

Who Climbs Up the Income Ladder? An Analysis of Intergenerational Income Mobility in France

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Abstract – We study the intergenerational income mobility of individuals by directly comparing, for the first time in France, the rank of young adults between the ages of 27 and 30 on the income ladder with that of their parents, based on administrative data from the *Échantillon démographique permanent* (EDP, INSEE’s demographic panel sample). The rank-rank correlation is 0.25 at age 29. Twelve per cent of the young people born to the poorest 20% of parents climb up the income ladder to the top 20%: this upward mobility rate is higher in France than in the United States and Italy, but lower than in the Nordic countries. Upward mobility is stronger the higher the parents’ capital incomes and diploma, when parents are immigrants, are geographically mobile, or were living in Île-de-France when their offspring reached the age of majority. Conversely, being female, having lived in a single-parent family or in the Hauts-de-France region, or having parents who are manual workers has a negative impact on upward mobility.

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Keywords: intergenerational mobility, income, inequality, geographical variations

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Reducing the perpetuation of inequalities from one generation to the next has become a key objective for public policy and an economic policy consensus. Intergenerational mobility allows for more inclusive growth, where everyone has the same opportunity to thrive (OCDE, 2018), and can stimulate innovation (Aghion *et al.*, 2019). Conversely, positions that remain fixed from one generation to the next bring about losses in efficiency in the same way as under-investment in human capital (Becker & Tomes, 1979¹). Poor mobility at the bottom end of the income distribution also leads to the loss of numerous potential talent and entrepreneurs (Bell *et al.*, 2019). Reducing the perpetuation of inequalities from one generation to the next will make it possible to move in the direction of equal opportunities (Roemer & Trannoy, 2016). However, although there is consensus with regard to the objective of encouraging mobility from one generation to the next, the diagnoses performed with regard to the intergenerational income mobility of individuals in France are at odds with one another (Dherbécourt, 2020). While the scale of intergenerational mobility is well documented when it comes to social position or occupation, this is not true when it comes to income since, until recently, there were no databases that would allow a person's income to be directly linked to that of their parents.

In this article, we study intergenerational income mobility by linking young adults' income to that of their parents a decade earlier for the first time in France, based on a very large sample of parent-child pairings. In order to do so, we use a rich administrative dataset panel, the *Échantillon démographique permanent* (INSEE's demographic panel sample – EDP), and in particular its fiscal and social section from 2010 to 2019. These data allow us to compare the individual income from employment of young adults aged 29 in 2019 with that of their parents in 2010, provided the parents and young people were living in the same tax household. As the income of the young people and their parents is not measured at the same age, it is the relative position of the parents in 2010 (within the distribution of parents' incomes) that is compared to that of young people in 2019 (within the distribution of young people's incomes). The rank-rank correlation between these positions provides a measure of the income mobility as shown by Chetty *et al.* (2014). The rank-based approach is far more robust than the conventional comparison of income logarithms, as was demonstrated by recent studies looking

at mobility (see in particular Chetty *et al.*, 2014 and Nybom & Stuhler, 2017). The limitations in the data that led to the children's incomes being measured at the age of 29 causes the correlation to be underestimated when compared with an ideal situation in which the children's income could be measured at the same age as their parents, particularly as some remain in education for many years. Nevertheless, our findings are only slightly affected by life cycle bias given that almost all young people have entered the labour market by the age of 29 (only 0.8% are still in initial education according to Bernard, 2021). Finally, 29 years is very close to the age used by Chetty *et al.* (2011) (27 years) and Chetty *et al.* (2014) (30 years) for similar studies.

We then analyse upward and downward mobility by quintile according to socio-demographic characteristics and geographical locations through the use of Poisson regressions. As the EDP also includes tax data, we study intergenerational mobility from the perspective of capital income, which, to the best of our knowledge, has never been done before. In theory, wealth plays an ambiguous role in intergenerational mobility: on the one hand, significant parental wealth can reduce children's motivation for long studies or to get a job; on the other hand, significant wealth provides access to expensive training and also often goes hand-in-hand with greater social capital. We also look into the intergenerational income mobility of children of immigrants, which has never been studied before in France. Being descendants of immigrants can also have an uncertain impact on mobility: on the one hand, children of immigrants can suffer from discrimination and are more likely to live in poor areas, which can reduce their upward mobility. On the other hand, the fact that immigrants are more likely to live in large urban centres with more employment opportunities coupled with education-related factors can produce the opposite effect. In order to produce robust estimates based on all of the above characteristics, we are extending the scope of our study to young people aged between 27 and 30, resulting in a sample of around 60,000 parent-child pairings.

We estimate the rank-rank correlation, which measures the intergenerational persistence of income, at 0.25 at the individual-level. This rank-rank correlation increases slightly when we take account of the family's standard of living rather than individual income, or the income of the parent with the highest income rather than

1. In their founding model, these economists include parents' investment in their children's human capital in the analysis of inequalities.

the average income of both parents. However, this correlation masks a high degree of heterogeneity: the position of children varies greatly when parents' income is fixed.

The study of mobility between income quintiles completes our review of intergenerational mobility in France. It first of all confirms that inequalities are passed from one generation to the next: young people from families in the top 20% of the income distribution are three times more likely to be ranked among the wealthiest 20% than those from the poorest 20% of families. However, this analysis also reveals a degree of mobility: 73% of young adults belong to a different income quintile than their parents, and of those young adults aged 29 years born to parents in the bottom 20%, 12% reach the top 20% of their generation as adults. This upward mobility is higher than that observed in the United States and Italy, but falls below that seen in Canada and Sweden.

Based on Poisson regressions, we demonstrate that upward mobility is even greater when parents have high capital incomes, when the parent with the highest income is at least a high-school graduate (baccalaureate diploma) when they are immigrants, when the family was geographically mobile during the individual's childhood and when the young person was living in Île-de-France upon reaching the age of majority. Conversely, the fact of being female, having lived in a single-parent family or in the Hauts-de-France region, or having parents who are manual worker has a negative impact on upward mobility.

Literature Review and Contributions

Our work build on an extensive literature on intergenerational mobility. Although intergenerational social mobility in terms of social categories has formed the subject of numerous studies in France (see, for example, Vallet, 2014), thanks to the survey *Formation et qualification professionnelle* (Training and vocational skills, FQP), mobility in terms of income is yet to be addressed in depth due to a lack of data. However, two types of studies have previously been conducted in France. The first links income to the occupation of the parents, the so-called 'mixed' method implemented by Lefranc *et al.* (2004), Dherbécourt (2018) and Dherbécourt & Kenedi (2020). The other imputes parents' income based on other information: Lefranc & Trannoy (2005) in a seminal article on French data, followed by Lefranc (2018), OCDE (2018) and Alesina *et al.* (2018),

impute the average income of fathers using a two-sample two-stage least squares estimation procedure (popularised by Björklund & Jäntti, 1997) based on the FQP and SILC and estimate the intergenerational elasticity (IGE) of income. Kenedi & Sirugue (2021) also use this method to calculate different mobility indicators at the national and departmental level, this time using the EDP.² Compared to these studies, our main contribution is to provide a direct comparison of income observed with the income observed for the parents, which removes the reliance on imputation assumptions.³ Our study also makes it possible to cover all of the sectors of individuals and their parents, including the public sector and the self-employed.

Our study is close to recent studies performed using non-French data. It largely follows the study by Chetty *et al.* (2014). That study is, in turn, based on those by Solon (1999) and Black & Devereux (2011), who focus on intergenerational income mobility in the United States, using administrative data with parents' incomes observed. Corak & Heisz (1999), Schnitzlein (2016), Boserup *et al.* (2014), Nybom & Stuhler (2017), Muray *et al.* (2018), Helsø (2021) and Acciari *et al.* (2022) implement similar methodologies using Canadian, German, Danish, Swedish, Australian and Italian data. One of the innovative contributions made by our study is our description of intergenerational income mobility for a new country, France. Our findings show that positional mobility appears to be higher compared with the United States and Italy, but similar to that observed in Australia at the same or a similar age. However, it appears to be lower than in Switzerland, Sweden, Denmark and Canada. Our data also allow us to describe intergenerational mobility according to a number of socio-demographic and geographical characteristics. In particular, to the best of our knowledge, this is the first time that mobility has been described based on parents' capital income, which allows us to study the way in which capital ownership influences mobility.

