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INTERGENERATIONAL WEALTH MOBILITY IN FRANCE, 19TH AND 20TH CENTURY

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This paper examines intergenerational wealth mobility between fathers and children in France between 1848 and 1960. Considering wealth mobility in the long run requires taking into account not only positional mobility (that is, how families move within a given distribution of wealth), but also structural mobility induced by changes in the distribution of wealth. Such changes are related to two structural phenomena: in the nineteenth century, the rising number of individuals leaving no estate at death and, after World War I, the decline in the number of the very rich who could live off their wealth. The paper studies the movements between these groups and estimates the intergenerational elasticity of wealth, taking into account the persistence at the bottom and at the top.

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1. INTRODUCTION

The study of mobility complements the characterization of a society obtained from examining inequality. Inequality represents a snapshot of the distribution of income or wealth within a society at one point in time while mobility

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concentrates on following movements of individuals or families over time across the distribution (Jäntti and Jenkins, 2015). In common wisdom, a high degree of (upward) mobility is perceived as dampening the impact of rising inequality as people hope to climb the ladder, even if the rungs are farther apart. However, against this widely shared hope, Corak (2013) shows that countries with more inequality also experience less earnings mobility across generations, a negative correlation that has been labeled "the Great Gatsby curve" by various authors. Chetty *et al*. (2014) find that income inequality is driven by the extreme upper tail (the top one percent) while income mobility is sensitive to what happens to the middle class. We follow up on this idea of differential mobility across the distribution but instead of analyzing income we focus on wealth. People save and transmit their wealth in very different ways whether they stand at the top or at the bottom of the wealth distribution (Pfeffer and Killewald, 2015). As a consequence, intergenerational mobility is unlikely to be homogeneous across the wealth distribution.

An increasing number of papers look at mobility between generations, and they do so by comparing children to their fathers (Solon, 1992; Corak and Heisz, 1999; Aaronson and Mazumder, 2008; Black and Devereux, 2011). Most of these papers use contemporaneous data from Europe and North America and focus on income. Some studies have a longer time span and expand over three generations (Solon, 2014; Pfeffer and Killeward, 2015) or more (Clark and Cummins, 2015; Adermon *et al*., 2016). A few papers go back to the 19th century (Long and Ferrie, 2013 on occupational mobility in Britain and in the U.S.; Modalsli, 2015 on Norway) and find that mobility is not constant over time, its evolution being related to structural change in the pattern of jobs (out of farming), the spread of public education and migration. Olivetti and Paserman (2015) also relate the evolution of earnings mobility in the U.S. between 1850 and 1940 to fertility transition, migration, and industrialization.

Family transmission of social status encompasses many dimensions which may be summarized by the broad distinction between nature (the genetic inheritance of skills and preferences) and nurture (parents' investment in human and social capital). Recent papers tend to show that context has a significant role, with wealth being a key component (Bjorklund *et al*., 2012; Black *et al*., 2015, both on Sweden; or Fagerang *et al*., 2015 comparing adopted and biological siblings). Without going in this debate which is beyond the scope of this paper, we look at wealth mobility. Examining mobility based on wealth data is a useful complement to results obtained from income data for two reasons. First, wealth is considered to be a more permanent measure of economic status than yearly income; second, and foremost, inheritance might directly explain the persistence of inequality (Adermon *et al*., 2015).

In this paper, we study the intergenerational mobility of wealth in France between 1848 and 1960. We consider father and children pairs taken from a large dataset of wealth reported at death, which is nationally representative. The children are of both sexes, allowing us to estimate how the average status of a generation correlates with that of their father. Wealth is observed for both generations and we have reconstructed family linkages based on marriage and bequest records. Thus we do not have to rely on pseudo-panel estimation in order to

reconstruct parental outcomes based on names (Olivetti and Paserman, 2015) or locations (Aaronson and Mazumder, 2008)

Our main contribution comes from the length of our timeframe. For over more than a century, society has evolved: social groups have gained or lost importance, new opportunities have emerged and activities have shifted from one place to another. Hence, individuals have not only moved within a given distribution, but the shape of the overall distribution has also changed. In such a context, it is not sufficient to simply transpose the previous literature, which was devised mostly for shorter periods and for income. We argue that the long-run changes in the distribution of wealth across generations must be taken into account when studying wealth mobility. In particular, two factors shape the change in the distribution of wealth in France since the mid-19th century and, as a result, impact mobility across generations: the rise of the number of wage earners (as they are able to earn a living without owning a professional asset) and the decline of the number of the very rich who can afford living off their capital without working.

Jäntti and Jenkins (2015), in their survey for the *Handbook of Income Distribution*, recall that there are many concepts of mobility. Among them, three are of particular interest for this paper: (i) positional change (or "exchange mobility") which refers to "the exchange of individuals between positions while abstracting from any change in the concentration of people in a particular slot in each year"—that is, the marginal distribution (p. 811); (ii) "structural mobility that integrates the change in the marginal distribution"; and (iii) "individual income growth" which "refers to the aggregate measure of the changes in income experienced by each individual between two points in time" (p. 813).

Positional mobility can be represented by changes in ranks. According to positional mobility, if one person's changes position, so must another one: "it is not possible for everyone to be upwardly mobile" (p. 812). By contrast, according to the "individual income growth" definition of mobility, it is possible for everyone to be upwardly or downwardly mobile (and this direction matters, as one may not want to treat in the same way income gains and losses). Indeed, "individual income growth" is based on gross (total) mobility and encompasses both changes in the positions and changes in the marginal distributions. It can be represented by a mobility matrix with group boundaries defined in real income terms. Jäntti and Jenkins (2015) also argue that for intergenerational mobility, economists have much to learn from sociologists and that studying "class mobility" between discrete and unordered social status "may be the only option" (p. 921).

Our concept of mobility is close to the "individual income growth" approach, transposed to wealth. We examine both positional and structural changes and consider the directions of the movement. To do so, we use a mobility matrix based on discrete groups, using wealth in real terms. We argue that these groups proxy social classes with different behaviors concerning wealth accumulation and transmission. We divide the population in three groups: those who leave no asset at death (the poor), a middle class endowed with "popular wealth"—to borrow from Atkinson (2008)—and the very rich (the top group). The latter are defined as individuals whose wealth is sufficient to yield an interest income equal to the current GDP per capita. The very rich are thus able to live off their assets.

We examine changes between these three groups. We complement the matrix approach by estimating the correlation between fathers and children wealth. We also depart from the standard estimation of an intergenerational elasticity as we control for the father's class.

We show that the degree of mobility varies over time and at different points in the wealth distribution. Wealth status is more persistent at the bottom and at the top of the distribution. But movements between groups are also important: downward mobility from the middle class to the bottom group up to the first world war; and the rise of the middle class after 1914, fueled both by upward mobility from the bottom and downward move from the top. The intergenerational wealth elasticity is around 0.4 and almost doubles for fathers of the top group. The Intergenerational Elasticity (IGE, a measure of the relation between the log of child's income and the log of father's income) evolves over time: it is at 0.55 in 1848–1869 and decreases afterwards (meaning higher mobility) in 1870–1894 before reaching 0.45 in 1895–1913, a period when inequality, driven by the top wealth owners, is at its highest. It seems that in the 19th century, inequality responds to what happens at the top while mobility is driven by the fate of the middle class and the rising share of the bottom class. After World War I, the pattern becomes more familiar: there is higher upward mobility for children of the middle class along with a decline in inequality. In addition, mobility is heterogeneous depending on individual and familial characteristics such as marital status, the timing of the parent's death, and on geographical factors such as migration out of rural areas.

The remainder of the paper is organized as follows. Section 2 describes the data and the context of wealth inequality in France. Section 3 presents the concept of mobility we use, the three wealth groups and the mobility matrices between these groups of wealth across generations. Section 4 discusses the estimates of the intergenerational wealth elasticity, modified in order to account for the three groups. Section 5 explores individual characteristics correlated with mobility and the direction of movements between groups. Section 6 concludes.

