the individual’s race, but the prospects of mobility of a white individual, though not promising, are better than that of a black with a similar social background. It is mainly on the process of educational achievement that the faith and disadvantages of the black Brazilians are decided. When each new cohort of Brazilians get to the labor market,
there’s still some room left for racial discrimination, but by then it is the educational achievements that will really differentiate adult workers.

It is important to bear in mind these characteristics of the mobility process in order to analyze the racial gaps that come forth when comparing general socioeconomic indicators broken down by race categories. Brazil is a society with a high degree of intergenerational status persistence, as shown by economic studies of income mobility and by sociological studies of class mobility. And we are only about six generations far from the end of the nineteenth century when the abolition of slavery took place. So it is reasonable to think that not all racial inequality is due to racism and racial discrimination, because in such an immobile society, the relative positioning of people in the socioeconomic structure of the present will to some extent mirror the positioning of their ancestor in the socioeconomic structures of the past. Part of the worst relative positioning of black Brazilians can be attributed to this inertia provoked by low mobility.

However, one can not despise the idea that racial discrimination is still present in society. Brazil has low mobility, but it is not a caste society, there is a reduced degree of openness to exchanges of positions between people of different social origins. So we would expect that in the absence of racial prejudice, the black Brazilians would slowly experience improvements in their relative positioning. As this, as we showed, does not happen at all, we are led to conclude that racism still has some present effects over the outcomes of the black population.

In fact, we have seen in the case study presented that even for a recently born cohort the effects of race over their outcomes on many points of their educational trajectories are negatively influenced by racial affiliation. When we met the cohort born 1973-1977 in 2005, aged 28-32 years-old, mature workers and parents, we found out that the relative positioning of the black members of the cohort in respect to the white members follows exactly the same pattern as in the whole population, and the same is valid for their offspring. By accompanying the educational trajectory of this cohort, we noticed that the variables related to social origin, parental education and household income, are undeniably more important than race in determining the variations in the probability of the educational achievements expected at given ages. But right after social origins race
ranks second as determinant of the variations in outcomes. Last, although in the beginning of the cycle of cumulative disadvantages for the offspring of the cohort analyzed we noticed that both the influence of social origins and race were diminishing due to the expansion of the supply of primary schooling, we can not be sure that this is for real. Our evidences suggests that the core differentiation simply might have shifted to higher educational levels, and so, it might be just a matter of time before social origins and race start to impact the educational achievements of today’s children.

These results are important for the broader social debate on race, because it shows that radical explanations by class or by race only are fallacies. The racial inequalities in Brazil are not a matter of race or class, but of both. That is why the newest generation of studies is starting to research the interactions between race and class.

Policy implications are rather obvious. If Brazilian society is really willing to make a commitment of overcoming the broad racial inequalities it bears today, interventions in the educational system are needed. These interventions should have three broad guidelines: i) expand supply of pre-school, secondary and tertiary education, and on the run adopt measures to promote more equitable access to these educational levels; ii) improve the quality of all, but particularly of the first, stages of the educational processes, to counteract the disadvantages that kids from poorer social backgrounds bring to school; iii) proactively fight racist ideas and discrimination in schools. First two items are color-blind, for they aim to break the general inertia of the socioeconomic structure by fostering a higher overall level of mobility. They are not new ideas instead they are clichés, education for all and of good quality has been a goal for long, the problem is in finding the formula that will lead Brazilian society to accomplish it. The third item has to do with socialization of teachers and students for a non-racist society, and depuration of the teaching materials of racist imagery and contents.

In the last thirty years, Brazilian society saw the emergence of a debate around the adoption of affirmative action policies. However, up to the beginning of the XXI century, the grand policy to fight racial inequality attacked just part of the problem, by the criminalization of overt racial prejudice in interpersonal relations. After the Durban conference, however, affirmative policies started to be adopted. It is still very early to
evaluate the results of these policies, and all the reduction of racial inequalities that happened in the last five years are better explained by the forces that resulted in an overall reduction of inequality than by these policies. After all, the policies needed to reduce the racial gap are mostly educational policies, and the effects of those take a long time to come up.
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Appendix – Models