The remainder of the paper is structured as follows. The first section describes the data used,

2. In particular tax data for the children and annual declarations of social data (Déclaration annuelle de données sociales, DADS) for the parents. Self-employed persons and civil servants are therefore not covered (as they are not included in the DADS data). Our estimates of rank-rank correlations at the individual level, obtained from a sample of children of comparable ages, are very close to theirs, and are obviously lower when compared with those made by the authors with regard to household income (due to the homogamy effect).

3. The imputation method tends to bias intergenerational elasticity by 0.1 point or more (Björklund & Jäntti, 1997; Acciari *et al.*, 2022; Kenedi & Sirugue, 2021).

the construction of the dataset, the methodology and provides descriptive statistics. The second section sets out the results at the national level and proposes robustness checks. Finally, the third section describes mobility according to the socio-demographic and geographical characteristics of the population, expanded to cover those aged from 27 to 30 years.

1. Data, Coverage and Descriptive Statistics

1.1. Data

The *Échantillon démographique permanent* (EDP) is a panel of individuals established and managed by INSEE since 1968. Up until 2007, it gathered administrative information on all persons born on the 2nd, 3rd, 4th or 5th of October and, since 2008, it has been gathering information regarding persons born on the 2nd, 3rd, 4th or 5th of January and one of the first four days of the final three quarters of the year (referred to as the 'sixteen EDP days'). Since 2008, it has been representative of just over 4% of the French population each year (around 1% previously). Although the EDP historically only gathered data from the civil register and the population census, it now also collects data from the Annual Social Data Declarations (*Déclaration annuelle de données sociales* – DADS), from the electoral register and, since 2015, fiscal and social data (FIDÉLI and FILOSOFI) (Robert-Bobée & Gualbert, 2021). The fiscal data provided by the 2020 edition of the EDP cover all incomes during the years from 2010 to 2019 (2011 to 2020 fiscal years):⁴ They provide annual data on all 'EDP individuals'.

The EDP provides a wealth of tax-related information that makes it possible to track the detailed personal income of the 'EDP individual', as well as all other individuals included in the tax return of that individual. The EDP also includes comprehensive census data from 1968 to 1999 and the annual census surveys conducted since 2004. Finally, the EDP includes annual information regarding the employment of the 'EDP individual' alone, which is taken from the DADS; however, this only includes employees and is only available up to 2018.

The different steps in which the data are processed (including re-weightings in particular) are presented in Box 1.

1.2. Coverage

We are interested in people born between 1989 and 1992, identified within the fiscal data as

living in the same fiscal household as their parents (or one of their parents) in 2010, 2011 or 2012, who have positive or zero income in 2019 (when they are between 27 and 30 years old) and whose parents have positive or zero income in 2010. We restrict the coverage to metropolitan France. The effects of the various restrictions are set out in Online Appendix S2 (link to the Online Appendix at the end of the article). Persons born after 1992 are excluded, as some of those belonging to these generations are still in initial education (the oldest among them are 26 years old in 2019), and those born before 1989 are also excluded, as too few of them are still living in their parents' fiscal household in 2010, 2011 or 2012 (when they are 22 years of age or older) and are too heavily impacted by the selection effect (see Section 2.2 and the Online Appendix). Analyses of the rank-rank correlation and intergenerational mobility matrices (Box 2) are limited to the generation born in 1990, who were 29 years of age in 2019, in order to minimise life cycle bias⁵ and selection bias.⁶

Although we only use persons aged 29 (or between 27 and 30 years for the final section), some are potentially still students: their observed standard of living is very unlikely to be the same as the standard of living they will have once they enter the labour market. This issue does not seem likely to introduce a bias into our analysis, since only 0.8% of individual over the age of 29 are still in initial education (Bernard, 2021). We also use the 2019 *Enquête annuelle de recensement* (Annual Census Survey) to identify and remove students identified therein from our sample. However, this correction does not allow us to take account of the existence of individuals who are unemployed.

1.3. Definition of Incomes Variables

We turn now to describe the main income variables used in this section. The other income variables and the socio-demographic variables are described in Online Appendix S3.

The parents' individual incomes are derived from the information declared to the tax authorities (pre-filled for the majority of the population and therefore very reliable) through the use of the FIDÉLI database. The individual income of

4. In the following, we will only mention income years and not fiscal years.

5. This bias corresponds to the fact that children are observed at a younger age than their parents, and at a time when their labour market situation is not fully stabilised, which can lead to the overestimation of intergenerational mobility indicators. Chetty et al. (2014) demonstrate that this bias becomes very small from the age of 29-30 years (see Section 2.2 for further details).

6. Individuals aged 30 and over remained with their parents until relatively late (22 years), which could lead to a bias (see below).

Box 1 – Treatments Applied to Build the Database

To ensure that their income can be linked to that of their parents, we select persons from the EDP born between 1989 and 1992 who were living in the same fiscal household as their parents in 2010 in the income tax returns. This means that we get the information of their parents' income for 2010. We also have the income of these people in 2019, when they were between 27 and 30 years old, which is the most recent year for which tax data is available. This allows us to compare the parents' incomes in 2010 with that of their child in 2019.

However, tax information concerning the parents of 'EDP individuals' is not directly available within the EDP: the only data available for 2010 is the income of the declarant and any partner provided in the tax returns in which the EDP individual appears. We then compare the parents' individual information, taken from the general tax source table in the EDP, with that of the declarants and their partners taken from the detailed table of income from that same source in order to determine whether the declarant and their partner are the mother or father of the EDP individual. In the tax returns in which the EDP individual is declared, the 'declarant' and the 'declarant's partner' are the potential parents of these individuals. In some cases, these may be step-parents in the event that the parents of the EDP individual have previously separated and one of the parents has entered a new partnership (see Abbas & Sicsic, 2022 for further details). This approach remains relevant: on the one hand, blended families are still few in number (in 2018, 11% of 15–17-year-olds were living with one parent and one step-parent) and, on the other hand, we are more interested in measuring the perpetuation of inequalities linked to standard of living and the economic situation experienced during childhood than in identifying the precise situation with regard to biological parents.

As the information provided by tax data is of poorer quality for minors than for adults, the number of people born between 1989 and 1992 found in the tax data increases after 2010 as these people become adults. In order to tackle this issue and to increase the size of our cohorts, we supplement the sample of persons found in the tax data for the year 2010 with persons who are only present in 2011 or 2012 and not in 2010. We consider the family situation and income of the parents of those present in 2011 or 2012 to be the same as those for 2010 (correcting for income inflation), since they still appear as dependent children in their parents' tax returns. This approach allows us to largely, but not fully, reconstitute the various cohorts studied for the purposes of this article (Abbas & Sicsic, 2022). The data are also weighted in order to build a sample of children that is representative of the French population. As the weighting available in the fiscal data included in the EDP do not allow for a precise reconstitution of the French population by age and by gender, we correct it on the basis of tax data and by using INSEE's detailed records of the French population by age, gender and marital status using a two-step method (see Online Appendix S2). Alternative weightings are also applied as robustness checks.

We also add socio-demographic data available in the EDP to our database. However, this information (taken from the 1999 population census) only concerns EDP persons born on one of the four historical EDP days (and not on one of the sixteen EDP days, as has been the case since 2008). We therefore supplement the database using the annual census surveys conducted between 2008 and 2019. The total coverage rate of our sample by either the 1999 survey data or an annual census survey is more than 70% on average for each generation (compared with 25% if we rely solely on the information available in the EDP). Since this coverage rate differs from one generation to the next, reweighting was performed in the analyses using these variables. Details of all of these treatments are provided in Online Appendix S1.

