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Equalization or reproduction? Long-term trends in the intergenerational transmission of advantages in higher education in France

Julie Falcon¹, Pierre Bataille²

Référence originale

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Résumé

This article analyses the evolution of the influence of social background on educational and occupational achievement across the 20th century in France. We use pooled data from the French Labour Force surveys for the period 1982-2014 and undertake an analysis of 11 birth cohorts born between 1918 and 1984. We demonstrate that social background inequality in terms of access to higher education has diminished across cohort, even within the highest and most selective educational levels such as the grandes écoles. However, we also document, as Torche (2011, 2016) did in the United States, the existence in France of a U-shape pattern in the intergenerational transmission of advantages across levels of education. Thus, contrary to previous assertions (Hout 1988), the influence of social background on social destination does not necessarily declines linearly with educational level. Altogether, these findings question the greater meritocratic nature of the labour market among the highly educated and call for more research to be undertaken on the influence of non-meritocratic assets related to social background on the recruitment process and occupational career development.

Introduction

When Bourdieu and Passeron published their seminal book *Les Héritiers* in 1964, they revealed that "a senior executive's son [was] eighty times more likely to enter a university than a farm worker's son, and forty times more likely than an industrial worker's son¹" (Bourdieu and Passeron 1964 :11). After the post-WWII educational reforms and in the context of the first expansion of the educational system, the demonstration of the persisting salience of inequality in educational opportunity had far-reaching consequences on French society. Further educational reforms were thus implemented in the following decades. One of the most recent striking metamorphoses of the French educational system has

been the second "democratisation" wave, which was initiated in 1985 with the political target to get 80% of an age class to reach the Baccalauréat² level by 2000. Although this target has not been reached, the share of Baccalauréat holders increased from 30% to more than 60% between 1985 and 2006 in France (Ichou and Vallet 2011). Moreover, access to tertiary education has opened up to students from traditionally underrepresented social backgrounds (Poullaouec and Lemêtre 2009), even though the educational career patterns of these second "democratisation" children differs from that of most of graduates with a higher social background (Hugrée 2010).

Thus, more than fifty years after the publication of *Les Héritiers* the French educational landscape has been totally modified. The extent to which these changes have impacted on the intergenerational transmission of advantages—i.e., social class reproduction—remains an important question. While some pieces of research have suggested that inequality of educational opportunity decreased (Breen et al. 2009, 2010; Thélot and Vallet 2000; Vallet and Selz 2007) and social fluidity³ increased (Vallet 1999, 2004, 2017), some

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recent studies have outlined more contrasting findings in this respect (Albouy and Wanecq 2003; Bouchet-Valat, Peugny, and Vallet 2016; Ichou and Vallet 2011, 2013; Peugny 2007).

This research article thus aims to extend previous research to analyse how educational inequality and the intergenerational transmission of social position in France evolved across cohorts born between 1918 and 1984. For this purpose, we analyse data from the French Labour Force survey from the period 1982-2014. These data have the advantage of covering the past two decades, which have witnessed an important increase in tertiary education enrolment rates. We test in particular whether the influence of social background on labour market outcome is weaker among the highly educated (Hout 1988). In line with previous research (Torche 2011, 2016), our analysis reveals that within the highest higher education levels, social origin continues to have a strong influence in the allocation process. We start by introducing the research background, both internationally and nationally, and then we present our research design and our findings. We conclude by discussing the implications of our analysis.

Research background

The role of education on intergenerational social mobility

Comparative social mobility research has identified two main mechanisms through which education can increase social fluidity (Breen and Jonsson 2007). First, the so-called equalization effect suggests that the decreasing association between social origin and educational attainment can foster social fluidity. If inequality in educational attainment decreases, then social background should have a weaker influence on individuals' allocation on the labour market. Second, the so-called compositional effect maintains that the influence of social background on labour market outcome is weaker within higher levels of education, as labour market allocation would be more meritocratic among higher education graduates (Hout 1988). Given that an increasing share of the population is coming to hold a higher education degree as the education system expands, the overall level of social fluidity is expected to correspondingly increase.

Empirical evidence widely supports the existence of these two mechanisms. An educational equalization trend has been documented in many Western countries (Ballarino et al. 2009; Breen et al. 2009, 2010; Shavit, Arum, and Gamoran 2007). Scholars have furthermore

observed the existence of a lower association between social origin and social destination among higher education graduates in many nations (Breen 2010; Breen and Luijkx 2007; Falcon 2013; Pfeffer and Hertel 2015; Vallet 2004).

However, despite these indications of evolution, education still remains the main vector of social reproduction : between half and three-quarters of intergenerational socio-economic association is mediated by education in Western countries (Ballarino and Bernardi 2016 :257; see also : Blau and Duncan 1967). Several mechanisms have been put forward to explain this phenomenon. According to the Maximally Maintained Inequality hypothesis (Raftery and Hout 1993), unless access to the highest educational level becomes universal, educational inequalities will remain maximally maintained, as privileged families will always take advantage of social class differentials in educational attainment. The Effectively Maintained Inequality hypothesis (Lucas 2001) amends the previous hypothesis : even when access to the highest educational level increases and becomes almost universal, children from privileged families will essentially enrol into the most prestigious tracks of this educational level. In other words, when there is a reduction in quantitative inequality, qualitative inequality becomes more salient to ensure the intergenerational transmission of advantages.

Rational action theory provides a general framework to explain the persistence of educational inequality (Boudon 1985; Breen and Goldthorpe 1997; Goldthorpe 2007). This theory posits that individuals develop different educational strategies according to their social background. While it has been widely documented that the unequal distribution of resources among families of different social backgrounds translates into unequal academic performance at school (primary effect), working-class children tend to choose less demanding educational tracks than upper-class children even when both have the same level of academic performance (secondary effect). Thus, educational choices, as well as unequal academic performances, contribute to the persistence of educational inequality (Jackson and Jonsson 2013). Along similar lines, despite poor academic performance, upper-class children are more likely to pass to the next educational level than working-class children with the same level of academic performance (Bernardi 2014). This phenomenon, known as the social origin compensatory effect, clearly illustrates that the main concern of individuals when making educational decisions is the avoidance of downward mobility. Breen and Goldthorpe (1997; see also : Goldthorpe 2007 :167) indeed argue that

individuals do not primarily seek to achieve upward social mobility, but rather to acquire a social position at least as favourable as their parents'. This phenomenon, which they coined relative risk aversion, constitutes according to them the main explanation of the persistence of educational inequality and social reproduction. To some extent, these theoretical explanations echo with the Bourdieusian tradition, which showed that to maintain a dominant position within the social structure, the upper class graduates build their educational choices as "reconversion strategies" of their inherited capitals (Bourdieu, Boltanski, Saint-Martin, 1973).

How education is rewarded on the labour market can also influence social mobility. With educational expansion, a growing share of higher education graduates enters the labour market. Yet if the supply of higher education graduates exceeds the demand on the labour market, an "inflation" of educational credentials is likely to occur (Passeron 1982). Empirical research indeed supports these claims, insofar as returns to education have decreased over time in several European countries (Breen and Goldthorpe 2001; Ganzeboom and Luijkx 2004; Goldthorpe and Mills 2004; Jackson et al. 2008; Vallet 2004).

