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Accounting for Intergenerational Wealth Mobility in France over the 20^{th} Century: Method and Estimations[1]

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We propose a new and simple method to study the intergenerational wealth correlation (IWC) between two generations which is easy to implement in wealth (and housing) surveys and is aimed at overcoming the major data limitation present in most countries. We show that information about the ownership of housing assets combined with a Two-Sample Two-Stage Least Squares approach can be used to study IWC. Using France as our guiding example, we are able to estimate not only the level of the IWC but also its trend thanks to an exceptionally large number of cohorts spanning over the 20th century. We focus on the wealth positions measured at the mid-life cycle of both children and parents. First, we find that probabilities of belonging to the top wealth groups increase with the wealth of the parents. Moreover, this intergenerational correlation appears to have increased over time. Second, the higher we move up the children's wealth distribution, the larger the role of parental wealth: the persistence in the top 50% is 42% higher than under perfect mobility, and the deviations from perfect mobility are larger in the higher top wealth groups. Third, 50% to 60% of the IWC is accounted for by a mix of direct intergenerational wealth transfers, father's occupation and children's education. Fourth, gifts and bequests explain a larger share of the link between parental wealth and the probability of belonging to the highest top wealth groups (i.e. top 10%) compared with larger top wealth groups (i.e. top 50%). Fifth, children of wealthy parents hold a higher share of their wealth in high-yielding assets which imply an additional unexplored channel of transmission that could be related to intergenerational correlation in financial literacy. We also find evidence of persistence of the effect of parental wealth over the life cycle. (JEL: D31, J62, G11)

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1 Introduction

The relative importance of wealth relative to income has sharply increased in advanced economies. The United States as well as European countries have experienced a sharp rise in the wealth-to-income ratio from the 1970s onwards (Piketty and Zucman (2014)). This trend is associated with a rise in the share of inherited wealth in aggregate wealth (Alvaredo et al. (2017)). Regarding these two trends, France is clearly no exception.[2] In a context of slow growth, the relative importance of wealth, and particularly of previously accumulated wealth seems to be on the rise.[3] While this increase should not necessarily be viewed as negative in itself, it raises questions about the determinants of wealth concentration and the persistence of inequality across generations (Piketty (2000)), especially in a context of low intergenerational income and social mobility (Dherbécourt (2020), Dherbécourt (2018)). Regarding this latter issue, the correlation of wealth across generations may be driven by various factors. It may reflect intergenerational income correlation. As shown by the standard theory of income mobility (Becker and Tomes (1979), Becker and Tomes (1986)), such correlation in incomes may result from parental investment in human capital and from correlation in abilities across generations. The intergenerational wealth correlation may also be explained by direct transfers of wealth (bequests and inheritances) or by the passing-on of preferences (attitudes to risk, patience) regarding savings and consumption behaviour. While the intergenerational correlations in income or education have been widely studied,[4] the empirical work on the intergenerational correlation in wealth is more recent.[5]. As for France, two papers have studied intergenerational *wealth at death* correlation using samples from estate tax data (Arrondel and Grange (2006), Bourdieu et al. (2017)). For samples of individuals born in the 19^{th} century, they both find significant correlation in wealth at death between the children and their father.[6] Unfortunately, there exists no study on more recent cohorts or on living children while the rise in the wealth-to-income ratio and in the share of inherited wealth concern younger cohorts.[7] Our paper

[2] In France, after a steep decline beginning in the early 20th century, the wealth-to-income ratio rose from 2 to 6 between 1950 and 2010. The share of inherited wealth grew from 40% in 1970 to 60% in 2010. See also Garbinti et al. (2018), Garbinti et al. (2020) for an account of income and wealth inequality trends in France.

[3] In the classical Harrod-Domar-Solow formula, the wealth to income ratio is determined as the ratio of aggregate saving rates (net of capital depreciation) to the income growth rate. This illustrates that the lower economic growth, the stronger the multiplicative effect of accumulation on the wealth to income ratio.

[4] E.g. for France Lefranc and Trannoy (2005) or for the U.S. Lee and Solon (2009), Auten et al. (2013), Long and Ferrie (2013), Chetty et al. (2014), Corak et al. (2014), Olivetti and Paserman (2015), Chetty et al. (2017).

[5] See Arrondel and Grange (2006) and Bourdieu et al. (2017) for France, Adermon et al. (2018) for Sweden, Boserup et al. (2017) for Denmark, Fagereng et al. (2018) for Norway and Charles and Hurst (2003) and Pfeffer and Killewald (2017) for the U.S.

[6] Arrondel and Grange (2006) use a sample of father-child pairs living in a particular French county (*département*) with children deceased between 1800 and 1938, and Bourdieu et al. (2017) use a sample with children deceased between 1848 and 1960.

[7] Interestingly, in an article assessing the elasticity of discounting preferences and savings behavior between parents and children, Arrondel (2013) produces an estimate for the intergenerational wealth

aims at filling this gap in the absence of administrative or long-panel data. We propose a new and simple method to study the intergenerational wealth correlation (IWC) between two generations which is easy to implement in wealth (and housing) surveys and is aimed at overcoming the major data limitation present in most countries. Using France as our guiding example, we study intergenerational wealth correlation (IWC) for children and parents at similar stages of their life-cycle. We estimate not only the level of the IWC but also its trend thanks to an exceptionally large number of cohorts spanning over the 20^{th} century.

Our contribution to this literature is twofold.

Our first contribution is related to the measurement of intergenerational wealth correlation in the absence of extensive administrative data (as in Adermon et al. (2018), Boserup et al. (2017), Boserup et al. (2018)) or long panel dataset (like the PSID used by Charles and Hurst (2003) and Pfeffer and Killewald (2017)). We propose a new method to overcome this lack of data and estimate the correlation of wealth across two generations (parents and children). Compared with previous studies, our method is much less demanding in terms of data. Interestingly, it does not require the matching of administrative or fiscal records for two generations and can easily be implemented in wealth or housing surveys. It enables the estimation of the intergenerational wealth correlation by taking the positions in the wealth distribution at similar life-cycle periods for both children and parents.[8] Moreover, it allows to estimate the intergenerational correlation over time by accounting for potential differences across children's cohorts. Our analysis is based on the French Wealth Survey conducted by the National Statistical Institute.[9] Like the Survey on Consumer Finance (SCF) for the United States, the French Wealth Survey aims to measure wealth at the household level. It is a high-quality survey, that is matched with some fiscal data and that breaks down wealth into its different components in order to be as precise as possible. Importantly, the survey also collects information on whether parents of the members of the household (i.e. of both the reference person and his/her partner) owned their main residence when they were 14 and whether their parents owned other kinds of real estate. We document that ownership of the main residence as well as other real estate properties can be used to measure the position of the parents in the wealth distribution and that this feature can be combined with a two-sample two-stage least squares (TSTSLS) approach to provide a relevant measure of the intergenerational correlation in the absence of ideal data which is the most common situation across countries. This approach has been

elasticity (as opposed to correlation) thanks to a qualitative survey in 2002 composed of 440 parent-children pairs with children aged 35 to 55 whose parents are still alive, asking them to self-report their wealth and interviewing their parents about their own total wealth during the current year. Consequently, the wealth of parents and children are not measured at the same stage of their life-cycle with parents far older than the children. Moreover, the size of the sample does not allow to break down the elasticity by smaller age-groups. But note that this paper is mostly focused on correlation of preferences which is likely to be less variable over time than wealth, making this issue much less problematic in this context.

[8]This is an interesting feature since it eliminates life-cycle effects, as shown in Boserup et al. (2017). It also enables to use estimates from intergenerational wealth correlation in order to infer intergenerational correlation in lifetime economic resources.

[9]We use all existing waves of this survey, i.e. 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

widely used to assess intergenerational income correlation (see for instance Lefranc and Trannoy (2005) and Lefranc (2018) for France) but we are the first to use it for intergenerational wealth correlation. In a nutshell, our method relies on two simple items that can easily be incorporated into wealth and housing surveys to foster new national studies on intergenerational wealth mobility.

Using our methodological approach, we derive three main results. First, information about ownership of the main residence as well as other real estate properties can be used to proxy for wealth groups for all cohorts. Owning one's main residence (with or without having any other real estate property) is associated with belonging to the top 70% of the wealth distribution while owning other real estate, *in addition* to the main residence is associated with a position within the top 50%. It is true for France but also for the U.S. and other Europeans countries. Second, even though these proxies enable the study of intergenerational wealth mobility, they may lead to a bias due to potential misclassifications (since the mapping between real estate properties and wealth groups is not perfect). We show that using a TSTSLS approach allows to correct for this small and downward bias due to misclassification. Third, using data from other European countries and the United States, we show that our method can be extended to other countries and thus could allow the study of intergenerational wealth mobility in many other countries. Compared to previous work, we are able to study numerous cohorts and to clearly present the evolution of the IWC over time which unveils new results.

Our second contribution is to use our method to study intergenerational wealth correlation and reveal new findings for France. We estimate the intergenerational wealth correlation between two generations for numerous cohorts born after World War II. Thanks to the use of estate tax data, previous work for France (Arrondel and Grange (2006) and Bourdieu et al. (2017)) has focused on wealth at death and on cohorts deceased before 1960. This approach presents useful advantages, but may also come with some drawbacks, particularly when looking at cohorts born in the second half of the 20^{th} century. While it is relevant to measure wealth of both parents and children at the same life-cycle period[10], wealth at death may not represent the most accurate measure of wealth to assess the IWC. First, in a context of increasing life-expectancy and real estate tax planning, it is likely to be affected by tax avoidance and tax evasion (Kopczuk (2007), Kopczuk (2012)).[11] Second, the increasing end-of-life expenditure may have a differential impact on wealth accumulation, depending on the position in the wealth distribution.[12] Our baseline analysis focuses on the intergenerational correlation between the wealth positions of children and parents measured at the same life-cycle stage (mid-life cycle). We estimate the probability of belonging to top wealth groups (top 70%, top 50%, top 25% and top 10%) for people aged between 35 and 44 years old. We also compute rank-rank correlation. First, the probabilities of belonging to the top wealth groups increase with the wealth of the parents, which confirms the

[10] see e.g. Charles and Hurst (2003) and Boserup et al. (2017)

[11] There are several ways to avoid most of the estate tax. See Kopczuk (2012) for the U.S and for a broad review of responses to the taxation of intergenerational transfers, see Garbinti and Goupille-Lebret (2018) or Frémeaux (2018) for a focus on France, and Goupille-Lebret and Infante (2018) for an illustration with respect to French inheritance taxes.

[12] See section 3 for a discussion of the ideal period in the life-cycle to measure the IWC.

persistence of the position in the wealth distribution over generations already observed in other countries. Moreover, this intergenerational correlation has increased over time for the probability of belonging to the different top wealth groups. A similar pattern is observed with rank-rank correlations: children born in the mid-1940s and in the 1950s have experienced much lower IWC than subsequent cohorts. Coupled with previous work, this finding suggests a U-shaped pattern in IWC. It is in line with the evidence from the literature highlighting concern about decreasing intergenerational mobility in the recent decades for other countries (Adermon et al. (2018), Boserup et al. (2017)). Compared with other countries and for children born in the 1970s, we find a similar level of intergenerational wealth mobility as the one prevailing in the U.S. for similar birth cohorts, and as the one prevailing in Sweden for cohorts born 10 years prior. For cohorts born in the 1960s, wealth mobility was the same as in Denmark and much higher than in Sweden. This decrease in wealth mobility is consistent with previous findings highlighting the growing importance of accumulated wealth in France.[13]

Second, we find that the higher we move up the children's wealth distribution, the greater the role of parental wealth: the difference in the probability of belonging to the top wealth groups between children with parents in the bottom 30% (respectively in the bottom 50%) and children with parents in the top 70% (respectively in the top 50%) increases as we move up to the higher top wealth groups. The persistence in the top 50% is 42% higher than under perfect mobility, and the deviations from perfect mobility are even higher in the higher top wealth groups (159% for the top 10% with parents in the top 50% wealth group for instance).

Third, we also find evidence of persistence of the effect of parental wealth over the life cycle: our main conclusions are robust when we take the wealth of the second generation at younger and older life-cycle stages, while the parents' wealth is measured at a fixed life-cycle stage (mid-life cycle).

Fourth, we turn to the determinants of this intergenerational wealth correlation. We find that about 50% to 60% of it is accounted for by a mix of direct intergenerational wealth transfers, father's occupation and children's education. Gifts and bequests explain a larger share of the link between parental wealth and the probability of belonging to the top 10% than the link with larger top wealth groups. This share appears lower than what had previously been found in Scandinavian countries. We discuss this point. Finally, we look at differences in children's asset composition. We find that among the top wealth quartile, children of wealthier parents hold a higher share of high-yieding

[13] Alvaredo et al. (2017) show that the share of inherited wealth in aggregate wealth has increased in European countries and in the United States. For France, it rose from 40% in 1970 to 60% in 2010. Moreover, the probability of being part of top wealth groups has decreased for top labour earners, which also reflects the increasing role of past wealth in wealth accumulation (Garbinti et al. (2020)). Regarding homeownership, Bonnet et al. (2018) show that the apparent stability of the homeownership rate among young households from the 1970s masks a growing disparity between the best and least well-off and that family support (in particular through gifts and bequests) has played a significant role in this diverging path in recent years. Spilerman and Wolff (2012) estimate the waiting time from marriage to homeownership using data from one wave of the survey used in this paper (the 1992 wave). In line with our result, they find that couples with low parental wealth are less likely to have made the transition to homeownership. See also Garbinti and Savignac (2021) for results about the increasing intergenerational correlation in homeownership status.

assets. Such differences in children wealth composition could reflect differences in their financial literacy (Lusardi and Mitchell (2014), Bianchi (2018)). Financial literacy is then an additionnal channel that could explain differences in wealth accumulation depending on parental wealth.

