

Educational expansion and class mobility trends in Brazil

Carlos A. Costa Ribeiro



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This document was prepared by Carlos A. Costa Ribeiro, Professor of Sociology at the Instituto de Estudos Sociais e Políticos (IESP) of the State University of Rio de Janeiro and consultant with the Social Development Division of the Economic Commission for Latin America and the Caribbean (ECLAC), within the framework of the project “Social stratification and mobility in middle-income countries. Challenges for an uncertain future” of the Regional Facility for Development in Transition of the European Union, implemented by ECLAC and coordinated by Rodrigo Martínez.

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Summary

The paper investigates trends in intergenerational class mobility for men and women along six cohorts born between 1921 and 1981, and observed in 1973, 1982, 1988, 1996 and 2014. Besides analyzing the variation of trends along three temporal dimensions —age, cohort and period— the paper seeks to determine the effects of the expansion of the access to the education system along the decades on the observed trend of increasing intergenerational mobility or, in other words, the trend of increasing equality of opportunities for educational attainment and intergenerational mobility. The impact of educational expansion on the racial mobility gap is also analyzed for the five youngest cohorts.

Introduction

Intergenerational mobility, measured by the association between parents and adult children in terms of class, income, or any other socioeconomic indicator, is an important measure of inequality of opportunity. If family of origin socioeconomic conditions is strongly associated with adult children socioeconomic situation, rich will remain rich, and the poor will remain poor, which means high inequality of opportunity, while if this association is weak, opportunity would be less unequally distributed. The right to education and, therefore, the educational level achieved by adult children is the leading way to overcome disadvantages and improve mobility chances. Few studies, however, analyze how educational changes are related to changes in intergenerational mobility trends, that is, how the right to education and equality of opportunity are linked across time. Indeed, recent research indicates that class mobility has increased in several industrialized countries (EUA, Sweden, France, Germany, Switzerland, Netherlands, Italy, and Spain) due to replacing older, less fluid birth cohorts with younger, more fluid ones (Breen and Muller, 2020). These studies are not limited to measuring trends. They also seek to define the mechanisms linked to the education of sons and daughters that determine the increase in intergenerational mobility related to the replacement of cohorts over time. Most studies, however, focus on advanced industrialized nations where historical changes were significant but not dramatic, as in Brazil (Blanden, 2011; Solís and Boado, 2016; Torche, 2014). In contrast, this document analyses the effects of education on intergenerational class mobility trends in Brazil. In this country, educational expansion, urbanization, and economic development have changed fast, at least since the middle of the 20th century. This study advances in several aspects of previous work.

First, the analyses present the longest trend in intergenerational mobility for any Latin American country. Data to study intergenerational mobility depends on retrospective information about parental socioeconomic standing—most frequently occupations. Many countries in Latin America have national data sets on intergenerational mobility available, but only for recent periods since the beginning of the 21st century (Torche, 2014). In contrast, Brazil has data for an extended period since the 1970s. Analyses using these datasets show that trends in intergenerational class mobility are better observed and explained across birth cohorts; that is, the youngest cohorts are more mobile than the older ones since their class of destination depends less on their class of origin. In addition, as individuals get older and have more experience in the labour market, they are also more mobile. In other words, intergenerational mobility and fluidity increase across birth cohorts and along the life cycle of men and women in Brazil.

Second, the analyses presented show that educational attainment is the main factor explaining the trends of increasing mobility. The effects of education allow for evaluating the relative impacts of four mechanisms related to educational attainment on the observed trends of increasing mobility and fluidity across birth cohorts. The first mechanism is the impact of the expansion of upper-secondary and higher education on the increasing fluidity across birth cohorts. The second mechanism is the relative advantage that individuals with higher social class origins have to progress into the educational system compared to individuals with lower class origins. Since this advantage decreases across birth cohorts, we can argue that equality of educational opportunity increased and had a positive impact on increasing intergenerational mobility. The third mechanism is the return to education in terms of class destination, or the value of education in the occupational labour market—if the strength of the link between education and class destination declines, then fluidity would increase. The fourth mechanism is not related to educational attainment. It is simply the impact of parental class on adult children's class that does not depend on adult children's educational attainment. For example, parents can help their children to obtain better jobs through their social networks or invest in a business for their adult children. The analyses in this document are designed to describe the relative impact of each one of these four mechanisms on intergenerational mobility trends. For the policymakers, the three first mechanisms related to education are fundamental, while the fourth is less attractive. In particular, our analyses indicate that the expansion of higher education and the promotion of equality of educational opportunities were the two main mechanisms explaining the increase of intergenerational mobility and fluidity across birth cohorts born between the 1920s and the 1970s. The analyses also show a smaller effect of the third mechanism since educational credentials are losing value in the occupational labour market from older to younger birth cohorts.

Third, despite all the impact that educational expansion had on increasing intergenerational mobility and fluidity, the advantage of white people concerning non-white (black and brown) in intergenerational mobility remains unchanged for cohorts born between 1931 and 1981. The analyses presented indicate that for these birth cohorts of men and women, at least half of the effect of race on intergenerational mobility depends on educational attainment. However, the other half is related to disadvantages in the labour market—including racial discrimination and job market networks. These pieces of evidence point to the fact that racial inequality is persistent in Brazil, as many other studies have shown (Hasenbalg, 1979; Telles, 2004). Policymakers should be aware that educational policies promoting racial and ethnic equality are essential—in Brazil, racial affirmative action policies in the educational system were effective for cohorts born in the 2010s and not analyzed in the present document (Mello, 2021)—but also that racial inequality depends on factors related to the labour market. Indeed, our study indicates that at least half of the racial disparities in mobility do not depend on educational attainment.

Fourth, the document presents evidence about the impacts of educational expansion on trends of intergenerational mobility for men and women. Although we do not study gender inequality in intergenerational mobility trends, the evidence presented is essential to understand women's changing participation in the labour market and the effects of educational expansion on women's intergenerational mobility. The increasing involvement of women in the labour market across the decades in Brazil is reflected in our analysis. Educational expansion and equality of educational opportunities are significant in explaining women's mobility patterns. Still, the trends we present are also related to the increasing participation of women in the labour market. Therefore, our analyses are also of interest to policymakers focusing on policies promoting gender equality in the educational system and the labour market.

Finally, a critical conceptual definition in mobility studies must be clarified. Social scientists make a distinction between absolute and relative mobility rates. Absolute rates represent the total amount of upward and downward mobility and immobility observed and the percentages of individuals from different class origins reaching each educational level; that is, they measure the aggregate of educational and intergenerational mobility opportunities. In contrast, relative mobility measures the association between parental class and educational attainment or class destination of adult children. In this document, relative mobility rates are calculated by odds ratio estimated via log-linear models and describe the

relative chances of individuals from different class origins of attaining higher levels of education and upper-class destinations. In sum, relative mobility measures inequality of educational opportunity and intergenerational mobility opportunity (or social fluidity).

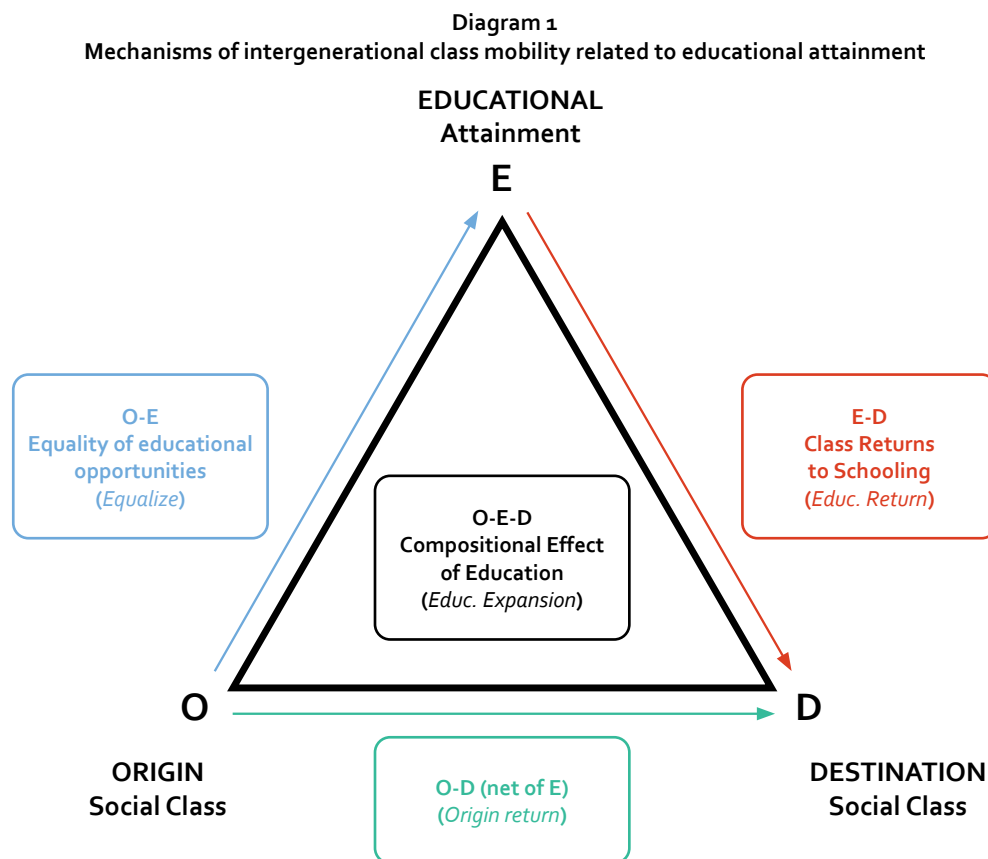
The analyses we present in this report have important implications for policymakers. First, it is essential to understand that educational policies promoting the expansion of higher education are the main factor in increasing social mobility and fluidity. The growth of vacancies in upper-secondary and, especially, in colleges is a powerful mechanism to expand intergenerational mobility and must be the focus of attention to policymakers. In addition, the educational policy must promote equality in access to higher education; that is, policies that promote access to higher education for disadvantaged people in terms of socioeconomic background and racial and ethnic characteristics—these groups must be the focus of certain educational policies such as affirmative action and quotas based on both socioeconomic background and race. However, policies promoting intergenerational mobility must also focus on diminishing inequality of conditions in the present generation if the goal is to promote intergenerational mobility in the next generation. All policies focusing on the diminishment of economic inequality can have an impact on the mobility opportunities of the next generation because mobility chances are defined both by educational attainment and family of origin socioeconomic background. Therefore, policies designed to diminish economic inequality will increase mobility chances and the educational progression of the next generation.

This document analyses high-quality National Household Surveys —“Pesquisa Nacional por Amostragem Domiciliar (PNAD)”— to investigate changes in intergenerational mobility across six cohorts born between 1921 and 1981, and observed in 1973, 1982, 1988, 1996, and 2014. In the next section, the four intergenerational mobility mechanisms linking parental or origin class (O), adult children’s educational attainment (E), and adult children’s class destination (D) are presented in detail. Section three offers the data and variables, and section four explains the methodologies used. Section five shows the main trends in absolute mobility rates. Section six describes the context of Brazil’s industrialization, urbanization, and educational expansion. Section seven is dedicated to analyzing different educational expansion aspects that explain relative mobility rate trends across cohorts and the life course (age groups). In contrast, section eight concludes these analyses using counterfactual exercises designed to untangle the relative impact of each of the four mechanisms described in section two on social fluidity trends. Finally, section nine presents an analysis of the racial mobility gap. The last section is the conclusion.

I. The basic triangle of stratification and the mechanisms of intergenerational mobility

The relationship between classes of origin (O), education (E), and classes of destination (D) can be summarized in the basic stratification triangle O-E-D (see diagram 1 below). Decades of study of class mobility (Breen, 2005; Breen and Muller, 2020; Erikson and Goldthorpe, 1992) and intergenerational mobility in terms of other indicators (Blanden, 2011; Torche, 2015) have revealed that educational achievement plays a significant role in mediating the association between origin and destination classes. According to modernization theory (Treiman, 1970), industrial society would tend to be more meritocratic because education would completely mediate the mobility process; that is, the educational system would select only on merit, and the most qualified would reach occupational and class positions better paid in the labour market. Stratification studies refuted this theory because decades of research have shown that classes of origin are associated with access to education and also because there are several forms of intergenerational transmission that do not go through the educational system (Hout and Di Prete, 2006; Di Prete, 2020).