Box 2 – Intergenerational Income Mobility Indicators

1. Rank-rank Correlation

An initial measure of intergenerational mobility involves a comparison of the rank of children with that of their parents within their respective income distributions. Let R_{ei} be the rank (in percentile) of i within the income distribution for their generation, and R_{pi} the rank (in percentile) of the parent of i within the income distribution for the parents of that generation. The rank of the young people can be regressed on the rank of their parents as follows:

$$R_{ei} = C + \beta R_{pi} + \varepsilon \quad (1)$$

where C is a constant. The coefficient β is the correlation coefficient between R_{ei} and R_{pi} , since both child and parent ranks follow uniform distribution for which the standard errors are identical. We will therefore refer to this coefficient as the 'rank-rank correlation' or RRC and, in some cases, as the 'rank-rank slope' in reference to the slope of the regression. If the correlation is zero, the position of an adult within the employment income distribution isn't linked to that of their parents, and their relative income mobility is very high. Rank-rank correlation therefore provides a measure of the persistence of income between generations. We will sometimes use this term in the following to refer to this indicator.

The rank-rank correlation is linked to intergenerational income elasticity (IGE), which is often studied in the literature and estimated by regressing the logarithm of income on the logarithm of income for the parents. The IGE therefore corresponds to the correlation coefficient ρ_{ep} between the log of income and the log of parents' income multiplied by their standard error ratio. The rank-rank correlation β and the income log correlation ρ_{ep} are very conceptually close,^(a) the difference between the rank-rank correlation and the IGE being the income standard error ratio: the IGE takes account of the degree of inequality (an increase in parents' income having a greater

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Box 2 – (contd.)

impact on their children's income where there is greater inequality between children than between their parents). This is especially important when comparing countries with very different levels of inequality, such as France and the United States.

The comparison of ranks is far more robust than the conventional comparison of income logarithms, as was demonstrated by recent studies of mobility (see in particular Chetty *et al.*, 2014, Nybom & Stuhler, 2017 and Acciari *et al.*, 2022). Indeed, the IGE is very sensitive: (i) to the treatment of zero or negative income (due to the use of logarithms); (ii) to attenuation and life cycle bias (date on which the children's income is observed), more so than to rank-rank correlation; (iii) to the way in which the parents' incomes are estimated (observed or imputed). In addition, the relationship between the income of individuals and their parents is highly non-linear, unlike when the rank-based approach is applied.

2. Intergenerational Quintile Transition Matrix and Upward Mobility

A second way of studying intergenerational mobility involves focusing more specifically on upward mobility. The indicator used is the probability that a person whose parents belong to the bottom 20% of the income distribution for parents will find themselves in the top 20% of the income distribution. This is referred to as 'upward mobility' or the 'B20/T20 ratio' (Bottom 20%/Top 20%). It is also possible to measure the probability that a person whose parents fall into the poorest 40% will themselves be among the wealthiest 40%. We will refer to this indicator as 'expanded upward mobility' (or the B40/T40 ratio). This indicator allows us to include more individuals in our econometric analyses (double the amount). These two indicators have the advantage of offering simple and clear graphical representations. It should be noted, however, that the findings must be interpreted with caution, as the intervals group together the same number of people, but do not cover the same range in terms of euros. The intervals at the extremes of the distribution are therefore broader than those in the middle, which implies greater mobility in the middle quintiles than at the top and bottom ends of the distribution.

^(a) According to the degree to which the child's income relies on that of their parents.

the father (or the mother) is the sum of their employment income, unemployment benefits and pensions, as reported in the income tax return, i.e. net of contributions and the deductible CSG. The parents' income is defined either as the average of the individual incomes of the two parents (where the child is fiscally linked to both of their parents who are married to each other or in a civil partnership), or as the individual income of the single parent with whom they are linked. That income is then divided by the size of the household, which is achieved by dividing it by the number of adults in the household and, for a robustness check, by dividing it by an equivalence scale. These incomes are observed in 2010.

The individual employment income of the children is also derived from the FIDÉLI database, integrated into the EDP and calculated by adding together employment income and unemployment benefits. This income is observed in 2019.

Alternative measure of income. The parents' equivalised disposable income (also named standard of living),⁷ taken from FILOSOFI, is used to give supplementary results, and is not used in the main analysis since this variable is not available for the children. Indeed, it is difficult to separate the standards of living of children from

those of their parents, as they may live with their parents for a long time after reaching the age of majority. In this case, the standard of living of the parents and children is the same: in both cases, this is effectively the standard of living of the whole family, as it takes account of both the parents' and the children's income. According to Pouliquen (2018), 20% of young people aged between 25 and 29 spend all or part of the year living with their parents. Although this rate decreases with age, it still remains above 6% between the age of 30 and 35. However, in spite of these limitations, an analysis limited to children who moved house between 2010 and 2019 (probably from their parents' house, having thus a different standard of living to their parents) will be presented in robustness checks section.

The income scale. Young people belonging to the same generations are ranked within their birth cohort according to their income on a scale of 1 to 100: from the first percentile for the lowest 1% of incomes among the generation

7. The standard of living of the parents corresponds to the standard of living of the household to which the young person was attached in 2010. The standard of living is calculated as equivalised disposable income (i.e. income from employment and capital, less taxes and with the addition of social security benefits paid in cash). It also takes account of any child support payments made in the event of separation. The data is taken from the FILOSOFI database. Any income received by the young person is subtracted to calculate the parents' standard of living.

up to the hundredth percentile for the highest 1% of incomes among the generation. Likewise, parents are ranked (from 1 to 100) relative to other parents with children in the same birth cohort. This strategy makes it possible to correct for the fact that the parents' income is observed at a different – older – age than that of the young people (which is seen throughout the literature, Chetty *et al.*, 2014) and to take account of the different ages of the children.

1.4. Descriptive Statistics

If we combine the generations from 1989 to 1992, there are around 60,000 parent-child pairings in our sample, which represent 3.1 million young people after treatment and restrictions of coverage (see above). Each generation comprises between 10,000 and 18,000 parent-child pairings (Table 1), with the number increasing in line with the birth year (due to the fact that these people had to be included in their parent's tax declaration in 2010, 2011 or 2012).

Around half of our sample is made up of daughters (Table 1). The average age of the parents is around 50 years and approximately 90% of the parents are aged between 40 and 60 years in 2010. In 2010, around half of the individuals in our sample were living in a dwelling with both of their parents, and possibly one sibling, and around one quarter were living in a dwelling with multiple siblings.

Figure I represents the average individual income of individuals aged between 27 and 30 in 2019 based on the income percentile rank to which they belong: the curve takes on a tilde shape with an almost straight line between the 20th and 80th percentile. At the lower end of the distribution, 6% of young people have zero or almost zero incomes, then incomes increase significantly to 12,000 euros at the 20th percentile. The median is almost 20,000 euros (it varies between 17,000

and 22,000 euros depending on the generation, see Table S2-2 in the Online Appendix S2), and the 80th percentile is 29,500 euros. There is then an exponential increase from the 80th percentile: the average income is almost 36,000 euros at the 90th percentile, 61,000 euros at the 99th percentile and 93,000 euros at the top percentile. The shape of the curve is largely the same if we plot the parents' average income for each percentile of the distribution of their incomes; however there are of course, fewer zero incomes and incomes are higher, particularly at the top end of the distribution (the 90th percentile is 41,000 euros and the 99th percentile is more than 160,000 euros). The difference between the threshold of the wealthiest 20% and that of the poorest 20% is 17,500 euros per year. That same inter-quintile gap is higher for the parents, amounting to almost 20,000 euros. It should be noted that the exclusion of individuals who declare their income alone at the age of 18 slightly inflates the figure for the income of young people within our sample when compared with their generation as a whole, and also leads to a slightly higher proportion of wealthy parents (more managers and higher-education qualifications) within the sample than within the general population (Abbas & Sicsic, 2022). However, correcting this by means of reweighting does not change the outcomes (see Section 2.2).

2. Findings at the National Level

2.1. Intergenerational Mobility Indicators

We start by commenting on the findings related to the rank-rank correlation (RRC), followed by those related to the transition matrices (cf. Box 2 for the concepts).