2. Data and Context

2.1. *Data*

We use the TRA database which is an extensive, long-term survey of the French population (Dupâquier and Kessler, 1992; Bourdieu *et al*., 2004; Bourdieu *et al*., 2013). This survey collects data in various archives for all individuals whose names start with the letters "TRA". It documents their situation at death, including age, marital status, profession, place of residence and estate (Bourdieu *et al*., 2003). Two features of the TRA survey are of particular importance for studying intergenerational mobility: first, it enables reconstruction of genealogies; second, by following individuals all over the country, the survey overcomes the selection issue that would arise if one were limited to families who remained in the same place.

The survey is representative of the French population with respect to demographic characteristics, age at death, gender composition, rural/urban

composition (Bourdieu *et al*., 2014). It can be considered as a random draw of 1/1200 of the French population of deceased at the time before 1940 and 1/2000 between 1940 and 1960. The survey is also representative of the estates left by the deceased in France, as reported by the Fiscal authority (INSEE, 1966; Piketty, 2001, annex J), once the top one percent is taken out. Indeed, the TRA database is akin to a household survey; as such, it does not over-represent the richest. Hence, the TRA database is representative of the bottom 99 percent of the French population, which owns around 70 percent of total wealth (see Figure A.2. in appendix).

In this paper, we take adult children (boys and girls) whose father's situation is also fully documented in the database (see Appendix A). This step adds a selection which is partly demographic and partly due to our data collection. The selection is partly demographic, as the sample requires married fathers and children living into adulthood, thus putting aside unmarried men or children that were not legally recognized by their father. The selection is also due to the process of data collection itself, as it is easier to find genealogical linkages of wealthy families. Our final sample encompasses 7,782 father-child pairs.[1]

Among them, there are 4,372 different fathers (some fathers have only one child in the sample, some have many). We keep all children of the same father as our purpose is larger than inheritance but rather mobility between father's and children' social status; in that respect, all siblings have benefitted in the same way from their father's social status.[2] We do not either restrict the sample to children who have outlived their fathers. This means that some individuals have not inherited from their father at the time of their deaths. We discuss this below, in Section 5.1.

The variable used as an indicator of wealth is individual gross assets at death, deflated by a national cost of living index. Assets include real estate, movables (clothes, linen, furniture, agricultural tools and stocks), and financial assets (private loans, bank credit, public and private bonds, equity, enterprise shares, savings in *Caisse d'épargne)*. The value of assets is based on information gathered by the Fiscal Department (*l'Enregistrement*) which—in order to levy universal inheritance taxes—carries out meticulous inquiries into the value and composition of the deceased's assets. All assets were valued with equal attention by fiscal officials (Daumard, 1973). In particular, financial assets—which were particularly important in the wealthiest estates—were well observed and valued by the fiscal apparatus. Attempted fraud remained limited. On the one hand, rates were low for the wide majority of the population, who thus had very little incentive to cheat: they were only 1.25 percent on average (for direct-line succession at least) during the 19th century and, except for the very rich, they remained modest at around five percent when the tax became progressive after 1901.[3] Moreover, the tax brought

[1]Men who died as soldiers during World War I (proxied by the fact that they were between 20 and 40 years old) are dropped from the sample as they are likely to die young and without wealth.

[2]Table A.2 (panel 6) in appendix shows, as a robustness check, an estimation keeping only one child per family.

[3]World War I ushered in a very serious effort to tilt the burden to the rich. By the 1930s the 1 percent was paying an estate tax rate twice as high as the middle class. Though modest, the progressivity was indeed real, with the P70–90 group paying about 10 percent while the one percent paid above 20 percent on average in inheritance taxes.

an important benefit that offsets its cost: filing a return was an easy way to register changes in property titles.

The source indicates explicitly if there is no estate at all. The fiscal authority reported even basic furniture and clothes and checked thoroughly if there was suspicion of assets, whether at home or in some other place. The fact that individuals are observed without wealth does not reflect measurement errors or tax fraud (Bourdieu *et al.*, 2003). This corresponds to true behavior, as people were earning some income without the possibility—or the willingness—to save (Bourdieu *et al.*, 2011).[4]

2.2. *The French Context*

France was mostly rural at the beginning of the 19th century and has gradually become more urbanized and industrialized. As a consequence, the share of wage earners in the total population increased. Retirement schemes appeared first in civil service and in a few industries such as mining and railroad companies and began to be extended after 1945. Economic growth boosted private wealth but this increase resulted in higher levels of inequality. In addition, industrialization and the stagnation of wages led to poverty traps. Historians look at mobility in France mostly through the prism of a "metamorphosis of the social structure" (Marchand and Thélot, 1997). The French Revolution broke down the *société d'ordres* (made up of nobility, clergy, and the *Tiers-Etat)* and it was hoped that the society would become more fluid, with high mobility and the elimination of privileges.

After several decades of slow growth in the early 19th century and a deep crisis on the eve of the Second Republic (1848), industrialization accelerated under the Second Empire (1852–1870) and the stock market boomed. This sequence of prosperity was interrupted by war, the loss of two rich regions of Eastern France, and the Commune in Paris. A long deceleration followed (1870–1895) in all sectors: agriculture suffered most while there was also a financial crisis and long lasting unemployment in the industrial sector. Growth resumed at the turn of the twentieth century (the "Belle Époque"). France then entered a period of turmoil—mixing short cycles of growth and crisis—as did most of Europe and large swaths of the world. Robust growth took place in the 1950s fueled by reconstruction. In the following, the century and a half under survey will be divided into five sub-periods according to the year of the child's death: 1848–1869 (industrialization during the Second Empire); 1870–1895 (deceleration); 1895–1913 ("Belle Époque"); 1919–1939 (interwar) and 1940–1960 (post-war reconstruction). Using the child's year of death means that the relationship between economic cycles and wealth is not straightforward, as a person might have worked and accumulated capital during a boom and dissaved later during a recession. Our choice highlights

[4]The main source (*Table de Successions et d'Absences)* reports exhaustively if the estate had a zero or a positive value. However, the detailed assets are reported after 1870 in a separate register (*Registres de Mutations par Décès*). We have collected quite a few of these Registers but not all. Hence, the positive wealth are weighted so as to represent the estates that are known to be positive but for which we lack the detail (stratified by year and type of locality of death—rural or urban). A robustness check in Table A2 presents the estimation without the weights and the results are similar to the weighted results.

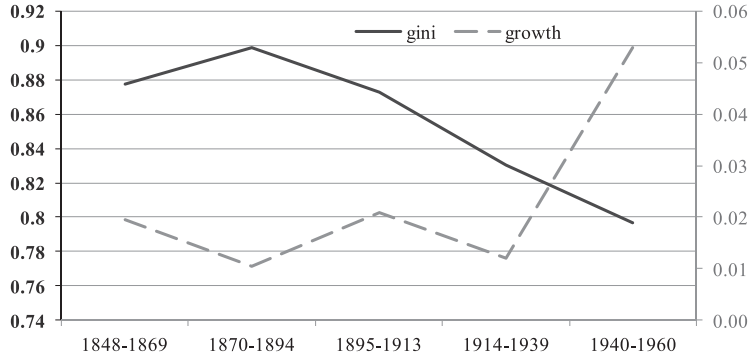

Figure 1. Wealth inequality and growth

Source: TRA-database, deceased over 20 years old for Gini index. For the GDP: Bourguignon and Lévy-Leboyer (1985), Toutain (1987), Piketty (2001), annexe G. For total population: Meslé and Vallin (2001).

Note: average growth rate of real GDP per capita in 1914 francs (right axis). Gini index of wealth, computed on all individuals (including those with 0 wealth (left axis))

the need to finance the retirement period and the importance of assets prices (in particular, land prices have decreased in the 1880s and again during the interwar).