Model 1 – probability of being literate in 1982 for those born 1973-1975

Probit estimates

| Variable | dF/dx   | Std. Err. | z   | P>|z| | x-bar [    95% C.I.   ] |
|----------|---------|-----------|-----|------|--------------------------|
| age      | .2370604| .0039186  | 60.40| 0.000 | 7.97624 .22938 .244741  |
| sex*     | .0634006| .0060777  | 10.41| 0.000 | .497714 .051488 .075313  |
| dcor*    | -.1114154| .0065738 | -16.82| 0.000 | .490376 -.1243 -.098531  |
| dn*      | .0264936| .0177962  | 1.50 | 0.134 | .031056 -.008386 .061374  |
| dse*     | .268957 | .0075874  | 34.35| 0.000 | .397063 .254086 .283828  |
| ds*      | .3405615| .0177962  | 19.93| 0.000 | .322836 .358287          |
| dco*     | .1646283| .0070122  | 13.25| 0.000 | .140317 .188825          |
| durb*    | .1443941| .0079375  | 23.23| 0.000 | .170384 .201499          |
| dnemel*  | .2825052| .0083764  | 32.51| 0.000 | .299929 .266088 .298923  |
| deleme*  | .3976512| .0121508  | 26.10| 0.000 | .373836 .421466          |
| dprima*  | .4860567| .0105003  | 29.42| 0.000 | .465477 .506637          |
| dsecun*  | .5248154| .0112238  | 23.31| 0.000 | .502817 .546814          |
| lnpjc     | .0790677| .0031333  | 25.23| 0.000 | 8.77928 .072926 .085209  |

(*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P>|z| are the test of the underlying coefficient being 0

obs. P  | .4383599
pred. P  | .4112945  (at x-bar)
Model 2 – probability of elementary education completion in 1987 for those born 1973-1976

Probit estimates

Number of obs = 26295
LR chi2(14) = 10579.93
Prob > chi2 = 0.0000
Log likelihood = -12636.936  Pseudo R2 = 0.2951

| elemen-r | dF/dx   | Std. Err. | z    | P>|z| | x-bar | 95% C.I. |
|-----------|---------|------------|------|------|-------|----------|
| idade     | .1612786| .003274    | 49.10| 0.000| 12.4702| .154862   |
| sexo*     | .1086297| .0069241   | 15.59| 0.000| 0.492762| .095059   |
| dcor*     | -.1294564| .0074325  | -17.25| 0.000| .490875 | -.144024  |
| dn*       | -.0142673| .0184644  | -0.77| 0.442| .037945 | -.050457  |
| dse*      | .1568337| .009003    | 17.32| 0.000| .404397 | .139188   |
| ds*       | .2746426| .0113565   | 23.34| 0.000| .150277 | .252384   |
| dco*      | .0913211| .0147498   | 6.27 | 0.000| .07326  | .062412   |
| durb*     | .1167246| .0083985   | 13.47| 0.000| .705199 | .100264   |
| dnemel*   | .1542945| .009844    | 15.69| 0.000| .279276 | .135001   |
| deleme*   | .2846526| .009028    | 27.91| 0.000| .272721 | .265243   |
| dprima*   | .3334304| .0146588   | 20.48| 0.000| .058047 | .3047     |
| dsecun*   | .426425 | .0136126   | 24.73| 0.000| .056696 | .399745   |
| dsuper*   | .4934999| .015515    | 20.18| 0.000| .032083 | .463091   |
| lnypc     | .1040887| .0040098   | 25.95| 0.000| 7.26641 | .09623    |

Obs. P | .4246902
Pred. P | .3932919 (at x-bar)