This paper is organized as follows. Section 2 presents the data we use and some descriptive statistics. Section 3 shows how ownership of the main residence and other real estate can be used to account for the position in the wealth distribution. Our baseline estimates of the intergenerational correlations are presented in Section 4. Section 5 investigates the role of intergenerational transfers and human capital in explaining the intergenerational wealth correlation. Section 5 shows some robustness tests over the life cycle of the children. Section 6 concludes.

2 Data

2.1 Sources and definitions

Our empirical analysis is based on the French Wealth Survey conducted by the French Statistical Institute (INSEE). Like the SCF for the United States, the French Wealth Survey aims to measure wealth at the household level. It collects detailed household-level information on assets (financial, housing and professional assets) and liabilities, family composition, socio-economic characteristics and intergenerational transfers. The survey is a cross-sectional dataset.[14] We use all waves of the French Wealth Survey. These waves relate to the following years: 1986, 1992, 1998, 2004, 2010, 2014, and 2017. In each wave, the weighted sample provides country representative figures for asset holdings and wealth.[15]

Our concept of wealth is individual gross wealth excluding durable goods.[16] While wealth is measured at the household level in the survey, we present the core of our analysis based on individualized wealth. This means that, for couples,[17] we divide

[14] A panel component was introduced in 2014 and is only available in the 2014 and 2017 surveys. The number of panel households by cohort is, however, too limited to analyse the intergenerational wealth correlation over the 20^{th} century using this panel component.

[15] The financial assets at the top of the distribution may be underestimated in this type of surveys because of offshore wealth or coverage of the very top of the distribution that, despite the oversampling methods, may not be precise enough (see Bricker et al. (2016), Vermeulen (2016) or Garbinti et al. (2020) for a discussion of this and for other references). Consequently, we do not focus on the very top percentiles of the wealth distribution.

[16] For the two first waves of the survey (1986 and 1992), wealth is reported in brackets. We compute ranks having simulated the wealth distribution from these brackets and using economic and socio-demographic information. See Appendix A.4 for more details about this procedure. We use a multiple imputation procedure by imputing 5 different sets of imputations. As a benchmark we use the first set of imputations. We test the robustness of our finding to the other sets of imputations and show no difference in the results (see section 7.1). From 2010 onwards, durable goods are reported in the survey. In 2010 the amount is fully simulated by INSEE while starting in 2014 the amount is computed thanks to specific questions. These changes in methodology and in the concept of "total wealth" lead to breaks in the series and concept. We thus decide to exclude durable goods for reasons of comparability.

[17] On average, 58% of the reference persons live with a partner i.e. "in a couple" when surveyed in

wealth by two and attribute it to each partner (while the ownership of all housing assets is still attributed to each partner). This choice is mainly driven by the issues related to the comparison between the wealth of single individuals and wealth of couples over the long run. First, due to the decline in marriage rates and the rise in single-headed households, the number of households has increased faster than the number of adults. Such differences in household size may lead to an overstatement of wealth inequality between singles and couples and are also subject to confounding trends in household size. To study wealth inequality over the long run in France, this choice is by far the most commonly (if not the only one) used in the academic literature (see Piketty et al. (2006), Piketty et al. (2014), or Garbinti et al. (2020)). However, taking individual or household-level units leads to the same main results (see section 7.1 for all our robustness checks).

We focus on the probability of belonging to the top wealth percentiles (top 70%, top 50%, top 25%, and top 10% for a given age group within each cohort). We set the lower age bound to 25 in order to preserve the sample size, and the upper limit is set at 54 to exclude specific wealth disaccumulation behaviours that may be specific to older ages.[18] We then define three age categories: 25-34, 35-44, and 45-54 years old. Our benchmark category is 35 to 44 year-old individuals, since they are in the middle of their life cycle. This also allows us to measure parents' and children's wealth at the same life-cycle period (as recommended by Charles and Hurst (2003), or Boserup et al. (2017), to account for the wealth accumulation profile over the life cycle). The other age groups are studied as robustness tests for our findings, and allow us to assess the intergenerational correlation for children of different ages, while the wealth of the parents is measured at a fixed age (Boserup et al. (2017)).

The parents' wealth is elicited from the survey, which makes it quite unique for the study of the intergenerational wealth correlation. More specifically, the survey collects information on whether the parents of the members of the household (i.e. of both the reference person and his/her partner) owned their main residence when they were 14, and whether their parents owned other kinds of real estate. We are thus able to link the wealth of the second generation (through its rank in the wealth distribution) to the wealth rank of the parents (using wealth indicators such as real estate or main residence ownership and a TSTSLS approach). In Section 3, we show that these wealth indicators can be used as a convincing tool to assess the wealth rank of the parents through a TSTSLS approach, once we have ascertained the period of the parents' lifetime to which the reported information about their real estate holdings relates. The survey also provides retrospective information about the inheritances and gifts received both for the reference person and their partner, as well as their education and the occupation of their fathers.

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our sample.

[18] And in particular because of transfer behaviours that may occur in order to avoid inheritance taxes (see for instance Kopczuk (2012).

2.2 Sample

The seven waves of the French wealth survey cover individuals born over the course of the 20^{th} century. At the time of the survey, we observe older individuals for older cohorts; while for more recent birth cohorts, our sample only includes young individuals. Since our population of interest is aged 25 and over, we restrict our sample to individuals born before 1992 (who are thus aged 25 in 2017). We also exclude cohorts with individuals born before 1933 which contain only very few observations. We then define cohort groups based on the year of birth of the individual to create five-year cohorts. There are more than 5,600 observations for birth cohorts spanning from 1948 to 1972 (Table 1). Our benchmark group of individuals aged between 35 and 44 comprises more than 20,000 individuals born between 1943 and 1982.

Table 1: Sample description

Cohorts	**1933-1937**	**1938-1942**	**1943-1947**	**1948-1952**	**1953-1957**	**1958-1962**	**1963-1967**	**1968-1972**	**1973-1977**	**1978-1982**	**1983-1987**	**1988-1992**
Number of observations	763	1 859	3 705	5 633	6 996	8 188	10 033	8 076	5 552	3 834	2 329	1 022
Repartition (weighted)	3%	6%	9%	12%	13%	15%	14%	10%	8%	5%	3%	3%
Age group												
25 - 34 years old	0%	0%	0%	0%	22%	31%	27%	29%	33%	50%	100%	100%
35 - 44 years old	0%	0%	35%	52%	42%	33%	29%	38%	67%	50%	0%	0%
45 - 54 years old	100%	100%	65%	48%	36%	36%	45%	34%	0%	0%	0%	0%
Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*
Parents' real estate holding category												
Parents without real estate	55%	52%	47%	43%	41%	37%	32%	31%	28%	27%	30%	33%
Homeowner parents without other real estate	32%	35%	38%	42%	44%	46%	48%	51%	53%	56%	54%	51%
Homeowner parents with other real estate	10%	10%	12%	12%	13%	14%	16%	14%	16%	15%	13%	12%
Others	3%	3%	3%	3%	3%	3%	4%	4%	3%	3%	4%	3%
Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*

Source: French Wealth survey (INSEE) 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

The evolution over time of the occupation of the individuals (Figure E1, panel a), or of their father (Figure E1, panel b) observed in our sample accurately reflects the evolution of the French economy,[19] with a decreasing share of farmers, craftsmen and small business owners, and increasing educational levels over the course of the 20^{th} century.

3 Parental ownership of housing assets & children's wealth

To study intergenerational wealth correlation, our methodology relies on the use of two simple qualitative survey questions about parental ownership of the main residence and ownership of other real estate properties. In this section, we first present these items. Second, we evaluate the stage of the parents' life cycle to which children's responses correspond to. Finally, we investigate the correlation between children's wealth and parental ownership of real estate properties.

[19] See for instance Figure 2 in Bauer et al. (2018).

3.1 Qualitative questions about the parental real estate ownership during the childhood of surveyed individuals

The information about the real estate assets of the parents during the individual's childhood is elicited with the following questions: "*During the childhood of [the reference person], did the parents [of the reference person] own:*

- *their main residence (Yes/No)*;
- *any other real estate properties (Yes/No)?"*

A similar question is also asked about the partner of the reference person. This makes it possible to account for the real estate assets of the first generation for all cohorts. Unfortunately, there is no information about the total wealth of the parents. Nevertheless, asking precise questions about the amount of wealth of the parents during the individual's childhood would have probably led to either imprecise or missing answers. Indeed, it is very unlikely that individuals would be able to properly assess and remember the level of wealth of their parents during their childhood. By contrast, questions about the ownership of the main residence and other real estate properties (second home or investment property) are easier to answer and do not lead to a significant number of missing answers (less than 2% for these two items).

Beside the fact that these questions are easily answered, they present two other crucial advantages. First, they provide information about parental wealth without requiring matching administrative data between children and father. Though close to the ideal type of data one would wish to use, approaches relying on this kind of matching (as used in Adermon et al. (2018) or Boserup et al. (2017), Boserup et al. (2018)) are very demanding in terms of data. Currently, they are seldomly possible in the vast majority of countries, while two qualitative questions about the parental ownership of housing assets during the individual's childhood are easy to incorporate into any wealth or housing survey.

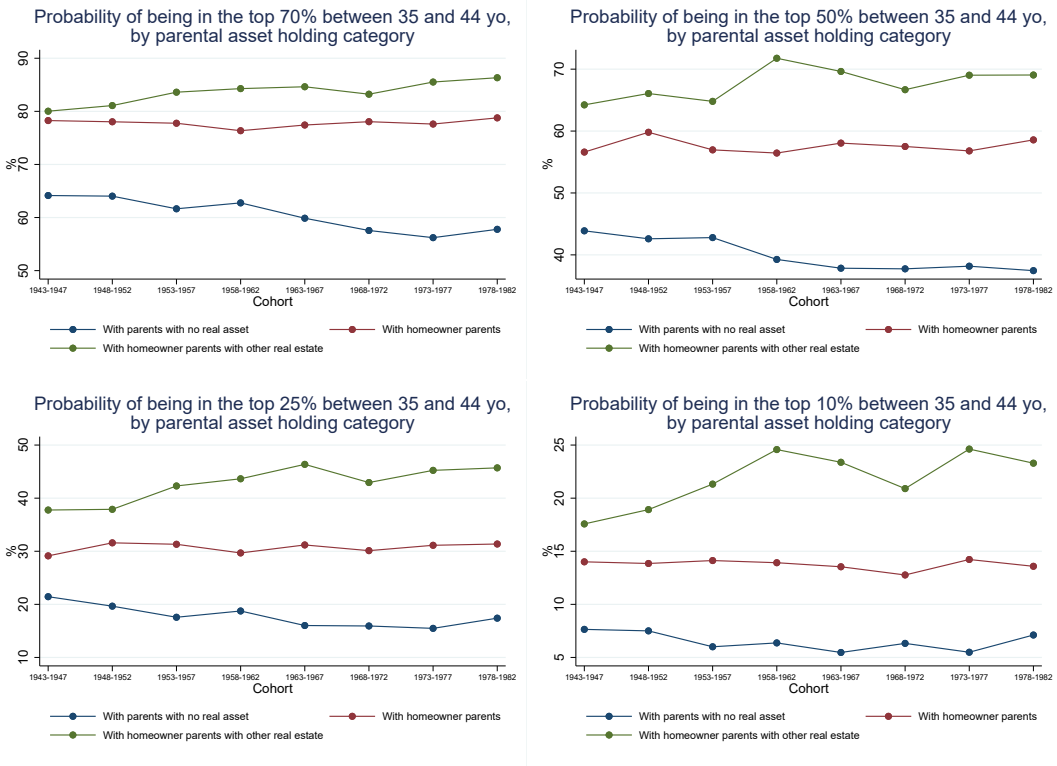
Second, these questions also have the great advantage of giving information at the same point in the lifetime of the parents (childhood of their children) for all surveyed cohorts. This is a crucial advantage of this question, especially when comparing intergenerational correlation across cohorts (Boserup et al. (2017)).

With these two qualitative questions, we are able to split the population of parents into four categories: parents without any real estate property, parents that owned their main residence without any other real estate property, parents that owned other real estate properties in addition to their main residence and a residual category of parents that owned other real estate properties without owning their main residence (they only represent 2% of the sample, see Table 1).