As a consequence, some scholars sustain that educational attainment has become a less reliable signal in the recruitment process, whereas individual characteristics directly related to family background have become more crucial (Breen and Goldthorpe 2001). For instance, non-meritocratic characteristics such as appearance, self-presentation, savoir-faire, manners and accent seem to have gained importance when it comes to reaching certain top occupations (Jackson, Goldthorpe, and Mills 2005). Further research also qualified Hout's (1988) statement, which claims that allocation on the labour market is systematically more meritocratic among higher education graduates. Torche (2011, 2016) documented the existence of a nonlinear decreasing pattern in the association between social origin and social destination across levels of education in the United States. She observed a U-shape pattern, wherein the influence of social background on labour market outcome linearly weakened up to the level of bachelor degree holders and increased among advanced degree holders. A recent study on the UK found some hints towards similar pattern among postgraduate degree holders (Wakeling and Laurison, 2017).

Thus, empirical evidence as to the equalization and meritocratic power of education is quite contrasted. From this standpoint, we investigate this issue in the French context.

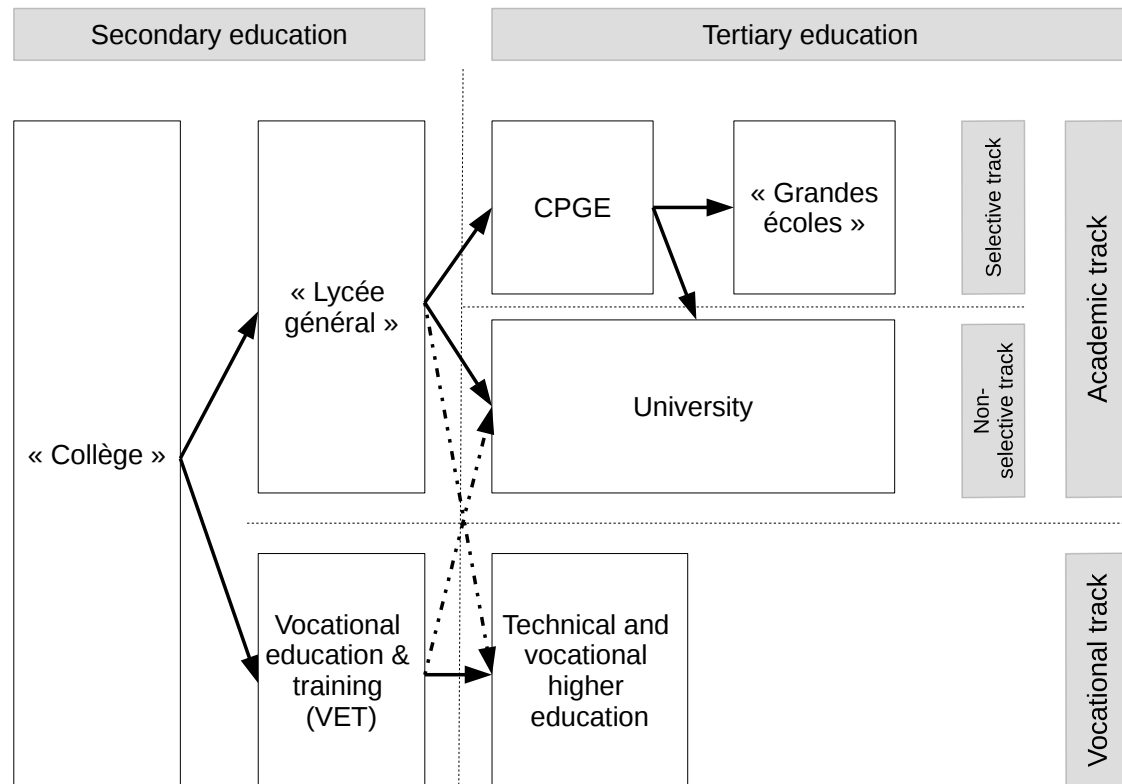
Between universalism and selection : the French educational system

Despite its important expansion since the middle of the 20th century, the French educational system has remained highly stratified⁴ (see Figure 1). After four years at the collège, the comprehensive and unified first part of secondary school in France, pupils either go to lycée général or to vocational education and training. The lycée général prepares pupils to take the baccalauréat général, which grants access to tertiary education, whereas vocational education and training is designed to prepare them to enter the labour market. Yet those who pass a vocational or professional baccalauréat also have the opportunity to continue to tertiary education.

Tertiary education in France is divided into three tracks : (1) the technical and vocational track, (2) the academic non-selective track and (3) the academic selective track. The technical and vocational track offers two to three years of applied trainings. For working-class students, these trainings are usually perceived as a path to reach intermediate occupations. The existence of two parallel tertiary education academic tracks constitutes a French specificity which clearly formalises the difference between elitist and non-elitist institutions, respectively the grandes écoles⁵ and universities. While admittance to the university in France is formally granted to anyone who holds any type of baccalauréat, access to the grandes écoles is highly selective. It is traditionally based on a national competitive examination considered a "meritocratic contest", the concours (Bourdieu 1989). Although theoretically, everyone can take the concours, in practice candidates need to follow a two-year intensive preparatory training called classes préparatoires aux grandes écoles (CPGE) to have a chance of gaining admission to a grande école. Access to this preparatory training is itself highly selective. Yet this preparatory training does not constitute a guarantee to access to a grande école, insofar as less than 5% of each generation graduates from a grande école. Those who fail to get into a grande école after this training usually pursue their education at the university (Beaud and Convert 2010).

The persisting co-existence in France of "small, specialized and highly competitive schools" with "the universities [that] are large and ever growing, and (...) not selective" (Suleiman 1977 : 192) can sound surprising in an era of higher education "democratisation" (Beaud and Convert 2010). However, this idiosyncrasy must be understood through the central role that the grandes écoles play in the training of the elite in France. Historically, the grandes écoles developed

FIGURE 1: Overview of the French education system



after the French Revolution with the goal to train a "meritocratic" elite selected on competence criteria that would be loyal to the state and not based on aristocratic endowments—at that time there existed a strong political mistrust towards universities, which were closely linked to religious authorities (Bourdieu 1989).

Sociological studies have suggested that the grandes écoles could be considered as an "elite production machine" (Darmon 2013; Eymery 2001), with the underlying idea that these institutions would have the "power" to erase individual differences (Bataille 2015). This machine has indeed worked quite well, as most of the French economic, political and academic elite was trained in a grande école (Bourdieu 1989). Still today, and despite the internationalization of the elite recruitment, having graduated from a grande école constitutes a major asset to attain highly prestigious positions in France (Denord, Lagneau-Ymonet, and Thine 2011). For all these reasons, the grandes écoles

enjoy a high degree of symbolic capital in France (Bodin and Orange 2016), although over the past couple of decades there has been intense debate in France as to how to increase the social diversity in the student body of the grandes écoles (Van Zanten 2010), as it is widely believed that these institutions constitute an "elite reproduction machine".