Wealth inequality was very high in France between 1848 and 1960 because a large share of the population owned no assets at all. The share of poor increased from 25 percent in 1840 to above 30 percent in the early 20th century. The Gini index was above 0.85 and declined after the wars to 0.8 (Figure 1).

Table 1 shows the amounts of wealth in constant francs, at various points in the distribution (including individuals without wealth). Mean wealth varies between 8,500 and 10,000 Francs depending on the period. The median is at one-eighth of the mean. Wealth levels reached a maximum before 1914. In the inter-war, mean wealth was divided by half, mostly because of a decrease at the very top of the distribution. Median wealth receded as well but only by 20 percent. After World War II, wealth increased again, the rise being larger at the top decile (40 percent) that at the median (10 percent).

TABLE 1

Wealth at Different Parts of the Distribution, by Periods

	P50	P75	P90	P95	Mean	Std-error	Threshold to top
1848–1869	1,042	3,785	10,022	20,117	8,375	54,366	12,611
1870–1894	1,063	4,286	13,667	27,275	8,500	57,538	15,171
1895–1913	1,175	5,228	15,979	35,681	10,737	64,123	21,054
1914–1939	957	4,017	10,786	21,701	5,733	27,772	28,376
1940–1960	1,041	5,159	15,127	28,501	5,825	14,229	34,557

Source: TRA-database, father and child pairs, over 20 years old; including those leaving zero wealth.

Note: wealth in 1912 francs (see text). Periods are defined by child's year of death. Threshold to the top is the minimum wealth to enter in the top group (those whose wealth would generate the average GDP per capita assuming a five percent interest rate).

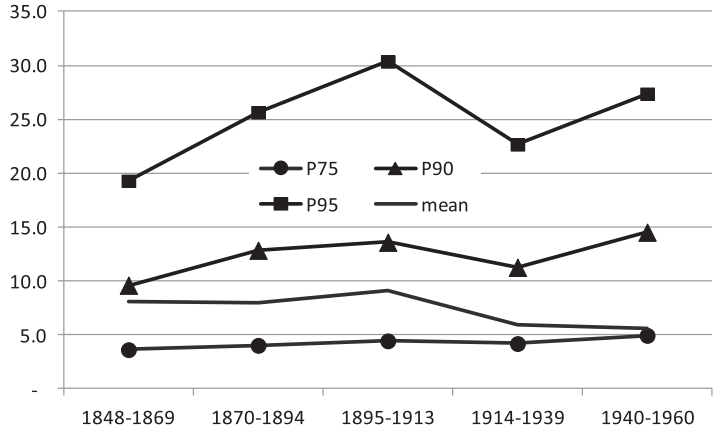

Figure 2. Wealth ratios to median wealth

Source: Father-adult child pairs from the TRA database.
Note: Wealth at a given percentile, as a ratio to median wealth (P50).

Figure 2 shows another indicator of inequality: the ratio of wealth, at various points of the distribution, over the median wealth. Between 1848 and 1960, wealth did not evolve in the same way, depending on one's place in the distribution Up to 1913, the ratios to the median increased, and more so for the top five percent of the distribution (P95).[5] During the interwar period, the ratios decreased at all points in the distribution., The P90/P50 wealth gap, which receded during the interwar period, widened again in 1940–1960 to a ratio similar to the one observed before World War I.

3. Mobility Between Groups

3.1. *The Three Wealth Groups*

The large and varying share of poor has many consequences on the way mobility can be measured. First, a transition matrix that would compare the wealth quartile of the father to the quartile of the child would be contaminated by structural change, as the first quartile (from P1 to P25) and, depending on the period, the second one (from P26 to P50) would be made mostly of poor. Second, using ranks as an indicator of mobility is difficult because this would require to rank also the poor and this arbitrary decision would concern up to one-third of the population.

We choose to focus on three wealth groups based on exogenous (that is, not distribution-dependent) criteria. The first group is made up of those without any asset, the poor. Another group is made up of the people at the top of the distribution. In between comes the "middle class".

[5]The phenomenon was even starker for the top 1percent or the top 0.1percent (Piketty *et al*., 2006; Piketty, 2010). As the TRA survey does not over-sample the richest, it catches very few individuals from the top percentile of the national distribution of wealth.

We define the top group, the very rich, as individuals whose wealth is above a threshold chosen as the level of wealth that yields the average income of the time. Thus the very rich are able to earn the mean income of their time without working. As incomplete as it may be, it is still a reasonable measure of the first step into the world of rentiers (those who could live off their wealth). More precisely, we compute the amount of wealth which would generate a yearly income equivalent to the real per capita GDP, assuming a five percent interest rate.[6] The resulting threshold wealth level of the top group is given in Table 1: the boundary goes from 12,600 constant Francs in 1848–1869 to 21,000 Francs in 1895–1913, up to 28,000 Francs in 1914–1939 and 34,500 in 1940–1960.[7]

Earning an average income might not actually be enough to live at ease in cities, surrounded by servants and owning some means of transport. However, even this was beyond the reach of most people: the "very rich" represent the top 8 or 9 percent of our sample in the second half of the nineteenth century. As Table 1 shows, the boundary to the top group increases by 35 percent in the interwar period and by another 22 percent after 1940, pushed by the fast growth during post-war reconstruction. Earning the average income out of wealth alone becomes then increasingly difficult: less than six percent of our sample is able to do so in 1940–1960.

The bottom group comprises people leaving no assets at death. They have no measurable economic assets—or so little that it does not count. This means they cannot rely on their personal wealth for any purpose. All their current needs depend on the flow of income that they earn or can access by other means (family, charity, credit, or public transfers). The bottom group represents one-quarter of father-child pairs in 1848; it rises to more than 30 percent in the twentieth century (Table 2 in appendix). The rise is related to structural shifts in production patterns out of agriculture and towards industry and services. As more wage earners had long term job attachments instead of the daily or seasonal contracts of the past, they could count on a stable flow of income. They lived in towns, renting their flats; a few of them (civil servants, employees in railroad and mining companies) became entitled to retirement benefits; they were spared the need to invest in professional assets or to save for their old age. Of course, part of the bottom group also includes the "have-nots", those struggling to get through their daily lives.

The middle class, around 60 percent of the sample, is made up of the people in between, who save but not enough to live off their capital. They detain small savings than can be used as a buffer stock in case of shock or professional assets for their work or the house where they live with their family. This is, in Atkinson's words, the "popular wealth" (Atkinson, 2008).

The three groups are, in a sense, three worlds. Belonging to the top group is very different from holding some buffer stock as a precautionary saving and, of course, from having nothing at all. Table 2 characterizes these three worlds. The top group not only has more wealth, but its composition is different: they are

[6]We take a three-year moving average of real GDP per capita, in order to smooth fluctuations.

[7]Wealth amounts are reported in 1912 francs. On the eve of World War I, the yearly wage of a worker was around 1,000 to 1,300 Francs and a farm with a 10 ha plot was worth 10,000 to 15,000 francs.

TABLE 2
THE THREE WORLDS

	Bottom	Middle	Top
Age	61.1	61.3	61.4
Single	0.10	0.09	0.07
Male	0.56	0.55	0.59
Rural	0.42	0.70	0.46
Mean wealth		3,796	82,598
With real estate		0.59	0.70
With financial assets		0.18	0.55

Note: Characteristics of individuals in the three groups: age at death, being single, being a male, living in a rural area at the time of death, mean wealth in 1912 Francs. The last two rows pertain only to those with positive wealth: share of individuals owning some real estate or some financial assets.

more likely to hold real estate than the middle class. But what really distinguishes them is that they hold financial assets. They are also more likely to be male and married. Table 2 shows that both the bottom and the top group are less likely to live in rural areas compared to the middle class. Indeed, cities are places with large inequality, as they bring together the richest, the working class and the *Lumpenproletariat*. Because the characteristics and types of assets are different between groups, the mechanism of wealth mobility is also likely to differ.