Currently, studies seek to show the extent to which class destination depends on the class origin and education achieved to analyze the degree of social fluidity that characterizes the stratification system of a given society, on the one hand, and to describe the contribution of the different mechanisms, related to education or not, to the reproduction or overcoming of the disadvantages associated to the social class background, on the other hand. This approach generally focuses on historical changes but also turns to international comparisons that are frequent in the literature (Breen and Muller, 2020; Erikson and Goldthorpe, 1992; Ishida and Satoshi, 2012; Solís and Boado, 2016). To carry out the analysis of social fluidity trends (association OD) along the cohorts born between 1921 and 1981 and the role played by education in this trend, it is usual to define four basic mechanisms taking into account the education achieved as the central mediator of the relationship between class origin and destination (OD). Diagram 1 displays the four mechanisms graphically as represented in the intergenerational mobility triangle (O-E-D triangle).



Source: Prepared by the author.

The first is the “Equalization of Educational Opportunities” mechanism (OE). The progression in the educational system is strongly associated with origin classes; that is, the higher the class, the greater the chances of progressing in the educational system, configuring inequality of educational opportunities. If this inequality decreases, we would observe a reduction in the OD association; that is, the democratization of access to the educational system would be one of the mechanisms leading to an increase in intergenerational mobility (social fluidity). A second mechanism related to education is the “Composition” or “Educational Expansion.” In general, the OD association is weaker among people who have reached higher levels in the educational system—such as upper-secondary and university. Therefore, when a considerable percentage of individuals get higher educational levels, a composition effect can emerge; that is, the simple fact that more people attained upper-secondary and university and that the OD association is smaller for those with these educational levels leads to an overall decrease in social fluidity.

A third mechanism, also involving education, is that of “Class Returns to Education”. If the relative value of education in the labour market (DE) decreases may be a reduction in the OD association would occur. This mechanism is similar to what some social scientists call “credential inflation,” that is, as the proportion of people with higher educational levels increases, the value of diplomas and credentials tends to decrease in the occupational or class labour market—and also in terms of earnings in the labour market. Finally, there is an effect of class origin on the class destination that does not go through the educational system. For example, parents can directly help their children through their social networks, as they put their adult children in contact with suitable employers, or parents can help to fund a business for their adult children. Several other forms of intergenerational transmission of advantages and disadvantages are unrelated to the educational system. This paper presents analyses that allow us to define the proportional contribution of these four mechanisms to the observed trends of increasing social fluidity (decrease in the OD association) across birth cohorts and age groups.

II. Data

Before presenting the analyses and results about trends in intergenerational mobility and the mechanisms that explain them, it is essential to present the variables and the structure of the data sets used. The data is from the National Household Sample Survey (PNADs-IBGE¹) collected in 1973, 1982, 1988, 1996, and 2014. For the analysis of intergenerational mobility, we selected all men and women who lived in urban and rural areas of the country, with ages between approximately 30 and 50 years old, whose class origin (O), education (E), and class destination (D) are known. The total size of the analytical sample is 132,789 men and 65,959 women —the percentage of women in the labour market increased across cohorts, as we explain below. Six birth cohorts (C) were defined using the five surveys: (C1) 1921–1930, (C2) 1931–1940, (C3) 1941–1950, (C4) 1951–1960, (C5) 1961–1970, and (C6) 1971–1981. These definitions lead to the observational design displayed in table 1.

Table 1
Brazil: Age (A) according to Cohort (C) and Survey (S)

Cohorts	Survey Year				
	1973	1982	1988	1996	2014
C1: 1921–1930	41–50				
C2: 1931–1940	30–40	41–50	51–60		
C3: 1941–1950		30–40	41–50	51–60	
C4: 1951–1960			30–40	41–50	
C5: 1961–1970				30–40	41–50
C6: 1971–1981					30–40

Source: Prepared by the author.

The oldest cohort was observed in 1973 (41 to 50 years old), while the youngest cohort was observed in 2014 and at a younger age (30 to 40 years old). The other four cohorts are seen at different ages in different surveys. We call the three age groups (A) defined by this design: old (51 to 60 years old),

¹ PNAD is, in Portuguese, “Pesquisa Nacional por Amostra Domiciliar (PNAD)” collected by the “Instituto Brasileiro de Geografia e Estatística (IBGE)” – The Brazilian Bureau of the Census.

middle (41 to 50 years old), and young (30 to 40 years old). Because the number of cases for older people (51 to 60 years old) in 1973, 1982 and 2014 is small —what could affect the statistical analyses— we exclude the older people in these surveys. The variables cohort (C), survey (S), and age groups (A) are represented in table 1. Since the analyses we will present below indicate that trends in intergenerational mobility run mainly across cohorts and to a lesser extent across age groups —but not over the period (or survey year)— our analyses will always emphasize cohort trends.

Two other variables used in the analysis are the origin (O) and destination (D) classes classified according to the EGP scheme (Erikson and Goldthorpe, 1992) with the following six categories:

- (i) I+II – Professionals and administrators
- (ii) III – Routine non-manual workers
- (iii) IVab – Self-employed and small employers
- (iv) V+VI – Skilled manual workers
- (v) VIIa – Unskilled manual workers
- (vi) VIIb+IVc – Rural workers and small farmers

This scheme with six classes is hierarchized into three large groups: at the top is class I+II; in the intermediate position, classes III, IVab, and V+VI; and at the bottom, classes VIIa and VIIb+IVc. Thus, we only consider movements between these three large groups as vertical mobility.

Taking into account changes in the educational system over time, we defined five categories for the education variable: (1) 0 to 3 years of study or less than complete primary; (2) 4 to 7 years of schooling or completed primary school; (3) 8 years of study or lower-secondary completed; (4) 9 to 11 years of education or upper-secondary (complete and incomplete); and (5) 12 or more years of study or some higher education (incomplete or complete).

In the closing section, we will also analyze trends in the racial mobility gaps between white and non-whites (blacks and browns). We use the gender variable in all analyses as we study trends for men and women separately. Although this division seems trivial, there are fundamental differences in analyzing trends in the intergenerational mobility of men and women that should be better explained.

Given that women's participation in the labour market has constantly changed over time, the analyses of intergenerational mobility are strongly dependent on the changing characteristics of working women. While more than 85% of men in all six birth cohorts (C1 to C6) were in the labour market between 1973 and 2014, women's participation has dramatically expanded. Of the cohort born between 1921–30 (C1), only 43% of all women entered the labour market, whereas, of the 1971–1981 (C6) cohort, 69% were working. The data reveals that women entering the labour market increasingly come from wealthier families —parents with more education.² Therefore, we expect a tendency for social fluidity to expand across birth cohorts and that women will be more fluid than men. In short, one cannot directly compare trends in mobility for men and women because, according to analyses made but not shown here, class of origin (and parental education) is associated with women's chances of entering the labour market, which is not the case for men.

² Analysis not shown because of space issues, but available from author by request.

III. Methodology

A. Absolute mobility

Measures of absolute mobility are based on counting the number of cases falling into particular combinations of the origin and destination classes. For example, the upward mobility rate is computed as the proportion of people in a destination class hierarchically higher than their origin class. Inversely, downward mobility is defined by the proportion of people in a destination class hierarchically lower than their origin class. Finally, the immobility rate is determined by the proportion of people whose destination class is the same as their origin class. Upward mobility, downward mobility, and immobility must sum to one (when we use proportions) or to 100 if we use percentages. Upward plus downward mobility sums to total mobility. The distribution of class origin, class destination, and educational distribution are even simpler. All these measures are also divided by birth cohort, gender, and race in some of the analyzes presented below.

B. Social Fluidity

The fundamental statistic of social fluidity is the odds ratio. This ratio is based on comparing people from two origin classes, for whom we compare their odds of being in one, rather than another, destination class. For example, if we consider origins in classes I+II and III and compare their odds of ending up in the same classes as a destination, this odds ratio would be computed as follows. First, we consider the odds of being in destination I+II rather than III for individuals from class I+II origin; that is, we calculate the number in destination class I+II who originated in class I+II divided by the number in destination class III who originated in class I+II. Second, we computed the odds for the same pair of destinations for people from origin class III. Last, we divided the odds for class I+II origins by the odds for class III origins to get the odds ratio for this particular origin and destination classes. The log-linear models estimated in the analysis presented in this paper use the log-odds-ratio (the logarithm of odds ratio). Suppose the odds are the same for both of the origin classes being considered. In that case, the odds ratio equals one and the log odds ratio equals 0, meaning there is no relative class advantage in mobility chances. The odds ratio is a measure of the difference in the destination distribution between people from different origins. They capture the association between origin and destination; that is, they tell us how strongly the

destination depends on origins. The larger the odds ratio, the strongest the association. If all odds ratio equal to 1, the origin and destination would be independent, this situation is called perfect mobility and was never observed in any mobility table. In a six-by-six mobility table that are used in this document, there is a basic set of 25 odds ratio. When we want to compare social fluidity across different mobility tables (in our case, tables for different birth cohorts, age groups, educational levels, and racial groups), it is rather cumbersome to compare 25 numbers. To make the task simpler, we use a model known as Unidiff (Erickson and Goldthorpe, 1992) or “log-multiplicative layer effect” (Xie, 1992).

C. The Unidiff Model

The idea of the Unidiff model is that the pattern of the log odds ratio is the same, but their overall size (the strength of the association) shifts up or down as we move from one table to another. To say that the pattern is the same means that the differences among log odds ratios in the compared tables are the same. For example, if a given odds ratio is twice as large in one table, it would also be twice as large in the table being compared. To say that the overall size of the log odds ratio shifts as we move from table to table means that each log odds ratio in the table is scaled up or down by the same factor. For example, imagine that in one table, one log odds ratio is three and another is 2. If in another table being compared, the log odds ratio were twice as large here than in the first table, these log odds ratios would be 6 and 4, respectively—the difference would be 1.5 in both tables, but the overall size (or strength of the association) increased from the first to the second table.

The formula for the relationship between log odds ratio across a set of tables is:

$$\log\theta_{ijk} = \phi_{-k} \log\theta_{ijk}$$

Here k is used to index tables, i to index origin, and j to index destination. θ_{ijk} represents a particular odds ratio in table k . θ_k is the table-specific parameter that shifts or scales the log odds ratios up or down (the Unidiff parameter) relative to the log odds ratios in the baseline table, $\log\theta_{ijk}$. In the baseline table (the oldest cohort and youngest age group—collapsed across cohorts—in our analysis), θ_k is set as 1. If in another table $\theta_k < 1$, this means that the log odds ratios are all smaller than in the first or baseline table, and social fluidity increased from the first to the second table because the origin is less strongly associated with destination. If $\theta_k > 1$ in the second table, the association is stronger and social fluidity decreases.

D. Simulations

In the section about the basic stratification triangle O-E-D, we indicated that the origin-by-destination association (OD) is mediated by the education attained (E) by adult children and that three paths link origin to destination (OD association, ED association, and educational composition effect). After accounting for education, origin-by-destination still present an association (net of education). Breen (2010) and Vallet (2017) proposed a simulation-based approach to estimate how changes in these four mechanisms or processes are related to changes in social fluidity. The simulations tell us what social fluidity “would have been” had only one of the four processes or mechanisms changed over birth cohorts and age groups, holding others as they were in the oldest cohorts and younger age groups. Using these simulation exercises, we can understand which of the mechanisms better explains changes in social fluidity over birth cohorts and age groups. As with any simulation, this method tells us what could have happened and shows the potential of distinct factors to bring about change in social fluidity. The simulation tells us the possible relative impact of these potential sources of change in social fluidity. The results of this method are displayed graphically in figures 10a and 10b.

E. The mediating role of education in the race by class destination association, controlling by origin class

In the section on race and intergenerational mobility, we use a comparison of nested models for categorical data developed by Karlsson et al (Breen, Karlson, and Holm, 2013; Breen, Karlsson, and Holm, 2018; Karlson, Holm, and Breen, 2012). This method allows us to compare the odds ratio between a model without controlling for educational attainment and another model controlling for educational attainment. This comparison will enable us to measure the degree of change in the total association (between race and destination) after we include a mediating variable (education). Therefore, we can estimate the proportion of the entire association between race and class destination diminishes after controlling for education. The models also allow the inclusion of other controlling variables in particular origin class, but also some others —see section VII. In sum, it is simply an analysis of the mediating impact of education in the race by destination association.