Previous research on France and limitations

Research on intergenerational social mobility in France has documented a general increase in observed social mobility as well as in social fluidity over time (Peugny 2007; Vallet 1999, 2004, 2017). Both equalization and compositional effects have contributed to this evolution (Bouchet-Valat et al. 2016; Breen et al. 2009, 2010; Thélot and Vallet 2000; Vallet 2004, 2017; Vallet and Selz 2007). In a recent study, Vallet (2017) furthermore underlined that educational equalization was the main driver of increased social fluidity for the 1945-1954 cohort,

while educational expansion was the main factor for subsequent cohorts. He also uncovered that social fluidity increases with age, suggesting that career mobility plays an important role on intergenerational social mobility in France.

Further research however qualifies to some extent these general conclusions. First, the democratization of the educational system has been unevenly distributed based on educational tracks. Ichou and Vallet (2011) have shown, for instance, that while inequality in rates of passing the baccalauréat in relation to social background decreased across cohorts, inequality was actually maintained when distinguishing between the different types of baccalauréat. Along similar lines, some studies have shown that, after a small opening trend, social selectivity in the access to the grandes écoles has increased in recent years (Albouy and Tavan 2007; Albouy and Wanecq 2003; Duru-Bellat, Kieffer, and Reimer 2008). Second, returns to education have weakened (Bouchet-Valat et al. 2016; Vallet 2004), and downward social mobility has increased over time (Peugny 2007, 2013). Third, the direct effect of social origin on social destination also increased over time (Bouchet-Valat et al. 2016). Ichou and Vallet (2013) furthermore reported an increase in the relative importance of primary effect between individuals born in 1951 and those born in 1984, insofar as the heterogeneity in terms of social background profile of those who reach the next educational transition has increased with educational expansion.

Thus, empirical evidence suggests that the opening of French society through increasing social fluidity may have come to a halt. However, most studies on intergenerational social mobility in France were conducted using a period approach and data from the Formation et Qualification Professionnelle (FQP) survey, which was last conducted in 2003⁶. As a consequence, those studies may not fully capture recent evolutions in the intergenerational transmission of advantages. Indeed, not only is change more likely to occur through cohort replacement than through period change (Breen and Jonsson 2007 :1805), but also the data do not allow assessing opportunities of cohorts who entered the labour market since the new millennium. Last but not least, those studies have also often failed to finely isolate some educational boundaries, especially at the level of higher tertiary education⁷. This research aims to address these limitations and thus extend knowledge as to the development of intergenerational social mobility in France. For this purpose we analyse the evolution of the relationships among social background, educational

attainment and social class destination with a unique study design.

Methodology

Data, population and sample size

We use the French Labour Force Surveys (henceforth FRLFS)⁸ for the period 1982-2014 to undertake our analysis. The FRLFS collects information on respondents' social background, measured through father's occupation, since 1982. It was originally conducted annually and since 2003 has been carried out every quarter by the INSEE, the French national statistical office. This survey displays a high degree of continuity in the measurement of indicators over time, as its design and questionnaire have only been modified twice since 1982, in 1990 and in 2003. The FRLFS has a large sample size and is designed in the form of a rotating panel : every household is interviewed six times (three times before 2003). Thus, we only select individuals during their first interview to ensure that we do not analyse the same individual twice. We furthermore restrict our analysis to individuals between 30 and 64 years old⁹ who were not studying at the time of the survey and who were born in France. As we have already highlighted, social change is more likely to occur through cohort replacement ; therefore, we pool the data together and divide the pool into 11 birth cohorts : 1918-1929 ; 1930-1939 ; 1940-1944 ; 1945-1949 ; 1950-1954 ; 1955-1959 ; 1960-1964 ; 1965-1969 ; 1970-1974 ; 1975-1979 ; 1980-1984. We provide detail on the construction of the cohorts in Table A1 in the Appendix. In the end, we reach a sample size of 754,611 individuals and use the weighting variable designed for first interview respondents, which we adjusted to the sample size for the model estimation.

Indicators

Social class destination and social origin are measured through the EGP class schema (Erikson and Goldthorpe 1992). We used the coding procedure outlined by Bouchet-Valat (2015 :520-21) based on the French occupation codes. We grouped classes into seven categories : higher service class (I), lower service class (II), higher white collar (IIIa), petite bourgeoisie (IVab), farmers (IVc), skilled workers (V+VI), and lower white collar and semi-/unskilled workers (IIIb+VIIab). We also used a collapsed version of this class schema into three categories to distinguish the upper class (I+II), the intermediate class (IIIa, IVabc), and the working class (V+VI, IIIb+VIIab).

Educational attainment is coded into seven categories, which finely distinguish differences in higher education : less than baccalauréat, baccalauréat, lower tertiary vocational (2 years of study after baccalauréat), lower tertiary general (2 years of study after baccalauréat), mid-tertiary (3 to 4 years of study after baccalauréat), upper tertiary (5 years or more of study after baccalauréat), and grandes écoles.

Log-linear models

In addition to descriptive statistics, we apply log-linear models to assess whether the changes observed in French society are driven solely by structural changes. Through the odds ratio statistic, log-linear models¹⁰ allow capturing the association between two or more variables, net of their structural distribution. Applied to the analysis of intergenerational social mobility, "[this method] tells us something about the advantages and disadvantages associated with being born into one class rather than another" (Breen 2004 :20). In this article, our main concern is to adjust two types of models to the data, namely the constant association model, which assumes for instance that the association between social origin and educational attainment has remained stable over time, and the uniform difference model (Unidiff, see : Erikson and Goldthorpe 1992 ; Xie 1992), which posits that this same association varies log-multiplicatively according to a third variable, such as birth cohort. This model shows whether educational inequality changed across cohorts. Moreover, to thoroughly assess the significance of a given Unidiff trend, we furthermore fitted some Unidiff models where we imposed equality constraints on some Unidiff parameters. Because of the large sample size of the data, we assess model fit with the BIC statistic rather than with conventional statistical testing. However, it must be underlined that "using BIC generally leads to a preference for simple models that reflect the broad contours, rather than the details, of the social fluidity regime" (Breen, 2004 :27).