The changes in social structure cannot be ignored: the seven percent points increase in the share of the bottom group between 1848 and 1913 indicates that many children of wealthy fathers ended up without assets. Conversely, the slight decline of the bottom group during the 1940–1960 period means that some children of poor fathers entered the middle class. At the other extreme, children of fathers in the top group were kicked out from their group of origin, whose share dropped by half after 1914.

We now turn to movements between the three groups.

3.2. *Concept of Mobility*

When comparing matrices of different periods, we mix two types of mobility: (i) *structural mobility*, arising from the fact that the distribution of fathers and children in the three groups changes over time and (ii) *positional mobility*, which is the exchange of positions between fathers' and children's wealth, holding the distribution of wealth constant over time.

Table 3 presents the structural mobility matrix of the sample of father-children pairs for the two extreme periods, 1848–1869 (panel a) and 1940–1960 (panel b). Each row of the matrices sums to 100. In 1848–1868, 20.6 percent of children of middle class fathers drop into the bottom group and so are 13.1 percent of children of top group's fathers. In 1940–1960, the corresponding figures increase, to 22.4 and 15 percent. Meanwhile, the share of the bottom group in the society has increased by 5 percentage points (from 24.7 percent to 29.6 percent, in the last row of each matrix); this structural change is met by children of wealthy people ending without wealth.

TABLE 3
Positional and Structural Mobility

(a) 1848–1869

Father\child	Bottom	Middle	Top
Bottom	44.3	52.1	3.7
Middle	20.6	74.5	4.9
Top	13.1	53.3	33.6
Total child	24.7	67.4	7.9

(b) 1940–1960

Father\child	Bottom	Middle	Top
Bottom	44.1	52.1	3.8
Middle	22.4	73.2	4.4
Top	15.0	63.6	21.4
Total child	29.6	64.6	5.8

(c) 1940–1960 with the structure of 1848–1869

Father\child	Bottom	Middle	Top
Bottom	42.2	52.7	5.0
Middle	21.2	73.1	5.7
Top	13.4	60.2	26.4
Total child	24.6	67.4	7.9

By quantiles
(d) 1848–1869

Father\child	Bottom	Middle	Top
Bottom	55.0	39.9	5.2
Middle	31.9	60.6	7.6
Top	21.0	38.1	41.0

(e) 1940–1960

Father\child	Bottom	Middle	Top
Bottom	54.7	37.7	7.5
Middle	33.1	58.9	8.0
Top	17.2	53.5	29.3

Note: Mobility matrices for children deceased in 1848–1869 (a) and in 1940–1960 (b). Each row sums to 100. Panel (c) is the matrix for 1940–1960 with the same structure (share of bottom, middle and top groups) as 1848–1869. Panels (d) and (e) are mobility matrices with groups defined as P1-P40 (bottom), P41-P90 (middle) and P91-P100 (top).

Another structural change, related to the post-war period of high growth, is the decline of the very rich, from 7.9 percent of the children's generation in 1848–1869 to 5.8 percent in 1940–1960. Fewer children of top group's fathers remain in the top group (21.4 percent in 1940–1960 instead of 33.6 percent in 1848–1869) and more go to the middle class (63.6 percent instead of 53.3) or in the bottom

group. As a result, persistence (here, the share of children staying in the same class as their father) is decreasing.

Had we frozen the structure of society, we would have obtained for 1940–1960, the matrix shown in panel (c). To do so, we use the procedure described in Altham and Ferrie (2007), which relies on the fact that the cross-product ratio (a measure of the "nucleus of association") in a contingency table is invariant to the multiplication of entire rows and columns by arbitrary constants (Mosteller, 1968). Hence, the matrix of panel (c) has the same cross-product ratios as that of panel (b) but multiplied proportionally so that the children's total in the last row is identical to that of the 1848–1869 matrix. When the proportion of the three classes are held fixed over time, persistence is enhanced at the top, as more children of top group's father stay in the same class as their father (26.4 percent in panel (c) compared to 21.4 in panel (b)); conversely, less children of bottom group's fathers remain stuck at the bottom (42.2 percent instead of 44.1 percent) and more manage to the top (5 percent instead of 3.8 percent). This is because in this hypothetic world they are fewer positions to fill in the bottom group and more positions in the top group than what actually happened. In ignoring the structural change of a shrinking top group and a widening bottom group, we end up with a different story about mobility.

Another commonly used transition matrix would compare the wealth quantile of fathers and children. Wealth quantiles are similar to ranks as they abstract from changes that might happen to the scope or the shape of the wealth distribution. Panels (d) and (e) show the positional mobility matrix for 1848–1869 and 1940–1960 with the group's boundary defined by their quantile. The bottom group's upper boundary is set to p40 (as this value is always strictly positive throughout the period). The middle class starts at p40 and goes until p90. The top group is simply the top decile. In this case, the three classes are defined relatively to the contemporaneous wealth distribution. Compared to panel (a), persistence in the bottom and the top group are higher because these groups are larger. However, being in the bottom group in 1848–1869 when the wealth of the bottom 40 percent is at most equal to 500 Francs is not comparable to being in the bottom group in 1940–1960 with a wealth of less than 300 (constant) Francs. At the other end, we have seen that the minimum wealth of the top decile has increased by half between 1848 and 1960 (Table 1). Hence, the issue that we chose to ignored when looking at quantiles comes back as diverging wealth levels.

Among the many concepts of mobility, we think that the more relevant to a study of intergenerational wealth mobility over more than a century is a definition that includes both positional and structural mobility, because part of the change in wealth mobility comes from the relative share of the bottom and the top classes.

3.3. *The Intergenerational Mobility Matrix*

Table 4 presents the intergenerational mobility matrices on average for the whole sample and for each period separately. The matrices are presented with the total sum of cells equal to 100, so as to highlight the structural change occurring not only in the children' generation but also in the father's generation. A first measure of mobility is the percentage of children that are not in the same group as their father. These off-diagonal cells represent on average 38 percent. Persistence within

TABLE 4

Intergenerational Mobility Matrices

All periods

Father\child	Bottom	Middle	Top	Total father
Bottom	14.2	13.6	0.9	28.7
Middle	13.8	44.9	3.3	61.9
Top	1.3	5.6	2.5	9.3
Total child	29.3	64.0	6.7	100

1848–1869

Father\child	Bottom	Middle	Top	Total father
Bottom	9.2	10.8	0.8	20.7
Middle	14.0	50.5	3.3	67.8
Top	1.5	6.1	3.9	11.5
Total child	24.7	67.4	7.9	100

1870–1894

Father\child	Bottom	Middle	Top	Total father
Bottom	11.8	9.6	1.2	22.6
Middle	14.1	48.5	5.4	68.0
Top	1.2	5.8	2.5	9.5
Total child	27.0	63.9	9.1	100

1895–1913

Father\child	Bottom	Middle	Top	Total father
Bottom	15.0	12.5	0.8	28.3
Middle	13.5	44.3	3.5	61.4
Top	1.5	5.2	3.7	10.4
Total child	30.0	62.0	8.0	100

1914–1939

Father\child	Bottom	Middle	Top	Total father
Bottom	16.9	17.5	0.7	35.0
Middle	14.1	41.8	1.5	57.4
Top	1.1	5.3	1.2	7.5
Total child	32.1	64.6	3.4	100

1940–1960

Father\child	Bottom	Middle	Top	Total father
Bottom	16.2	19.1	1.4	36.7
Middle	12.0	39.4	2.3	53.7
Top	1.4	6.1	2.1	9.6
Total child	29.6	64.6	5.8	100

Note: Periods are defined by the child's year of death. The total of all cells sums to 100. In 1848–1869, 20.7 percent of children were from fathers with 0 wealth. 9.1 percent had no assets themselves, and 0.9 percent reached the top group. Conversely, 1.4 percent children with fathers in the top group had no assets at the end of their life.