Figure II shows the rank-rank relationship: the average percentile at the age of 27–30 based on the percentile of parental income. The relationship is positive and, remarkably, almost linear

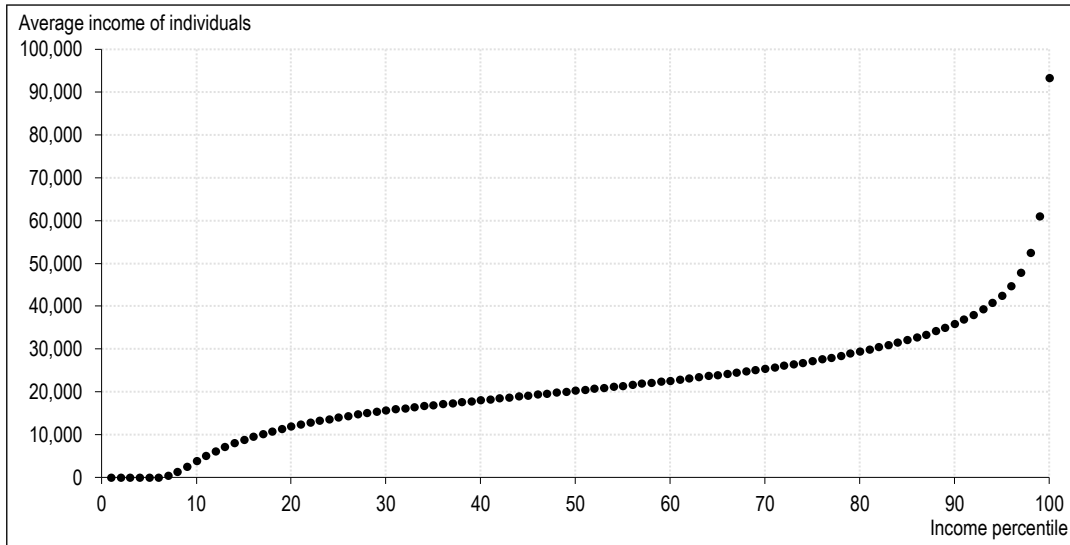
Table 1 – Descriptive statistics

Generation (age in 2019)	Population		Proportion of daughters (%)	Age of parents in 2010		Family composition in 2010 (%)		
	Not weighted	Weighted		Father	Mother	Couple with 1 or 2 children	Couple 3 or more children	Single-parent family
1989 (30 years old)	9,644	780,866	50	53	50	51	24	21
1990 (29 years old)	13,791	792,576	49	52	49	50	24	21
1991 (28 years old)	17,926	789,443	48	51	48	49	25	22
1992 (27 years old)	18,803	784,897	48	50	47	48	26	21
89-90-91-92 (27-30 years old)	60,164	3,147,782	49	51	49	49	25	21

Notes: The family composition is the composition of the individual's family in 2010. The proportion of complex households is not indicated (relatively small, around 5%).

Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

Figure I – Average income of young adults based on their income percentile in 2019



Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2019. Metropolitan France. Individuals born between 1989 and 1992, included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

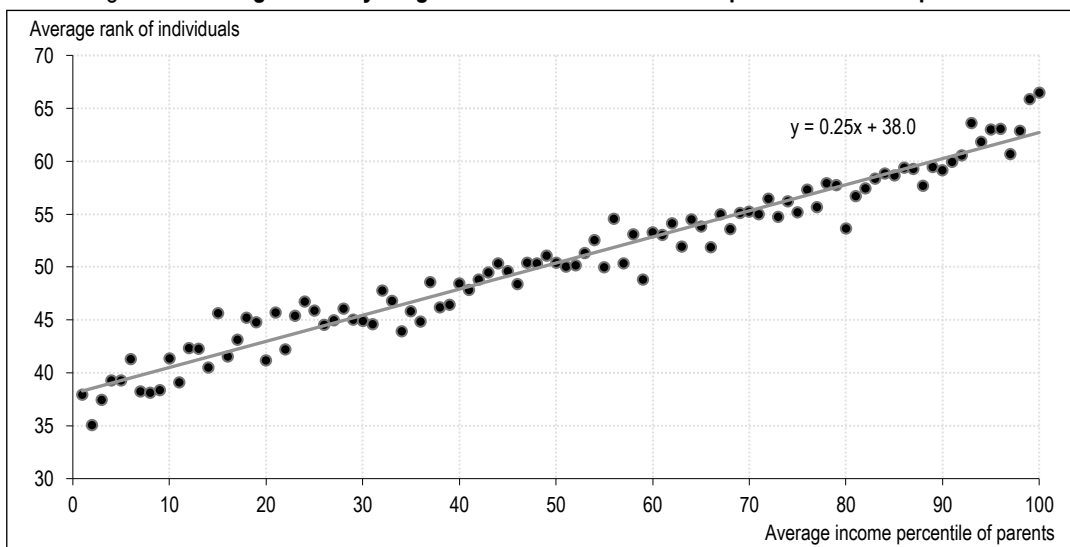
(a little steeper, except at the beginning and the very end of the distribution). The correlation is slightly stronger when we take account of the parents' highest income rather than their average income,⁸ is similar when the father's income is taken into consideration, but less so when the mother's income is used (see Figure S4-2 of Online Appendix S4).

The estimation of the equation using the ordinary least squares method (cf. Box 2) for young people aged 29 years gives a RRC of 0.25: in other words, a person whose parents are classed ten income percentile higher than

those of another person are, on average, ranked 2.5 income percentile higher. For young people aged 30, and more generally for those aged between 27 and 30, the average correlation is also 0.25 (Figure II). This persistence of income from one generation to the next can be explained in part by the fact that the children of wealthy parents are more likely to pursue higher education, as was demonstrated recently by Bonneau & Grobon (2022) in France and

8. Figure S4-1 is the same as Figure II, but uses the parents' highest income rather than their average income (see Online Appendix S4).

Figure II – Average rank of young adults based on the income percentile of their parents



Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals born between 1989 and 1992, included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

Chetty *et al.* (2020) in the United States.⁹ The correlation of 0.25 estimated based on our data is very close to that obtained at the individual income level by Kenedi & Sirugue (2021) by imputing parents' income for France at the age of 29 (0.244). The comparison with other countries is not clear, as the RRC differs depending on the type of income taken into account and the age at which it is estimated. In order to carry out robust cross country comparisons, we compare studies with the same concept of income to ours (individual income) and compare mobility at the same age: around 5%¹⁰ must therefore be added to our estimates for persons aged 29 in order to estimate the value for persons aged 35 (which is generally the reference age used in the literature). The RRC of individual income in France would then be higher (and mobility therefore lower) than that obtained in Switzerland (0.14 according to Chuard-Keller & Grassi, 2021), Sweden (0.2 according to Heidrich, 2017 and even below 0.2 at the age of 28-29 according to Nybom & Stuhler, 2017), Denmark (0.20 according to Boserup *et al.*, 2014 and 0.22 according to Helsø, 2021) and Canada (0.17 according to Corak & Heisz, 1999).¹¹ Conversely, according to the findings made by Chetty *et al.* (2014), who obtain a coefficient of 0.29 for individual income¹² and 0.32 for household income at the age of 29, it appears that the persistence of individual income is lower (and mobility therefore higher) in France than in the United States. The persistence of income also appears to be lower than in Italy, where Acciari *et al.* (2022) find a RRC of 0.30¹³ across a sample of children aged 36. The RRC appears to be relatively close to that obtained at the individual level in Australia by Murray *et al.* (2018) of 0.26 when we increase our estimate by 5%.

The regression intercept (which is the same as the intercept shown in Figure III) is 38.0. The average rank of young people whose parents are at the 25th percentile of the distribution, also called "absolute upward mobility" in the literature, is the 44th percentile ($38 + 0.25 * 25$). It should also be noted that the R^2 of the regression, which measures the proportion of the variability in the ranks of the young people that is explained by the rank of their parents, is relatively low at 6%.