Analysis

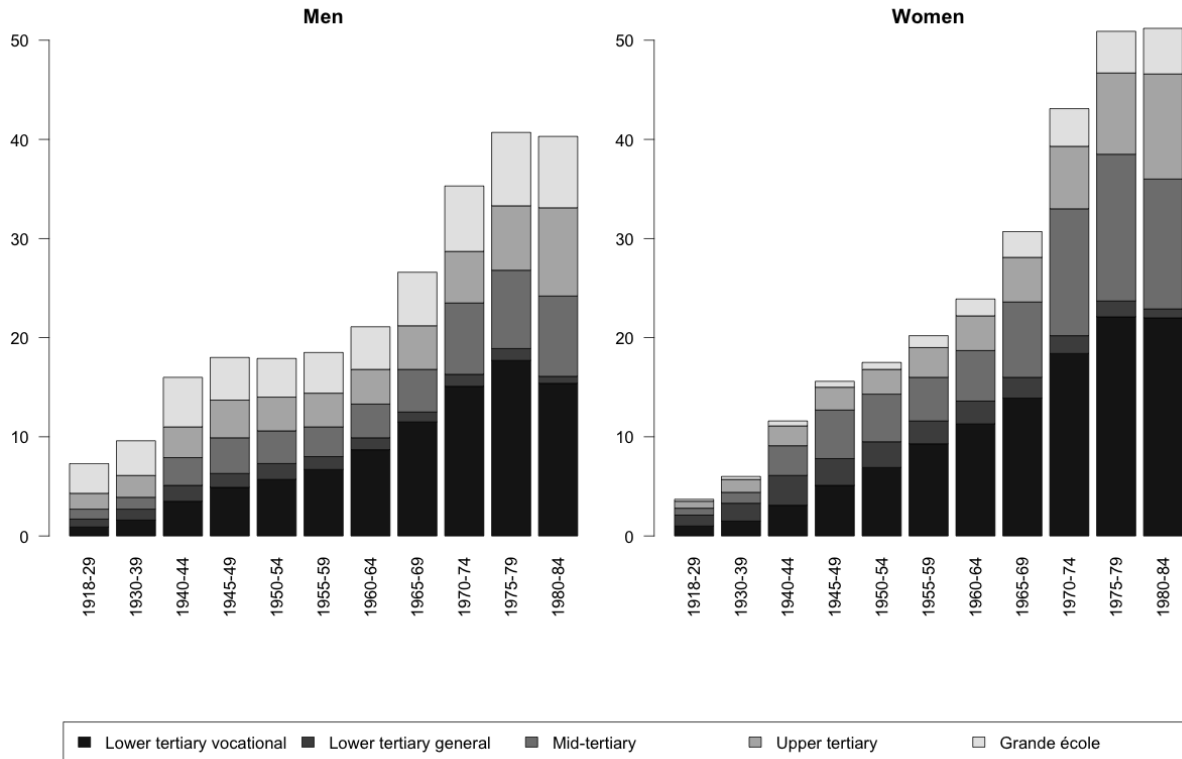
We first outline how access to higher education changed across cohorts, then we assess through log-linear models whether observed changes remain significant net of structural changes.

Descriptive changes in the expansion of higher education across cohorts

Over less than a century, access to higher education in France has greatly opened. While only 7% of men and 4% of women born between 1918 and 1929 reached higher education, for cohorts born between 1980 and 1984 these shares have increased to 40% and 51%, respectively (see Figure 2). These shares underline the existence of a reversed gender gap in access to higher education, a trend widely documented for many Western countries (DiPrete and Buchmann 2013). All educational levels have seen their share increasing, with the exception of the lower tertiary general level, which has never represented more than 3% and has fallen below 1% in the 1980-84 cohort. Almost half of the educational expansion of higher education has been driven by lower tertiary vocational degrees. More advanced higher education levels have also contributed to this trend, notably through mid-tertiary university degrees. The share of upper tertiary degree holders has also increased, particularly for people born since 1975. Access to the grandes écoles has also risen from 3% to 7% for men, and from 0.2% to almost 5% for women across cohorts. Thus, at this level no reversed gender gap is uncovered.

To analyse the evolution of inequality based on social background, we calculated in Table 1 the odds ratios of reaching each higher education level for the upper-class compared to the working-class and intermediate-class backgrounds. We observe that across cohorts the gap between social backgrounds decreased within each higher education level. While in the 1918-29 cohort, someone from the upper class was 17 times for men and 21 times for women more likely to graduate from higher education than someone from the working class, in the 1980-84 cohort this upper-class advantage had dropped to less than 6 times more likely for both men and women. In particular, at the level of lower tertiary vocational education, social background inequality almost disappeared : upper-class men only have a 1.3 times larger chance than working-class men to graduate from this educational level. However, within other educational levels, there still remains important social background inequality. People from upper-class backgrounds are in the 1980-84 cohort about twice as likely to graduate from mid-tertiary education, upper tertiary education or a grande école than people from intermediate class backgrounds. This gap is bigger between the upper class and the working class : a person from the upper class is 5 times more likely to graduate from upper tertiary education or a grande école than a person from the working class. Thus, while there has been an overall improvement

FIGURE 2: Trends in educational expansion across cohorts for men and women



in terms of access to higher education in relation to social background in France, some inequality persists. However, in relative terms inequality in access to higher education did decrease across cohorts overall in France.

Relative trends in the intergenerational transmission of advantages across cohorts

To estimate whether the intergenerational transmission of advantages changes across cohorts net of structural changes, we look at the statistical association between social origin, educational attainment and social class destination and their variation by cohort. We first test whether there has been any change in the association between social background and educational attainment to assess whether we observe a decrease in educational inequality in France. We use different combinations of the educational variable to see whether educational inequality has evolved at a different pace across cohorts. First, we model this association using the full detail of our educational variable; second, we

look at this association between all graduates of higher education versus all others; third, between graduates of at least mid-tertiary education versus all others; fourth, for those who graduated from upper tertiary education versus all others; and fifth, for those who graduated from a grande école versus all others. Log-linear models are reported in Table A2 in the Appendix. We reported in Figure 3 the corresponding Unidiff parameters for each combination of the educational variable.

For each set of models fitted, the BIC statistic indicates that the Unidiff model should be preferred over the constant association model. This implies that there has been some change across cohorts in the association between social background and educational attainment. Unidiff parameters indicate that this association has decreased quite linearly across cohorts for men and women. This trend has been more pronounced for women than for men. Unidiff parameters show that inequality of educational

TABLE 1: Odds ratios of reaching higher education between people of upper-class and working-class origins and between upper-class and intermediate origins