3.2 Correlation between children's wealth and parental ownership of real estate properties

The four panels of figure 1 display the percentage of households by real estate asset category of the second generation ("non-homeowner parents" for parents without real estate, "homeowner parents" for parents who are homeowners and "homeowner parents with other real estate" for parents who own other real estate property in addition to their main residence) in four top wealth groups (top 70%, top 50%, top 25% and top 10%).

Figure 1: Probability of being in top wealth groups by parental asset holding category



These figures suggest a positive association between the probability of belonging to the top wealth groups and the parental real estate ownership. The probability of belonging to all four top wealth groups is higher for individuals with parents who own both their main residence and other real estate than for individuals whose parents are homeowners. These probabilities are in turn higher for individuals whose parents are homeowners than for individuals whose parents do not own any real estate.

In Appendix section B, we investigate the magnitude and the significance of these diverging patterns with a linear probability model. We find statistically significant higher probabilities of belonging to the top wealth groups for individuals whose parents are homeowners compared with individuals whose parents did not own any real

estate property. For most of the regressions, we also find that the effect of having parents who are either homeowners or homeowners with other real estate properties is significantly lower for the oldest cohorts than for the reference cohort. This suggests that the correlation between parental real estate detention and children's wealth has increased over time.

4 Assessing intergenerational wealth correlation using a two-sample two-stage least squares approach

4.1 Real estate holdings of the parents during the childhood of respondents: which period of the parents' lifetime does the reported information relate to?

Before turning to the wealth rank of the parents, we need to know at which stage of their life cycle their ownership of the real estate assets is measured through the survey.

There are two reasons for this. First, it allows to show that we are able to compare children's and parents' wealth at the same stage of the life-cycle. Second, in order to use a two-sample two-stage least squares approach, one needs to have a sample of counterfactual parents and in order to build it as precisely as possible, we need information about the parents's characteristics.

The question about parental ownership of real estate assets concerns these holdings during the childhood of the surveyed individuals. "Childhood" is defined as "before 14 years old" in the questionnaire. Since it is very unlikely that young children understand concepts such as main residence, in our benchmark approach, we first consider that this question refers to households with children aged over 10 and below 14. Second, we observe individuals born from 1933 to 1992.[20] In France, the average age of women at childbirth has followed a U-shaped curve over the 20^{th} century. It was 29.4 for a child born in 1901, it fell to 26.5 for those born in 1977 and then increased to 29.4 for children born in 2000 (Appendix figure E2). For children born between 1933 and 1992, the average age of women at childbirth ranges from 26.5 to 28.8.

So, if individuals refer to their parents' property when they were around 14, their mothers should on average be 40 to 43 years old. Consequently, as a first approximation, it seems reasonable to consider that the parents to whom this questions refers to are households (couples or single-headed) with at least one child aged 10 to 14 and with a woman aged 35 to 44. Such an age interval accounts for the fact that the mother's age for the first (resp. last born) child is lower (resp. higher) than the average age of women at childbirth.[21] In our TSTSLS approach, we will refer to these households as our benchmark counterfactual group for parents. We also test the robustness

[20] The oldest cohort corresponds to the 54-year-old individuals observed in the 1986 survey and the youngest cohort to the 25-year-old individuals observed in the 2017 survey.

[21] As shown in Daguet (2000), Daguet (2002), the mother's age for the first child is around three years lower compared with the average age. It is three years higher for the last born. See also Toulemon (2001).

of our conclusion by changing the restriction of the children's age (by restricting only to children less than 14, by restricting only on the fact of having one child whatever their age, or by not restricting on the fact of having a child) and by extending the age of women from 30 to 54. We show that the results are identical whatever the alternative samples tested (see section 5).

4.2 Wealth ranks of the parents according to their real estate holdings

In this section, we show that the information about parental real estate ownership is likely to reflect specific wealth ranks. In particular, the ownership of the main residence is almost always associated with being in the top 70% and the holding in addition of other real estate properties with being in the top 50%.

Following our discussion in section 4.1 about the lifetime period to which parental wealth relates to, we first focus on the wealth rank of individuals in households with a woman aged 35 to 44 according to these real estate holding categories.

First, Figure 2 panel (a) presents the probability of being in the top 70% when one is a homeowner (with or without other real estate). For our benchmark counterfactual group for parents (red line), this probability is higher than 93% for all cohorts but one (where it stands at 90%).[22] The average probability is 95%. We also present this probability for other demographic characteristics (having at least one child aged less than 14, having at least one child but without setting an age limit on the child, and individuals irrespective of their number of children). This very high probability is similar whatever the counterfactual group of parents tested. This also remains true if we extend the age of women to 30 to 54 (see Appendix Figure E3). In Appendix Figure E4, panel A, we show that the probability of belonging to top wealth groups in the upper part of the distribution is decreasing and that the mapping with the top 70% appears to be the most accurate.

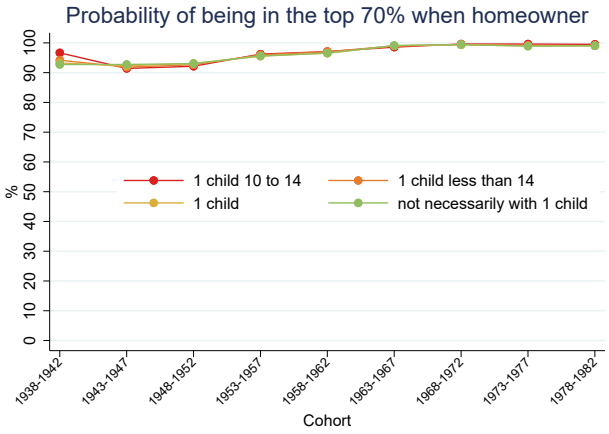
Second, we turn to homeowners with other real estate. From 1943 onwards, more than 91% of individuals belong to the top 50% wealth group, and 95% on average over the period (Figure 2, panel b). There are no differences across the groups with other demographics that we use to test the robustness of this high probability. Finally, the probability of being in the bottom 30% and 50% wealth groups for individuals without any real estate is also very high for all cohorts (panel c, 81.4% on average for the bottom 30% and even higher for the bottom 50%). Again, this remains true even for households with other demographics and if we extend the range of women's age (Appendix Figure E3). In Appendix Figure E4, panel B, we show that the probability

[22] In our main approach, we compute wealth rank by survey and five-year age cohort for individuals aged 25 to 54. For each intersection of these two variables, we systematically have more than 270 observations and more than 1,000 observations in the vast majority of cases (for more than 77% of the cohort*survey). Here, due to the restriction to households with a woman aged 35 to 44, some intersections lead to a small number of observations. We thus decide to exclude cohorts when the number of observations in a survey is lower than 30. This only leads to the exclusion of two cohorts for four surveys (1998, 2004, 2010 and 2015), which represents a total of 164 observations out of 22,888.

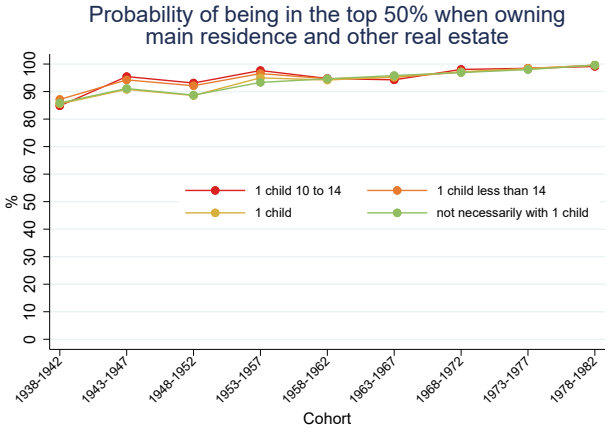
of belonging to top wealth groups in the upper part of the distribution is decreasing and that the mapping with the top 50% appears to be the most accurate.

Figure 2: Probability of being in some wealth groups by asset holding category

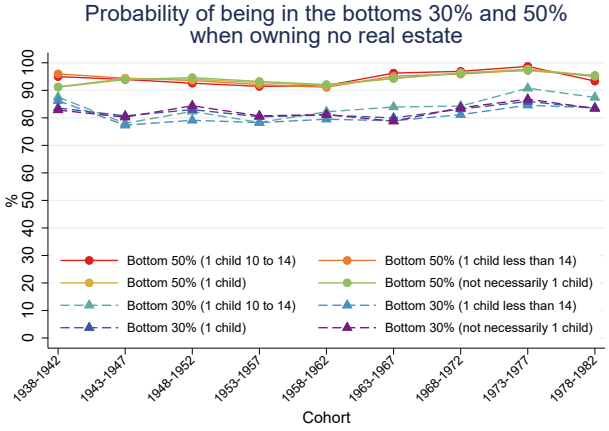
(a) Panel a



(b) Panel b



(c) Panel c



Note: Sample of counterfactual parents (see section 4.1)

4.3 Correcting the misclassification bias using a two-sample two-stage least squares approach.

In section 4.2, we have shown how some real estate categories are good proxies for the top 70% wealth group (owners of the main residence only) and the top 50% wealth group (owners of other real estate in addition to their main residence). In Appendix C, we compute the bias that would occur had we used these real estate categories to directly assess the intergenerational wealth correlation (henceforth IWC). We show that it would lead to a small and downard bias (the true coefficient being multiplied by $P(T=1|\tilde{T}=1)-P(T=1|\tilde{T}=0)$).
One first solution to correct for it is to simply rescale our estimated coefficients by $1/[P(T=1|\tilde{T}=1)-P(T=1|\tilde{T}=0)]$.

In practice this can be done by using a two-sample two-stage least squares approach (TSTSLS). This offers the advantage to account for uncertainty and to correctly compute the standard errors. Starting with seminal work by (Klevmarken (1982), Angrist and Krueger (1992) and Arellano and Meghir (1992)), this method has now been regularly used to study intergenerational income correlation (Piraino (2015), Sauro (2007) or, in France for instance by Lefranc and Trannoy (2005)) but we are the first to use it to study intergenerational wealth correlation (IWC).

The principle is simple. To compute the IWC, we want to run the following regression:

$$y_{Child} = \alpha + \beta y_{Parents} + u \tag{1}$$

With y_{Child} the child's outcome (such as "belonging to the top 10% wealth group") and $y_{Parents}$ her parents' wealth group (for instance "belonging to the top 50% wealth group"). Unfortunately, the information about parental wealth is generally absent from wealth surveys, making it impossible to estimate directly this equation with this kind of dataset. The TSTSLS approach consists in using auxiliary information, generally from a second dataset, and linking it to a set of variables (Z) that is a good proxy for the missing variable and that is observable in the first (main) dataset. In practice, it relies on two steps. First, on the auxiliary dataset, the following equation is estimated:

$$y_{Parents} = a + bZ + \nu \tag{2}$$

Then, the estimates from equation (2) are used to compute $\hat{y}_{Parents}$ on the main dataset (obtained as $\hat{y}_{Parents} = \hat{a} + \hat{b}Z$) thanks to the observed variables Z that are reported in both datasets.
The second step consists in replacing the unobserved $y_{Parents}$ by its predictor $\hat{y}_{Parents}$ to estimate (still with the main dataset):

$$y_{Child} = \alpha + \beta_{TSTSLS}\hat{y}_{Parents} + \mu \tag{3}$$

To estimate equation (2), consistently with our previous discussion about counterfactual parents in section 4.1, we use as a benchmark for the auxiliary dataset the sample

of the households with at least one child aged 10 to 14 and a woman aged 35 to 44. In section 7.1 we show our findings are robust when using all the other samples for counterfactual parents that we have previously mentioned. Again, such changes do not alter our conclusions.

To allow the IWC to be different across cohorts, we estimate the following second-stage equation:

$$y_{Child} = \alpha + \sum_{c=1}^{C} \beta^{c}_{TSTSLS} \hat{y}_{Parents} \times cohort^{c}_{Child} + \mu \tag{4}$$

where $cohort^{c}_{Child}$ denotes the dummy for the cohort of birth of the child (by 5-year group), ranging from the oldest cohort ($c = 1$) to the youngest one ($c = C$).[23] Following Bjorklund and Jantti (1997), we compute the standard errors by bootstrapping the two-stage procedure. We cluster bootstrap sampling at the household level and use 300 replications to guarantee consistency.