(*) dF/dx is for discrete change of dummy variable from 0 to 1

z and P>|z| are the test of the underlying coefficient being 0

Probit estimates

| Variable  | dF/dx | Std. Err. | z    | P>|z| | x-bar  | [    95% C.I.   ] |
|-----------|-------|-----------|------|------|--------|----------------------------------|
| idade     | .0699679 | .0019036  | 36.38 | 0.000 | 16.8456 | .066237 – .073699 |
| sexo*     | .092906  | .0053048  | 17.53 | 0.000 | .470487  | .082509 – .103303 |
| dcor*     | -.1100237 | .0057809 | -18.88 | 0.000 | .494181  | -.121354 – -.098693 |
| dn*       | -.0309008 | .012932  | -2.29 | 0.022 | .042416  | -.056247 – -.005555 |
| dse*      | .0224059  | .0072259  | 3.11  | 0.002 | .425873  | .008243 – .036568 |
| ds*       | .0485265  | .009843   | 5.13  | 0.000 | .146225  | .029235 – .067818 |
| dco*      | -.0149128 | .0108405 | -1.35 | 0.177 | .076048  | -.03616 – .006334 |
| durb*     | .1011386  | .0065883  | 13.65 | 0.000 | .786373  | .088226 – .114051 |
| dnemel*   | .1136151  | .0090324  | 13.06 | 0.000 | .299077  | .095912 – .131318 |
| deleme*   | .2138775  | .0098385  | 23.03 | 0.000 | .263196  | .194594 – .233161 |
| dprima*   | .3274217  | .0149352  | 23.76 | 0.000 | .073034  | .298149 – .356694 |
| dsecun*   | .4373771  | .0147733  | 30.10 | 0.000 | .069185  | .408422 – .466332 |
| dsuper*   | .5794198  | .0171996  | 27.87 | 0.000 | .029985  | .545709 – .61313 |
| lnypc     | .0591876  | .0027666  | 21.17 | 0.000 | 12.5521  | .053765 – .06461 |

obs. P | .270385
pred. P | .2117061 (at x-bar)

(*) dF/dx is for discrete change of dummy variable from 0 to 1
z and P>|z| are the test of the underlying coefficient being 0

Probit estimates

| Variable | dF/dx   | Std. Err. | z     | P>|z| | x-bar       | [5% C.I.   ] |
|----------|---------|-----------|-------|------|--------------|-------------|
| idade    | 0.0247739 | 0.0016272 | 15.19 | 0.000 | 20.9183      | 0.021585, 0.027963 |
| sexo*    | 0.0900699 | 0.0046023 | 19.52 | 0.000 | 0.495474     | 0.08105, 0.09909   |
| dcor*    | -0.0653858| 0.0050757 | -12.75| 0.000 | 0.466573     | -0.075334, -0.055438|
| dn*      | -0.0386552| 0.0100272 | -3.53 | 0.000 | 0.047274     | -0.058308, -0.019002|
| dse*     | -0.0336499| 0.0062067 | -5.37 | 0.000 | 0.433483     | -0.045815, -0.021485|
| ds*      | -0.034055 | 0.0100272 | -3.53 | 0.000 | 0.047274     | -0.058308, -0.019002|
| dco*     | -0.0208925| 0.0087646 | -2.29 | 0.022 | 0.079029     | -0.03807, -0.003715|
| durb*    | 0.0714153 | 0.0062904 | 9.92  | 0.000 | 0.817646     | 0.059086, 0.083744 |
| dnemel*  | 0.07775   | 0.0081666 | 9.99  | 0.000 | 0.279807     | 0.061744, 0.093756 |
| deleme*  | 0.1621689 | 0.0089781 | 19.71 | 0.000 | 0.252842     | 0.144572, 0.179766 |
| dprima*  | 0.2532825 | 0.0146256 | 20.30 | 0.000 | 0.069576     | 0.224617, 0.281948 |
| dsecun*  | 0.3676013 | 0.0149849 | 28.08 | 0.000 | 0.073708     | 0.338231, 0.396971 |
| dsuper*  | 0.4920898 | 0.0195202 | 26.64 | 0.000 | 0.038026     | 0.453831, 0.530349 |
| lnypc    | 0.1021511 | 0.0027614 | 36.25 | 0.000 | 4.79791      | 0.096739, 0.107563 |

| Variable | P>|z| | x-bar       | [5% C.I.   ] |
|----------|------|--------------|-------------|
| obs. P   | 0.222259 |
| pred. P  | 0.1576649 (at x-bar) |

(*) dF/dx is for discrete change of dummy variable from 0 to 1
z and P>|z| are the test of the underlying coefficient being 0