IV. Industrialization, class structure, and educational expansion

Between 1960 and 1980, Brazil was the country whose economy grew the most in the world (Abreu and Verner, 1997). The Brazilian class structure changed enormously over the decades, mainly because industrialization and urbanization quickly transformed the occupational structure. Traditional rural labour and production were rapidly surpassed by work in the industrial and service sectors in cities and by a technological form of the agricultural output employing a tiny proportion of workers. These changes had essential impacts on the labour market, which absorbed a large part of the workers even though the majority continued to focus on jobs that required little qualification. In addition, as the educational expansion was slower than economic growth, many workers with low qualifications found jobs in occupations requiring more technical knowledge, given that there was little supply of qualified labour (Cardoso, 2008). In this context, school diplomas were highly valued, even if they were only lower-secondary credentials.

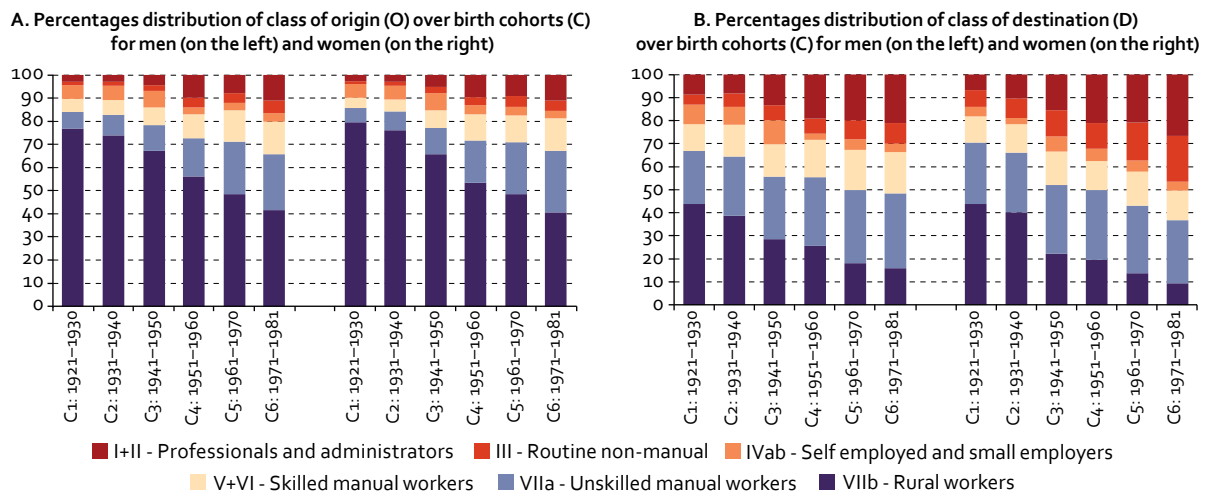
Economic growth until 1980—7.7% mean annual GDP growth between 1948 and 1980—and the continuity of population growth throughout the 20th century and the beginning of the 21st—in 1970, the population was 70 million and in 2010, it was 191 million—made more qualified labour in industry and especially in services increasingly necessary. This demand for work, even during the economic slowdown after the 1970s, was also supplied by the increasing participation of women in the labour market. To reach the most qualified positions in non-manual work (professional or not), the expansion of the educational system was essential, as more skilled jobs require workers with diplomas and training obtained in the educational system. Despite the economic stagnation, unemployment was low and stable during the 1970s and 1980s and has increased somehow since the 1990s (Reis and Gonzaga, 2006).

One of the main consequences of Brazil's rapid industrialization and urbanization is that most people in the labour market are sons and daughters of rural workers (class VIIb). In the samples used in this document, one can see that among men and women born between 1921–1930 (C1), around 80% were sons or daughters of rural workers (origins in class VIIb), while among the youngest cohort (C6: 1971–1981) 40% had origins in the rural classes—see figure 1A. The rural classes are traditionally marked by poverty as they were small subsistence producers or employees in large rural latifundios. In other words, the vast majority of the population grew up in impoverished families, which implies that they started from very low socioeconomic and occupational levels. At the same time, the process of industrialization in Brazil

combined, on the one hand, the expansion of low-tech industries and a more modern industrial sector represented respectively by the classes of skilled (class V-VI) and unskilled manual workers (class VIIa); and, on the other hand, an increase in the service sector including low-skilled workers (classes III and IVab) and a more sophisticated professional and managerial sector (class I-II) (Bresser-Pereira, 2003; Ribeiro, 2007; Valle Silva, 2008). In figures 1A and 1B, the comparison of origin (figure 1A) and destination (figure 1B) class distributions across birth cohorts reveal that the sharp decline of men and women with origins in the rural working class (VIIb, figure 1A) was accompanied by a sharp decline of destination in this rural class (VIIb) and by significant growth of destination in all urban classes (figure 1B). Such a reversion is a reflection of the fast urbanization in the country during the 1960s and 1970s.

Figure 1

Brazil: percentages distribution of class of origin (O) and class of destination (D) over birth control for men and women



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

It is well known that women's "working class" positions are concentrated in the service sector or in "pink-collar" occupations, which are represented by the class of routine non-manual workers (III) in the EGP class schema. Indeed, urban working classes destinations (V+VI and VIIa, figure 1B) steadily increased for men rising from 35% in the oldest cohort (C1) to 50% in the youngest one (C6). However, it remained virtually unchanged for women with a percentage of around 40% in all cohorts. The rate of women who were non-manual routine workers (III, figure 1B) increased from 8.4% in the oldest cohort (C1) to 20% in the youngest cohort (C6), while for men, the percentage in class III did not change much—it was 5% in the oldest cohort (C1) and 9% in the youngest (C6). Finally, the class of self-employed and small employers (class IVab) remained, including a relatively small proportion of men and women in all cohorts (figure 2b). In contrast, the destination in the professional classes (I+II) expanded significantly across cohorts from 8.7% for men and 6.8% for women in the oldest cohort (C1) to 21% for men and 26% for women in the youngest cohort (C6). As a whole, the destination on the non-manual service sector classes (I-II, III, and IVab, figure 1B) expanded from 21.5% for men and 18% for women in the oldest cohort (C1) to 34% for men and 55.5% for women in the youngest cohort (C6).

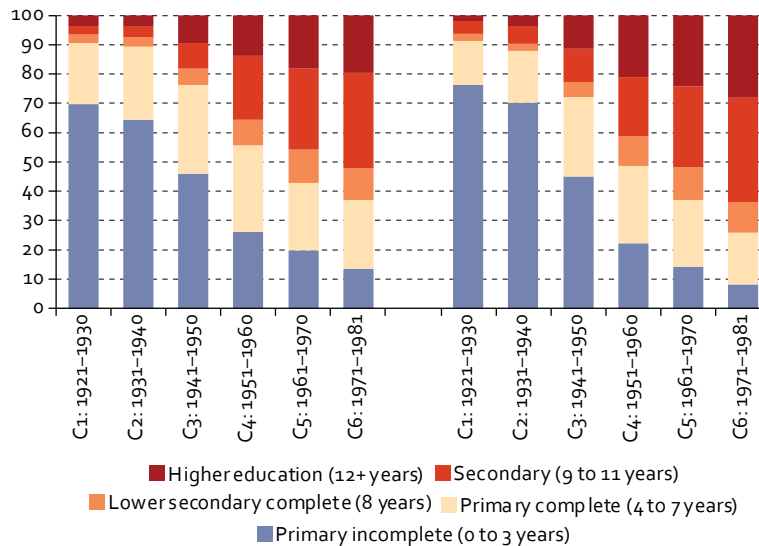
The expansion of female participation in the labour market implies a growing competition between men and women, although there is strong sexual segregation in the occupational structure (Silveira and Leão, 2020). Women entering the labour market across cohorts are increasingly allocated to non-manual classes. Consequently, the distribution of class destination for women includes a higher percentage in the class of professionals (I-II) than the same distribution for men. However, combining men and women in

the same distribution of class destinations, it is clear that most people in the class of professionals and administrators (I-II) are men. For example, in the oldest cohort (C1), 61% of all professionals, class I+II, were men; in the youngest one (C6), this percentage was 52%.

While industrialization completely changed the class structure—as we see in Figures 1A and 1B—the educational system underwent significant changes throughout the 20th century and the beginning of the 21st century. Considerable changes have occurred in the legally required levels of education and the denomination of these levels. The most critical change was implemented in 1971 when compulsory education expanded from lower primary (4 years of schooling) to lower secondary (8 years). Even taking all these changes into account, it is possible to divide the system's progressivity into four levels that remain similar over the decades: (1) four years of primary education; (2) four years of lower secondary; (3) three or four years of upper-secondary; and (4) higher education. As shown in the data section above, the analyses in this paper are based on the definition of six birth cohorts observed at different ages in 1973, 1982, 1988, 1996, and 2014. These cohorts were born between 1921 and 1981; entered primary and lower-secondary school, if ever, between 1928 and the early 1990s; could be entering upper-secondary from 1935 until the early 2000s, and higher education from 1938 until 2014, in the case of older people returning to the university, which was not uncommon (Comin and Barbosa, 2011; Schwartzman, 2004). This period was marked by several educational reforms that helped to expand student enrollments at the primary, lower and upper secondary, and tertiary levels. Since it is not the goal of this document to verify the causal effect of any one of these educational policies—which would be impossible with the data at hand—we only need to know that these policies were all designed to expand the Brazilian educational system to offer vacancies in all levels for the increasing demand for education across birth cohorts. Since the most crucial expansion policies to access primary and secondary education were implemented after 1961, and those designed to expand higher education were also more intense after the 1980s, the three youngest cohorts (born from 1951 to 1981) in our analyses are the ones more likely to profit from the expansion of the educational system.

Following trends observed in population censuses and official information from the educational system (Arretche, 2018; Sampaio, 1991), Figure 2 shows that 70% of men and 75% of women born in the 1920s (C1)—who could be attending school in the 1930s—never completed primary education and only had between 0 and 3 years of schooling. This percentage decreased to 13.5% among men and 8.3% among women born in the 1970s (C6) who could have been in primary school in the 1980s. In contrast, among those born in the 1920s (C1), who were 20 years old in the 1940s, only 3.6% of men and 1.9% of women had attended higher education. In comparison, among those born in the 1970s, aged 20 in the 1990s, around 19.5% of men and 28% of women had already attended higher education. In sum, the educational distribution (figure 2) has completely changed: among the oldest cohort (C1), the lowest educational levels predominated. In contrast, the majority of the youngest cohort (C6) reached upper-secondary or higher education. The data reveals the continuous expansion of the educational system in Brazil throughout the second half of the 20th century and the beginning of the 21st century. Although this expansion is, at first sight, extraordinary, it is essential to remember that the educational level of the Brazilian population has always been historically low, not only when compared to industrialized countries (Shavit and Blossfeld, 1993) but also in Latin American neighbors who were even less industrialized than Brazil, such as Argentina, Chile, Mexico, and Uruguay (Silva and Hasenbalg, 2000). Although late, the expansion of the Brazilian educational system was rapid. In six decades, the country went from a situation where the system did not include the majority of the relevant population to one able to attend to this population relatively well.