The correlation between their income and that of their parents is largely unchanged when the parents are classified based on definitions of income other than average individual income. The RRC is therefore slightly higher (0.26%) when parents are classified according to their equivalised initial income or according to their

equivalised disposable income (Table 2). It is a little higher still if the highest income of the parents is used rather than their average income, and a little lower if their average declared income (for tax purposes) is used. The RRC is slightly higher when the father's income (0.26) is used, but significantly lower when the mother's income (0.16) is used. The correlation is also systematically slightly higher for daughters (see below), while the correlation between the rank of mothers and the rank of sons is negative, whereas it is positive (but weak) and significant for daughters.

The previous analysis was carried out by expressing the average ranks of the young adults based on the rank of their parents. However, these ranks vary greatly with respect to a given parent's rank. In addition to the average, Figure III shows the three quartiles of the children's income percentile for each of the parents' income percentile. The slope of the median is steeper than the slope of the mean, particularly at the top end of the distribution. This difference is linked to the fact that there are extreme upward and downward mobility (respectively) that make the mean rank of sons and daughters within the lowest (or highest) percentile higher (or lower) than the median. This finding was previously observed by Acciari *et al.* (2022) in Italy. By regressing the median of the percentile of the children's ranks on the parents' ranks, a slope of 0.39 is obtained (see Table S4-4 in the Online Appendix), i.e. significantly higher than when regressing the mean of the ranks.

A study of the rank quartiles reveals a high degree of heterogeneity among the ranks of the children when the parents' ranks remain fixed. The interquartile difference in the conditional distribution of the children's ranks, at a given parental income, is 46 percentile (Figure III), a Figure very similar to that found by Acciari *et al.*, 2022, while the interdecile difference is more

9. The fact that higher education is more valuable in the United States (i.e. higher wage premium with higher education) may explain the persistence of higher incomes in the United States.

10. In France, Kenedi & Sirugue (2021) find a difference of 4% between the rank-rank correlation at 29 years old and at 35 years old for individual income (and 12% for household income). In the United States, Chetty *et al.* (2014) observe a difference of around 5% in the age at which the correlation stabilises (or almost zero when longer data are used to compare with income at 40 years of age).

11. The correlations observed in these countries are estimated on the basis of a concept of individual income that is similar to ours. However, these are measured at ages over 30 years and are therefore likely to be lower under the age of 30.

12. Unlike findings in terms of family income, the authors do not present these results by age, but the rank-rank correlation would still be lower in France, even if the life-cycle correction is applied.

13. In their most reliable estimate, taking account of all sources of bias. The estimate without correction is 0.22. The authors use a definition of income that is very similar to our own for individual income.

Table 2 – Rank-rank regression according to the parental income

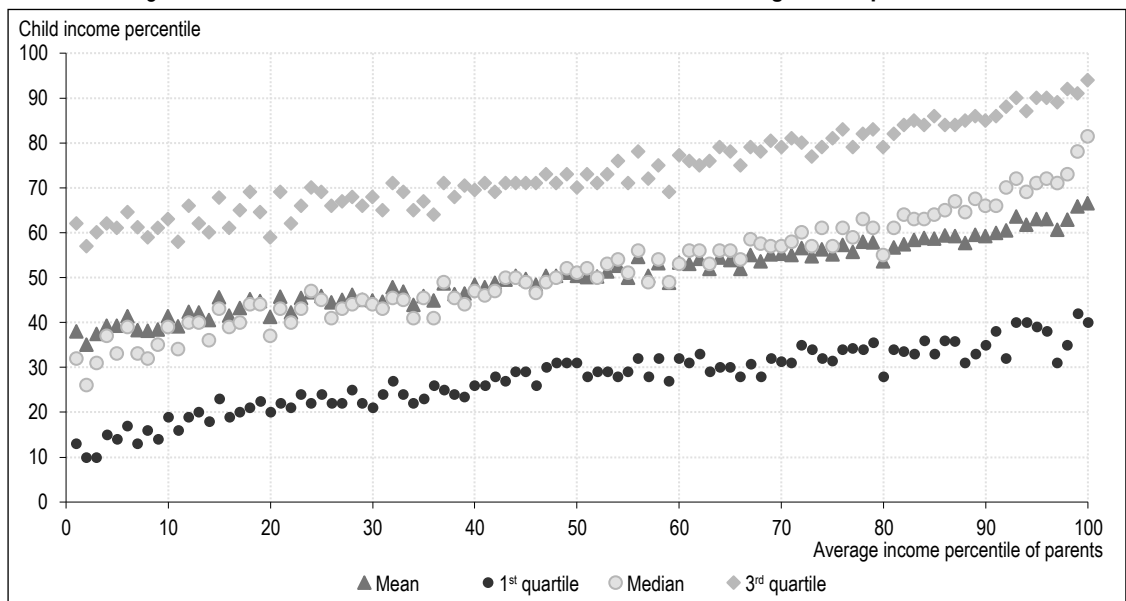
	Dependent variable					
	(1)	(2)	(3)	(4)	(5)	(6)
Average income of parents	0.249*** (0.008)					
Average equivalised income		0.256*** (0.008)				
Average equivalised disposable income			0.255*** (0.008)			
Maximum income of parents				0.264*** (0.008)		
Father's income					0.257*** (0.008)	
Mother's income						0.160*** (0.009)
Constant	37.918*** (0.481)	37.546*** (0.480)	37.629*** (0.480)	37.714*** (0.479)	38.916*** (0.501)	45.484*** (0.553)
Observations	13,707	13,707	13,707	13,707	12,761	10,825
R ²	0.062	0.066	0.065	0.070	0.057	0.016
Adjusted R ²	0.062	0.066	0.065	0.070	0.057	0.016
Residual Std. Error	211.753 (df= 13705)	211.332 (df= 13705)	211.428 (df= 13705)	210.899 (df= 13705)	215.094 (df= 13705)	218.646 (df= 13705)
F Statistic	906.760*** (df= 13705)	964.999*** (df= 13705)	951.751*** (df= 13705)	1025.328*** (df= 13705)	766.499*** (df= 1; 12759)	174.977*** (df= 1; 10823)

Notes: Estimates of the coefficient β of the equation (1). The standard errors are shown in brackets.
Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals aged 29 (born in 1990), included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

than 80 percentile at the top end of the distribution. Even at the lower end of the parents' income distribution, a quarter of individuals exceed the 60th percentile (and 10% exceed the 80th percentile), while at the very top, a quarter of children have incomes below the 30th percentile (and 10% have incomes below the 10th percentile). This

variability in the income positions of certain parents has already been observed in accordance with given social categories of parents by Lefranc *et al.* (2004). We therefore observe numerous cases of upward and downward mobility, indicating that parents' income is not the only factor determining children's income.

Figure III – Percentile in which individuals are ranked according to their parents' rank



Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals born between 1989 and 1992, included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

Turning now to intergenerational transition matrix across quintiles, we observe that 73% of persons aged 29 belong to a different income quintile than their parents. Thirty-one per cent of those whose parents are in the bottom of their distribution remain in the bottom 20% (a phenomenon often referred to as the 'sticky floor' phenomenon), while, at the opposite end of the scale, 12% climb up the income ladder to the top 20% (Figure IV). This latter rate of upward mobility is a little less marked among those aged 30, at 11%. This is very close to the figures obtained by Alesina *et al.* (2018) and Kenedi & Sirugue (2021) using French data, who assessed it at 11% and 10%, respectively, bearing in mind the differences in method and scope (these studies impute the parents' income, involve persons over 30 years of age and use different definitions of income). The rate of upward mobility is significantly higher than in the United States (7.5% according to Chetty *et al.*, 2014, and 7.8% according to Alesina *et al.*, 2018), Italy (8.6% according to Acciari *et al.*, 2022, and 10.4% according to Alesina *et al.*, 2018) and Germany,¹⁴ but lower than in Canada (13.4% according to Corak & Heisz, 1999) and Sweden (15.7% according to Heidrich, 2017).¹⁵ Conversely, 35% of persons aged 29 born to parents in the top 20% remain at the top 20% (referred to as the 'sticky ceiling' phenomenon).¹⁶ Therefore, members of the wealthiest 20% of families are three times more likely to themselves be among the wealthiest 20% (of their generation) than members of the poorest 20% of families. Fifteen

per cent of children exhibit downward mobility towards the poorest 20%. This percentage is reduced if we use the income of the household to which the person belongs rather than their individual income, partly due to the temporary unemployment of one of the two partners upon the birth of a child within the couple.¹⁷

Finally, if we broaden the definition of upward mobility to include persons whose parents fall within the poorest 25% (or 40%) who subsequently find themselves in the wealthiest 25% (or 40%), the mobility rate is 16.5% (or 29%). Conversely, mobility between the poorest 10% and the wealthiest 10% is consistently lower, but remains significant: 4% of people whose parents are among the poorest 10% are themselves among the wealthiest 10%.