4.4 Empirical design: top wealth groups and rank-rank correlations

To estimate the persistence in top wealth groups and the link between the probability of the children to reach top wealth groups according to their parents' wealth, we first use the sample of our counterfactual parents, to estimate the first-stage equation (5). Then, the second stage is estimated with the same kind of specification as in equation (4). Depending on the regression, "having parents who are homeowners" is used as an predictor for "having parents in the top 70%" and "having parents who are homeowners with other real estate" is used as an predictor for "having parents in the top 50%". We also interact the predictor with birth cohorts in order to account for non-linearities in the intergenerational wealth correlation over time. Our specification also allows to account for non-linearities at the top of the wealth distribution (as previously documented in Adermon et al. (2018), Boserup et al. (2017), Boserup et al. (2018)). We

[23] Consequently, our first-stage equation is:

$$y_{Parents} = a + \sum_{c=1}^{D} b^{c} Z \times cohort^{c}_{Child} + \delta.cohort_{Child} + \nu \tag{5}$$

Ideally, we would like to estimate $y_{Parents} = a + \sum_{c=1}^{C} b^{c} Z \times cohort^{c}_{Child} + \nu$. Here, we add a linear trend in cohort because in our sample of counterfactual parents, we do not observe all the cohorts of birth for all the children that we have in our sample of children (i.e $D < C$). This is very unlikely to make a difference with a specification that would contain all the cohorts of birth for the children ($D = C$). First, as we have seen in Figure 2, there is no apparent trend in cohorts. Second, the coefficient δ is systematically estimated as non-significant (at the 10% threshold) for all cases. Finally, as an additional robustness test, we test an alternative specification for the first-stage equation by using only a linear trend in cohorts (i.e $y_{Parents} = a + b.Z + \zeta.cohort_{Child} + \nu$). The coefficient ζ is systematically estimated as non-significant (at the 10% threshold) for all cases and the results of the second-stage equation are fully similar (see Appendix tables E11 and E12).

also estimate the second stage using the rank of the children in the wealth position as a dependent variable. This enables the direct estimation of the average wealth rank of children according to the parents' wealth position.

This first focus on the link between having parents in the top 70% and 50% wealth groups and children's wealth is straightforward because of the direct link between our real estate categories and these wealth groups (see section 4.2). However, by focusing on the probability of being in the top 50% or top 70%, we create dummies and then lose information on the ranks. The use of a TSTSLS approach allows us to use more information and to predict the wealth rank of the parents. As a complementary approach, we also perform rank-rank regressions. To do so, instead of regressing a dummy on our real estate categories in the first-stage regression (equation 2), we regress the (counterfactual) parental wealth rank. In section 4.5, we show that the quality indicators for the TSTSLS approach applied to this rank-rank regression turn out to be good. We additionnally explain that this approach allows us to rule out the concern of a potential direct effect of the instrument on the dependent variable. This approach allows for straightforward comparisons with foreign countries (Denmark, Sweden and the U.S) and previous French studies on wealth correlation at death.

One could be concerned about the potential sensitivity of our results to the choice of the sample for the counterfactual parents. In section 7, we test the robustness of our results to the different available choices previously mentioned and find no difference.

4.5 Assessing the quality of the TSTSLS approach

$\widehat{\beta}_{TSTSLS}$ is a consistent estimator for β under the classical assumptions that Z is strongly correlated with $y_{Parents}$ and uncorrelated with the error terms in equation (1).[24] In particular, if the variable Z has a direct impact on the dependent variable (and not only through the variable it proxies) the bias cancels out if the R-squared of the first-stage equation (equation (2)) is equal to 1.[25]

To assess the quality of our TSTSLS estimators we first compute the usual F-Statistic for the first-stage equation (see Appendix Table E2). Our F-Statistics range from 3,360 to 6,980 which proves a very strong correlation and the absence of an attenuation bias due to a weak correlation.[26] Additionally, we also compute the R-squared for our first-stage regressions as another indicator of the quality of our predictor. Reassuringly, they all turn out to be high. They range from 37% when the dependant variable is the top 50% to 67% for the top 70%. This is this the same order of magnitude as the highest R-squared presented in the few studies on intergenerational earnings correlation that show the R-squared of their first-stage regressions. This is all the more

[24] This approach is close to an instrumental variable approach, but TSTSLS estimate is more asymptotically efficient than the IV estimate (see Inoue and Solon (2010)).

[25] See e.g. Solon (1992) and Nicoletti and Ermisch (2008)

[26] Choi et al. (2018) show that this attenuation bias in the case of a TSTSLS estimate is approximately equal to the inverse of (1+ the first-stage F statistic).

remarkable since we are just using one simple categorization (with only 4 categories) while other studies generally use more variables (often with more categories) to impute fathers' earnings.[27]

Needless to say, we cannot exclude the fact that the variable Z has a direct impact on the dependent variable. One could imagine such a direct effect if, within a parental top wealth group, parents for whom the predictor equals 1 (for instance being a homeowner) and those for whom it equals 0 had such a different wealth that this different level of wealth may play an additionnal role on the children's probability of reaching a top wealth group. Regarding this concern, two points can be noted. First, when looking at the differences in total wealth within the top 50% wealth group of parents depending on the fact of having other real estate in addition to the main residence, we find that (conditionnally on being in this wealth group) parents with other real estate in addition to their main residence own on average a 2.7% higher wealth than parents with no other real estate (in this wealth group). This small gap turns out to be non-significant (p-value = 89.5%). For parents in the top 70% wealth group, the gap is larger (28% higher for those who are homeowners). This difference turns out to be not significant at the 5% level and only slightly significant at the 10% level (p-value = 9.8%). Those figures are reassuring concerning our strategy, ruling out large direct effects of our predictor. Second, we tackle this issue by providing rank-rank correlation estimates. Of course, our method does not allow to impute a full distribution for parental wealth and parental ranking, so we have to rely here on the usual assumption that the rank-rank correlation between parents and children is linear (and thus can be estimated with a very small number of points). While this is an additional assumption, it has an important advantage: in this set-up, it is very unlikely that the predictor has a direct effect on the dependent variable since the wealth rank is a concept very close to the concept of wealth.[28] In Appendix table E2, we show that the F-Statistics and the R-squared of this first-stage regressions for the rank-rank correlation regressions are particularly high regarding the usual standards (higher than 2,000 for the F-Statistics and 55.7% for the R-squared).

To summarize, we have high R-squared for the first-stage estimates and very unlikely large direct effect of the predictor on the children's outcomes. This is reassuring for our strategy.

[27] For instance, in the literature about the intergenerational earnings correlation, Piraino (2015) uses 5 dummies for fathers' occupation and 5 for fathers' education, and reports R-squared ranging from 35% to 46%. Nicoletti and Ermisch (2008) use age, age-squared, 4 dummies for managerial duties and educational level dummies, and report a 25.9% R-squared. and Sauro (2007) uses 5 dummies for fathers' occupation, 5 for education, 4 for sector of activity, 3 for regions and age as a continuous variable and reports a 30.1% R-squared. The highest R-squared we found are reported in Lefranc and Trannoy (2005). They range from 49% to 54% while the authors use age, age-squared, 8 dummies for fathers' education, 7 dummies for social class. Up to now, there is no study on intergenerational wealth correlation using the TSTSLS approach.

[28] It is reassuring to see how estimates from the rank-rank correlation estimates show very similar patterns (see section 5)

4.6 Possible extension to other countries

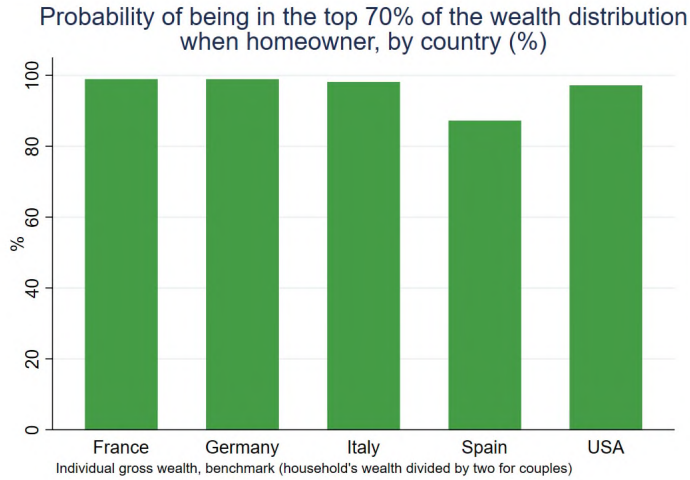
Using wealth surveys for other countries, we show that our wealth indicators based on the ownership of real estate properties can also be relevant in other countries.
For the United States, we use the Survey of Consumer Finances (SCF) 2016. For the European countries, we use the second wave of the Household Finance and Consumption Survey (HFCS). These two wealth surveys[29] enable the study of the wealth rank position of the individuals according to some demographics such as their age, the age of their children, etc. We present how the different categories of real estate holdings are distributed across the wealth distribution for three other European countries (Germany, Italy and Spain) and for the United States. These countries are interesting because they present very different situations regarding homeownership. While only 44% of German households own their main residence, 83% of Spanish households are homeowners. Italy occupies an intermediate position, with a homeownership rate of 68%. For the United States, the homeownership rate was about 64% in 2016. Such differences have to be borne in mind when studying different countries in order to interpret the ownership of real estate properties as reflecting a specific position in the wealth distribution. Looking at these countries illustrates how national differences regarding the housing market could play a role in the mapping between parental wealth indicators and the wealth distribution. To facilitate comparisons across countries and with France, we compute wealth ranks in a similar way as we do for France and with the same individualization.[30]

[29] Note that the data for France in the HFCS are provided by the French wealth survey, which is the data that we use in this paper.

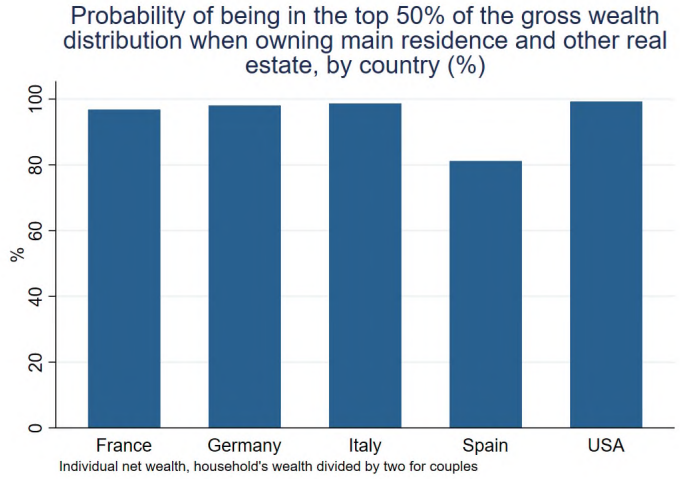
[30] As for France, we compute wealth ranks among individuals living in households with a woman aged 35 to 44. Here, we focus on these individuals when they have at least one child aged below 14 (see 4.1) rather than with one child aged 10 to 14, because this latter choice would lead to very small sample (with the HFCS) or would not be possible to implement (with the SCF). Wealth is studied at the individual level. Appendix figures E5, panel (a) and (b) present the results when the wealth of the household is divided by the number of adults aged over 25 in addition to the reference person and her/his partner. For instance, the wealth of a couple with two children aged 26 and 28 is divided by four. We present this variant because household composition may differ greatly from country to country. As it turns out, our conclusions are not sensitive to the way we treat household composition.

Figure 3: Probability of belonging to top wealth groups by real estate categories for Germany, Italy, Spain and the U.S.

(a) Panel a: Probability of being in the top 70%



(b) Panel b: Probability of being in the top 50%



For all countries, homeowners' wealth positions are close to those observed in France (Figure 3), except for Spain where homeowners have a lower 87% probability of being in the top 70%. In all other countries this probability is around 97 to 99%. This is also strinking for the individuals that own both their main residence and other real estate in all countries except Spain. There are only 2% of such individuals in Germany, 1.3% in Italy and less than 1% in the United States that do not belong to the top 50%.

Table E8 shows that, as for France, the first-stage R-squared and F-Statistics are particularly high. The R-squared range from 45% to 63% for the US (resp 1,769 to 3,443 for the F-Statistics), from 56% to 68% (resp. 414 to 554) for Germany and from 59%

to 77% (resp. 1,589 to 3,966) for Italy. Consistent with our previous finding the R-squared and F-Statistics are lower in Spain than in other countries when the predicted variable is a dummy for belonging to the top 50%. For this country, another mapping between the holding of real estate properties and the top of the wealth distribution should be investigated. For all other countries, these results are reassuring about the possible direct use of our method using the same classification as for France, at least for recent cohorts.[31]

5 Intergenerational wealth correlation

5.1 Baseline results

We first focus on the most recent cohort for which we observed all ages from 35 to 44 years old, i.e. the cohort of children born from 1973 to 1977.[32] Then, we study the dynamics of the IWC.

Table 2 presents the estimated IWC from our TSTSLS approach. As expected, the point estimates for "having parents in the top 70%" and "having parents in the top 50%" are higher than the point estimates obtained in Tables B1 and B2 for "having parents who are homeowners" and "having parents who are homeowners and also have other real estate property" since the downward bias is corrected. Consistently with the fact that this bias is small, the results are close those obtained in tables B1 and B2 and all the findings we present below are consistent with our previous results using directly real asset categories of parents to proxy parental wealth rank. As opposed to tables B1 and B2, here the constant is not the same across tables. This is due to the fact that, thanks to the TSTSLS approach, it now refers to the probability of belonging to top wealth groups for two distinct groups of individuals: those with parents either in the bottom 30% (when estimating the probability of being in the top 70%) or in the bottom 50% (when estimating the probability of being in the top 50%).