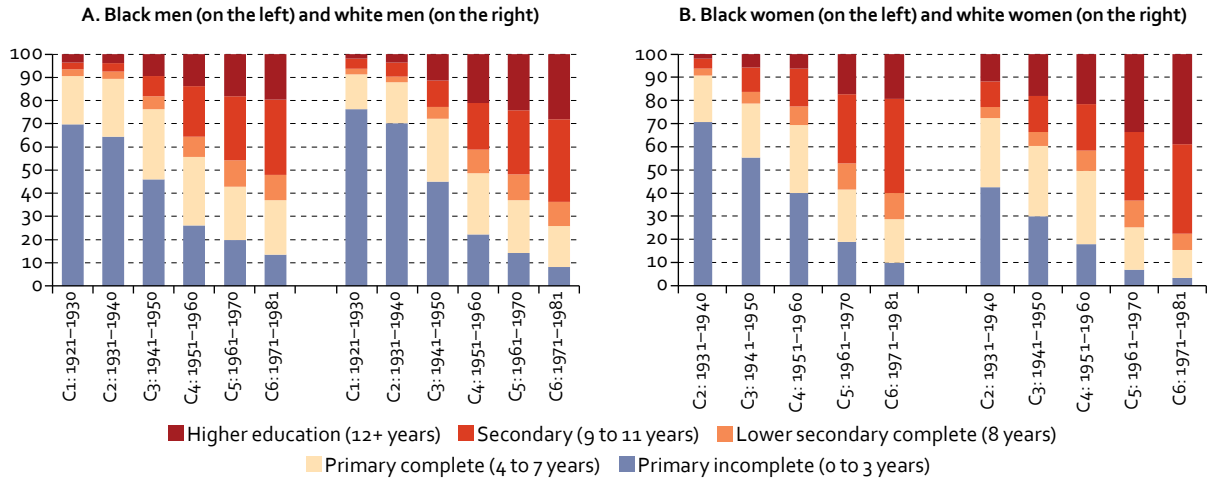
Figure 2
Brazil: percentage educational distribution (E) over birth cohort (C) for men (on the left) and women (on the right)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

As we will see in the following sections of this document, educational expansion had three main effects on intergenerational mobility. First, it diminished inequality of educational opportunity since inequality in chances of advancing in the educational system for men and women from different class origins diminished. Second, the expansion had a composition effect because across cohorts, the percentage of people reaching upper-secondary or higher education increased dramatically (see figure 2 above), and for individuals at these two higher levels of education, the effect of the class of origin on the class of destination (OD) is significantly smaller. Furthermore, educational expansion increased the supply of people with higher educational levels and, consequently, diminished the occupational or class returns of education in the labour market. In the following sections, we will analyze in detail these three aspects of intergenerational mobility and investigate the effect of race on the intergenerational mobility process. As we will show, educational expansion helped to diminish class inequality in mobility chances among people from different class origins, but it did not decrease racial inequality in mobility chances. Therefore, it is crucial to observe how educational expansion impacted the educational prospects of white and black (blacks plus browns) men and women. Figures 3A and 3B show the educational distribution across birth cohorts for white and black individuals in the five younger birth cohorts—we do not have data on race for the oldest cohort. For both men and women, we observe that the proportion of whites with upper-secondary and higher education is higher than that of blacks with these levels of education in all cohorts. While the proportions reaching only primary incomplete and primary complete are higher among blacks in all birth cohorts. These figures suggest that racial inequality in educational attainment does not change over birth cohorts and that it is likely that racial disparities in intergenerational mobility also do not change across birth cohorts. In section VIII, we will investigate the effect of racial inequality in educational attainment on intergenerational mobility trends. It is important to emphasize that affirmative action policies for black people were implemented in Brazil only after 2002 and positively impacted the diminishment of racial inequality in educational attainment for young people born in the late 1990s, which are not detailed in this document (Mello, 2021).

Figure 3
Brazil: percentage educational distribution (E) over birth cohort (C)



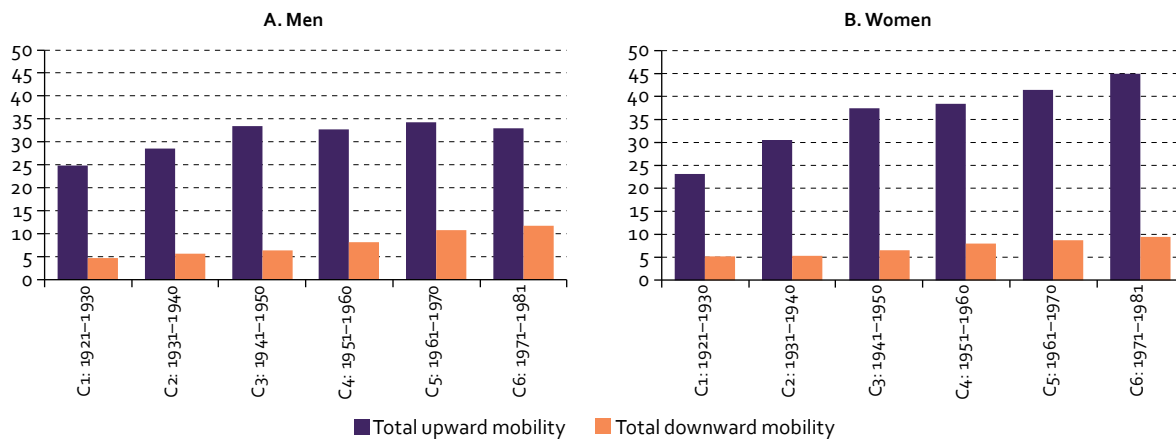
Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

V. Trends in absolute mobility rates

Absolute mobility rates measure the total opportunity for intergenerational mobility characterizing each one of the birth cohorts. Although there are many measures of absolute mobility—such as inflow, outflow, total immobility, etc.—we will focus only on the total vertical mobility and its two components, upward and downward mobility. These measurements summarize the overall mobility experienced by the six birth cohorts we are investigating in this document. Within the EGP class structure, there are three hierarchical levels: (1) the classes of unskilled manual work (VIIa) and rural workers (VIIb) are at the bottom; (2) the classes of skilled manual workers (V-VI), self-employed and small employers (IVab) and routine non-manual workers (III) are in the intermediary position; and (3) the class of professionals and administrators (I-II) are at the top. Therefore, only mobility between these three levels is considered vertical mobility, which means that mobility between classes at the bottom and in the middle is conceived as horizontal mobility, that is, a change in terms of sector of the economy but not necessarily an improvement in life chances.

Figures 4A and 4B present the trends in total vertical mobility and its two components, upward and downward mobility, for men and women for the six birth cohorts born between 1921 and 1981. For both men and women, vertical mobility increased: the youngest the cohort, the higher the chances of mobility. Both upward and downward mobility increased, but the first is more common for men and women. Given the significant improvements in the class structure (see figures 1A and 1B above), it is not surprising that vertical mobility increased so much across birth cohorts. Although the trends of increasing vertical mobility for men and women are directly linked to the improvements in the class structure, they are a sign that relative mobility or social fluidity has also increased. In the following sections, we will investigate in what measure social fluidity expanded and the mechanisms linked to the education achieved by men and women that account for and explain the changes observed.

Figure 4
Brazil: total upward and total downward mobility over birth cohort (C)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

VI. Relative rates and inequality of opportunities: empirical results

A. Changes in the association between origin and destination (OD) classes

As shown above, in figures 4A and 4B, absolute mobility rates and, in particular, total upward mobility expanded significantly across birth cohorts of men and women. The increase in absolute mobility observed reflects the improvement in the class structure, which included less rural and working-class positions and more non-manual and professional positions in each younger birth cohort observed. In addition, intergenerational mobility could also change (increase or decrease) along the life cycle of the individuals as they age (an age effect) and across the survey year or period from 1973 to 2014 (a period effect) when they were observed in the labour market.

Although total vertical mobility trends, seen in figures 4A and 4B above, indicate that absolute mobility increases across birth cohorts, it is difficult to decide if another temporal dimension, such as age and period, is also relevant to explain changes across time in mobility. Moreover, since absolute rates are also influenced by changes in the class structure provoked by industrialization and urbanization, it is also challenging to use absolute rates to measure inequality of opportunities in mobility chances. In this section, we investigate trends in relative mobility rates that are a standard measurement of inequality of opportunity because they estimate the log of odds ratio measuring the association between origin and destination classes. The odds ratio compares the relative mobility chances of individuals with different class origins reaching the same class destination. The following questions are important in this section's investigation of relative mobility rates. Do relative mobility rates follow absolute mobility and also increase across birth cohorts? If relative mobility rates rise, which temporal dimension better explains the trend? Is it a trend explained by substituting older and less mobile cohorts with younger and more mobile cohorts? Or is it a trend along the life cycle of workers (age effect) so that individuals in the same birth cohort experience more or less mobility as they age? Or is it a trend over the period—observed in each survey year: 1973, 1982, 1988, 1996, and 2014— affecting workers from all birth cohorts and ages simultaneously? It could also be a trend across more than one of these temporal dimensions: age, period, and cohort.

To investigate trends in social fluidity (relative rates) over time and to distinguish among age, period, and cohort effects; we use log-multiplicative models (Xie, 1992), also known as uniform differences models or Unidiff, according to the literature (Erikson and Goldthorpe, 1992). The parameters estimated by these models are known as “Unidiff” and are used to measure the changing strength of the association between two categorical variables across a third categorical variable. More specifically, the Unidiff parameters multiply the log odds ratio measuring the OD association in each cohort (and/or age group or period), providing a measurement of the change in the strength of the OD association across time. We start the analysis by adjusting the constant social fluidity model (Model 1) to the 12 mobility tables—OD tables observed at different ages and in other surveys (see data design in table 1). Then, we adjust a Unidiff model (Model 2), allowing the OD association’s strength to vary across cohorts ($\beta_{C}OD$). Model 3 tests whether the OD association’s strength varies over birth cohorts and age groups ($\beta_{A}\beta_{C}OD$). Models 4 and 5 each add a different complexity to model 3, which means that Models 4 and 5 should be compared to Model 3 and not against each other. Model 4 tests whether the association between origin and destination classes varies not only across cohort and age groups (Model 3) but also across surveys ($\beta_{S}\beta_{A}\beta_{C}OD$), what could be evidence of a period (or survey, S) trend effect on top of age (A) and birth cohort (C) effects. Finally, Model 5 tests the hypothesis of an interaction effect between cohort and age ($\beta_{CA}OD$) in addition to the additive cohort and age effects present in Model 3. In other words, these five models are nested and can be compared in terms of L^2 differences between them as a strategy to select which one has the best fit for the data (the 12 OD tables). However, the number of cases in the data set is vast, which makes L^2 a limited criterion for evaluating models’ fit (Raftery, 1986; Weakliem, 1999); for this reason, we also use the Bayesian information criterion or BIC statistic—penalizing complex models—to select best fitting models. The more negative the BIC value, the better the model’s fit to the data.

According to the BIC statistics presented in table 2, Model 3 is the preferred one to describe trends in the OD association for men and women—it is the model showing the most negative BIC statistic. Figure 5 below presents the Unidiff parameters estimated by Model 3 to measure the strength of the OD association across cohorts (C) and age groups (A). Because the OD association declines, these estimates reveal that social fluidity, or relative mobility, increased from older to younger birth cohorts and as people in the same cohort are observed in older ages in later surveys. Relative mobility rates measure the relative chances of people from different class origins reaching higher class destinations. According to the model estimated (Model 3), inequality in mobility chances declined over birth cohorts and age groups. The Unidiff parameters estimated by Model 3 and presented in figure 5 multiply all odds ratios in the mobility table (OD) and describe tendencies of declining OD association over birth cohorts and age groups for men and women. For example, sons of professionals (class I-II) born in the 1920s (C1) had seven times more chances of becoming professionals themselves (class I-II) than sons of skilled manual workers (Class V-VI) also born in the 1920s (C1) of becoming professionals (destination class I-II). This advantage of sons of professionals over sons of skilled manual workers declined to 3 times more among men born in the 1970s (C6). Similar declines were estimated for all comparisons of relative chances (odds ratio) for men and women across birth cohorts and as they age and get more experience in the labour market.

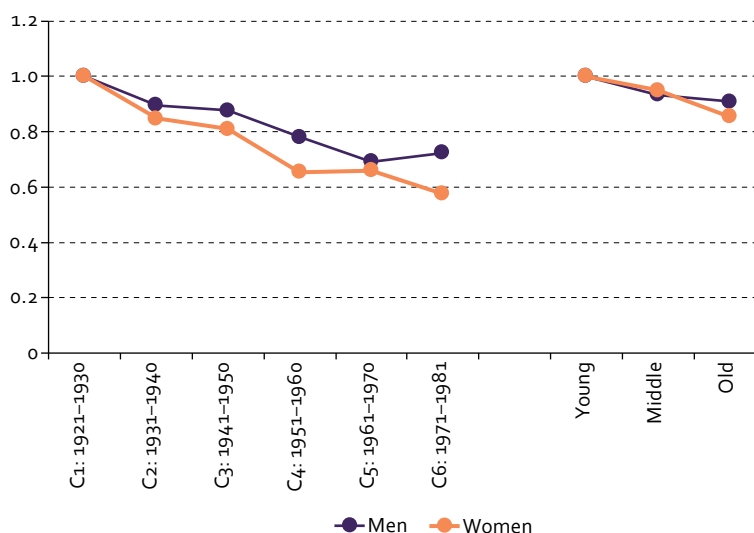
Table 2
Brazil: fit statistics and Unidiff parameter estimates for observed trends in mobility between Origin and Destination Class (OD) across cohort and age groups

(a) OD Men (n = 132789)						
Model	L^2	df	P	$\Delta(\%)$	BIC	
1. CSO CSD OD	838.08	350	0.000	2.11	-3 290.70	
2. CSO CSD β_C OD	757.15	344	0.000	2.02	-3 300.85	
3. CSO CSD $\beta_C\beta_A$ OD	685.47	341	0.000	1.89	-3 337.14	
4. CSO CSD $\beta_C\beta_A\beta_S$ OD	666.95	337	0.000	1.88	-3 308.48	
5. CSO CSD β_{CA} OD	660.04	336	0.000	1.88	-3 303.59	

(b) OD Women (n = 65959)						
Model	L ²	df	P	Δ(%)	BIC	
1. CSO CSD OD	735.99	350	0.000	2.91	-3 147.89	
2. CSO CSD β_C OD	637.82	344	0.000	2.64	-3 179.48	
3. CSO CSD $\beta_C \beta_A$ OD	600.33	341	0.000	2.61	-3 183.67	
4. CSO CSD $\beta_C \beta_A \beta_S$ OD	577.47	337	0.000	2.54	-3 162.15	
5. CSO CSD β_{CA} OD	573.47	336	0.000	2.52	-3 155.05	

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by author.