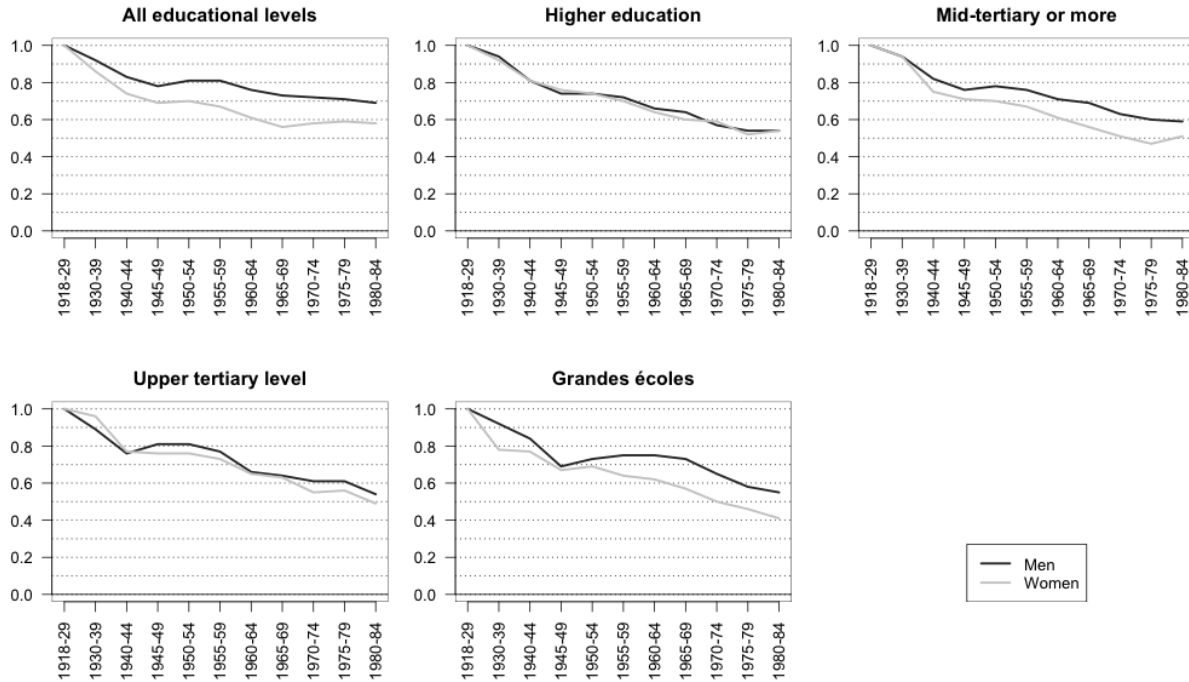
	1918	1930	1940	1945	1950	1955	1960	1965	1970	1975	1980
	-	-	-	-	-	-	-	-	-	-	-
	1929	1939	1944	1949	1954	1959	1964	1969	1974	1979	1984
Odds ratio : upper class origin versus working class origin											
Higher education (all levels together)											
Men	17.2	13.8	10.1	8.8	8.8	8.4	7.1	6.6	5.5	5.0	5.3
Women	21.5	15.2	10.5	9.6	9.2	7.9	6.8	5.9	5.9	4.8	5.3
Lower tertiary vocational											
Men	7.2	5.1	3.4	2.9	2.9	2.9	2.6	2.2	1.6	1.3	1.3
Women	19.7	10.8	7.6	4.6	4.0	3.2	2.8	2.0	1.6	1.2	1.1
Lower tertiary general											
Men	6.4	4.7	2.4	2.3	3.3	4.0	3.7	3.2	2.5	2.1	1.6
Women	5.8	4.6	3.5	3.1	3.1	3.5	3.7	2.8	1.9	0.9	0.5*
Mid-tertiary											
Men	12.3	9.3	5.3	5.2	5.9	5.0	4.9	3.6	3.0	3.0	2.9
Women	50.4	22.0	9.8	8.2	7.9	5.9	4.5	3.5	2.9	2.1	2.9
Upper tertiary											
Men	18.2	14.0	10.2	10.6	11.5	9.5	7.2	6.3	6.1	5.8	5.8
Women	48.2	30.5	11.2	12.7	12.0	11.7	8.6	8.2	6.1	6.4	5.2
Grandes écoles											
Men	14.1	11.7	10.5	7.8	7.8	8.4	8.6	7.9	6.4	4.9	4.8
Women	48.2*	16.2	22.5	12.8	14.4	11.5	10.2	7.8	6.9	5.7	5.5
Odds ratio : upper class origin versus intermediate class origin											
Higher education (all levels together)											
Men	8.9	8.4	5.6	5.3	5.0	4.5	3.9	3.7	3.2	2.7	2.7
Women	7.9	7.1	5.7	4.9	4.4	4.1	3.5	3.1	3.2	2.9	2.5
Lower tertiary vocational											
Men	4.5	4.0	2.4	2.2	2.0	1.8	1.6	1.3	1.1	1.0	0.8
Women	6.5	5.8	4.2	2.8	2.1	1.9	1.7	1.3	1.1	0.9	0.9
Lower tertiary general											
Men	3.2	3.3	1.7	2.0	2.4	2.4	3.0	2.5	1.7	1.6	2.8*
Women	3.6	2.7	2.4	1.9	1.9	2.1	2.1	1.8	1.9	1.0	0.8*
Mid-tertiary											
Men	6.1	5.0	3.6	3.2	3.4	3.0	2.8	3.0	2.4	1.8	2.6
Women	8.4	8.2	5.0	4.3	4.0	3.3	2.7	2.1	1.8	1.6	1.5
Upper tertiary											
Men	9.9	7.4	4.8	5.6	5.3	5.4	3.8	3.3	3.3	3.1	2.3
Women	8.0	9.1	5.9	5.3	5.1	5.3	3.8	3.9	3.0	3.9	2.5
Grandes écoles											
Men	7.6	7.3	5.0	3.8	3.9	3.9	4.1	4.0	2.8	2.3	2.5
Women	18.3	8.1	4.5	5.1	4.1	4.6	4.7	3.2	2.8	2.0	2.0

Note : odds ratios with a * indicate that they were calculated with a sample size of less than 10 individuals in one group

opportunity globally decreased even within the highest educational levels (upper tertiary and grandes écoles). We can identify three phases in the opening process of the two highest educational levels of the French educational system : first an opening up to cohorts born in the 1940s, followed by a relative stability for subsequent cohorts; then finally, another opening trend for cohorts born from the 1960s and from the 1970s respectively at the upper tertiary level and among the grandes écoles.

We then analyse the three-way interaction between social origin (O), educational attainment (E) and social class destination (D) to assess whether the association between social origin and social class destination (henceforth OD association) weakens within higher educational levels (see models fitted in Table A3). As can be seen from Figure 4 (left panel), while the intergenerational transmission of advantages weakens linearly until mid-tertiary education, it then reinforces for holders of an upper tertiary degree and of a

FIGURE 3: Unidiff parameters for the association between social background and educational attainment across cohorts