Having parents in the top 50% (resp. 70%, panel b) wealth groups has a significant effect on the probability of accessing top wealth groups (table 2, panel a) compared with children with parents in the bottom 50% (resp. 30%). Children with parents in the bottom 50% have a 34% probability of reaching the top 50%. This probability is doubled for those with parents in the top 50% (65%). The effect is stronger when moving up the children's wealth distribution: the higher we move up the children's wealth distribution, the greater the role of the parental wealth. For children with parents in the top 50%, the probability reaching the top 25% is 220% higher than for those with parents in the bottom 50%. It is 500% higher for the probability of reaching the top 10% wealth group.

[31] The accuracy of this mapping in other countries over different periods of time is an issue to be investigated further.

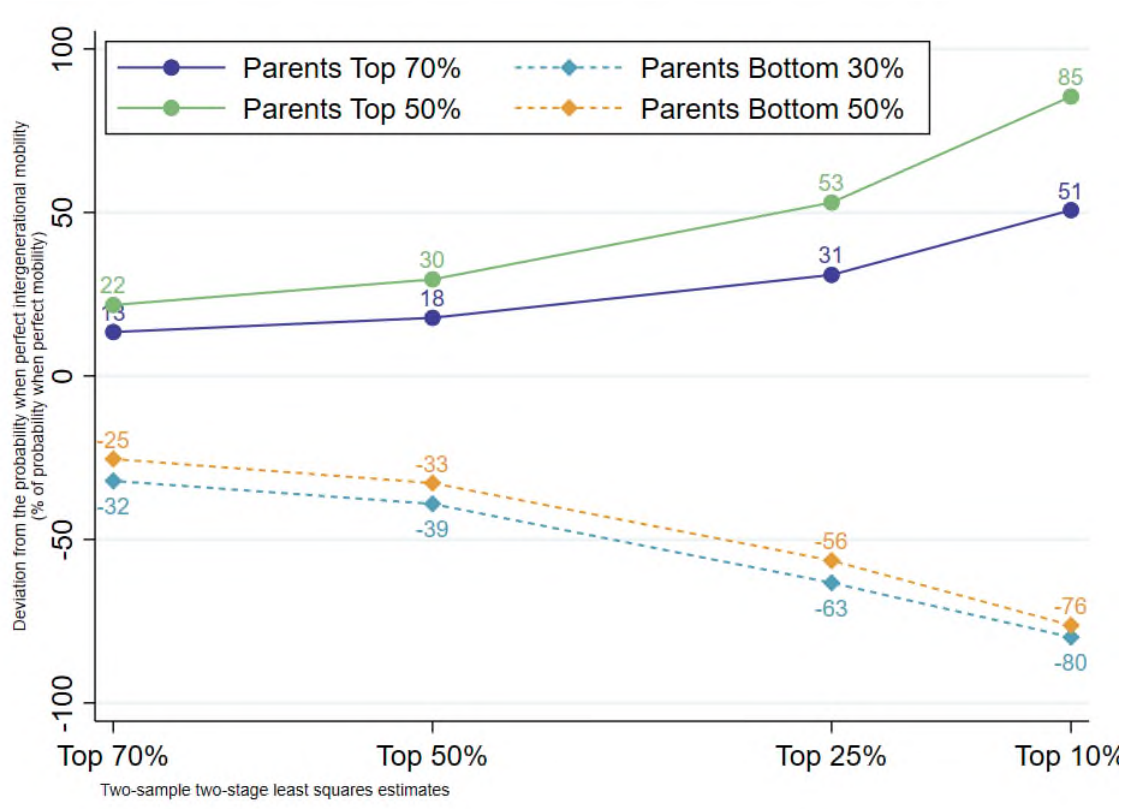
[32] See appendix table A1 for the detail of minimum, maximum and average ages by cohort and age groups.

Table 2: Two sample two stage least squares estimations (Children born from 1973 to 1982, when aged 35 to 44)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Panel (a): Parents in the bottom 50% vs in the top 50% wealth groups					
Constant (Bottom 50% parents)	0.52***	0.34***	0.11***	0.02**	37***
Parents in top 50%	0.33***	0.31***	0.27***	0.16***	25***
Panel (b): Parents in the bottom 30% vs in the top 70% wealth groups					
Constant (Bottom 30% parents)	0.48***	0.30***	0.09***	0.02	34***
Parents in top 70%	0.32***	0.28***	0.24***	0.13***	23***
Obs.	20682	20682	20682	20682	20682

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Figure 4: Probability of belonging to top wealth groups, by parental wealth groups: Deviation from the probability under perfect intergenerational mobility (% of probability under perfect mobility), 35-44 years old



To have a better idea of the orders of magnitude across parents' wealth groups, we compute deviations between the observed probability of belonging to the top wealth groups and the probability that would prevail in the situation of perfect intergenerational mobility (Figure 4). Under perfect intergenerational mobility, and without any

control variables, these probabilities would be 70%, 50%, 25% and 10% respectively. This offers two advantages. First, it allows for a simple and transparent comparison between the observed probabilities and the simple benchmark of perfect mobility. Second, since we compute the probability of belonging to different top wealth groups, one should not interpret a smaller gap in the probabilities of belonging to the top 10% (between children of rich and poor parents) compared with the gap in the probability of belonging to the top 70% as a lower effect of parental wealth for the top 10%. Indeed, we are much more interested in relative effects than in absolute ones in order to compare the effect of parental wealth on the probability of accessing to the various top wealth groups. By computing deviations from the situation of perfect intergenerational mobility, we abstract from this spurious absolute comparison and focus on a more meaningful relative comparison.[33]

Consistent with our previous findings, the deviation is higher for the wealthiest parents (from the top 50% compared with the top 70%) and is increasing as we move up along the top wealth groups. This last pattern is reverse for individuals with parents in the bottom 30 or 50%. For such individuals, the probability of accessing the top 70% (resp. top 10%) is 25 to 32% (resp. 76 to 80%) lower than the probability under perfect mobility. The persistence in the top 70% across two generations is 16% higher than under perfect mobility. As we move up along the wealth distribution, the deviations are strikingly larger. For instance, the deviations from perfect mobility is 85% for reaching the top 10% with parents in the top 50% wealth group. The persistence in the top 50% is about twice the one for the top 70% (30% higher than under perfect mobility).
The slope of the rank-rank correlation for the reference cohort (1973-1977, figure 5) has the same order of magnitude than the one observed in Sweden for the cohort born in 1957 (0.39, Adermon et al. (2018)) and in the United States for cohorts born from 1969 to 1978 (0.39, Pfeffer and Killewald (2017)). We come back to this point in the next section.

5.2 Historical trend in IWC

Tables 3 and 4 show how the IWC and the rank-rank correlation have evolved over time.[34] Figure 5 presents the rank-rank correlation for some chosen cohorts, illustrating its evolution throughout time.

[33]Deviations are computed as the probability of being in a given top wealth group conditional on having parents in the top or bottom wealth groups minus the probability in a situation of perfect intergenerational mobility (and expressed as a % of this probability). For instance, for the top 10%, we compute for children of parents in the bottom wealth group: Proba(Top10% | Parents in bottom wealth group)/0.10-1.

[34]Table E1 in the appendix shows that the pattern is similar when studying children with parents in the top 70% versus children with parents in the bottom 30% wealth groups.

Table 3: Two sample two stage least squares estimations (Children with parents in the top 50% wealth group)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (Bottom 50% parents)	0.53***	0.35***	0.12***	0.03**	37***
Parents in top 50 %	0.32***	0.30***	0.27***	0.16***	25***
Cohorts * Parents in top 50 %					
1943-1947	-0.23**	-0.26**	-0.24**	-0.13***	-20**
1948-1952	-0.24***	-0.20**	-0.20**	-0.13**	-18**
1953-1957	-0.19***	-0.19**	-0.16**	-0.09**	-15**
1958-1962	-0.23**	-0.17*	-0.20**	-0.11*	-17**
1963-1967	-0.17**	-0.14*	-0.14*	-0.09*	-13*
1968-1972	0.00	0.03	0.00	-0.03	-0
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.01	0.03	-0.02	-0.03	-1
Other controls: cohorts					
Obs.	20680	20680	20680	20680	20680

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Table 4: Rank-rank correlations

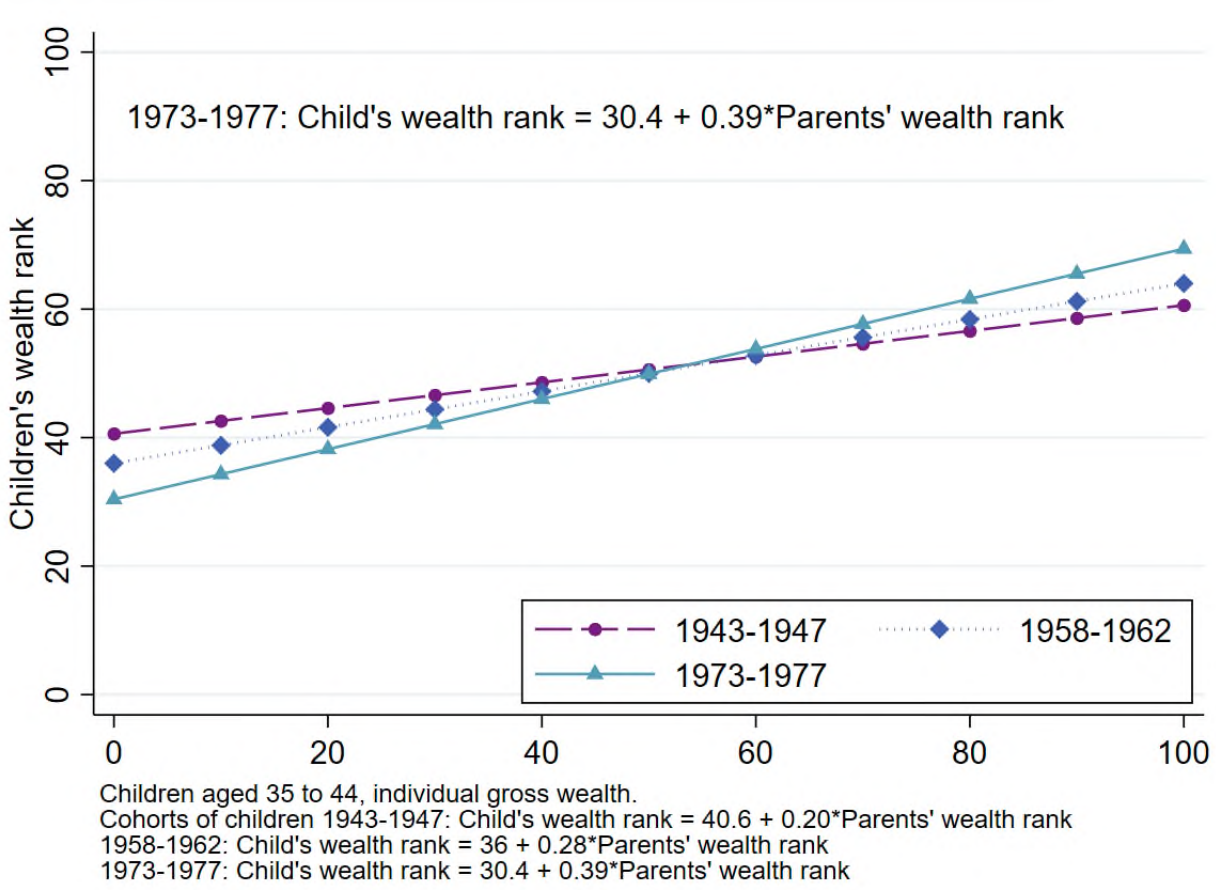
	Child's rank
Constant	30.43***
Parents' wealth rank	0.39***
Cohorts * Parents' wealth rank	
1943-1947	-0.19**
1948-1952	-0.16**
1953-1957	-0.12**
1958-1962	-0.11*
1963-1967	-0.07
1968-1972	-0.05
1973-1977	Ref.
1978-1982	-0.03
Cohorts	
1943-1947	10.13**
1948-1952	9.11**
1953-1957	6.08*
1958-1962	5.60*
1963-1967	3.45
1968-1972	4.38*
1973-1977	Ref.
1978-1982	2.85
Obs.	20682

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications) clustered at the household level.

Interestingly, the magnitude of the intergenerational correlation is significantly lower for some older cohorts compared with younger ones. The same is true for the rank-rank correlation: the average rank of the children with the poorest parents (the intercept) has continuously decreased while the magnitude of the parents-children relationship (the slope) has increased. Two periods appear clearly: a period when the mobility was the highest, for cohorts born from 1943 to 1962, and the recent period, for cohorts born after 1968, with a lower mobility and a higher IWC. The rank-rank correlation was 1.4 to 2 times lower for the oldest cohorts than for the most recent cohorts (0.2 for the 1943-47 cohort, 0.23 for 1948-52 and 0.27/0.28 for 1953-62 vs 0.39 for 1973 to 1982). Meanwhile, the relative wealth position of children with parents in the bottom of the distribution has also decreased and was 30 to 20% higher for the oldest cohorts than for the most recent ones (the intercept has decreased from 40.6 to 30.4).