Figure 5
Brazil: trends in origin by destination class (OD) association over birth cohort (C) and age groups (A),
estimated by Model 3 in table 2 for men and women
(Unidiff coefficient)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

Many factors influence intergenerational mobility, but as discussed above, education plays a significant role in the mobility process. In particular, access to higher educational levels, returns to education in the labour market, and the educational expansion itself (as a powerful compositional mechanism) are three central pieces of the intergenerational mobility process. Therefore, policymakers interested in improving intergenerational mobility should pay attention to inequality in access to education (or inequality of educational opportunity), the returns of education in the labour market (or educational returns), and the effect of educational expansion on overall intergenerational mobility (educational expansion or compositional effect). In the following parts of this section, we empirically investigate these three aspects of intergenerational mobility. In contrast, in section VII, we present the results of simulations used to verify the relative impact of each one on the observed trends of social fluidity described in figure 5 above.

B. Changes in inequality of educational opportunities (OE)

In the context of the three sides of the "Triangle" Origin-Education-Destination (diagram 1 in section I), the 'equalization of educational opportunity' is one of the central mechanisms that could explain the observed increase in fluidity, that is, the decline in OD association displayed in figures 5 above. Suppose

the strength of the association between origin or parental class (O) and the level of education achieved (E) by their adult children decreased across birth cohorts. In that case, we could say that inequality of educational opportunity diminished over time. The decrease in the OE association means that the advantage in progressing in the educational system of individuals growing up in upper-class families over individuals growing up in lower-class families diminishes across birth cohorts. If “equality of educational opportunity” is a significant force explaining the increase of social fluidity and mobility, policymakers interested in increasing mobility (or fluidity) should promote policies to diminish class of origin inequality in access and progression within the educational system.

To investigate if and in which direction inequality of educational opportunity changes across the birth cohort, age groups, and periods; we estimated a series of log-linear models presented in table 3 below. The analysis in table 3 panel (a) reveals a reduction in inequality of educational opportunity among Brazilian men. Model 3 offers the best fit to the data for men (it has the more negative BIC), indicating that the overall strength of the origin-education (OE) association decreased across cohorts and also as men aged (age groups). The Unidiff parameters for Model 3, presented in Figure 6 below, reveal a steady decline in the OE association from the oldest (C1) to the 1961–1970 (C5) cohort and also a slight increase for the youngest cohort (C6). Furthermore, the OE association is stronger for younger people within the same cohort, indicating an age effect (A). These trends confirm previous research findings, which presented evidence of decreasing inequality of educational opportunities in Brazil (Arretche 2018). In sum, the analyses and results shown in table 3 and figure 6 indicate that, for Brazilian men, the mechanism of “equality of educational opportunities” is undoubtedly responsible for part of the increase in social mobility (fluidity) over birth cohorts and age groups.

Table 3
Brazil: fit statistics and Unidiff parameter estimates for observed trends in the association between Origin Class and Educational Attainment (OE) across cohort and age groups

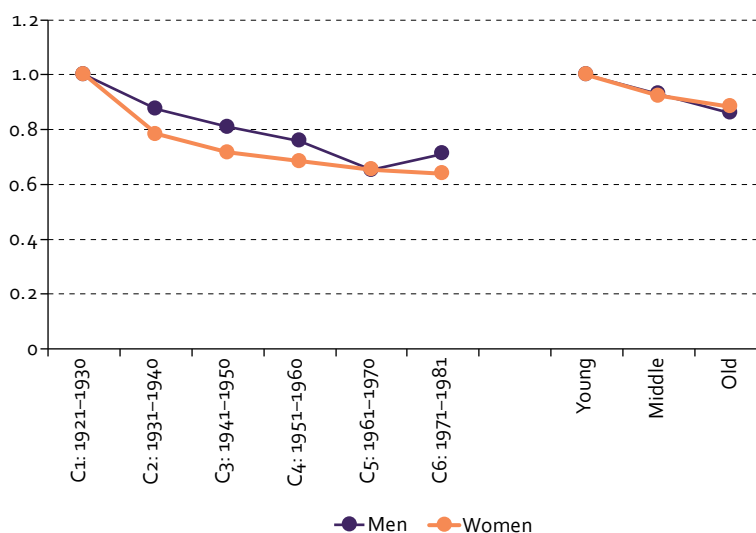
(a) OE Men (n = 132789)						
Model	L ²	df	P	Δ(%)	BIC	
1. CSO CSD OD	812.29	280	0.000	2.05	-2 490.74	
2. CSO CSD β _c OD	705.37	274	0.000	1.87	-2 526.88	
3. CSO CSD β _c β _A OD	641.25	271	0.000	1.75	-2 555.61	
4. CSO CSD β _c β _A β _s OD	621.81	267	0.000	1.69	-2 527.86	
5. CSO CSD β _{CA} OD	619.00	266	0.000	1.68	-2 518.88	
(b) OE Women (n = 65959)						
Model	L ²	df	P	Δ(%)	BIC	
1. CSO CSD OD	713.42	280	0.000	2.65	-2 393.68	
2. CSO CSD β _c OD	642.18	274	0.000	2.46	-2 394.34	
3. CSO CSD β _c β _A OD	611.85	271	0.000	2.43	-2 395.38	
4. CSO CSD β _c β _A β _s OD	602.6	267	0.000	2.39	-2 360.24	
5. CSO CSD β _{CA} OD	602.13	266	0.000	2.39	-2 349.62	

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by author.

Analyses for women are presented in Panel (b) of table 3 and figure 6. As for men, Model 3 offers the best fit for the data. The estimated log-multiplicative or Unidiff parameter for women, displayed in figure 6, decreases significantly from 1 for the oldest cohort (C1) to 0.640 for the youngest one (C6), revealing a decreasing trend of inequality of educational opportunity. In addition, the OE association is stronger for younger women than older women, indicating an age effect (A). As an example of the declines

in the OE association estimated by Model 3 for men and women (presented in figure 6), we can calculate the chances of women who completed lower-secondary education (8 years of schooling) of transitioning to upper-secondary education (9 or more years of schooling). For this particular transition, daughters of professionals and administrators (origin class I-II) born in the 1920s (C1) had 40 times more chances of transitioning from lower-secondary to upper-secondary than daughters of skilled manual workers (origin class V-VI). In comparison, for those born in the 1970s (C6), this advantage declined to 12 times more chances. Similar declines were estimated for all educational transitions and class of origin comparisons (odds ratio) for men and women across birth cohorts and as they age and get more experience in the labour market.

Figure 6
Brazil: trends in origin class by education achieved (OE) association over birth cohort (C) and age groups (A),
estimated by Model 3 in table 3 for men and women
(Unidiff coefficient)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

In sum, educational opportunity inequality significantly decreased across birth cohorts of men and women and over the life cycle, as it is weaker when people in the same cohort get older. The mechanism of “equality of educational opportunities” is essential to explain the increasing social fluidity in class intergenerational mobility—for industrialized countries see Breen and Muller (2020), for some Latin American countries see Torche (2010), and for Brazil see Arretche (2018) and Ribeiro (2009). Therefore, it is clear that policymakers interested in increasing intergenerational mobility must pay attention to and promote policies designed to diminish class inequality in educational attainment. In other words, educational policy should focus on expanding access to quality education and diminishing class inequality in the educational system’s progression of students with lower-class backgrounds. More specifically, policymakers need to focus on improving living conditions and access to information for families in which individuals grew up and not only on designing good educational policy.

C. Changes in the association between education attained and class destination (ED)

The decline in class returns to education over time is the second mechanism that could explain the increase in social fluidity (reduction in OD association). In terms of absolute rates, it is clear that over time cohorts of men and women with less than eight years of schooling (lower-secondary) are increasingly reaching urban working-class positions (classes V+VI and especially VIIa) rather than the rural classes (IVc-VIIb), while people with upper-secondary or higher education are decreasing their proportions in the upper-class positions (I+II) across the cohorts. These trends indicate diminishing returns to education in absolute terms. To see if similar trends are also present in relative rates, we estimate the models presented in table 4.

Table 4
Brazil: fit statistics and Unidiff parameter estimates for observed trends in the association between Education and Class Destination (ED) across cohort and age groups

(a) ED Men (n = 132789)					
Model	L ²	df	P	Δ(%)	BIC
1. CSO CSD OD	1 383.11	280	0.000	2.72	-1 919.92
2. CSO CSD β _C OD	1 090.70	275	0.000	2.54	-2 153.34
3. CSO CSD β _C β _A OD	870.46	272	0.000	2.16	-2 338.19
4. CSO CSD β _C β _A β _S OD	830.25	268	0.000	2.06	-2 331.22
5. CSO CSD β _{CA} OD	830.10	267	1.000	2.06	-3 149.67
(b) ED Women (n = 65959)					
Model	L ²	df	P	Δ(%)	BIC
1. CSO CSD OD	1 091.59	280	0.000	3.31	-2 015.51
2. CSO CSD β _C OD	888.84	275	0.000	3.10	-2 162.78
3. CSO CSD β _C β _A OD	789.42	272	0.000	2.92	-2 228.91
4. CSO CSD β _C β _A β _S OD	772.69	268	0.000	2.90	-2 201.25
5. CSO CSD β _{CA} OD	742.29	267	0.000	2.91	-2 220.55

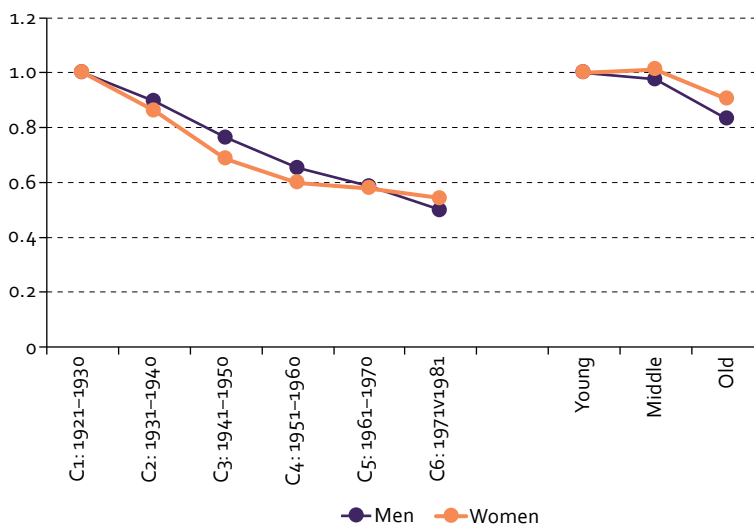
Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by author.

For men, Model 3 presents the best fit for hierarchical L² comparisons and BIC statistics evaluation (table 4 panel a). Once again, a trend of decreasing association is observed (Unidiff parameters in figure 7), now between education and class destination (ED), across birth cohorts (C). The observed trend indicates that decreasing returns to education are also mechanisms that explain part of the trend towards increasing social fluidity (decrease in the OD association). In addition, Model 3 indicates that the ED association decreases as men get older (see figure 7) in the same birth cohort measured at different periods. This can be seen as evidence that returns to education decrease with experience in the labour market. In other words, workers with more experience in the labour market (older workers) are more fluid.

Panel b in table 4 presents the same analysis for women. Model 3 offers the best fit for the data. Parameters (Unidiff) estimated from Model 3 and shown in Figure 7 reveal that the strength of the ED association decreases over the birth cohort and age groups. In other words, the value of educational credentials decreases across birth cohorts and as women in the same cohort get older and have more experience in the labour market. This evidence indicates that experience in the labour market is essential to explain intergenerational mobility and that the value of educational credentials tends to diminish with the expansion of educational opportunities. Indeed, the value of education is not absolute; that is, the value of education is relative since it depends on the supply of educated people—if the supply grows, the

value of education may decline. Policymakers interested in expanding intergenerational mobility must pay attention to the fact that educational expansion increases the supply of educated people, which tends to lead to a decline in the value of education that impacts intergenerational mobility. Programs of training workers in the labour market could affect intergenerational mobility, and policymakers should keep an eye open to this alternative.