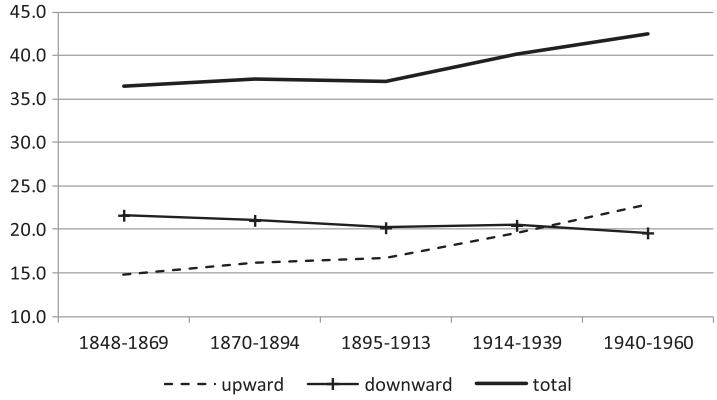

Figure 3. Upward and downward intergenerational mobility

Note: Upward (resp. downward) mobility is the share of children that are in a strictly higher (resp. lower) group than their father. Total mobility is the sum of upward and downward mobility (the sum of the off-diagonal cells).

each class dominates but movements between classes are not negligible. On average, moves from the bottom to the middle class are of the same magnitude as the share of those who stay at the bottom, and even larger in 1940–1960. Moves from the top to the middle class are larger than the share of those who stay at the top. The share of off-diagonal cells increases from 36 percent in 1848–1869 to 42 percent in 1940–1960. Hence it seems that mobility between classes has increased.

It should be kept in mind, though, that mobility can be of two sorts. Common wisdom tends to associate mobility with a move upward. However, in a society where capital ownership becomes more concentrated, the likely direction of mobility is rather downward, from wealthy fathers to poor children. And this is indeed the case (Figure 3): one out of five father-child pairs are on a downward trend of mobility, while less than one out of six are on an upward trend. Downward mobility is driven by the rising share of the bottom group: as there are more children than fathers in the bottom group, the "positions" in the bottom group are filled by children falling from higher groups. After 1914, the opposite occurs.[8] Upward mobility increases as more children of poor fathers are reaching the middle class. This move is consistent with the fact that, in 1940–1960, the size of the bottom group is smaller for the children' generation (29.6 percent) than for their father's generation (36.7 percent).[9]

4. The Intergenerational Elasticity of Wealth

4.1. *Intergenerational Elasticity in the Three Worlds*

Figure 4 plots the actual distribution of wealth for fathers and children, pooling all periods together. Each dot represents a combination of a father's and a

[8]We rule out differential fertility as fathers in the bottom group have no more adult children than fathers in the other groups.

[9]In the mobility matrices, contrary to the regressions below, we compare father and children without controlling for their age at death. Hence, it is likely that children of period *n* do not have all their fathers belonging to period *n-1* (some might also have died in period *n-2*). The evolution of the share of the bottom group is thus magnified when one compares fathers and children' generations.

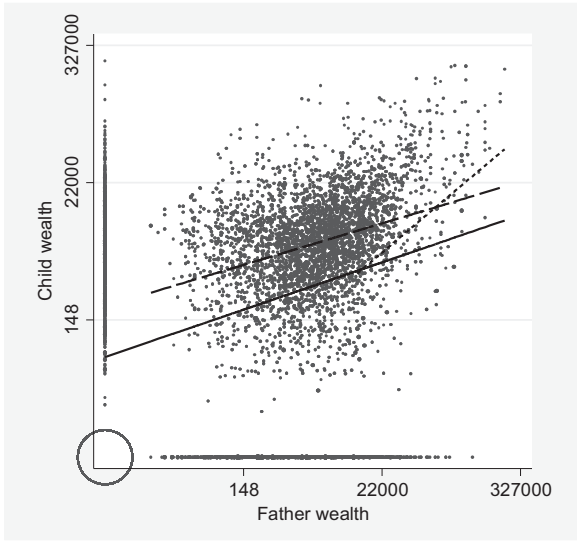

Figure 4. Father and child wealth

Source: TRA dataset.

Note: Father and child wealth in logarithms (with value equal to zero for poor individuals). Values on the axes are in 1912 francs. All years are pooled. The continuous line is the fit for the whole sample (all wealth, including zero). The dashed line is the fit between father and child with positive wealth. The dotted line is the fit if the father belongs to the top group.

child's wealth, weighted by the frequency of that combination—this matters mostly for the large number of (0,0) pairs, hence the large circle at the origin. Along the X and the Y axis appear individuals with zero wealth, either children (on the Y-axis) or fathers (on the X-axis). At the center lies the cloud of positive wealth pairs.

Figure 4 reveals a positive relationship between the wealth of fathers and children. A perfect transmission of wealth from father to child would be indicated by the 45° line. The dashed line represents the fit when both father and child have a positive asset: if the slope is positive but less than the 45° line, there is a correlation between father's and child's wealth, with some difference between them. The continuous line is the fit for all father and child pairs, including those without wealth. The continuous line is below the dashed line (obviously the average level of wealth is lower when including those with zero wealth) and its slope is slightly higher (once included the poor, there is more disconnection between fathers and children). It also reaches the vertical axis (as the sample now includes fathers with zero wealth). The continuous line intersects the Y-axis at a positive value (around 140 constant Francs of 1912) because, among the children of the bottom group fathers, some do have positive wealth; thus on average the wealth of that group is above zero. The slope of the continuous line is also slightly steeper than that of the dashed line, as it accounts for the fact that there are pairs of fathers and children who are both without wealth.

If we take only fathers belonging to the top group (the dotted line), the slope becomes much steeper and close to the 45° line of perfect transmission. There is less mobility in the top group than in the middle class.

A standard measure of intergenerational income mobility is Intergenerational Elasticity (IGE), which measures the relation between the log of child's income and the log of father's income, controlling for age (Solon, 1992; Corak, 2004). An IGE equal to 1 means persistence of income hierarchy across generations. An IGE equal to 0 means a reshuffling of social positions.

The IGE is closer to the "individual income growth" approach of mobility, as it simply compares the outcomes for a father and his child. It differs from the mobility matrix presented above. First, the IGE allows studying mobility within a class. Moreover, because classes' boundaries are defined in real terms without any reference to the actual wealth distribution, a child might increase his wealth with respect to that of his father and yet move in a lower class. This might happen in particular during the 1940–1960 period when the threshold to the top rises, because of the fast growth of per capita GDP.

Transposing the IGE to estimate intergenerational wealth mobility is not straightforward. First, at the bottom of the wealth distribution are a large number of poor, with no counterpart when considering income. Second, wealth is far more concentrated than income. As a result of complete absence and extreme concentration of wealth at both ends of the wealth distribution, it is misleading to summarize intergenerational wealth mobility with one coefficient of elasticity. Thus, we augment the standard IGE approach in order to capture the non-linear aspect of wealth transmission between fathers and children. We introduce two dummies d and D for, respectively, children of fathers in the bottom group and fathers belonging to the top group.

$$(1) \qquad w_i = \alpha + \beta W_i + \beta_1 W{*}D + \beta_2 D + \beta_3 d + \gamma_1 Z_i + \gamma_2 z_i + \delta_t + \varepsilon_i$$

with w_i (resp. W_i) being the wealth of the child (resp. father) in family *i*. We also use the logarithm of wealth, with the value for 0 wealth set to 0. The variables Z and z control for individual characteristics of (resp.) father and child: life-cycle behavior, namely the fact that wealth decreases after retirement (approximated here as the difference of age at death to 60 years old), and differences in inheritance and wealth accumulation between men and women (proxied by child's gender). Equation (1) also includes a dummy for periods of children's death.

The usual IGE would be β. In the case of wealth, we characterize mobility by adding to β the three coefficients β_1, β_2, and β_3 which capture the heterogeneity of the process of wealth transmission. Thus, the IGE for the middle class of fathers is β. The IGE for the top group of fathers is $\beta+\beta_1$. The average wealth obtained by children whose fathers are in the bottom group is $\propto+\beta_3$.