These figures are robust to the way in which the parents' income is measured, regardless of whether it is equivalised initial income, equivalised disposable income, the highest of the two

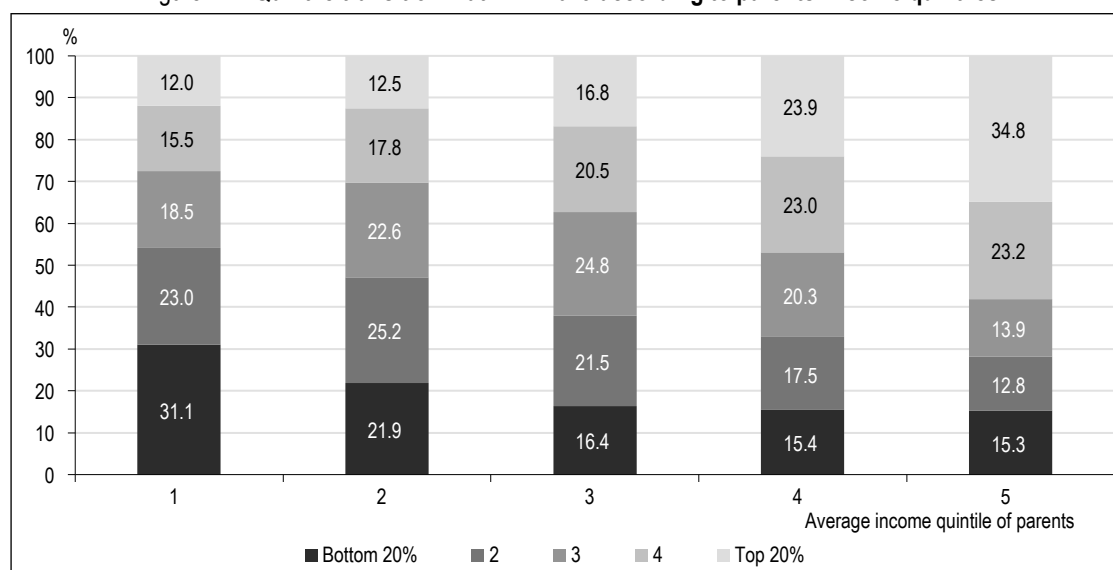
14. According to Schnitzlein (2016), the rate of upward mobility between the quartiles at the extremes of the distribution is 15% in Germany. According to our findings, it is 17% in France. The OCDE (2018) also calculates a much lower rate of upward mobility in Germany than in France.

15. The percentage of upward mobility appears to be much closer in Denmark (11.7% according to Boserup *et al.*, 2013) and Switzerland (Chuard-Keller & Grassi, 2021); however, these findings relate to an older age, so upward mobility is expected to be higher in these countries. We compare our estimation only with countries whose estimates are made at the individual level.

16. That figure would have been 20% had their position on the income scale been by chance (perfect equality of opportunity).

17. The fact the downward mobility is higher among women is in line with this explanation. For example, Kenedi & Sirugue (2021) observe much lower downward mobility by using a definition of income at household level rather than at individual level.

Figure IV – Quintile transition matrix in 2019 according to parents' income quintiles



Reading note: 31.1% of children whose parents were in the bottom 20% (column 1) are themselves in the bottom 20% of the income distribution in their age category in 2019, and 12.0% are in the top 20%

Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals aged 29 (born in 1990), included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

parents' incomes or the average income that is taken into consideration (Table 3). However, upward mobility is slightly lower (11%) when

the maximum income of parents and/or the standards of living of the parents is taken into account for children aged 29 years.

Table 3 – Transition between income quintiles according to the definition of parental income used

	Sticky floor (B20/B20)	Upward mobility (B20/T20)	Sticky ceiling (T20/T20)	Downward mobility (T20/B20)
Average income of parents (%)	31	12	35	15
Equivalised income (%)	31	12	35	15
Standard of living (%)	30	11	35	15
Maximum income of parents (%)	31	11	36	15

Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals aged 29 (born in 1990), included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

2.2. Robustness Checks

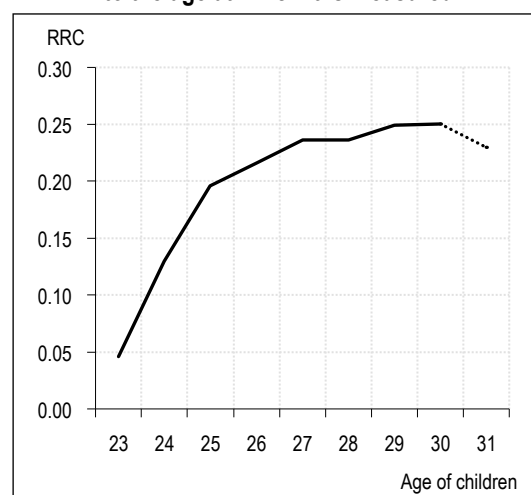
Lifecycle bias. This potential bias is linked to the fact that we are focusing on people who are still young (27 to 30 years of age) and therefore not necessarily in a fully stabilised position on the labour market (and therefore do not yet have a fully stabilised income). In order to assess the scale of this bias, in this section, we comment on the relationship between the rank-rank correlation and the age at which it is measured (Figure V). The RRC increases sharply between the ages of 23 and 25 (it is almost zero before this age); the increase slows between the ages of 25 and 27, is very slight from the age of 27 and stabilises at the age of 29. This backs up our decision to only present our findings for persons aged between 27 and 30 and to focus our analysis on those aged 29. It should be noted that the findings concerning persons aged 31 are affected by selection effects¹⁸ and must be interpreted with caution (probable under-evaluation of the correlation). Different studies reveal that there may be a gap between the RRC at 29 to 30 years and that at 35 years, which brings an order of magnitude of life cycle bias: Kenedi & Sirugue (2021) calculate a difference of 4% (or 10%) between the RRC at 29 and at 35 (or 40) with regard to individual income in France, and Chetty *et al.* (2014) observe a very small gap (which may even be non-existent depending on the data used) between those aged 29 and those aged between 35 and 40. It should finally be noted that, according to a recent study (Loisel & Sicsic, 2023¹⁹) mobility throughout a person's life appears to be very low in France, which is indicative of low life cycle bias.

Finally, Table S4-2 in the Online Appendix shows the various statistics from the transition matrices for different ages. The findings concerning the 'sticky floor', upward mobility and the 'sticky ceiling', are very close whether

they are measured at 27, 28, 29 or 30 years of age. Between 30 and 32% of persons born to parents in the bottom 20% remain in the bottom 20%, while 11–12% find themselves in the top 20%. Kenedi & Sirugue (2021) also find that upward mobility remains at the same level from the age of 27. These figures remain largely unchanged when standard of living is taken into consideration rather than the average income of parents (see Table S4-3 in the Online Appendix).

The findings of Section 3 below, which concern children aged between 27 and 30, primarily use upward mobility (see Box 2), the indicator that is the least sensitive to life cycle bias.

Figure V – Rank-rank correlation according to the age at which it is measured



Sources and coverage: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals aged between 23 and 31 in 2019, included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019.

18. This is linked to the fact that we only observe those who were still living in the same household as one or both of their parents in 2010, when they would have been 23 years old.

19. According to the authors, the rank-rank correlation is around 0.9 over 10 years, and the upward mobility 1.5%. (for individuals aged between 25 and 42, and 2%, for individuals aged 29).