Figure 7
Brazil: trends in education achieved by class destination (ED) association over birth cohort (C) and age groups (A), estimated by Model 3 in table 4 for men and women
(Unidiff coefficient)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

D. Association between origin and destination class at each educational level (OD over E)

Since educational expansion was very intense over cohorts (see Figure 2 in section II above), it is plausible to hypothesize that the growth of upper-secondary and higher education explains the increasing social fluidity in the association between origin and destination (OD). More specifically, if the OD association is weaker for people with higher levels of education—what is usual in many countries—a composition effect related to the increasing proportions of men and women with some upper-secondary or higher education could help to increase social mobility and fluidity.

To investigate the plausibility of this composition effect, we estimate the models presented in table 5 (OD-Unidiff-E) to analyze whether the strength of the “direct” association between origin and destination classes (OD) varies across the level of education attained by adult children. As expected, for men (table 5 panel a) and women (table 5 panel b), class destination depends on class origin, and education attained (Models 2, 3, and 4). For both men and women, it is model 5 that presents the best fit to the data according to the BIC statistic (more negative indicates a better fit). Model 5 reveals that the strength of the OD association varies across educational level (E); as expected, at higher educational levels, the influence of parental class (O) on adult child class (D) is less intense. Indeed, people from lower origin classes who reached higher education levels (upper-secondary and college) could escape the disadvantages of their class of origin; therefore, it is clear that the association between their origin and destination classes tends to be lower. This idea is confirmed by the Unidiff parameters estimated by Model 5 in table 5 for men and women.

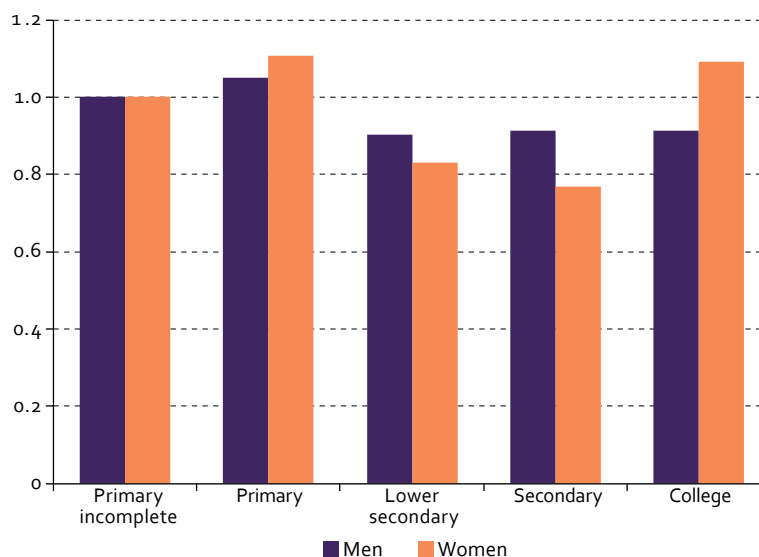
Table 5
Brazil: fit statistics and Unidiff parameter estimates for the interaction among Education, Class of Origin and Class of Destination

(a) OD-Unidiff-E Men (n = 132789)					
Model	L ²	df	P	Δ(%)	BIC
1. COE CD	74 935.18	870	0.000	27.4	64 672.21
2. COE CD OD	38 304.71	845	0.000	18.14	28 336.65
3. COE CD ED	14 234.64	850	0.000	10.11	4 207.60
4. COE CD OD ED	1 843.90	825	0.000	2.72	-7 888.23
5. COE CD β_{ϵ} OD ED	1 840.22	821	0	2.63	-7 900.73
(b) OD-Unidiff-E Women (n = 65959)					
Model	L ²	df	P	Δ(%)	BIC
1. COE CD	46 933.91	870	0.000	31.77	37 279.70
2. COE CD OD	29 990.38	845	0.000	23.07	20 613.59
3. COE CD ED	5 700.71	850	0.000	8.86	-3 731.56
4. COE CD OD ED	1 591.14	825	0.000	3.82	-7 563.71
5. COE CD β_{ϵ} OD ED	1 586.50	821	0.000	3.79	-7 583.96

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996 e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by author.

The Unidiff parameters estimated by Model 5 are presented in figure 8 below, showing that the OD association is weaker for people with higher educational levels. For men, the Unidiff coefficients estimated by Model 5 indicate that the OD association is lower for those with lower-secondary education (8 years) or more. For women, the Unidiff coefficients for the OD association are lower for those with lower-secondary (0.831) and upper secondary (0.769), but it is higher for those with higher education (1.092).

Figure 8
Brazil: origin by destination class (OD) association within each educational level achieved, estimated by Model 5 of table 5 for men and women
(Unidiff coefficient)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

In other words, we observed that for men with higher levels of education, the OD association tends to be smaller, which indicates that the composition effect —the expansion of the proportion of individuals reaching higher levels of education— is an important mechanism explaining the trend of increasing social fluidity. For women, the results seem to be contrary to this interpretation since the OD association is stronger for those with higher education. This result, however, is related to the selectivity of women's entry into the labour market; that is, the increasing entry into the labour market of women with origins in upper-class families explains the fact that for women with higher education, the OD association is stronger than for those with lower levels of education. Policymakers interested in promoting the expansion of intergenerational mobility need to know that educational expansion itself tends to have a compositional effect and, therefore, promotes social fluidity. The simple expansion of higher educational levels is a powerful mechanism for promoting intergenerational mobility.

VII. Counterfactual simulations: the contribution of different mechanisms to increasing social fluidity in Brazil

Initially, we presented pieces of evidence indicating a decrease in the association between origin and destination classes (OD) over time for men and women in Brazil—this result had already been established in different studies (Neves et al., 2007; Ribeiro, 2007, 2012; Torche and Ribeiro, 2010; Xavier and Neves, 2012). The analyses herein, however, advance over previous studies as we present evidence that the changes are due to replacing older and less fluid cohorts with younger and more fluid ones, on the one hand. An effect of experience in the labour market, so that older individuals in the same cohort tend to be more fluid, on the other hand. In other words, the OD association decreased both between the oldest (C1: 1921-1930) and youngest (C6: 1971-1981) birth cohorts and between the youngest (Young) and oldest (Old) individuals within the same cohorts.

To explain these trends, we analyzed (in the previous section) separately three mechanisms (pathways) linking origin and destination that goes through the education achieved: (1) “Equalization of Educational Opportunities” (OE, or “Equalize”); (2) “Decrease in Educational Returns” (ED, or “EducReturn”); and (3) “Educational Composition or Expansion” (OD-Unidiff-E, or “Expand”). For the first two mechanisms, the data analyzed above indicate that there was a decrease in the association (OE and ED) both between the youngest (C1) and the oldest cohorts (C6) and across the life course as people age in the same cohort (A), while for the last mechanism the data indicates that the OD association is weaker at higher educational levels. The results are similar for men and women in the labour market.

The analysis above, however, does not allow us to know the proportional contribution of these three mechanisms to the observed trend of increasing social fluidity. In this section, we use the methodology developed by Breen (2010) and Vallet (2017), who propose a set of consecutive counterfactual simulations—using a path model with two equations for categorical variables (Goodman, 1973; Vermunt, 1997)—that allows accounting for the share contribution of each one of the three mechanisms to the increase in fluidity observed over subsequent birth cohorts and age groups. To start the analysis Breen (2010) suggests a base model called “Base” (1), which assumes no variation in the OD association related to cohorts, age groups, and the explanatory mechanisms involving education (OE, ED, and OD-Unidiff-E). Then, the interactive

terms defining the three mechanisms involving education are successively included in the two equations of the "Base" path model, which leads to three new simulation models: (2) "Expand," (3) "Equalize," and (4) "EducReturn". In addition, this simulation exercise allows the generation of a fifth path model to observe which part of the OD association trend does not go through education (E). We call this mechanism (5) "Net Origin Returns" (OD net of E, "OriginReturn"). This last mechanism is simply the proportion of the OD association along C and A that was not explained by the three previous mechanisms. Finally, the saturated trajectory model —(6) "Saturated"— is estimated. This last model reproduces the trends of declining OD association over birth cohorts (C) and age groups (A) estimated by Model 3 for men and women in table 2 and presented in figure 5. Each one of these six trajectory models (with two equations) produces an ODCA table of expected frequencies that are used as data sets to estimate Unidiff models allowing us to analyze the relative contribution of each mechanism to the observed increasing fluidity trend in the association between origin and destination classes (OD) over cohorts (OD-Unidiff-C) and age groups (OD-Unidiff-A). These simulations starting with the "Base Model" (1) up until the "Saturated Model" (6), allow us to answer the following counterfactual questions about social fluidity trends:

- How would fluidity have changed over cohorts and age groups if only "Educational Expansion" (compositional effect) had occurred?
- How would fluidity have changed over cohorts and age groups if, in addition to "Expansion," "Equalization of Educational Opportunities" had changed?
- How would fluidity have changed over cohorts and age groups if, in addition to "Equalization," "Expansion," and "Educational Returns" had changed?
- How would fluidity have changed over cohorts and age groups if, in addition to the three mechanisms above, "Origin Returns" had changed?

Figure 9A shows results from the simulations for men. It presents, in a synthetic way, the portions of the decreasing trend of the OD association over birth cohorts (C) and age groups (A) that are due to the six simulation models (Base, Expand, Equalize, Educational Returns, Origin Returns, and Saturated). Starting from the Base model, subsequent trends are obtained by models that progressively include terms corresponding to the simulated effects of the four different mechanisms described above up until the model including the terms for the Saturated model, which reproduces the empirically observed trend (Model 3 in table 2 for men). Starting by interpreting trends across cohorts, presented in figure 9A, one can first describe the trend from the 1921–1930 (C₁) to the 1941–1950 (C₃) cohorts. Compared to the 1921–1930 cohort (C₁), the increase in social fluidity (decrease in OD association) that characterizes the 1931–1940 (C₂) and 1941–1950 (C₃) cohorts is primarily a consequence of the decline in "Returns from Origins" (OriginReturn), that is, the decrease in the net association, discounting the effect of education, between origin and destination. In addition, it is also due to an effect of the "decrease in educational returns" (EducReturn); that is, education's relative value in access to class destination positions is devalued.

Beginning with the 1951–1960 cohort (C₄), there is a strong effect of the mechanism of "Equalization of Educational Opportunities" (Equalize). In fact, "Equalize" explains the trend better than the other two effects (EducReturn and OriginReturn), which continue to explain a smaller proportion of the trend. It is important to note that the 1951–1960 cohort (C₄) is already beginning to benefit from the expansion of primary and lower-secondary education intensified because of the 1961 and 1971 Educational Reforms, whose main change was to expand lower-secondary. In other words, the growth of lower-secondary education (8 years of schooling) significantly diminished the class of origin inequality in access to education. It increased the chances of everyone transitioning to higher levels of education.

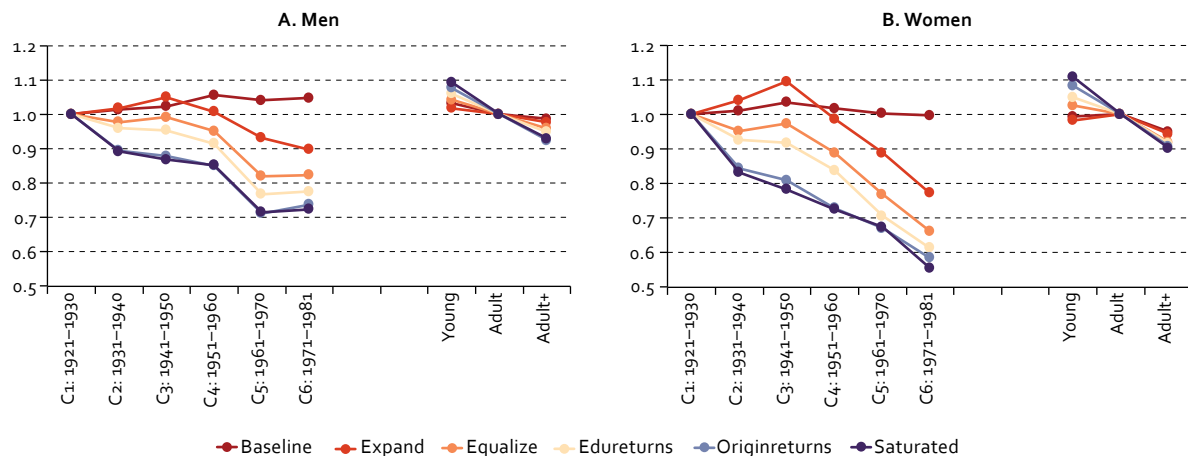
From the 1961–1970 cohort (C₅) onward, the equalization mechanism (Equalize) remains the most important one leading to a decrease in the OD association —an increase in mobility or fluidity— but the composition mechanism or "educational expansion" (Expand) also becomes highly relevant to explain the trend. Indeed, more than 50% of those born in the 1960s (C₅) had upper-secondary education or more. At these higher educational levels, the OD association is weaker (see figure 8) and contributes significantly

to increasing overall social fluidity via a compositional effect (Expand). This expansion of higher levels of education also created more chances for men with lower classes origins in the educational system and, therefore, helped to diminish the class of origins advantages to make educational transitions, which corresponds to an increase in equalization of educational opportunities (Equalize).