4.2. *Results of the Standard IGE Estimation*

To begin, we present the usual estimation of the intergenerational elasticity of wealth (IGE) between fathers and children in order to compare our estimate with previous works (Solon, 2002; Bourdieu *et al.*, 2008). Hence, we estimate equation (1) with β_1, β_2 and β_3 set to 0. First, panel (a) in Table 5 ignores the poor and presents the results estimated on the sample of father and children with positive wealth: if we consider all periods, β is equal to 0.32. The R^2 is equal to

TABLE 5
Intergenerational Elasticity, 1848–1960

Dependent variable: log of child's wealth						
	All periods	1848–1869	1870–1894	1895–1913	1914–1939	1940–1960
(a) Father and child both with positive wealth						
Father's wealth	0.320***	0.349***	0.299***	0.374***	0.312***	0.210***
	[0.018]	[0.042]	[0.032]	[0.034]	[0.033]	[0.059]
Constant	5.285***	5.149***	5.552***	5.156***	5.400***	5.910***
	[0.157]	[0.335]	[0.258]	[0.294]	[0.285]	[0.528]
R2	0.15	0.19	0.12	0.18	0.18	0.09
N obs	3,623	676	1,156	732	844	215
(b) All fathers and children (including 0 values)						
Father's wealth	0.355***	0.367***	0.383***	0.415***	0.315***	0.266***
	[0.013]	[0.034]	[0.024]	[0.026]	[0.021]	[0.037]
Constant	3.724***	4.340***	3.583***	3.236***	3.722***	4.162***
	[0.165]	[0.326]	[0.218]	[0.243]	[0.201]	[0.368]
R2	0.15	0.19	0.15	0.18	0.13	0.11
N obs	7,782	1,059	2,178	1,716	2,229	600
Std-error father's wealth	3.77	3.43	3.48	3.80	3.93	4.17
Std-error child's wealth	3.81	3.57	3.74	3.93	3.84	3.84
IGC	0.35	0.35	0.36	0.40	0.32	0.29

Note: Dependent variable is log of child wealth (set to 0 for 0 wealth). Robust standard errors, clustered at the father level, are in brackets. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. Controls: child's gender, difference of child's age at death to 60 and its square; difference of father's age at death to 60 and its square. The regression for all periods includes child's period fixed effects.

0.15 meaning that part of the children's wealth is not explained by that of her father.

In panel (b) we introduce the poor; in that case, the IGE for all periods is slightly higher at 0.36. This means that if a father's wealth is twice above the mean of his generation (100 percent higher), his child will be 36 percent above the mean wealth of his/her own generation. Thus, it takes three generations to dilute initial inequality. The estimated IGE for wealth is of the same order of magnitude as contemporary estimates of IGE for income, which are around 0.4 (Corak, 2013). Despite wealth inequality being higher than income inequality, mobility computed on both outcomes is of similar order of magnitude.

Taking into account the poor matters for the evolution of mobility over time. In panel (a), β starts at 0.35 in 1848–1869, decreases to 0.30 in 1870–1894 before rising to 0.37 in 1895–1913 then decreasing to 0.21 in 1940–1960. With the zero values, the IGE begins at 0.37 in 1848–1869 but *increases* continuously until reaching a maximum at 0.42 in 1895–1913 before decreasing to 0.27 in 1940–1960.

A slightly different measure, the intergenerational correlation of log wealth (IGC) takes into account generational differences in inequality between fathers and children. It is less often used than the IGE because it is more sensitive to measurement errors. The IGC is reported at the bottom of Table 5 and we can see that it evolves in parallel with the IGE: it is lower until 1914 (because wealth inequality is increasing) but becomes higher afterwards (when wealth inequality between generations decreases). As both indicators report the same evolution, we report only the IGE in the following estimates.

TABLE 6
Intergenerational Mobility by Father's Wealth Group

Dependent variable: log of child's wealth

	All periods	1848–1869	1870–1894	1895–1913	1914–1939	1940–1960
Father's wealth	0.387***	0.546***	0.361***	0.454***	0.345***	0.204
	[0.036]	[0.081]	[0.062]	[0.069]	[0.063]	[0.129]
*Father's wealth *father in top group*	0.383***	0.437	0.151	0.393	0.517*	1.187***
	[0.125]	[0.303]	[0.269]	[0.253]	[0.268]	[0.338]
Father in top group	−3.332**	−4.222	−1.015	−3.458	−4.396	−12.426***
	[1.299]	[3.063]	[2.701]	[2.641]	[2.798]	[3.829]
Father in bottom group	0.542*	1.881***	0.001	0.664	0.519	−0.195
	[0.286]	[0.651]	[0.488]	[0.550]	[0.503]	[1.015]
Constant	3.400***	2.927***	3.667***	2.800***	3.298***	4.449***
	[0.297]	[0.628]	[0.471]	[0.546]	[0.518]	[1.042]
R2	0.15	0.21	0.16	0.18	0.14	0.12
N obs	7,782	1,059	2,178	1,716	2,229	600

Note: Dependent variable is log of child wealth (set to zero for the poor). Robust standard errors, clustered at the father level, are in brackets. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. Controls: child's gender, difference of child's age at death to 60 and its square; difference of father's age at death to 60 and its square. The regression on all periods includes child's period fixed effects.

Table 6 presents the results of the full equation (1). The coefficient β is the IGE for children with fathers in the middle class. For all periods, it is equal to 0.39, higher than in the naive estimate. The IGE for fathers in the top group is $\beta+\beta_1$, equal to 0.77. The top group is thus characterized by lower mobility than the middle class. Children who have not received any inheritance from their fathers are not systematically handicapped: they end on average with positive wealth, albeit small (β_3 is positive and significant). Actually, this is true only during the halcyon days of the Second Empire: for the other periods, the effect of having a father in the bottom group does not appear significant but there is a general growth effect proxied by the significant and positive coefficient of the constant. In 1848–1869 and again in 1895–1913, the coefficient β is high (meaning lower mobility), whereas it is rather low (meaning higher mobility) in 1870–1894 and in the interwar period. It is lower in the last period (1940–1960).

To have a father in the richest group gives a head start: the coefficient β_1 is always around 0.4 except in 1870–1894 (0.15) although it is not significant before 1913. In the interwar, the coefficient $\beta+\beta_1$ for children of fathers in the top group is significant and as high as 0.8. In 1940–1960, it is even higher than 1 while the coefficient β_2 of the dummy D (equal to 1 if the father is in the top group) turns negative and significant. The slope becomes steep in the last period because children of the very rich spread in the entire spectrum from zero wealth to very high values. It is harder to stay in the top group in that period but children who succeed to do so improve their position compared to that of their fathers.

4.3. *Inequality and Mobility*

The augmented IGE estimates shows that for children of middle class fathers (the largest group), wealth mobility increased during 1870–1894 and declined in

1895–1913. It is difficult to make a causal assumption between the period of child's death and the value of his or her wealth. Wealth is a stock that could have been accumulated many years before. However, part of the assets (such as real estate and financial assets) is valued at the time of death and depends upon the macroeconomic state at the time of death. For these assets, it is likely that children lose in comparison to their fathers during recessions.

The picture of mobility that emerges in 1848–1913 is not the commonly expected for of a permanent upward mobility. Rather, mobility also comprises movements down the social ladder, both within the middle class and from the middle class to a growing bottom group. Meanwhile, inequality skyrocketed because of the increasing wealth gap between the upper tail of the distribution (P95 and above) and the median wealth (see Figure 2 above). Hence it seems that inequality is driven by what happens at the top, while mobility is determined by what happens both between the bottom and the middle class and within the middle class. The relationship that emerges between inequality and mobility in the 19th century is one of disconnection. Both phenomena respond to processes that occur at different points of the wealth distribution.