Age of parents. Although we consider children of the same age, their parents are of different ages. We thus assess the sensitivity of our baseline estimates depending on the age at which parent incomes are measured. We show that, by controlling for the parents' age in the regression (1), the results are very similar. We also test restrictions on parents' ages. According to our data, less than 2% of mothers and 7% of fathers are over the age of 60. If we limit our sample to persons whose parents are between the ages of 40 and 60, we observe a very slight increase in the rank-rank correlation (0.254 compared with 0.249, see Table S4-4 in the Online Appendix), which is consistent with the fact that the correlation between the age of the parents and their position on the income scale is not significant.

Children's income. In this analysis, child income is defined at the individual level rather than household level with equivalised disposable income, as a significant proportion of 29-year-olds are still living with their parents and, by definition, their equivalised disposable income at the age of 29 is the same as that of their parents. However, the analysis can be limited to those who are no longer living in the same dwelling as they were in 2010 (i.e. their parents' home),²⁰ which excludes around 20% of individuals. Among this restricted population, the rank-rank correlation is 0.26 if the individual income of the children and their parents is used (see Table S4-4 of the Online Appendix), and 0.29 if the standard of living of parents and children is used (and remains below the figure obtained for the United States by Chetty *et al.* (2014) using this variable at age 29, which is 0.32–0.33). The fact that the correlation is higher for equivalised disposable income than for income is linked to social homogamy at the time of becoming a couple.

Weighting. The regressions are weighted (see above), but not weighting them makes little difference to the results (see Table S4-4 in the Online Appendix). We also tested different weight sets, allowing us to better correct for the selection bias and to align income with that of the general population (see Online Appendix S2). The rank-rank correlation varies from 0.23 to 0.26 depending on the weighting applied, while upward mobility between the bottom and the top 20% remains stable at 12% (with the exception of one scenario at 13%, see Table S2-3 of the Online Appendix). The weighting that we have used in our main findings gives central results and has the advantage of causing less distortion to the starting weights available in the EDP.

3. Mobility According to Socio-demographic and Geographical Characteristics

Tables S4-5 to S4-7 and Figures S4-4 and S4-5 of Online Appendix S4 break down the aforementioned mobility indicators according to the various characteristics of the individual (gender, year of birth), household (family configuration, capital income, occupancy status of the dwelling) or the parents²¹ in 2010 (qualifications, occupations, migrant status) or geographical characteristics (region, department or size of the urban unit). To further investigate this, we use a modified Poisson regression with robust variance error (according to the procedure applied by Zou, 2004) that explains the B20/T20 upward mobility (and the expanded B40/T40 upward mobility) using these variables. Since the B40/T40 upward mobility involve twice as many people as the B20/T20 upward mobility, it results in more accurate estimators.

3.1. Analysis of Upward Mobility

Table 4 shows the relative risks (when compared with a baseline), referred to here as upward mobility relative chance²² obtained by regression and the associated confidence intervals. Women are 1.5 times less likely to achieve the expanded upward mobility than men (column 1) and 1.8 times less likely to achieve B20/T20 mobility (column 3).²³ This is a significant difference and is consistent with the existence of a large gender gap when it comes to income. The probability of upward mobility is lowest for single-parent families and complex households (and, to a lesser extent, large families) than for couples with one or two children. This can be explained by the specific difficulties faced by these families. Conversely, the fact that parents have high capital income favours mobility. Therefore, the positive effects of capital (the ability to access expensive training or significant social capital) outweigh any theoretical negative impacts (lower incentives to undertake long-term studies or to find a job). These impacts are a

20. However, this approach does not allow for the exclusion of those who moved house with their parents between 2010 and 2019.

21. Reference person of the family defined as the parent with the highest income.

22. This is easier to interpret than the odds ratios resulting from logistic regressions, which may be interpreted incorrectly. Indeed, the odds in the odds ratio already correspond to a relative chance measured by a probability ratio $r/(1-r)$, where r is the frequency of the event). This gives different results than a relative chance when r is not particularly small, as is the case in our study (see Figure S4-9 in Online Appendix S4).

23. The univariate analysis indicates that men have a 15% (or 34%) probability of achieving B20/T20 (or B40/T10) upward mobility, compared with 8% (or 24%) for women (see Table S4-7 in Online Appendix S4). This is also consistent with the fact that the rank-rank correlation is higher for daughters than for sons (by around 0.03 points).

little lower than those revealed by a descriptive univariate analysis,²⁴ but remain very significant. Likewise, children whose parents are homeowners have a higher probability of achieving upward mobility and a lower probability of remaining at the bottom end of the distribution and experiencing downward mobility.

Persons for whom the highest earning parent is an immigrant are far more likely to climb up the income ladder than those whose highest earning parent is not an immigrant.²⁵ This is consistent with the findings obtained by Abramitzky *et al.* (2021) for the United States, which reveal stronger upward mobility among immigrants for more than a century. This is partly linked to the fact that immigrants are more likely to live in large urban centres with more employment opportunities; however, we demonstrate that this finding remains valid even when controlling for location. Abramitzky *et al.* (2021) emphasise that this is primarily linked to the fact that immigrant fathers are paid less well than non-immigrants with the same skills (with this being especially true for those who immigrated later than in early childhood, due to a poorer grasp of the language, which prevents them from finding a job that matches their qualifications). In addition, among the descendants of immigrants, upward mobility is most prevalent among those whose parents come from Asia (30%), followed by those from America and Europe (19%). The figure is lowest for those from sub-Saharan Africa (13%), though this is still higher than that for children whose parents are not immigrants (10%). However, it should be noted that this more frequent upward mobility for immigrants goes hand-in-hand with an increased risk of remaining at the bottom end of the distribution or experiencing downward mobility (see below).

Persons whose highest-earning parent (often the father) is educated to at least baccalaureate level are significantly more likely (around 1.3 times) to achieve upward mobility, all else being equal.

The differences in mobility according to social origin (measured by occupation) are much smaller when estimated controlling for other characteristics: there is therefore no significant link between the fact of having a father in a management position rather than an intermediate profession and higher B40/T40 upward mobility. Conversely, upward mobility is weaker for the children of manual workers (0.8) than for the children of parents in intermediate professions.

Finally, persons whose family was geographically mobile during their childhood are also

more likely to achieve upward mobility, and income persistence is lower for them.

The probability of upward mobility is significantly higher for those who grew up in Île-de-France compared with those who grew up in Auvergne-Rhône-Alpes. It is significantly lower in Hauts-de-France than in Auvergne-Rhône-Alpes. In order to determine whether differences in mobility from region to region are linked to differences in average income between those regions, we add the quintile of median income of the municipality or urban area in which the person was living in 2010 to the regression. By adding this variable, there was no significant difference between Île-de-France and Auvergne-Rhône-Alpes, but the probability of mobility remains lower in Hauts-de-France (see Figure S4-6 in the Online Appendix). The values of the coefficients for the other regions also remain similar to those obtained without controlling for the income of the area of residence in 2010. Therefore, the specific effect of the territories remains, even when we control for the level of income, except for the Île-de-France region, the positive results of which appear to be linked solely to its level of wealth.

Finally, we look directly at whether upward mobility depends on the characteristics of the territory of origin. We observe that, all else being equal, there is a higher probability of upward mobility in areas in which the rate of graduates and GDP per capita are the highest; however, there is no difference when we take account of the type of area that the territories exhibit (see Figure S4-7 of the Online Appendix).

It is also interesting to note that we have not identified any correlation between mobility and standard of living inequalities at the regional and departmental level (or even based on other zoning), which is different from the findings of Chetty *et al.* (2014) in the United States. A positive correlation appears between upward mobility and the median income of the territory (see Abbas & Sicsic, 2022 for more details). This could be linked to the fact that the wealthiest territories are the most attractive and offer more employment opportunities, thereby creating favourable conditions for upward mobility.

24. 21% (or 40%) of individuals whose parents are among the top 10% of capital income achieve upward B20/T20 (or B40/T40) mobility, compared with 10% (or 26%) of those whose parents receive below-average capital income.

25. Descendants of immigrants also have a lower rank-rank correlation, which is even lower (0.13) for descendants of immigrants who hold a high-level diploma (see Figure S4-5 in the Online Appendix).