The other two mechanisms (EducReturn, and OriginReturn) also contributed, although to a lesser degree, to the drop in the OD association in the 1961–1970 (C5) cohort compared to the older ones. For the youngest cohort, born in 1971–1981 (C6), the effects of education attained (E) on the declining OD trend becomes even more significant, especially the composition effect (Expand), since more than 63% of the men in this youngest cohort (C6) already had upper-secondary or university education. In addition, the effects of equalization (Equalize) and the decrease in educational returns (EducReturn) also continued to contribute to the drop in the OD association. The youngest cohort (C6) was strongly affected by educational expansion, especially the upper secondary and higher education increase during the 1990s and 2000s, when many policies to expand higher education were advanced (Senkevics, 2021). At the same time, educational credentials (diplomas) started to devaluate in the occupational labour market, as is clear from the contribution of the “Educational Returns” mechanism (EducReturn). In sum, the expansion of the educational system has contributed to reducing the OD association (increased fluidity) over birth cohorts, mainly via the mechanisms of “Equalization of Educational Opportunities” and from the 1951–1960 cohort (C4) onward of “Educational Expansion.”

The simulation presented in figure 9A also depicts an increasing fluidity trend as men get older. In other words, the OD over A trend indicates that social fluidity increases in men’s occupational careers. Although the trend of increasing fluidity across birth cohorts is considerably stronger, the change over the life cycle as men age and acquire labour market experience is also relevant. The more experienced workers are, the less their intergenerational mobility depends on the class of origin; evidence of mobility along the life cycle of individuals is observed, confirming findings of previous research (Pastore, do Valle Silva, and Cardoso, 2000).

Figure 9
Brazil: contribution of the four mechanisms to increase social fluidity over birth cohorts (C) and age groups (A).
 (Simulation made from the cohort by age by origin by education by destination table (CAOED), i.e., allowing age and cohort effects, and social fluidity trends estimated in the simulated CAOD table)
 (Unidiff coefficient)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1973, 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

Figure 9B displays the result of the counterfactual simulations for women in the labour market. Starting with trends over cohorts, a decrease in the OD association for the 1931–1940 cohort (C2), compared to the previous one (C1), is observed as a consequence mainly of the mechanisms of “Equalization of Educational Opportunities” (Equalize), and of “Declining Origin Returns” (OriginReturn). For the following cohort of women born between 1941–1950 (C3), the effect of the “Educational Returns” (EducReturn) mechanism slightly increases its contribution. However, the direct effect of class origin (OriginReturn) remains the most important in explaining the downward trend of the OD association. From the 1951–1960 cohort (C4) onwards, the mechanism of “Equalization of Educational Opportunities” (Equalize) becomes the main driver of the downward OD association. Women born between 1951 and 1960 (C4) were pupils in primary and upper-secondary education during the 1960s and 1970s, decades marked by the reforms of 1961 and 1971 that significantly increased these initial levels of education. Finally, for the 1961–1970 (C5) and 1971–1981 (C6) cohorts, the educational system expansion mechanism (Expand) becomes the most important of all, which is undoubtedly a consequence of the fact that more than half of these two younger cohorts of women have already reached upper-secondary or higher education (see figure 2). Finally, a trend toward increasing fluidity over the life cycle of women is also present. The more experienced women workers are, the less their intergenerational mobility depends on their class origin; there is evidence of increasing fluidity in women’s occupational careers.

Nevertheless, intergenerational mobility is a complex process involving other aspects. The Brazilian case and the analyses presented show that educational expansion, in particular the increase of opportunities in higher levels of education, is central to promoting intergenerational mobility. Therefore, policymakers interested in promoting intergenerational mobility must pay special attention to educational policies. The diminishment of inequality of conditions among families of origin (families of children of the next generation) should also be the focus of social policies if one wants to promote intergenerational mobility. Moreover, policymaking must also know that experience in the labour market contributes to increased intergenerational mobility.

VIII. The racial upward mobility gap

In the previous sections, we have shown how educational attainment diminished class of origin inequalities in intergenerational mobility over birth cohorts in Brazil. In this section, we show that racial disparities in mobility chances did not change for birth cohorts born between the 1930s (C2) and the 1970s (C6), even considering educational attainment.

Brazil is a multiracial society in which racial and skin color divisions shape social stratification patterns and trends. The country was the largest slave society in the Americas during the colonial period. Consequently, the population with African origins is the largest in the Americas—according to the 2010 Census, 50.7% of the Brazilian population was classified as black or brown. Since the end of slavery in 1888, the levels of racial inequality have remained high until today. Social scientists have argued that one of the consequences of expanding an industrial and capitalist society is that racial stratification inherited from the slavery period would be gradually substituted by class stratification (Fernandes, 2021). However, subsequent research has shown that racial stratification and discrimination remain relevant and distinct from class stratification in today's modern and capitalist Brazil (Hasenbalg, 1979).

The evidence collected and analyzed over the years indicates that racial inequality and stratification have remained high since the abolition of slavery. In particular, research about the more recent period since the 1960's—when high-quality population data on racial (and skin color) classification became available—reveals that racial inequality in terms of income, regional distribution of the population, education, and many other aspects remained high and did not change in significant ways (Osorio, 2009; Silva, 1988; Telles, 2004). The evidence is clear and indicates that racial disparities are pervasive and persistent. For example, in terms of earnings, family income, and educational attainment, the advantages of whites to blacks and browns (non-whites) remained constant or decreased only marginally during the last 50 years (Telles, 2004; Hasenbalg, 1979).

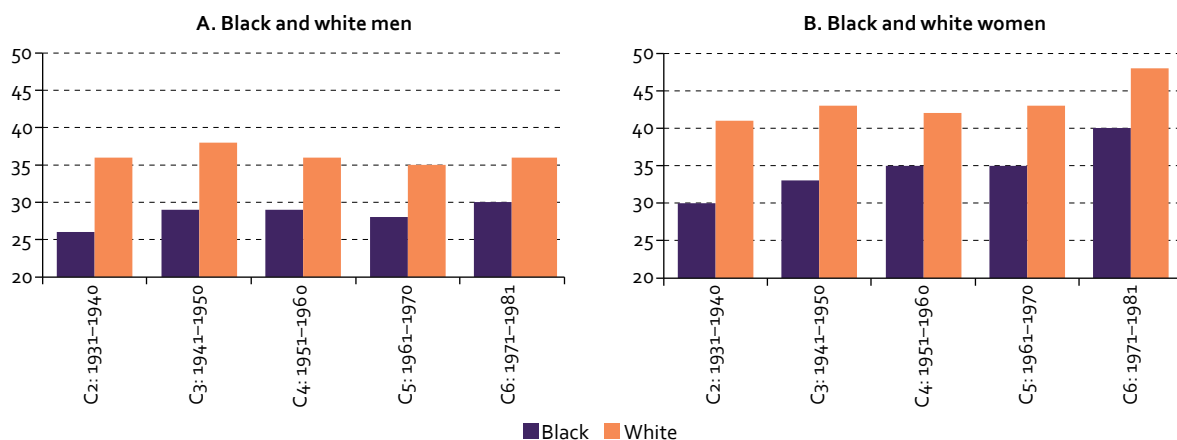
One of the mechanisms that could diminish racial gaps in economic standing is the elimination of the racial gap in upward intergenerational mobility. In other words, the persistence of racial inequality in income or occupational class positions implies that patterns of upward intergenerational mobility for whites and non-whites do not change over time. If non-white people have higher or equal rates of upward mobility than white people, income and occupational racial inequality could vanish over time. However, two studies indicate that the racial mobility gap is constant. Using data from the 1996 household survey (PNAD), Osório (2009) shows that the racial gap in income intergenerational mobility did not change across birth cohorts. He also develops simulations based on the observed patterns. He concludes that it would

take more than one hundred years of birth cohort changes to decrease the disadvantage of blacks and browns (non-white) to whites in terms of upward income mobility chances. Ribeiro (2020) also shows that racial disparities in occupational status and intergenerational mobility did not change from 1996 to 2014.

In this section, we analyze patterns and trends of the racial mobility gap in social classes between white and non-white (black plus brown) men and women from the five youngest birth cohorts in table 1. Since among the five household surveys (PNADs) used in this paper, the only one that does not include information on race or skin color self-classification is the 1973 survey, we analyze patterns and trends in the racial mobility gap using only the four latest surveys —PNADs 1982, 1988, 1996 and 2014. To focus the analyses on the vertical mobility of whites and non-whites, we use the three hierarchical levels within the six-fold EGP class schema. In other words, the study of the racial mobility gap below is based on the following three-fold class schema: (1) Low Classes (classes VIIa plus VIIb), (2) Intermediary Classes (V+VI plus IVa plus III), and (3) High Classes (I+II). Father's and adult children's (sons and daughters) class positions are cross-classified in three-way mobility tables.

Figures 10A and 10B present trends in total upward intergenerational mobility for white and non-white men and women in five cohorts born between 1931 and 1981. Despite the impressive occupational (origin and destination classes, see figures 1A and 1B in section II above) and educational upgrading across these birth cohorts (see figures 3A and 3B in section II above), the absolute racial upward mobility gap observed for men and women does not change across birth cohorts, as seen in figures 10A and 10B below. White men and women have around 25% and 30% more upward mobility than non-white men and women in all five birth cohorts. These findings of stability in the racial upward mobility gap across birth cohorts in Brazil are impressive because, as seen in previous sections, intergenerational class mobility has increased substantially both in absolute and relative mobility.

Figure 10
Brazil: total upward mobility over birth cohort (C)



Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

Since educational attainment and expansion were the most critical mechanisms explaining the increase in intergenerational class mobility across birth cohorts and age groups, it is natural to ask what role education plays in the stability of the racial mobility gap across cohorts. In particular, one can ask in what measure the racial mobility gap (figures 10A and 10B) diminishes if we account for educational attainment. Figures 3A and 3B of section III shows an outstanding educational upgrading between cohorts born in the 1930s (C2) and the 1970s (C6). Tables 6 and 7 below present the same data in a different format for each of the three occupational groups we use in this section. The data shows that educational attainment depends on the class of origin and race, on the one hand, and that over birth cohorts, the racial and class of origin disparities in educational attainment diminished considerably but are still present in the youngest cohorts of men and women (C6).

Table 6
Brazil: percentage with higher education (upper secondary and tertiary) by class of origin, race and birth cohort.
Brazilian men in the labour market in 1982, 1988, 1996 and 2014

	Low classes		Intermediary classes		High class	
	Black	White	Black	White	Black	White
C2: 1931–40	4.0	8.2	24.0	42.1	43.9	72.0
C3: 1941–50	6.9	15.2	33.4	53.4	61.2	79.9
C4: 1951–60	11.5	22.7	38.9	60.0	57.4	84.4
C5: 1961–70	22.2	32.4	49.9	61.4	68.8	83.4
C6: 1971–81	41.5	54.4	66.8	81.6	83.4	92.6

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1982, 1988, 1996 e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

Table 7
Brazil: percentage with higher education (upper secondary and tertiary) by class of origin, race and birth cohort.
Brazilian women in the labour market in 1982, 1988, 1996 and 2014

	Low Classes		Intermediary Classes		High Classes	
	Black	White	Black	White	Black	White
C2: 1931–40	4.4	12.6	25.1	51.2	46.0	75.5
C3: 1941–50	11.3	20.4	43.7	64.1	63.8	86.0
C4: 1951–60	17.9	29.0	49.1	66.6	70.7	86.4
C5: 1961–70	31.9	42.5	60.8	72.6	69.9	90.7
C6: 1971–81	57.3	69.8	78.7	87.1	91.2	97.0

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1982, 1988, 1996 e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE).