After 1914, mobility for children of middle class fathers increased. In 1940–1960, the top group achieved a high degree of persistence. The transition matrices also show more movements between the wealth groups after 1914: an upward move from the bottom group whose share stabilizes and declines; and a downward move from top to middle, as the share of the top group is cut by half. The relationship between inequality and mobility after 1914 is something we are more used to: higher upward mobility going along with a decrease in inequality.

4.4. *Robustness*

We have tested alternative specifications (Table C1 in the Appendix). First, we have estimated equation (1) without weighting individuals with known positive wealth so that they would be representative for individuals with positive and unknown wealth (panel 1). Next, we change the definition of the top group, either as the top decile (panel 2) or omitting the top centile (panel 3). We also change the definition of the bottom group and include fathers whose wealth is positive but very small up to 100 Francs (panel 4). Alternatively, we attribute to poor (both father and child) a hypothetical positive value randomly drawn from the bottom decile of positive wealth (panel 5).[10] We restricted the sample to keeping only one child per family (panel 6). We have estimated a Tobit function (panel 7). We also present polynomial equations, of degree 2, 3 and 4 (panel 8).

The IGE for children of middle class fathers is of the same order of magnitude (around 0.4) in all specifications except one. The exception is, understandably, the specification in panel (5) where we attribute positive (and non negligible) wealth to the poor. As we draw these positive values randomly, we undermine the persistence within the bottom group and the IGE decreases to 0.21 for all periods. At the same time, the IGE for children of top group fathers is always higher, at

[10]Individuals belonging to the bottom 10 percent of positive wealth own between 150 and 300 Francs.

TABLE 7
THREE GENERATIONS

	OLS		IV	
				First step
Father's wealth	0.334***		0.363***	
	[0.027]		[0.090]	
Grand-father's wealth	0.035	0.181***		0.437***
	[0.045]	[0.050]		[0.062]
Constant	3.543***	4.895***	3.500***	4.045***
	[0.546]	[0.597]	[0.792]	[0.670]
R2	0.14	0.05	0.13	0.093
N obs	2,175	2,175	2,175	2,175
F-test				7.684

Note: Dependent variable is log of child wealth (set to 0 for 0 wealth). Robust standard errors, clustered at the father level, are in brackets. The sample is the subset of grandfather/father/child triplets. All controls of Table 3 are included. IV: Father's wealth is instrumented by all controls plus grandfather's wealth, and grandfather's age difference to 60 (level and squared).

around 0.8, again with one exception: the specification in panel (3) that excludes the top 1 percent. Without the wealthiest members of the top group, there is no (measurable) difference between the top group and the whole population. By periods, all specifications show the same pattern of lower mobility in 1895–1913 and rising mobility afterwards (not reported). The different specifications show that our results are robust to changes in the boundaries of the three groups under study. This reinforces our main findings that wealth mobility varies at different parts of the wealth distribution and is particularly lower at the top.

As an additional robustness test, we look at wealth mobility over three generations. For a smaller sample, we do have information on wealth at death over three generations: grandfathers, fathers, and children. Using this sample, we test the effect of the grandfather's wealth (Table 7). First, we include it along with the father's wealth in an OLS estimation. In that case, the grandfather's wealth has no significant effect on the grandchild's wealth, once controlled for the father's wealth. Second, we use the grandfather's wealth as an instrument for the father's wealth in the IGE estimation (here, we do not interact with a dummy for the top group, due to sample size). The coefficient of the father's wealth is equal to 0.33, close to the 0.36 figure estimated for the IGE with two generations (Table 5, panel b). The coefficient of the grandfather's wealth on the father's wealth is equal to 0.44, higher than the IGE estimated between father and child. This might come from the fact that the grandfather-father pairs are more selected: both are men, must have been married and have a child that survived until adulthood. The IV estimate of the IGE is 0.36, of a similar magnitude to the simple OLS estimate.[11]

[11]The estimation on the three generations is no more than a robustness check, without entering in the growing and rich debate on transmission in a multiple generations setting (see among others Solon, 2014; Adermon *et al.*, 2015; Pfeffer and Killerward, 2015).

5. Characterizing Mobility

We have shown how mobility varied along the wealth distribution. Another important element is how that mobility may vary according to individual characteristics. To explore this question, we now turn to a characterization of the people behind this mobility, without pretending to detect any causality.

5.1. *Demographic Heterogeneity*

A source of variation between individuals is related to their situation at the time of death (which might influence the size of their assets) and that of their family; for instance having many siblings will mean getting a smaller share of parental wealth.

Overall, demographic context does not alter the mechanisms underlying intergenerational mobility, as the coefficients of the IGE and associated dummies for the father's group remain stable (Table 8). However, demographic variables change the level of wealth. First, child wealth is higher for sons than for daughters (column 1). It also changes depending on whether or not they have actually inherited from their father (column 2). Child wealth is also higher if the father was a widower (column 3), if the child was older than 40 years (column 4) and if he or she is married (column 5).

Location also matters: having a father in a rural area is correlated with lower child wealth; however, the wealth of the children will be higher if they live in a rural area (column 6), because they are likely to own a plot or a farm. The children of rural origin that migrate to cities are likely to end with a lower level of wealth (column 7). In the southern part of France, the ancient custom was to favor one child while, in the rest of the country, inheritance was equally shared between siblings. Having a father from Southern France is correlated with a lower child's wealth (column 8).

Table 9 shows the interaction of the characteristics of fathers and children with father's wealth. Some features have a significant effect on the degree of mobility. If the father was a widower, mobility is higher (the coefficient of the interaction is negative and significant). In contrast, if the child is single, the similarity between the child's and father's wealth is enhanced. Mobility is also higher if the father or the child was rural or if the father lived in Southern France. Surprisingly, it seems that being a male does not impact mobility (the correlation between father and child's wealth) despite having a positive effect on the *level* of wealth.

Demographic parameters influence the specific situation of each father-child pair. Some of these characteristics are family specific (such as whether the father died after his wife); some are related to structural changes such as migration out of rural areas. These characteristics have an impact on wealth levels and also on mobility (the slope of the curve linking fathers and children wealth).

5.2. *In and Out of the Middle Class*

The IGE does not give any clue on the direction of mobility. A complementary view is provided by the transition matrix. Once taken into account the

TABLE 8

DEMOGRAPHIC HETEROGENEITY

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Father's wealth	0.387***	0.386***	0.395***	0.397***	0.390***	0.368***	0.374***	0.397***	0.395***
	[0.036]	[0.036]	[0.036]	[0.038]	[0.036]	[0.036]	[0.036]	[0.037]	[0.038]
Father wealth*father in top group	0.383***	0.385***	0.352***	0.368***	0.395***	0.532***	0.390***	0.360***	0.463***
	[0.125]	[0.125]	[0.124]	[0.128]	[0.126]	[0.132]	[0.126]	[0.126]	[0.135]
Father in top group	−3.332**	−3.365***	−2.991**	−3.168**	−3.439***	−4.716***	−3.396***	−3.111**	−4.010***
	[1.299]	[1.300]	[1.287]	[1.329]	[1.304]	[1.360]	[1.306]	[1.300]	[1.393]
Father in bottom group	0.542*	0.553*	0.573**	0.602**	0.561*	0.625**	0.471*	0.619**	0.777***
	[0.286]	[0.285]	[0.288]	[0.300]	[0.287]	[0.283]	[0.283]	[0.289]	[0.301]
Child is a boy	0.163**	0.155**	0.161**	0.242***	0.193**	0.167**	0.160**	0.161**	0.242***
	[0.079]	[0.079]	[0.079]	[0.083]	[0.079]	[0.078]	[0.078]	[0.079]	[0.083]
Father died before child		0.989***							0.910***
		[0.170]							[0.347]
Father was widower			0.384***						0.282**
			[0.106]						[0.111]
Child was <40 when father died				−0.384***					−0.375***
				[0.120]					[0.122]
Child is single					−0.592***				−0.273*
					[0.145]				[0.159]
Father in rural area						−0.398***			−0.501***
						[0.131]			[0.137]
Child in rural area						1.291***			1.352***
						[0.114]			[0.119]
Rural father- urban child							−1.329***		
							[0.131]		
Father from southern France								−0.245***	−0.211**
								[0.095]	[0.098]
Constant	3.400***	2.424***	3.243***	3.689***	3.386***	2.859***	3.654***	3.417***	2.160***
	[0.297]	[0.339]	[0.302]	[0.324]	[0.297]	[0.307]	[0.294]	[0.297]	[0.482]
R2	0.15	0.15	0.15	0.15	0.15	0.17	0.17	0.15	0.17
N obs	7,782	7,782	7,673	7,015	7,734	7,782	7,782	7,750	6,852

Note: Dependent variable is log of child wealth (set to 0 for 0 wealth). Robust standard errors, clustered at the father level, are in brackets. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. Controls: child's gender; difference of child's age at death to 60 and its square; difference of father's age at death to 60 and its square; and child's period fixed effects.