Here, two opposite effects may be at play. On the one hand, the relative increase in the bottom 90% income share from the 1960s to the early 1980s should have made

Figure 5: Child wealth rank according to parental wealth rank, aged 35 to 44



it easier for the poorest individuals and for the middle class to accumulate wealth (Garbinti et al. (2018)). On the other hand, the rise in the aggregate share of inherited wealth (Alvaredo et al. (2017)), which can be related to both the large increase in the wealth-to-income ratio (Piketty and Zucman (2014)) (which is a strong determinant of the potential wealth that can be transmitted through *intervivos* gifts or at death), as well as to the rise in the aggregate inheritance flow (Piketty (2011)), could have mainly benefited children with wealthy parents. An additional effect may arise if the children's labor earnings is also correlated to the wealth of their parents, for instance through human capital investment (in addition to the non-human capital investment due to wealth transmission). The increase in the IWC that we observe suggests that the second effect tends to dominate.

To put our results in a longer historical perspective, we compare them with the intergenerational wealth correlation at death computed by Arrondel and Grange (2006) and Bourdieu et al. (2017). Interestingly, it turns out that the IWC seems to have followed a U-shaped pattern over time. Indeed, for children who died between 1800

and 1939, i.e. who were born on average between 1789 and 1878[35], the authors find an IWC at death of 0.38. For children born from 1787 to 1898, Bourdieu et al. (2017) find a similar IWC at death (0.39).[36] These estimates turn out to be close to the ones we find for our youngest cohorts. This pattern is consistent with the changes in the wealth-to-income ratio and in the inherited flows that we have already mentioned. The inherited flow was at its highest historical level in the 19^{th} century and the early 20^{th} century and then decreases until the 1950s when it started to increase back (figure 1, Piketty (2011)). The same holds for the wealth-to-income ratio (figure 2, Piketty (2014)). An additional similar pattern can be found when looking at the evolution of economic growth. In the classical Harrod-Domar-Solow formula, the wealth-to-income ratio can be written as the ratio between aggregate saving rates and the income growth rate. It points out that in the polar case of a world with infinite economic growth, the wealth accumulated by previous generations has no effect on how new generations are accumulating wealth, because only their own earnings matter. While in the (standard) case of finite growth, lower economic growth is associated with a higher multiplicative effects of wealth accumulation on the wealth-to-income ratio. As for France, growth is relatively low at the beginning of the century (1.5% from 1900 to 1950, see figure E6). It reaches its highest point over the period when cohorts born in the 1950s enter the labor market (4.2% from 1965 to 1970); and drops again to a lower level after the 1980s (1.4% between 1980 and 2000).[37] In a nutshel, the U-shaped pattern we find for the IWC reflects several macroeconomic evolutions.[38]

In section 7, we show that our results are similar with all alternative definitions of counterfactual parents, as well as when considering household-level regressions.

5.3 International comparison: Denmark, Sweden, the United States and France

How does this U-shaped pattern in IWC compare with other countries? In the late 1950s and the early 1960s, the intergenerational wealth mobility was lower in Sweden compared to Denmark and France (Figure 6). As the figure shows, although the intercept is lower for France, the linear relationship appears parallel between Denmark and France for the cohorts born in the early 1960s. Indeed, the slope is 0.27 in Denmark for the 1960-1965 cohorts and 0.28 in France for the 1958-1962 cohorts. It is

[35] We use the average age at death reported in Bourdieu et al. (2017) (61 years old) since Bourdieu et al. (2017) and Arrondel and Grange (2006) work on similar periods. For Bourdieu et al. (2017), we also substract this average age at death to the age of death mentioned in the paper.

[36] See also Arrondel and Grange (2018) for a summary of these previous french results.

[37] One can also notice that the aggregate saving rate of the household was also much lower in the post-1980 period and before the 1960s, suggesting again that the generation who started working in the 1960s and 1970s has globally faced conditions exceptionnally more favorable to its own wealth accumulation than the generations who entered the labor market before or after.

[38] This U-shaped pattern can also be found in intergenerational income mobility. Indeed, Lefranc (2018) shows that the intergenerational earnings elasticity decreased from 0.6 for cohorts born in the 1930s to 0.4 for those born in the 1950s and subsequently rises afterwards, to finally reach a level close to that of the beginning of the period for those born in the 1970s.

higher in Sweden (0.39). We also plot the rank-rank correlation for France for children born in the 1970s. As it turns out for this recent cohort, the relationship appears very close to the one of Sweden which corresponds to the decrease in wealth mobility that we have documented previously. Unfortunately, for the U.S., Pfeffer and Killewald (2017) do not provide the value of the intercept which does not allow us to graph the full rank-rank correlation in figure 6). Nevertheless, they show the slope of the rank-rank correlation. It stands at 0.39 for children born from 1969 to 1978. It is not only similar to Sweden for older cohorts but, maybe more interestingly, it is identical to the one we find for similar birth cohorts.[39]

Figure 6: Children's wealth rank according to parental wealth rank, Denmark, Sweden & France

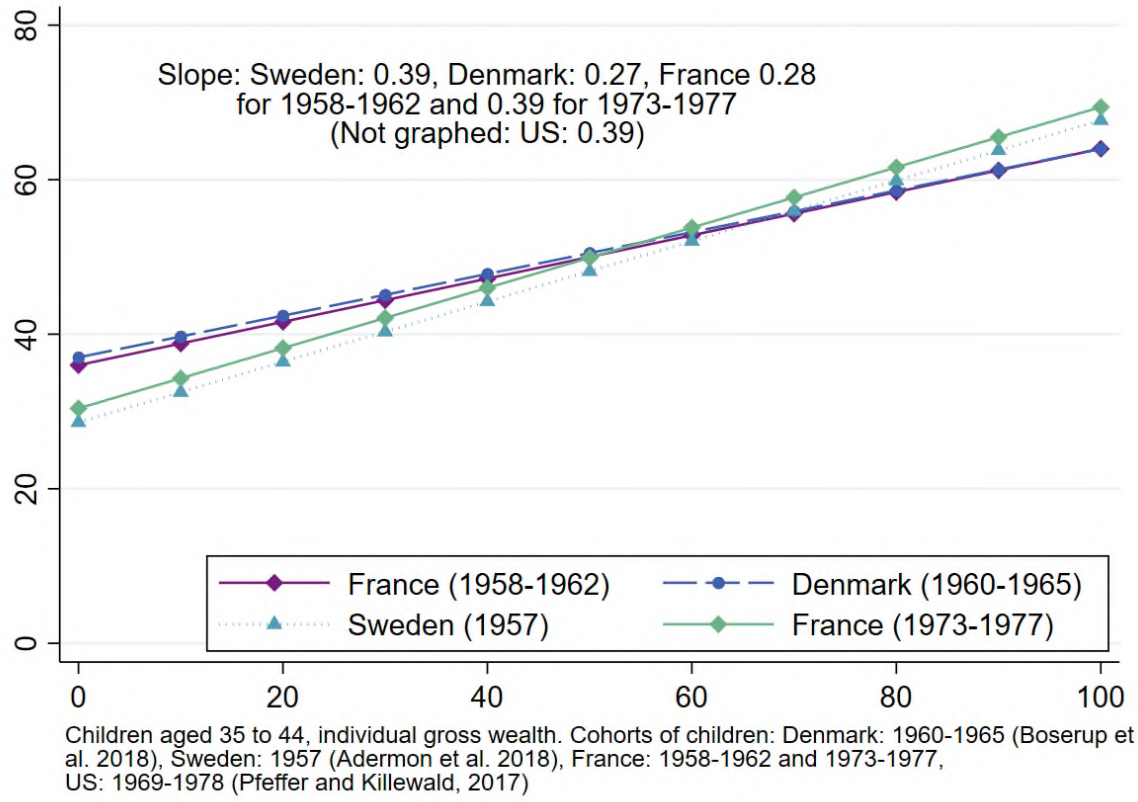


Table 5 complements this comparison, showing the gap between the average child's wealth rank according to parental wealth. [40]

[39] 0.39 for 1973-1977 and 0.34 for 1968-1972, non statistically different from 0.39.

[40] In appendix B, we explain how we compute these wealth ranks for Denmark from Boserup et al. (2017), and for Sweden from Adermon et al. (2018)

Table 5: Average child's wealth rank according to parental wealth, by cohorts and countries

Country	Denmark	Sweden		France	
Cohort	**1960-1965**	**1928**	**1957**	**1958-1962**	**1973-1977**
With parents in the bottom 30%	41	41.7	34.5	38.2	33.8
With parents in the top 50%	57.3	59.5	57.9	57.8	61.5
Gap	16.3	17.8	23.4	19.6	27.8
Rank-rank correlation	0.27	0.30	0.39	0.28	0.38

Note: authors' computations from Boserup et al. (2017a) for Denmark, Adermon et al. (2018) for Sweden. (see appendix section D for details and computations).

The results are fully in line with the previous findings. The gap in the average child's wealth rank between those with parents in the bottom 30% and those with parents in the top 50% is similar for Denmark and France (16 vs 19) and clearly higher for Sweden. Adermon et al. (2018) also provide results for an older cohort (1928) showing an increase in the IWC. The rank-rank correlation ranges from 0.30 to 0.39 betwen 1928 and 1957. Consequently, while wealth mobility in France appears today as low as the one observed in Sweden for children born in the mid-1950s, whether this is still the case for children born in Sweden in the 1970s, is still an open question that depends on whether the upward trend observed in Sweden has continued. Note that the question is even more open since, as shown in Ohlsson et al. (2019), Sweden is a country where, contrary to France, the increase in the wealth-to-income ratio does not seem to translate into an increase in inherited wealth.

6 Sources of the intergenerational correlation

6.1 The role of gifts, bequests and human capital transmissions

The intergenerational wealth correlation may result from several channels. In this section, we first investigate the role of gifts, bequests and human capital transmission. We then turn to chidren's asset composition to assess whether differences in parental wealth are also associated with differences in children's ownership of high-yielding assets.

The intergenerational wealth correlation may be due to direct transfers of wealth (*inter vivos* and inheritances) from one generation to the next. Second, following the approach by Becker and Tomes (1979) and Becker and Tomes (1986), intergenerational correlation in wealth may reflect intergenerational correlation in income, the latter resulting from parental investment in human capital and correlation in abilities across generations. Other factors such as the intergenerational transmission of preferences (risk attitudes, patience) may also affect the intergenerational wealth correlation. Boserup et al. (2013) show that the intergenerational wealth correlation is not only related to these various channels, but that they may interact with each other, so that

it remains very difficult to quantify the exact role played by each potential channel.[41] However, by controlling for a subset of characteristics of both parents and children, it is possible to assess the effect of the remaining characteristics on the intergenerational wealth correlation.

We follow this approach which has been widely used in the literature (Adermon et al. (2018), Boserup et al. (2017)) and sequentially add control variables in our baseline regression to assess the explanatory power of these control variables on the intergenerational wealth correlation. The French wealth survey provides reliable qualitative information on the receipt (and timing) of substantial gifts or inheritances.[42] It also provides information regarding the human capital of the parents (occupation of the father of the reference person and of the father of the partner[43]), and the education level of the second generation. Since we introduce numerous interactions between cohorts and other covariates in our regressions, it may be difficult to have a global view of the decrease in intergenerational wealth correlation due to the variables added. To overcome this difficulty, we systematically present marginal effects. This makes it possible to easily summarize the information. Tables 6 and 7 present the marginal effects for the different top wealth groups, for the different sets of additional controls and the reduction in this marginal effect due to the addition of these controls (respectively with parents in the top 70% and parents in the top 50%).

[41] Part of this difficulty also comes from the availability of information that would be required to identify each channel.

[42] However, information about the amount received is not well reported, particularly in the old waves of the survey. For a significant share of transfers, the amount is either missing or reported in brackets. An additional difficulty is that some people report the amount at the date of the receipt and others reevaluate it by themselves at the time of the survey. Garbinti and Georges-Kot (2019) show that the information about receipt is consistent with data for the French Ministry of Justice, but the amounts reported are clearly not in line with official statistics (as shown in Alvaredo et al. (2017)). We thus choose not to use information about the reported amounts. As robustness checks, we add additional controls for the interaction between the receipt of an intergenerational transfer and the occupation of the parents in order to proxy this dimension. Adding this additional control does not affect our main conclusion (results available from the authors upon request).

[43] Ideally, we would like to have the parents' education but we have no information about it in the data.