Table 4 – Upward mobility characteristics – Poisson regression

Variables	Conditions	Variable of interest and population					
		B40/T40		B40/T40 entire population		B20/T20 entire population	
		Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Gender	Male	<i>Reference</i>					
	Female	0.68***	0.04	0.69***	0.00	0.55***	0.01
Parents' capital income	Below D5	<i>Reference</i>					
	D5-D9	1.24***	0.04	1.32***	0.00	1.40***	0.01
	Above D9	1.25**	0.08	1.41***	0.01	1.85***	0.01
Type of household	Couple with 1 or 2 children	<i>Reference</i>					
	Couple with 3 or more children	0.94	0.05	0.98***	0.00	1.01***	0.01
	Single-parent family	0.87*	0.07	0.84***	0.00	0.80***	0.01
	Complex household	0.71***	0.10	0.75***	0.01	0.59***	0.02
Geographical mobility	Non-mobile	<i>Reference</i>					
	Mobile	1.10*	0.04	1.08***	0.00	1.29***	0.01
Education (parent)	Unqualified	<i>Reference</i>					
	Qualification below baccalaureate level	1.15*	0.06	1.13***	0.01	0.99***	0.02
	Baccalaureate or equivalent	1.34***	0.07	1.34***	0.01	1.35***	0.02
	Qualification above baccalaureate level	1.30***	0.07	1.29***	0.01	1.13***	0.03
	Missing			1.03***	0.04	0.94***	0.08
Immigrants (parent)	Non-immigrant	<i>Reference</i>					
	Immigrant	1.18**	0.06	1.24***	0.01	2.00***	0.02
	Missing			1.14***	0.04	1.38***	0.07
Occupation (parent)	Intermediate profession	<i>Reference</i>					
	Farmer	0.83	0.11	0.82***	0.02	0.80***	0.03
	Self-employed	1.06	0.07	1.11***	0.01	1.12***	0.03
	Manager	1.11	0.08	1.13***	0.01	1.20***	0.03
	White-collar worker	0.86*	0.06	0.88***	0.01	0.88***	0.03
	Manual worker	0.82**	0.06	0.84***	0.01	0.70***	0.02
	Other	0.99	0.10	0.94***	0.02	1.00***	0.03
Region of origin	Auvergne-Rhône-Alpes	<i>Reference</i>					
	Bourgogne-Franche-Comté	0.98	0.11	0.95***	0.01	0.92***	0.02
	Brittany	0.84	0.10	0.85***	0.01	0.88***	0.02
	Centre-Val-de-Loire	1.07	0.11	0.94***	0.01	1.050	0.03
	Corsica	0.93	0.39	1.23***	0.04	1.64***	0.09
	Grand Est	0.96	0.09	0.84***	0.01	0.74***	0.02
	Hauts-de-France	0.79**	0.09	0.79***	0.01	0.65***	0.02
	Île-de-France	1.22*	0.08	1.19***	0.01	1.51***	0.02
	Normandy	0.96	0.10	0.91***	0.01	0.82***	0.02
	Nouvelle-Aquitaine	0.98	0.09	0.87***	0.01	0.81***	0.02
	Occitanie	0.93	0.09	0.85***	0.01	0.83***	0.02
	Pays de la Loire	0.96	0.09	0.91***	0.01	0.90***	0.02
	Provence-Alpes-Côte d'Azur	0.90	0.10	0.84***	0.01	1.06***	0.02
Years	1989	<i>Reference</i>					
	1990	1.085	0.06	1.01	0.00	1.17***	0.01
	1991	1.119	0.06	1.07***	0.00	1.22***	0.01
	1992	1.147	0.08	1.13***	0.01	1.33***	0.02
	Intercept	0.30***	0.10	0.31***	0.01	0.10***	0.03
Observations		5,637		22,878		11,157	

Notes: The table indicates the risk ratio (RR) or likelihood of achieving upward mobility depending on various types of indicator between a particular modality and the reference modality (1st modality of each variable) based on a modified Poisson regression with robust variance. The "parent" indicated in the "Variables" is the parent with the highest income for the immigrant's status, the qualification and occupation, and these variables are observed between 1999 and 2012. The other variables were measured in 2010. The findings for the "entire population" correspond to the findings with all observations, without limiting the study to only non-missing data.

Sources: INSEE-DGFIP-CNAF-CNAV-CCMSA, *Échantillon démographique permanent* (INSEE's demographic panel sample) 2020. Metropolitan France. Individuals born between 1989 and 1992, included in their parents' tax return in 2010, 2011 or 2012 and who have positive or zero income in 2019, included in the annual census survey (EAR) or the population census.

Various robustness checks were performed according to the variables of interest taken into consideration, the way in which missing data was processed, the type of regression performed or even the age of the parents under consideration. Results are very close when the whole population is considered²⁶ but there are more significant (Table 4, column 2). One notable effect is that the Île-de-France effect becomes much more significant when the regression is performed on upward B20/T20 mobility (ratio of 1.5 compared with 1.2 for expanded mobility, Table 4, columns 2 and 3) (and to a lesser extent, when multinomial regression is performed – Figure S4-8 of the Online Appendix). The effect of being descended from immigrants also increases, as does the effect linked to parents' capital income. For information regarding the other tests, see Online Appendix S4 and Abbas & Sicsic (2022).

3.2. Analysis of Downward Mobility

As for upward mobility, we use a Poisson regression to explain downward T40/B40 mobility (probability of the top 40% falling into the bottom 40%). The findings (see Figure S4-10 in the Online Appendix) are generally the inverse of the findings for upward mobility, with some differences. Women, single-parent families and complex households have a higher probability of experiencing downward mobility, as do immigrants. The latter finding regarding immigrants is therefore not symmetrical with the finding for upward mobility.

Having parents with high capital incomes or who have completed higher education is protective against downward mobility. Unlike with upward mobility, geographical mobility during childhood and the occupation of parents have no impact on downward mobility. Across the whole population, the findings are similar, but more significant: for example, the fact of having capital income or holding a high-level diploma offers greater protection against downward mobility (see Figure S4-11 of the Online Appendix).

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This article gives, for the first time, a direct estimate of intergenerational income mobility

Link to the Online Appendix:

www.insee.fr/en/statistiques/fichier/7661155/ESpreprint_Sicsic_OnlineAppendix.pdf

in France based on data that matches individual income in 2019 to parents' income a decade earlier. When measured in this way, the intergenerational mobility at the individual income level appears to be higher than in the United States and Italy, and close to that observed in Australia when life cycle bias is corrected for. However, it appears to be lower than in Switzerland, Sweden, Denmark and Canada. The wealth of data used allows us to demonstrate that, all else being equal, upward mobility is even more pronounced when the parents have high capital incomes, when the parent with the highest income has a level of education at least equal to the baccalaureate, when they are an immigrant and when their family was geographically mobile during their childhood. Conversely, the fact of being female, having lived in a single-parent family or in a family in which the reference person is a manual worker and being resident in Hauts-de-France has a negative impact on upward mobility. Persons from Île-de-France and the bottom 20% of the income scale are more likely than others to experience upward mobility. This effect is linked to the attractiveness of Île-de-France, together with the opportunities the area offers in terms of higher education and jobs. Children of immigrants have also an elevated risk of downward mobility, and sticky floor.

It is important to remember that these findings relate to persons between the ages of 27 and 30. Although almost all of these young adults are in employment, their income at this age is not their permanent income, which may have an (upward) impact on certain mobility indicators. However, the existing literature leads us to believe that this effect is minor for the statistics that we use (upward mobility is very similar at 29 and 35 years of age), especially when coupled with the very low intragenerational mobility in France (particularly when compared to the United States) (Loisel & Sicsic, 2023). It will be interesting to update these initial findings when similar data will be available for children aged between the ages of 35 and 40. This new database can also be used to measure inequality of opportunities in France (Roemer & Trannoy, 2016). □

26. In other words, not limited to individuals included in the population census data: it is therefore necessary to add a 'missing' category for the population census variables.

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