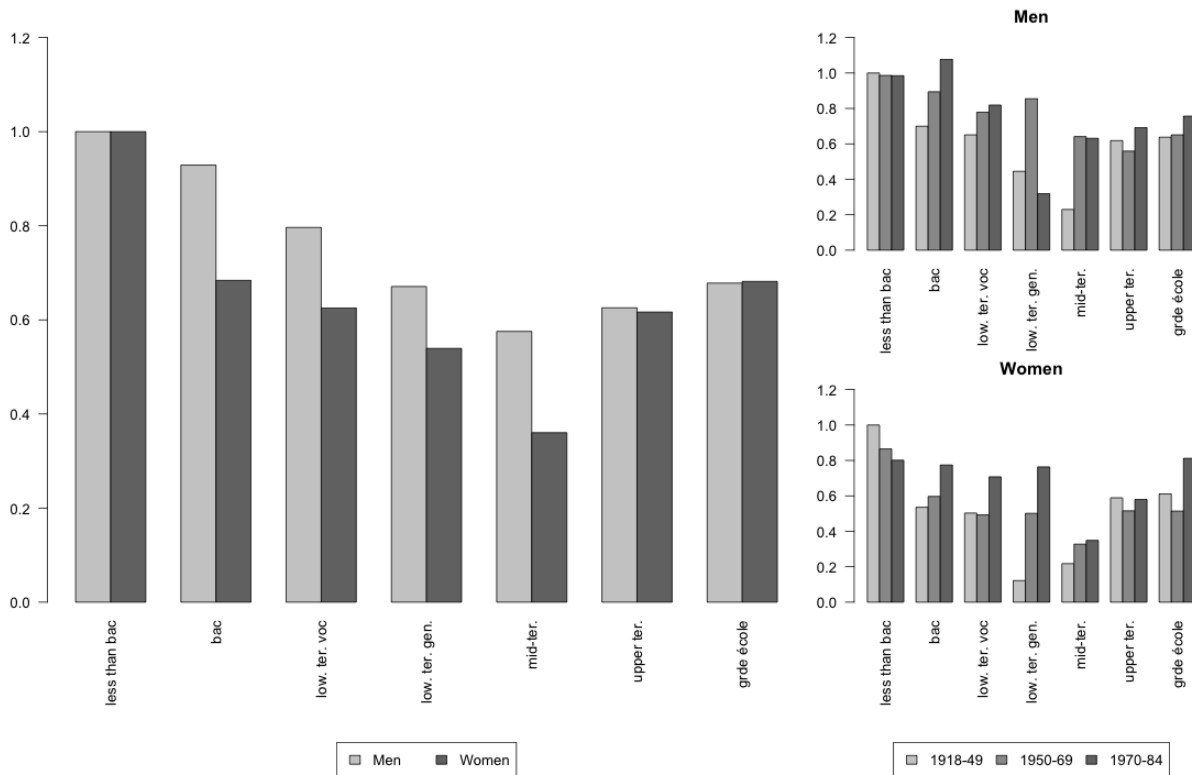


grande école degree – the "OED" interaction thus forms a U-shape trend similar to the one documented in the United States by Torche (2011, 2016). We subsequently tested whether we could improve the model by imposing equality constraints on some Unidiff parameters, in order to assess the degree of the robustness of the observed U-shape trend (see models M3a-d in Table A3). On the basis of the BIC statistic, models M3a and M3b, respectively for men and women, should be preferred. This indicates that the U-shape trend is not particularly sharp for men, while for women it is, although the Unidiff parameter for the grandes écoles is not markedly different from the one for upper tertiary education. While reasons for these gender differences remain unclear, it seems on the one hand that mid-tertiary education constitutes among women a particularly great equalizer. This could pertain to the fact that this female-dominated educational level (see Figure 2) tends to lead to female dominated occupations from the service sector (school teacher, nurse, civil servant, etc.) in which social background assets are less important. On the other hand, these findings tend to indicate the existence of a glass ceiling based on social background among women, insofar as highly educated women from an intermediate or working class background seem to face greater

obstacles in reaching top-level positions, compared to highly educated women from the upper class.

In a further set of models, we tested whether the U-shape trend increased or decreased across cohorts. For model simplification, the cohort variable was collapsed into three categories. The right panel of Figure 4 displays Unidiff parameters for the interaction between education and cohort (model M4). We observe some important variations in the OD association according to level of education across cohorts, although according to the BIC statistic we should reject this model in favour of the simpler model without Unidiff variation across cohorts (model M3). Therefore, to assess for each educational level the degree of robustness of variations across cohorts, we imposed equality constraints on Unidiff parameters for cohorts (models M5-11abcd). We observe a marked increase in the OD association across cohorts among some educational levels, especially for the baccalauréat (M6d for men and M6a for women), lower tertiary vocational education for women (M7a), and mid-tertiary education for men (M9b). However, we find no strong evidence that the U-shape trend increased across cohorts, although in the oldest cohort of men the U-shape pattern was particularly large.

FIGURE 4: Unidiff parameters for variation in the association between social origin and class destination according to educational attainment (left panel—model M3 from Table A3) and to cohort (right panel—model M4 from Table A3).



Last but not least, insofar as recent research reported that the OD association decreases with age (Vallet 2017), we ran a last set of models on the three-way OED mobility table across age¹¹ categories (see Table A4 in Appendix). While we find some significant effect of age, with a lower OD association among the two oldest age groups, controlling for a Unidiff trend on the OD association across age, does not alter the Unidiff trend across educational levels (see M5). Our findings are thus robust, even after controlling for age effect.

From this standpoint, despite a clear reduction of educational inequality, this analysis underlines that the intergenerational transmission of advantages does not systematically weaken with level of education.

Discussion and Conclusion

More than fifty years after the publication of *Les Héritiers* by Bourdieu and Passeron (1964) and since the second expansion of the educational system

initiated in the mid-1980s, access to education has been considerably democratized in France. We demonstrate that social background inequality in terms of access to higher education has clearly diminished. Through the analysis of eleven birth cohorts born between 1918 and 1984, we document that the disadvantage associated with being from the working class rather than from the upper class in graduating from higher education dropped across cohorts. This is a clear indication that higher education has opened up to individuals originating from the lowest social backgrounds. This decrease in educational inequality is also confirmed through the analysis of the data with log-linear models. It furthermore holds for the highest educational levels, such as upper tertiary education (5 years or more of study after baccalauréat) and the highly selective and elitist grandes écoles. This is an important finding given that it was previously reported that the democratization of the access to the grandes écoles had come to a halt (Albouy and Wanecq 2003). With more

recent data, we show that this democratization trend restarted from cohorts born in the 1970s.

This opening trend of the grandes écoles must however be understood in the light of the restructuration of the educational market since the 1980s in France. Indeed, over the past decades the definition of the grandes écoles has become to some extent more blurred, even within the official statistic (Bodin and Orange 2016), insofar as there has been a growth in the share of small higher education institutions, especially in the field of business and engineering, which have been recognized as grandes écoles because they select their student on the basis of a contest and/or previous grades. These institutions, which are less prestigious than the classical grandes écoles, may offer more opportunities to students from lower social background compared to the classical grandes écoles. The observed democratisation trend may thus be smaller when distinguishing more finely between the different types of grandes écoles as well as between different fields of study.

We also find that, unlike previous assertions (Hout 1988), the influence of social background on social destination does not linearly declines with educational level. As previously demonstrated by Torche (2011, 2016) in the US, we observe a U-shape pattern in the association between social origin and social destination across levels of education. While this U-shape pattern is not particularly sharp for men, these findings underlines at least that within the highest educational levels labour market allocation is not as meritocratic as could be expected. Furthermore, insofar as this U-shape trend is more pronounced among women, it seems that highly educated women from an intermediate or working class background face greater obstacles in reaching top-level positions. In other words, our study suggests that among highly educated women in France there exists a glass ceiling based on class background.

Altogether, these findings should invite both scholars and policymakers who address the issue of the intergenerational transmission of advantages to pay more careful attention to how non-educational assets are used to maintain social class advantages, especially on the labour market (Jackson et al. 2005). While educational equalization constitutes one way to achieve equality of opportunity, what happens during the occupational trajectory largely remains a black box. The recent study from Rivera (2016) on elite recruitment clearly sets an example in this respect. Because, despite a clear equalisation trend in access to the highest educational levels in France, educational

merit remains better rewarded on the labour market among the better off.