**Probit estimates**

- Number of obs = 7100
- LR chi2(14) = 1525.48
- Prob > chi2 = 0.0000
- Log likelihood = -2605.8973
- Pseudo R2 = 0.2264

|        | dF/dx  | Std. Err. | z    | P>|z| | x-bar [ 95% C.I. ] |
|--------|--------|-----------|------|------|-----------------|
| idade  | .0910506 | .0050934  | 17.52| 0.000 | .081068 .101033|
| sexo* | .0458136 | .0081249  | 5.64 | 0.000 | .029889 .061738|
| dcor* | -.0192462 | .0086929  | -2.20| 0.028 | .036284 -.002208|
| dn*   | .0197227 | .013792   | 1.36 | 0.174 | .007309 .046755|
| dse*  | .096863  | .0090029  | 10.14| 0.000 | .079218 .114508|
| ds*   | .1126245 | .0078128  | 14.10| 0.000 | .107891 .149675|
| dco*  | .0794173 | .009274   | 6.58 | 0.000 | .081742 .097594|
| durb* | .0647338 | .0124028  | 5.74 | 0.000 | .040425 .089043|
| dnemel*| .0904212 | .0087136  | 8.32 | 0.000 | .073343 .1075  |
| deleme*| .1287828 | .0106592  | 11.44| 0.000 | .107891 .149675|
| dprima*| .1373842 | .0079824  | 12.66| 0.000 | .121739 .153029|
| dsecun*| .1594574 | .0080006  | 14.10| 0.000 | .143776 .175138|
| dsuper*| .1311992 | .0050427  | 4.99 | 0.000 | .121316 .141083|
| lnypc  | .0375884 | .0041029  | 9.12 | 0.000 | .029547 .04563 |

| obs. P | .817971 |
| pred. P | .8751724 | (at x-bar) |

(*) dF/dx is for discrete change of dummy variable from 0 to 1
z and P>|z| are the test of the underlying coefficient being 0

Probit estimates

Number of obs = 4825
LR chi2(14) = 1237.22
Prob > chi2 = 0.0000
Log likelihood = -2207.0702 Pseudo R2 = 0.2189

| elemen-r | dF/dx | Std. Err. | z   | P>|z| | x-bar | [ 95% C.I. ] |
|-----------|-------|-----------|-----|------|-------|----------|
| idade     | .1408549 | .0063588 | 21.26 | 0.000 | 12.1586 | .128392 , .153318 |
| sexo*     | .0983118 | .0125513 | 7.76 | 0.000 | .487345 | .073712 , .122912 |
| dcor*     | -.0564373 | .0136094 | -4.09 | 0.000 | .562129 | -.083111 , -.029763 |
| dn*       | -.0688831 | .027495 | -2.66 | 0.008 | .082473 | -.122772 , -.014994 |
| ds*       | .0703214 | .0157436 | 4.34 | 0.000 | .372602 | .039465 , .101178 |
| dse*      | .0749509 | .0192262 | 3.55 | 0.000 | .140266 | .037268 , .112633 |
| dco*      | .0354745 | .0174406 | 2.07 | 0.099 | .107922 | -.004951 , .0759 |
| durb*     | .0130375 | .0174406 | 0.76 | 0.450 | .823629 | -.021145 , .04722 |
| dnemel*   | .1181666 | .0178826 | 5.65 | 0.000 | .152078 | .083117 , .153216 |
| deleme*   | .2154067 | .0192958 | 10.51 | 0.000 | .409866 | .177588 , .253226 |
| dprima*   | .2118983 | .0138928 | 16.90 | 0.000 | .168905 | .184685 , .239112 |
| dsecon*   | .2436992 | .0123928 | 12.75 | 0.000 | .164801 | .21941 , .267989 |
| dsuper*   | .2213918 | .00742 | 4.60 | 0.000 | .012333 | .206849 , .235935 |
| lnypc     | .0684617 | .0068711 | 9.91 | 0.000 | 4.90005 | .054995 , .081929 |

obs. P | .7275986
pred. P | .7848346 (at x-bar)

(*) dF/dx is for discrete change of dummy variable from 0 to 1
z and P>|z| are the test of the underlying coefficient being 0