TABLE 9

INTERACTING MOBILITY WITH DEMOGRAPHIC CHARACTERISTICS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Father's wealth	0.364***	0.289***	0.382***	0.334***	0.345***	0.394***	0.381***	0.356***	0.389***
	[0.018]	[0.035]	[0.016]	[0.024]	[0.013]	[0.021]	[0.019]	[0.014]	[0.016]
Father's wealth * z	−0.02	0.036	−0.060**	0.034	0.126***	−0.073***	−0.095***	−0.043	−0.088***
	[0.022]	[0.037]	[0.027]	[0.028]	[0.040]	[0.027]	[0.025]	[0.036]	[0.027]
Z is : child is a boy	0.272*								
	[0.155]								
Father died before child		0.814***							
		[0.255]							
Father was widower			0.700***						
			[0.192]						
Child was <40 yrs old when father died				−0.546**					
				[0.212]					
Child is single					−1.327***				
					[0.308]				
Father was rural						0.563***			
						[0.182]			
Child is rural							1.449***		
							[0.165]		
Rural father and urban child								−1.125***	
								[0.227]	
Father in Southern France									0.245
									[0.188]
R2	0.15	0.15	0.15	0.14	0.15	0.15	0.16	0.16	0.15
N obs	7,782	7,782	7,673	7,015	7,734	7,782	7,782	7,782	7,750

Note: Dependent variable is log of child wealth (set to 0 for 0 wealth). Robust standard errors, clustered at the father level, are in brackets. * $p<0.1$; ** $p<0.05$; *** $p<0.01$. Controls: child's gender; difference of child's age at death to 60 and its square; difference of father's age at death to 60 and its square; and child's period fixed effects.

TABLE 10
Logit Estimation: in and out the Middle Class

	From middle to bottom		From bottom to middle		From top to middle	
	(1)	(2)	(3)	(4)	(5)	(6)
Child is a boy	0.904***	0.901***	1.467***	1.468***	0.981	0.976
	[0.030]	[0.029]	[0.052]	[0.054]	[0.053]	[0.050]
Child was <40 yrs old when father died	1.299***	1.290***	0.924***	0.932***	1.386***	1.388***
	[0.061]	[0.061]	[0.002]	[0.001]	[0.021]	[0.017]
Child is single	0.760***	0.757***	0.531***	0.536***	2.149***	2.130***
	[0.017]	[0.015]	[0.031]	[0.031]	[0.096]	[0.097]
Father died before child	0.995	0.995	2.251***	2.154***	1.04	1.079***
	[0.019]	[0.016]	[0.003]	[0.003]	[0.039]	[0.023]
Father was widower	0.695***	0.697***	1.944***	1.925***	0.659***	0.660***
	[0.008]	[0.008]	[0.049]	[0.049]	[0.012]	[0.013]
Father in Southern France	1.146***	1.136***	0.961	0.963	1.260***	1.262***
	[0.003]	[0.002]	[0.058]	[0.052]	[0.058]	[0.059]
Father was rural	2.765***		0.455***		0.884	
	[0.030]		[0.030]		[0.099]	
Child is rural	0.426***		1.343***		1.343***	
	[0.012]		[0.121]		[0.014]	
Rural father-urban child		2.842***		0.738***		0.661***
		[0.018]		[0.054]		[0.054]
Constant	0.102***	0.110***	0.052***	0.038***	0.046***	0.052***
	[0.002]	[0.000]	[0.002]	[0.002]	[0.005]	[0.001]
N obs	6,852	6,852	6,852	6,852	6,852	6,852

Note: Dependent variable: probability of going from middle class to bottom (col 1), bottom to middle (col 2) and from top to middle (col 3). Robust standard errors, clustered at the father level, are in brackets. Logistic regression. The table reports odd-ratios. Period fixed effects are included.

structural changes in the distribution, we have seen that the story of mobility in the nineteenth century until 1913 was mostly downward, from the middle class to the bottom. On the other hand, mobility after 1914 goes mostly upward from the bottom to the middle class and, for a smaller part, downward from the top to the middle class.

Table 10 gives the odds ratios (estimated with a logit function) of father-child pairs going down from middle class father to bottom class child (columns 1 and 2) and of entering the middle class from below (columns 3 and 4) or from above (column 5 and 6). An odds-ratio that is higher (resp. lower) than 1 means that the variable has a positive (resp. negative) impact on the outcome. For instance, being young (less than 40) when the father dies is correlated with a higher probability of sliding down from the middle class to the bottom and from the top group to the middle class. Having inherited from the mother (proxied by the fact that the father was a widower) alleviates these risks of downfall and increases the probability of an upward move (here, from the bottom to the middle class).

Interestingly, some characteristics affect mobility in more subtle ways. If the child is single, it increases his or her probability of a downward move from the top group to the middle class but it reduces his or her chances to move between the bottom and the middle class in either direction. If a rural father was in the top group and living in the countryside, this would have prevented the fall of his child

from the top to the middle class. This is understandable, as rural fathers are likely to own a farm and pass it on to their offspring (column 5). However, if the father was rural and in the middle class, that would have *increased* the probability of the child ending up in the bottom group (column 1). Hence, in that case, if the father had a farm, it seems that the child would not have inherited it. Is this because of rural-urban migration? To explore this question, we add in column (2) a dummy that takes the value of 1 if there is any sign of such migration, namely, if the father was rural and the child urban. In that case, the probability of downward mobility from the middle to the bottom is indeed higher, while the probability of a downward move from the top group to the middle class is reduced.

The rising share of the bottom group is made up of children with fathers in the middle class, and it seems to correspond partly to rural-urban migration. This could be explained by the impoverishment of rural migrants working in city factories. But it could also be related to a new use of capital: in the rural areas, wealth was needed as a professional asset for earning a living and it was common to own one's house. In the cities, professional assets were no longer owned by employees working in industry or services, and the housing market provided more opportunities to rent.

6. Conclusion

This paper examines the intergenerational wealth mobility between fathers and children in France between 1848 and 1960. Mobility is not constant, neither over time nor across the wealth distribution. It evolves at different speeds and trends at the bottom of the distribution (the bottom group), in the middle and at the top (those living off their capital).

Mobility is driven by sizable movements in the bottom and the middle class, while inequality is determined by the two extremes, the bottom and the top. During the nineteenth century, intergenerational mobility was stable and oriented mostly downward, as the size of the bottom group increase continuously. Mobility increased after World War I, mainly driven by the upward mobility from the bottom to the middle class. Mobility is related to changes in the occupational structure as well as the extension of pension benefits that modified the motive of holding an asset. The composition of wealth is also likely to change during that process, and switch from professional assets to financial assets. We leave this question for further work.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Appendix A: Sample definition.
Appendix B: Descriptive statistics.
Appendix C: Robustness.
Figure A1: Total wealth P0-P99 for the TRA and for France
Figure A2: Sample selection
Figure B1: Evolution of the three groups over time
Table B1: Father and child wealth: descriptive statistics
Table C1: Robustness
Table C2: Polynomial specifications