Notes

1. This quote is from the translated version of their book in English by Richard Nice (on page 2), which was published in 1979 by the University of Chicago Press.
2. This is the end of a high school degree in France.
3. Social fluidity is the relative measure of intergenerational social mobility.
4. We only outline here the main features of the French educational system. For a more thorough introduction about the French educational system and its reforms across the 20th century, see Kieffer (2008).
5. For a more detailed introduction to the grandes écoles, see Van Zanten and Maxwell (2015).
6. A new survey was conducted in 2015, but the data was released after this analysis was performed.
7. This is the "3b" CASMIN category (see for instance Bouchet-Valat, Peugny, and Vallet 2016; and Vallet 2004), which aggregates university degrees of 3 to 4 years, university degrees of 5 or more years, and grandes écoles degrees.
8. We would like to thank the "Quetelet network" for providing us these data.
9. 30 years old on the one hand to reduce career mobility bias and 64 to reduce mortality bias based on social class.
10. Due to space limitations, we cannot present this modelling technique in detail. Those interested in this method can however read Breen (2004) as well as Falcon (2013 :121–31).
11. The age variable was grouped into three categories : 30-39 ; 40-49 ; 50-64.

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Appendix

Table A1 : Sample detail (cross tabulation of surveys and birth-cohorts)

Survey year	Birth-cohorts											Total (n)
	1918	1930	1940	1945	1950	1955	1960	1965	1970	1975	1980	
	1929	1939	1944	1949	1954	1959	1964	1969	1974	1979	1984	
1982	5879	5155	2319	3568	2185	-	-	-	-	-	-	19106
1983	5605	5299	2450	3600	2803	-	-	-	-	-	-	19757
1984	5096	5105	2260	3487	2722	662	-	-	-	-	-	19332
1985	4657	5234	2340	3401	2799	1358	-	-	-	-	-	19789
1986	4122	5243	2249	3214	2727	2007	-	-	-	-	-	19562
1987	3649	5217	2440	3447	2912	2865	-	-	-	-	-	20530
1988	2965	5204	2271	3560	2920	3612	-	-	-	-	-	20532
1989	2625	5144	2207	3355	2741	4095	-	-	-	-	-	20167
1990	1990	5072	2291	3237	2654	3874	671	-	-	-	-	19789
1991	1489	4985	2305	3314	2920	4324	1468	-	-	-	-	20805
1992	1118	5498	2374	3734	3113	4643	2282	-	-	-	-	22762
1993	543	5599	2635	3753	3184	4652	3262	-	-	-	-	23628
1994	-	5437	2434	3700	3117	4624	3902	-	-	-	-	23214
1995	-	4729	2359	3412	2919	4364	3923	790	-	-	-	22496
1996	-	4080	2424	3485	2941	4614	3978	1605	-	-	-	23127
1997	-	3376	2216	3411	2896	4378	3735	2128	-	-	-	22140
1998	-	3084	2264	3349	2914	4389	3693	2886	-	-	-	22579
1999	-	2420	2318	3408	2897	4329	3763	3727	-	-	-	22862
2000	-	1910	2304	3386	2943	4393	3645	3700	688	-	-	22969
2001	-	1366	2223	3179	2656	4206	3596	3661	1503	-	-	22390
2002	-	926	2210	3095	2586	4121	3470	3608	2145	-	-	22161
2003	-	413	1973	3041	2555	3751	3303	3274	2629	-	-	20939
2004	-	-	2057	3104	2538	3849	3440	3150	3209	-	-	21347
2005	-	-	1522	2899	2413	3711	3175	3057	3025	510	-	20312
2006	-	-	1243	2979	2394	3744	3151	3168	3024	953	-	20656
2007	-	-	830	2969	2510	3794	3290	3099	3014	1589	-	21095
2008	-	-	423	2974	2543	3673	3107	3061	2932	1986	-	20699
2009	-	-	-	4348	3575	5448	4755	4696	4393	3677	-	30892
2010	-	-	-	3508	3534	5278	4513	4394	4396	3587	771	29981
2011	-	-	-	2717	3693	5443	4763	4721	4575	3678	1536	31126
2012	-	-	-	1813	3469	5362	4518	4448	4416	3822	2222	30070
2013	-	-	-	842	3361	4913	4217	4260	4085	3325	2687	27690
2014	-	-	-	-	3700	5456	4648	4563	4436	3750	3554	30107
Total (n)	39738	90496	56941	103289	95834	125932	88268	67996	48470	26877	10770	754611
Age Mean	60.2	55.6	51.6	49.4	47.1	44.2	41.3	39	36.6	33.8	31.4	46.2

Table A2 : Log-linear models for the association between social origin and educational attainment

Model	Men				Women			
	DF	L2	DI	BIC	DF	L2	DI	BIC
All educational levels								
M1. Cond. Ind.	396	59229.8	13.2	54155.3	396	59682.5	13.0	54592.2
M2. Const. Ass.	360	2245.4	2.0	-2367.7	360	2705.5	2.2	-1922.1
M3. Unidiff	350	1953.0	1.9	-2535.0	350	1985.2	1.8	-2513.8
Higher education								
M1. Cond. Ind.	66	42100.7	10.6	41255.0	66	40338.1	10.1	39489.7
M2. Const. Ass.	60	1224.4	1.4	455.5	60	1213.4	1.5	442.2
M3. Unidiff	50	389.4	0.7	-251.3	50	475.0	0.8	-167.7
Mid-tertiary education or more								
M1. Cond. Ind.	66	36206.6	8.1	35360.9	66	29407.8	6.7	28559.4
M2. Const. Ass.	60	666.0	0.9	-102.9	60	1084.7	1.1	313.5
M3. Unidiff	50	162.1	0.4	-478.6	50	276.5	0.5	-366.2
Upper tertiary degree								
M1. Cond. Ind.	66	12880.3	2.9	12034.6	66	12585.3	2.7	11736.9
M2. Const. Ass.	60	336.1	0.4	-432.8	60	510.5	0.5	-260.8
M3. Unidiff	50	96.5	0.2	-544.3	50	194.9	0.3	-447.8
Grande école degree								
M1. Cond. Ind.	66	14376.6	3.4	13531.0	66	5409.0	1.2	4560.6
M2. Const. Ass.	60	398.7	0.5	-370.2	60	258.4	0.2	-512.8
M3. Unidiff	50	175.9	0.3	-464.8	50	126.0	0.1	-516.7

Note : Cond. Ind. = conditional independence model; Const. Ass. = constant association model; Unidiff = uniform difference model. Df = degree of freedom, L2 = deviance, DI = dissimilarity index, BIC = Bayesian information criterion.