Table 6: Marginal effect of having parents in the top 70% versus parents in the bottom 30%

	Baseline	Additional controls			Reduction in intergenerational wealth correlation		
	(1)	(2)	(3)	(4)	(1) to (2)	(1) to (3)	(1) to (4)
Top 70%	0.21***	0.19***	0.16***	0.13***	-11%	-25%	-39%
Top 50%	0.22***	0.18***	0.14***	0.11***	-16%	-35%	-50%
Top 25%	0.17***	0.13***	0.09***	0.07***	-22%	-43%	-58%
Top 10%	0.09***	0.07***	0.05***	0.04***	-22%	-46%	-59%
Childs' rank	16***	13.5***	10.7***	8.4***	-16%	-33%	-48%
Additional controls:							
* Cohorts	Yes	Yes	Yes	Yes			
* Gifts and inheritances received	No	Yes	Yes	Yes			
* Occupation of fathers	No	No	Yes	Yes			
* Education	No	No	No	Yes			
Obs.	20 680	20 680	20 680	20 680			

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Table 7: Marginal effect of having parents in the top 50% versus parents in the bottom 50%

	Baseline	Additional controls			Reduction in intergenerational wealth correlation		
	(1)	(2)	(3)	(4)	(1) to (2)	(1) to (3)	(1) to (4)
Top 70%	0.2***	0.17***	0.15***	0.12***	-13%	-27%	-40%
Top 50%	0.21***	0.17***	0.13***	0.1***	-18%	-37%	-51%
Top 25%	0.16***	0.12***	0.09***	0.07***	-24%	-44%	-57%
Top 10%	0.09***	0.07***	0.05***	0.04***	-24%	-45%	-57%
Childs' rank	15.2***	12.5***	9.8***	7.8***	-18%	-35%	-49%
Additional controls:							
* Cohorts	Yes	Yes	Yes	Yes			
* Gifts and inheritances received	No	Yes	Yes	Yes			
* Occupation of fathers	No	No	Yes	Yes			
* Education	No	No	No	Yes			
Obs.	20 680	20 680	20 680	20 680			

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

As expected, adding potential explanatory variables for the intergenerational correlation decreases the marginal effects of parental wealth on the probability of belonging to the top wealth groups. Overall, the three sets of variables we are able to control for explain together 50% to 60% of the marginal effect of parental wealth on the probability of belonging to the top 50 to 10% wealth groups. We document some striking differences across the top wealth groups by computing the reduction in the marginal effects of parental wealth between the baseline regression and the ones with additional controls.

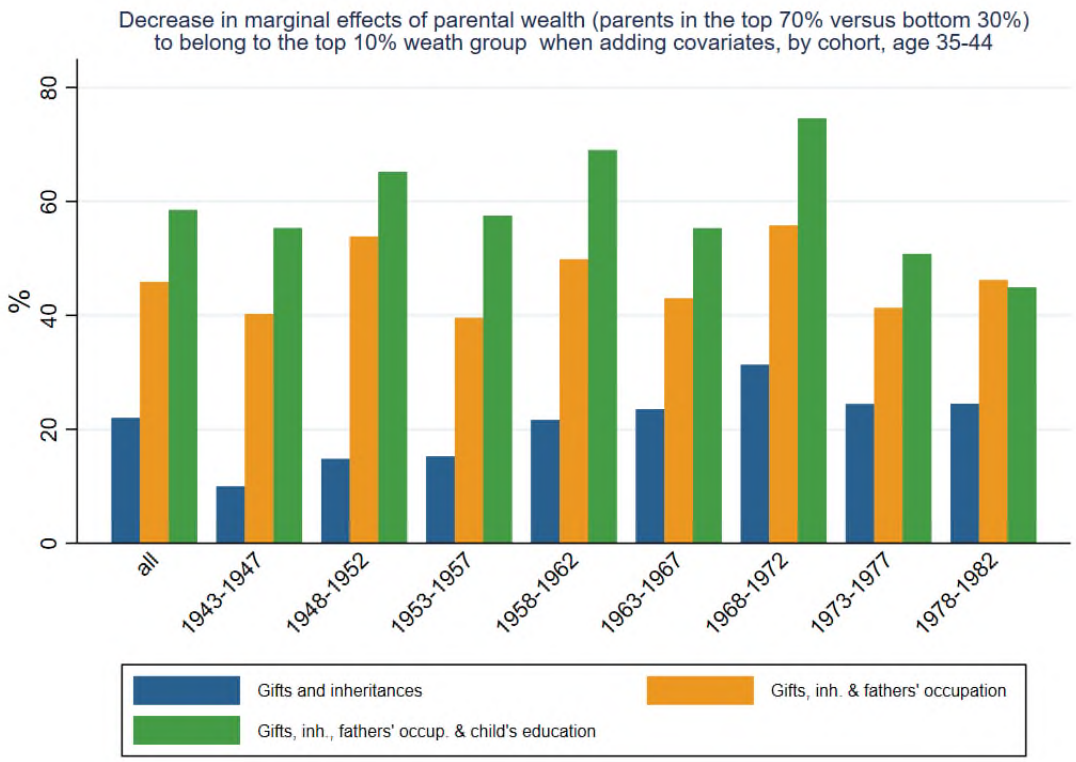
First, gifts and inheritances play an increasing role in the correlation between parental wealth and the probability for children of belonging to the top wealth groups

as we move up the children's wealth distribution. On average, accounting for gifts and inheritances decreases the marginal effect of having parents in the top 50% versus bottom 50% on the probability of belonging to a top wealth group by a value ranging from 13% (for the top 70%) to 24% (for the top 25%). This is lower than what is found for Sweden by Adermon et al. (2018), who find that bequests explain about half of the intergenerational wealth correlation. However, note that in our case, we do not have the exact amount of the inheritance, just the receipt. When adding father's occupation as a proxy for the amount of financial capital passed on as well as for some human capital transfers, the explained share reaches more than 50% (resp. 57%) for the top 50% (resp. top 25% and top 10%). Second, gifts and inheritances tend to explain a higher share of the intergenerational correlation at the top of the wealth distribution for more recent cohorts compared with older ones. This striking pattern is illustrated by the two panels of Figure 7: controlling for gifts and inheritances reduces the marginal effects of parental wealth (top 70% parents in panel a, top 50% parents in panel b).

For example, the marginal effect of having parents in the top 70% on the probability of belonging to the top 10% decreases from 10% to 16% for the three oldest cohorts to 23% to 33% for the youngest ones; while the marginal effect of having parents in the top 50% decreases from 12 to 19% for oldest cohort groups, to 17 to 50% for the youngest ones. This result is consistent with Alvaredo et al. (2017), who find a rising share of inherited wealth at the aggregate level between 1970 and 2010 (see foonote 2). Third, adding controls for parental occupation and children's education further reduces the marginal effect of parental wealth, which amounts to about half of the marginal effect obtained without any control variables.

Figure 7: Decrease in marginal effects of parental wealth to the probability of belonging to the top 10% wealth group when adding covariates, by cohort

(a) Panel a: Parents in top 70% vs bottom 30%



(b) Panel b: Parents in top 50% vs bottom 50%

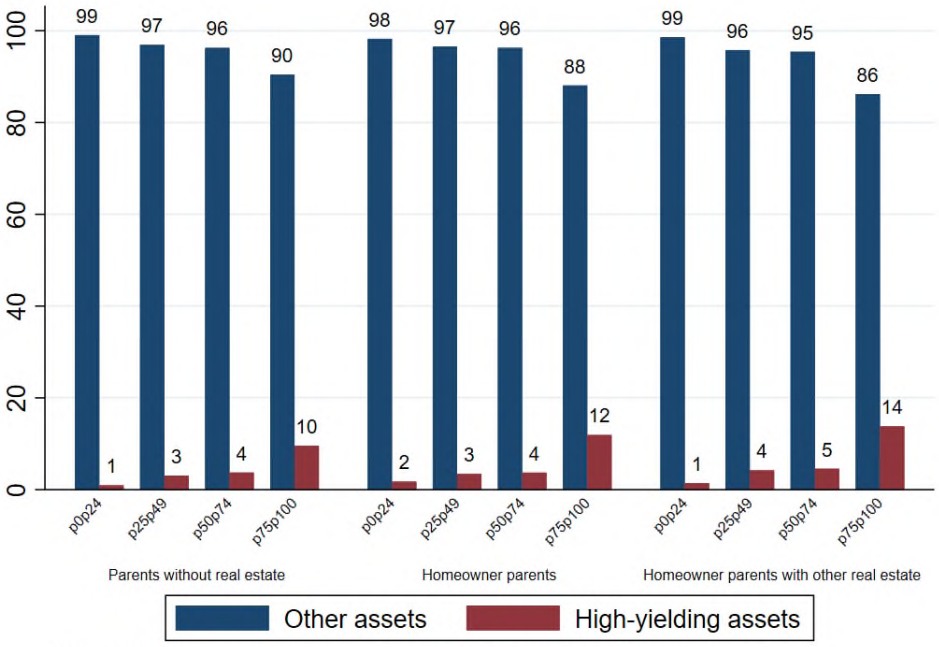
6.2 The role of high-yielding assets accumulation

There is a well-established literature about the role of intergenerational transfers on wealth accumulation and wealth inequality (Piketty (2014) for France, Boserup et al. (2016) for Denmark, Elinder et al. (2018) and Nekoei and Seim (2018) for Sweden). Recent studies have also highlighted the role of heterogenity in rates of return and of differences in assets holding (Carbonnier (2017) for France, Fagereng et al. (2020) for Norway). Fagereng et al. (2020) show that returns are both positively correlated with wealth and across generations. We test here for heterogeneity in children wealth composition, as a new channel explaining differences in children wealth accumulation across groups of parental wealth. More precisely, we focus on high-yielding assets. We define high-yielding assets as income-producing real estate (ie rental housing assets) and high-yielding financial assets (ie shares and firm bonds). We use the 3 last waves of the survey (2010, 2015, 2017) because previous waves only present the amount of these assets in brackets. As a results, we are not able to test for differences across cohorts.

As a motivating graph, figure 8 breaks down children total gross wealth into high-yielding assets and other assets, by quartile of gross wealth and depending on parental category. Panel (a) shows that there are stark differences in the children portfolio composition depending on respondents parental ownership of real estate, particularly at the top of the children wealth distribution. Within the 4^{th} quartile, children whose parents where owning real estate in addition to their main residence hold a share of high-yielding assets that is 4 percentage points higher that the share held by children of parents with no real estate at all (14% vs 10%). Panel b breaks down high-yielding assets into high-yielding financial assets and income-producing real estate. It shows that higher parental wealth is associated with a higher share of wealth held in both financial and housing assets. Figures E7 to E8 in the appendix show that this pattern is also present for the other age categories.

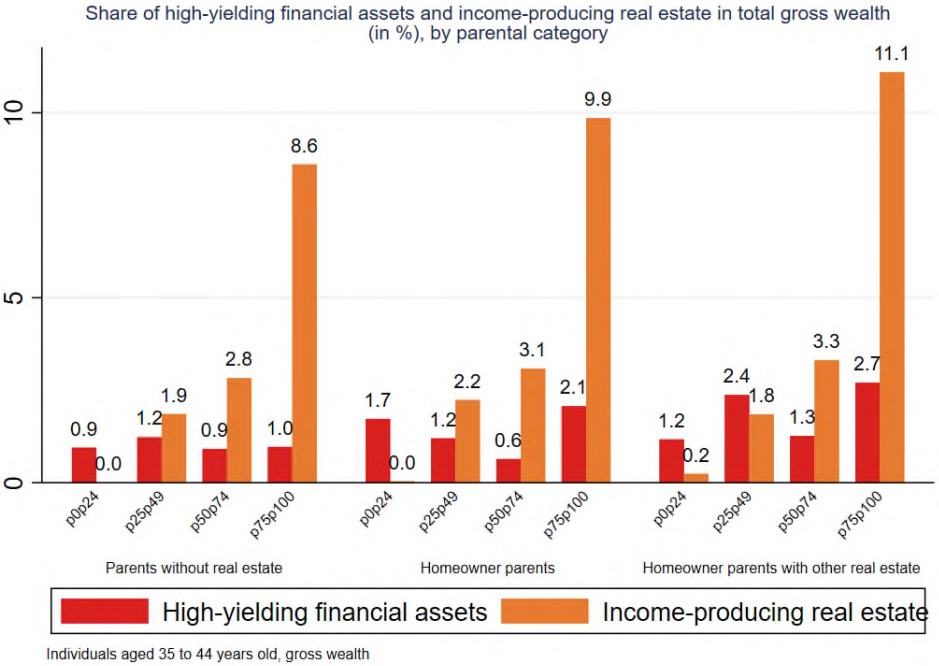
Figure 8: Share of high-yielding assets in total gross wealth, by parental category

(a) Panel a



Share of high-yielding assets in total gross wealth (in %). Individuals aged 35 to 44, gross wealth

(b) Panel b



Individuals aged 35 to 44 years old, gross wealth

Note: Rank of children computed over the entire population of children, within each generation×survey.

Table 8 show the results of the TSTSLS estimation. Among children those with richer parents (i.e. with parents in the top 50%) hold more often high-yielding assets (column 1, panel a). This is true for high-yielding financial asssets and income-producing real estate. They also receive more often capital income (columns 2 to 4, panel a). For children in the three first quartiles of the wealth distribution, these differences do not appear particularly significant and this pattern turns out to be driven by children in the 4^{th} quartile of wealth. This is expected since the higher we move up the wealth distribution, the more diversified the portfolios of assets are. Except at the bottom of the wealth distribution, individuals mainly own saving accounts and their main residence. This pattern is not only true for the ownership of high-yielding assets but also for the share of wealth invested in this type of assets (panel b). Indeed, children in the 4^{th} quartile of wealth own a significant larger share of their total wealth as high-yielding financial asssets and income-producing real estate when their parents belong to the top 50% than when their parents belong to the bottom of the wealth distribution. They also receive a higher share of their total income as capital income (columns 2 to 4, panel a).