To test the effects of educational attainment across birth cohorts in the racial upward mobility gap, we estimated multinomial logit models to test what measure the association between race (R) and class destination (D)—accounting for the class of origin (O) and birth cohort (C)—change when we control for the mediation role played by educational attainment (E). The total association between race and class destination (RD) controlling for origin class (O) can be divided between direct association (independent of education—E) and indirect association (via educational attainment—E). We use the method proposed by Karlson et al. (Breen, Karlson, and Holm, 2013; Breen, Karlson, and Holm, 2018; Karlson, Holm, and Breen, 2012), known as the KHB approach. This method proposes a comparison between a model without the mediation variable (in our case education) and another with the mediation variable. In other words, a comparison between a full model (accounting for education) and a reduced model (without education). Using these two models, one can compare the coefficients for the race by class destination (RD) association estimated in the full model (including educational attainment) and the reduced model (without education). The RD regression coefficient in the reduced model describes the total RD association.

In contrast, the RD regression coefficient in the full model (accounting for education) represents the direct RD association (net of education) and finally the difference between the two coefficients represents the indirect RD association (association via educational attainment). The KHB method allows us to implement these types of analysis—quickly done using linear regression models—for non-linear models such as multinomial logit and others. Tables 8 and 9 below present the result obtained by the final model, but before describing these findings, we will briefly explain the steps followed in choosing the final model (shown in tables 8 and 9). In the first step, we estimated a series of multinomial logit models to test if the association between origin and destination classes across racial groups changed between cohorts C2 and C6. As expected, the OD association decreased between older and younger cohorts—confirming the analyses in previous sections. However, the association between race and class destination conditional on

class origin (RD|O) did not change across birth cohorts. In the second step, we estimated the best model obtained in the first step, with and without the following controls: region (south, southeast, central, or north/northeast), age (30 to 50 years old), parental education, family structure (intact or non-intact) and birth cohorts. Although the association between race and class destination conditional on class origin (RD|O) remains practically the same when we include and when we do not have these controls, we present in tables 8 and 9 the results from the complete model obtained in step 2 (the model with controls).

Table 8
Brazil: decomposition of Total Effect of Race (White = 1 or Non-White = 0) on Destination Class (Low–base category, Intermediary and High) into Direct Effect and Indirect Effect via Educational Level Attained. Multinomial Logit Models for Brazilian men, including controls for Class of Origin and other variables^a

	Intermediary vs Low			High vs Low		
	Coefficient	Odds Ratio	z	Coefficient	Odds Ratio	z
Coefficients						
Total Effect	0.490	1.63	6.89	1.001	2.72	10.34
Direct Effect of Race	0.291	1.34	4.03	0.439	1.55	4.56
Indirect Effect of Race (via Education)	0.199	1.22	8.96	0.562	1.75	11.42
Relative Measure						
Mediation						
Percentage	40.60			56.13		
N	92 198			92 198		
Pseudo R ²	19			19		

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

Note: All coefficient statistically significant.

^a Parental Education, region, age, intact family, and survey year.

Table 9
Brazil: decomposition of Total Effect of Race (White = 1 or Non-White = 0) on Destination Class (Low–base category, Intermediary and High) into Direct Effect and Indirect Effect via Educational Level Attained. Multinomial Logit Models for Brazilian Women, including for Class of Origin and other variables^a

	Intermediary vs Low			High vs Low		
	Coefficient	Odds Ratio	z	Coefficient	Odds Ratio	z
Coefficients						
Total Effect	0.7998	2.23	8.93	1.2621	3.53	10.5
Direct Effect of Race	0.4976	1.64	5.88	0.5963	1.82	5.17
Indirect Effect of Race (via Education)	0.2622	1.3	8.09	0.6657	1.95	9.25
Relative Measure						
Mediation						
Percentage	34.50			52.75		
N	50 492			50 492		
Pseudo R ²	26			26		

Source: Pesquisa Nacional por Amostragem Domiciliar (PNAD) de 1982, 1988, 1996, e 2014. Instituto Brasileiro de Geografia e Estatística (IBGE). Figures from models estimated by the author.

Note: All coefficient statistically significant.

^a Parental Education, region, age, intact family, and survey year.

According to the results in table 8, white men have 1.6 times more chances of attaining intermediary destination class positions instead of only lower-class positions than non-white men. Of this total association, 40.6% runs via education (is indirect or via education) while the remaining association is direct—i.e., net of education. The advantages of white men are even higher when reaching higher-class positions. White men have 2.7 times more chances of attaining higher-class destination positions instead of only lower-class positions than non-white men. Of this total association, 56.6% runs via education (is indirect or via education) while the remaining association is direct—i.e., net of education. These patterns do not change across birth cohorts. It is noteworthy that education is even more relevant to explaining the racial mobility gap when it comes to reaching higher-class positions.

Table 9 presents the results for women. White women have 2.2 times more chances of attaining intermediary destination class positions instead of only lower-class positions than non-white women. From this total association, 35.5% runs via education (is indirect or via education) while the remaining association is direct—i.e., net of education. The advantages of white women are even higher when it comes to reaching higher-class positions. White women have 3.5 times more chances of attaining higher-class destination positions instead of only lower-class positions than non-white women. Of this total association, 52.7% runs via education (is indirect or via education) while the remaining association is direct—i.e., net of education. These patterns do not change across birth cohorts. As for men, education is even more relevant to explaining the racial mobility gap when reaching higher-class positions.

The analyses in this section show essential pieces of evidence about the racial mobility gap in Brazil. First, it is impressive that the advantages of upward class mobility of white people (men and women) to non-white remain constant across the five birth cohorts analyzed. In other words, in the context of increasing social fluidity (decline in OD association) across birth cohorts explained mainly by the mechanisms of educational equalization and expansion, the racial mobility gap remains stable across birth cohorts. This confirms the hypothesis about the persistence of racial inequality in Brazil (Hasenbalg, 1979). Second, educational attainment and expansion explain at least half of the racial mobility gap (RD|O), but it is far from explaining all the associations. While part of the racial mobility gap depends on racial inequalities in educational attainment, a substantial proportion of the gap is related to racial disparities in the labour and occupational market. Therefore, policies to increase the upward mobility chances of non-white people and ultimately reduce racial inequality should focus on the educational system and labour market institutions. Birth cohorts born in the 1990s and 2000s, and not analyzed in this document, benefited from affirmative action policies promoting the access of low-income and non-white students to higher education. Research has shown that these policies contributed to expanding access of non-white people to higher education and, consequently, affected their intergenerational mobility chances (Mello, 2021). However, the analyses above indicate that racial inequality is also created in the labour market. This suggests that policymakers interested in racial equality must also pay attention to discrimination occurring in the labour market after people achieve educational credentials. In other words, in addition to affirmative action policies in the educational system, policymakers interested in reducing racial inequality must design policies to fight racial discrimination in the labour market, such as anti-discrimination policies in hiring and promoting practices in firms and labour market institutions.

IX. Conclusion

The evidence presented in this document is based on high-quality and comparable data used to systematically analyze how intergenerational class mobility and fluidity changed for working men and women born between 1921 and 1981. During this extended period, the class structure was utterly transformed due to urbanization, industrialization, and the modernization of Brazilian society. The distribution of educational achievements of individuals has also been drastically changed because several educational reforms expanded the system throughout the 20th and early 21st centuries. While more than half of those born in the 1920s had not completed primary education (4 years of schooling), more than half of those born in the 1970s had at least entered upper-secondary school (9 or more years of education). Absolute mobility rates grew both downwards and upwards. Inequality of educational opportunities was reduced, although this was only for the three youngest cohorts born after 1951. In addition, the absolute and relative returns regarding occupational advantages (destination class) provided by education also steadily declined as younger cohorts entered the labour market. In contrast, men and women self-classified as white had better upward mobility chances than non-white men and women, an advantage that remained the same between those born in the 1930s (C2) and those born in the 1970s (C6). While about half of the racial upward mobility gap depends on educational attainment, the other half is related to inequality in the labour market.

The main results about relative mobility trends indicate that the three most recent cohorts (C4, C5, and C6) are intergenerationally more fluid than the older cohorts (C1, C2, and C3) mainly because educational expansion led to a considerable decrease in the association between origin and destination classes for the three youngest cohorts. For the two youngest cohorts, born between 1961 and 1981 (C5 and C6), the effect of educational expansion (Expand) was the most important of all, which was expected since these two cohorts were directly affected by the educational reforms that contributed most to expand the system from the 1970s to the beginning of the 21st century. Democratization of access to the educational system—increasing equality of educational opportunities— and expansion of upper-secondary and higher education—compositional mechanism— play critical roles in explaining the trend of increasing fluidity and equality of opportunities in Brazil.

Another significant result is that social fluidity also increases with age; that is, the association between origin and destination (OD) classes is weaker when respondents from the same cohort are sampled in a later survey at older ages and therefore are at a more advanced stage of their life course and occupational

careers. This last finding indicates that mobility after people finish their education and get experience in the labour market (intragenerational mobility) is an essential factor in intergenerational mobility, as classical mobility studies suggested a long time ago (Blau and Duncan, 1967). Finally, the increase in social fluidity was more significant for women than men. Although this result could be questioned by skeptical readers, as there was selectivity with an increasing proportion of female participation in the labour market between 1973 and 2014; it is important to emphasize that there were, in fact, significant changes in women's educational achievement, and participation in the occupational market throughout the 20th century. These changes certainly explain part of the incredible increase in women's intergenerational mobility in terms of the class structure in Brazil.

What can we learn from all the evidence presented in this document that could help policymakers interested in expanding social mobility and fluidity? Although the analyses we have presented describe the main mechanisms explaining mobility and fluidity trends across cohorts of Brazilians born between the 1920s and the 1970s, it is hard to forecast how trends will develop. Policies designed to expand access to higher education in high-quality institutions are undoubtedly essential to improve intergenerational mobility and equality of opportunity. Although higher education is key to improving mobility, we must acknowledge that research on intergenerational mobility indicates that improving the quality of elementary and even preschool institutions can be highly effective over time (Carneiro and Heckman, 2002). Indeed, one of the consequences of the fact that most men and women born between the 1920s and the 1970s did not have access to high-quality preschool is that we still observe an enormous effect of class background on intergenerational mobility.

Although the expansion of access to education was essential to explain the increase in social fluidity across birth cohorts, the whites from all birth cohorts had equally better chances of upward mobility than blacks (blacks and browns). We have called this advantage "the racial upward mobility gap," and the analyses above show that this gap did not change for cohorts born between the 1930s (C2) and the 1970s (C6). The youngest cohort analyzed in this paper was born in the 1970s (C6); therefore, most of these people did not have the chance to benefit from racial quotas and affirmative action policies to access higher education that began to be implemented in Brazil during the 2000s. The analyses above, however, indicate that a large part of the racial upward mobility gap is independent of education; that is, do not depend on the level of education achieved but rather on racial inequalities in the labour market—probably caused by racial discrimination.


Like income inequality, social fluidity is a concept used to describe trends and macro characteristics of a society. Brazil is a society with important levels of income inequality and, as we have seen above, it is also one in which the rapid industrialization and urbanization, and particularly the rapid expansion of the educational system, contributed to increased social fluidity across birth cohorts born between the 1920s and the 1970s. Despite the growth of equality of opportunity—as measured by social fluidity within the class structure—Brazil is still among the less fluid societies in the world (Blanden, 2011; Ganzeboom and Luijkx, 1989; Torche, 2014).

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This paper examines trends in intergenerational class mobility for six birth cohorts of individuals born between 1921 and 1981, observed in surveys carried out in 1973, 1982, 1988, 1996 and 2014. Besides analysing the variation of trends on the basis of three temporal dimensions —age, birth cohort and survey year— the paper determines the effects of educational attainment on intergenerational mobility. The analysis reveals a historical trend of increasing social mobility across birth cohorts in Brazil. The effects of educational attainment are determined by three mechanisms: educational expansion, equality of educational opportunities and returns to education. While educational expansion is the main mechanism responsible for increasing mobility among the three younger cohorts of persons born between 1951 and 1981, the other two mechanisms play minor roles. In the period under review, the origin-destination class association, net of educational attainment, also declined and contributed to the increasing intergenerational mobility trend. Nevertheless, the expansion of higher education is the main reason for the increase in social mobility. This paper also examines racial disparities in intergenerational mobility. Despite the impressive educational expansion and increased mobility opportunities observed overall, the racial gap in intergenerational mobility opportunities does not change over time, with black people facing a greater probability of downward mobility.