Table A3 : Log linear models for the three-way interaction between social origin, educational attainment and social class destination across birth cohorts

Model	Men				Women			
	DF	L2	DI	BIC	DF	L2	DI	BIC
Table cohort —origin—education—destination (COED)								
M1. COE CED	756	56799.8	12.2	47241.1	756	21207.4	7.6	11742.5
M2. COE CED OD	720	2974.1	2.6	-6129.4	720	2632.5	2.6	-6381.7
Variation across educational levels in OD (β_{eOD})								
M3. COE CED β_{eOD}	714	2621.3	2.5	-6406.3	714	2160.6	2.3	-6778.6
M3a. M3 where $e5 = e6 = e7$	716	2626.9	2.5	-6426.1	716	2199.0	2.3	-6765.2
M3b. M3 where $e6 = e7$	715	2622.2	2.5	-6418.0	715	2161.5	2.3	-6790.2
M3c. M3 where $e5 = e6$	715	2622.1	2.5	-6418.2	715	2182.7	2.3	-6769.0
M3d. M3 where $e5 = e7$	715	2626.8	2.5	-6413.5	715	2188.1	2.3	-6763.6
Variation across educational levels and cohort in OD (β_{ecOD})								
M4. COE CED β_{ecOD}	700	2462.9	2.5	-6387.7	700	2012.3	2.2	-6751.6
Constraint on cohort for education “less than baccalauréat”								
M5a. M3 + $c1 = c2$	713	2621.3	2.5	-6393.8	713	2150.5	2.3	-6776.1
M5b. M3 + $c2 = c3$	713	2619.8	2.5	-6395.2	713	2083.7	2.2	-6842.9
M5c. M3 + $c1 = c3$	713	2620.3	2.5	-6394.7	713	2105.7	2.3	-6820.9
M5d. M3 + no cohort constraint	712	2619.7	2.5	-6382.6	712	2080.9	2.2	-6833.1
Constraint on cohort for education “baccalauréat”								
M6a. M3 + $c1 = c2$	713	2548.1	2.5	-6466.9	713	2137.9	2.3	-6788.7
M6b. M3 + $c2 = c3$	713	2560.1	2.5	-6454.9	713	2155.4	2.3	-6771.2
M6c. M3 + $c1 = c3$	713	2615.6	2.5	-6399.4	713	2155.2	2.3	-6771.4
M6d. M3 + no cohort constraint	712	2513.5	2.5	-6488.8	712	2136.2	2.3	-6778.0
Constraint on cohort for education “lower tertiary vocational”								
M7a. M3 + $c1 = c2$	713	2618.1	2.5	-6396.9	713	2138.4	2.3	-6788.2
M7b. M3 + $c2 = c3$	713	2614.8	2.5	-6400.2	713	2159.7	2.3	-6766.9
M7c. M3 + $c1 = c3$	713	2621.1	2.5	-6393.9	713	2145.2	2.3	-6781.4
M7d. M3 + no cohort constraint	712	2613.3	2.5	-6389.1	712	2138.4	2.3	-6775.7
Constraint on cohort for education “lower tertiary general”								
M8a. M3 + $c1 = c2$	713	2613.6	2.5	-6401.4	713	2154.8	2.3	-6771.8
M8b. M3 + $c2 = c3$	713	2617.3	2.5	-6397.7	713	2151.8	2.3	-6774.8
M8c. M3 + $c1 = c3$	713	2606.2	2.5	-6408.8	713	2160.5	2.3	-6766.2
M8d. M3 + no cohort constraint	712	2605.7	2.5	-6396.7	712	2148.5	2.3	-6765.6
Constraint on cohort for education “mdi-tertiary”								
M9a. M3 + $c1 = c2$	713	2619.3	2.5	-6395.7	713	2160.1	2.3	-6766.5
M9b. M3 + $c2 = c3$	713	2600.2	2.5	-6414.7	713	2158.7	2.3	-6768.0
M9c. M3 + $c1 = c3$	713	2616.3	2.5	-6398.7	713	2160.5	2.3	-6766.1
M9d. M3 + no cohort constraint	712	2600.2	2.5	-6402.1	712	2158.5	2.3	-6755.5
Constraint on cohort for education “upper tertiary”								
M10a. M3 + $c1 = c2$	713	2619.8	2.5	-6395.2	713	2160.2	2.3	-6766.4
M10b. M3 + $c2 = c3$	713	2621.3	2.5	-6393.7	713	2160.4	2.3	-6766.2
M10c. M3 + $c1 = c3$	713	2619.9	2.5	-6395.1	713	2159.9	2.3	-6766.7
M10d. M3 + no cohort constraint	712	2619.6	2.5	-6382.8	712	2159.9	2.3	-6754.2
Constraint on cohort for education “grandes écoles”								
M11a. M3 + $c1 = c2$	713	2619.0	2.5	-6396.0	713	2152.7	2.3	-6773.9
M11b. M3 + $c2 = c3$	713	2620.9	2.5	-6394.1	713	2160.6	2.3	-6766.0
M11c. M3 + $c1 = c3$	713	2621.0	2.5	-6394.0	713	2153.6	2.3	-6773.1
M11d. M3 + no cohort constraint	712	2619.0	2.5	-6383.4	712	2152.4	2.3	-6761.7

Note : Df = degree of freedom, L2 = deviance, DI = dissimilarity index, BIC = Bayesian information criterion., $e5$ = mid-tertiary education, $e6$ = upper tertiary education, $e7$ = grande école, $c1$ = ,1918-49 $c2$ = 1950-69, $c3$ = 1970-84.

Table A4 : Log linear models for the three-way association between social origin, educational attainment and social class destination across age categories.

Model	Men				Women			
	DF	L2	DI	BIC	DF	L2	DI	BIC
Table age —origin—education—destination (AOED)								
M1. AOE AED	756	57643.7	12.4	48085.0	756	22239.9	7.9	12775.0
M2. AOE AED OD	720	2791.5	2.5	-6312.0	720	2503.6	2.5	-6510.7
Variation across educational levels in OD (β_{eOD})								
M3. AOE AED β_{eOD}	714	2615.7	2.4	-6412.0	714	2269.1	2.4	-6670.0
Variation across age categories in OD (β_{aOD})								
M4. AOE AED β_{aOD}	718	2501.3	2.4	-6576.9	718	2259.8	2.4	-6729.4
Variation across educational levels and age categories in OD ($\beta_{e\beta aOD}$)								
M5. AOE AED $\beta_{e\beta aOD}$	712	2365.2	2.3	-6637.1	712	1976.5	2.2	-6937.6
Interaction between educational levels and age categories in OD (β_{eaOD})								
M6. AOE AED β_{eaOD}	700	2309.8	2.3	-6540.9	700	1900.2	2.1	-6863.6
Unidiff parameters :		M5				M5		
Education (β_{eOD})		men women		Age (β_{aOD})		men women		
Less than baccalauréat		1 1		30-39		1 1		
Baccalauréat		0.91 0.69		40-49		0.94 0.93		
Lower tertiary vocational		0.78 0.61		50-64		0.92 0.93		
Lower tertiary general		0.63 0.52						
Mid-tertiary		0.58 0.38						
Upper tertiary		0.60 0.59						
Grandes écoles		0.68 0.66						