Such heterogeneity in asset composition may reflect differences in financial literacy and in ability to take financial decisions depending on parental background. The role of financial literacy in explaining investment behaviours, especially investments in financial risky assets is well-documented (see Lusardi and Mitchell (2014) and Bianchi (2018) in the case of France). Family factors during childhood are deemed to affect financial literacy of adults Grohmann et al. (2015). Richer parents may therefore have a positive impact on children wealth accumulation, not only through direct transfers of wealth or through intergenerational income correlation, but also because of better financial knowledge enabling children to invest more in high-yielding assets.

Table 8: Share of wealth held in high-yielding assets & Share of children holding high-yielding assets, by wealth quartile

		Share of high-yielding assets	Share of high-yielding financial assets	Share of income-producing real estate	Share of capital income
Panel a: Share of children holding high-yielding assets					
	Constant (parents in the bottom 50%)	0.20***	0.16***	0.07***	0.86***
All	Parents in the top 50%	0.17***	0.12***	0.11***	0.11***
	Obs.	9215	9215	9215	8699
Wealth quartiles					
	Constant (parents in the bottom 50%)	0.04***	0.04***	0.00	0.72***
1^{st}	Parents in the top 50%	0.00	0.00	0.00	0.05
	Obs.	1553	1553	1553	1431
	Constant (parents in the bottom 50%)	0.17***	0.15***	0.02**	0.90***
2^{nd}	Parents in the top 50%	-0.02	-0.01	0.00	0.05*
	Obs.	1827	1827	1827	1797
	Constant (parents in the bottom 50%)	0.29***	0.24***	0.06***	0.95***
3^{rd}	Parents in the top 50%	-0.03	-0.06*	0.03	0.03**
	Obs.	2246	2246	2246	2189
	Constant (parents in the bottom 50%)	0.52***	0.34***	0.29***	0.96***
4^{th}	Parents in the top 50%	0.16***	0.18***	0.10***	0.05**
	Obs.	3589	3589	3589	3282
Panel b: Share of total wealth held in high-yielding assets					
		Share of high-yielding assets	Share of high-yielding financial assets	Share of income-producing real estate	Share of capital income
	Constant (parents in the bottom 50%)	3.47***	0.91***	2.56***	0.04***
All	Parents in the top 50%	4.07***	0.81***	3.26***	0.04***
	Obs.	9140	9140	9140	8699
Wealth quartiles					
	Constant (parents in the bottom 50%)	0.76***	0.74***	0.02	0.03***
1^{st}	Parents in the top 50%	0.48	0.41	0.07	0.03**
	Obs.	1480	1480	1480	1431
	Constant (parents in the bottom 50%)	2.63***	1.20***	1.43**	0.03***
2^{nd}	Parents in the top 50%	0.40	0.44	-0.04	0.01
	Obs.	1825	1825	1825	1797
	Constant (parents in the bottom 50%)	3.28***	0.71***	2.57***	0.03***
3^{rd}	Parents in the top 50%	0.96	0.12	0.84	0.02***
	Obs.	2246	2246	2246	2189
	Constant (parents in the bottom 50%)	10.58***	0.97***	9.61***	0.10***
4^{th}	Parents in the top 50%	4.22***	1.84***	2.38*	0.03*
	Obs.	3589	3589	3589	3282

Other controls: cohorts (ref: 1973-1977).

Note: Surveys 2010, 2015 and 2017. Individuals aged 35 to 44 years old. Robust standard errors clustered at the household level.

7 Robustness tests

In our main analysis, we focus on the sample of counterfactual parents which consists of household with a woman aged 35 to 44 years and with at least one child aged 10 to 14 (first-stage estimation) and for children aged 35 to 44 in order to focus on children at the same stage of their life-cycle that of their parents. In this section, we first prove that our results are robust both to the choice of this definition of counterfactual parents and to household-level regressions (section 7.1). Another robustness test deals with the measurement of the wealth distribution in the first two waves of the French wealth

survey. For the 1986 and 1992 surveys, we have to impute a distribution from wealth brackets. In section A.4, we explain our approach in details and why we are confident in the results it gives. We use a multiple-imputation procedure based on a simulated residuals estimation. We compute five sets of imputations for each of these two surveys and use the first one in our benchmark approach. In section 7.2, we show there is no difference in our results when using the other imputation sets. We also show that our results are robust to the life-cycle period we are considering for the children's wealth (section 7.3). Finally, we also investigate how our method could be extended to net wealth (section 7.4).

7.1 Robustness tests on other choices for the counterfactual parents and for the other sets of imputations for the 1986 and 1992 surveys

One could be concerned that the results may depend on the choice of the counterfactual parents group. We show that our findings are robust:

- to other choices of demographics for the counterfactual parents group (having at least one child aged less than 14, having at least one child but without setting an age limit on the child, and without any restriction on the number of children) and when extending the range for the age of woman to 30 to 54 (Appendix tables E3 and E4).
- when we compute our regression at the household level rather than at the individual level (Appendix tables E5 and E6).

7.2 Robustness tests for the other sets of imputations for the 1986 and 1992 surveys

For the two first waves of the survey (1986 and 1992), wealth is reported in brackets. We compute ranks having simulated the wealth distribution from these brackets and using economic and socio-demographic information. Details and indicators of the quality of this procedure are given in Appendix A.4. We use a multiple imputation procedure by imputing 5 different sets of imputations and use the first set of imputations as a benchmark. Here, we test the robustness of our finding to the other sets of imputations. Theoretically it may lead to 25 different sets of imputations (5 for each of the two surveys). To avoid providing too many tables of results, we focus on 5 polar cases: when using the same set of imputations for each survey. For example, the set of imputations numbered 2 refers to the second set of imputations computed for both the 1986 and the 1992 surveys. the choice of the set of imputations does not alter our results (Appendix tables E9 and E10).

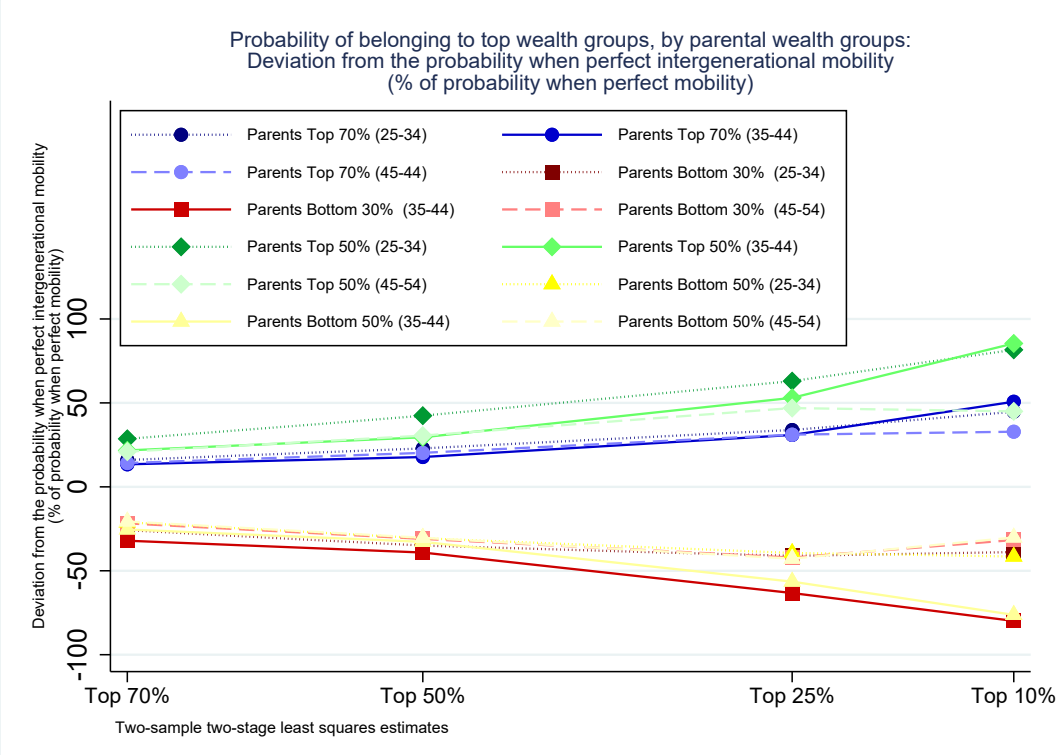
7.3 Robustness tests on other life-cycle stages

Our baseline estimates are obtained taking children's and parents' wealth at similar stages of their life cycle (mid-life cycle). Although our dataset is not a panel,[44] we nevertheless observe the wealth of children of the same cohorts at various life-cycle positions, which allows us first to test the robustness of the results obtained for mid-life-cycle individuals, and second to investigate possible differences across the life cycle in the role of parental wealth. We then consider the wealth positions of two other groups of individuals (i.e. those aged between 25 and 34 and between 45 and 54) to complement our baseline analysis (based on individuals aged 35 to 44).

Figure 9 summarizes the information for the different groups. It confirms the main findings obtained with the baseline age group and highlights the persistence over the life cycle of the differences in the wealth positions related to parental wealth.

First, the probabilities of belonging to the top wealth groups increase with the wealth of the parents for all age groups. Second, the higher we move up the children's wealth distribution, the larger the role of parental wealth in all age groups. Third, the wealthier the parents, the greater the role of parental wealth in accessing all top wealth groups at the three life-cycle stages.

Figure 9



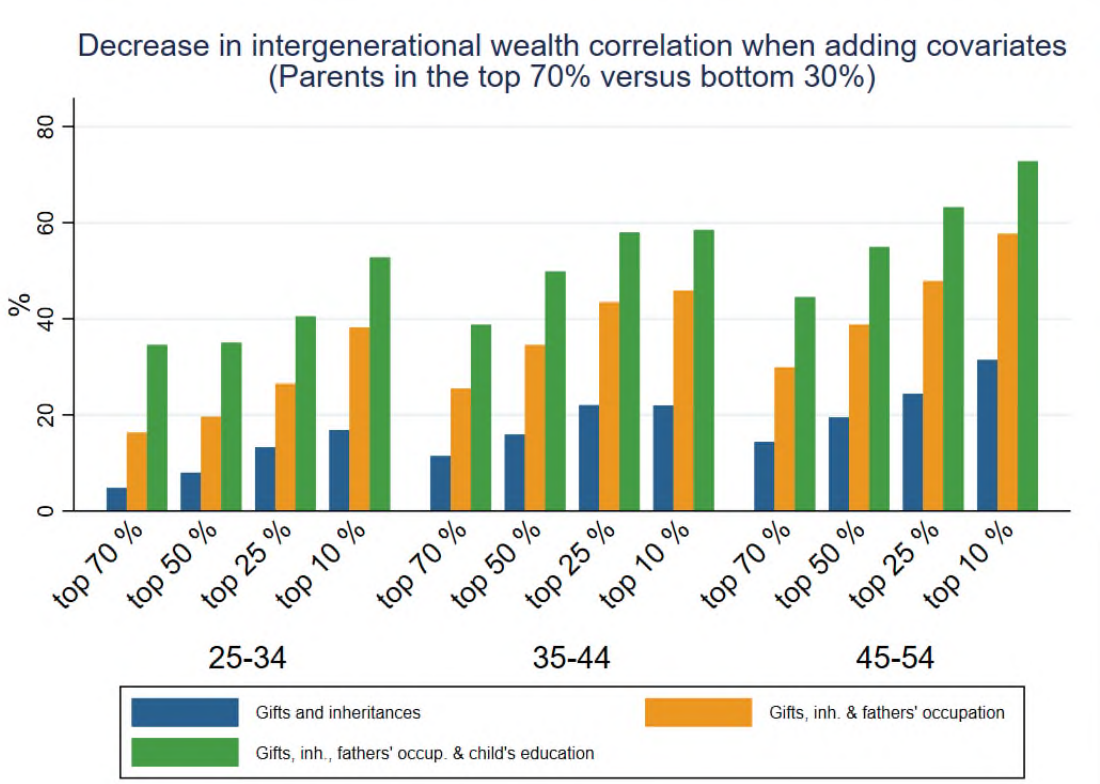
[44] Based on Danish tax administrative records, Boserup et al. (2017) are able to use a panel dataset to study the intergenerational correlation over the life cycle of the second generation.

Regarding intergenerational wealth correlation over the life cycle, Boserup et al. (2017) find a U-shaped pattern: the correlation is higher when children move into adulthood (20) and in their forties than in their mid-twenties. Clearly our method and data, though informative on several dimensions, do not allow us to study this point as precisely as they do, especially because we only have parental wealth at a given point of their life cycle. Nevertheless, if we turn to the most comparable results (the probability of being in the top 50% for children of parents in the top 50%), we find that the effect of parental wealth is lower when children are aged 35 to 44 than when they are younger or older. Though more research is needed on this point, this finding may confirm a U-shaped pattern over the life cycle in France.

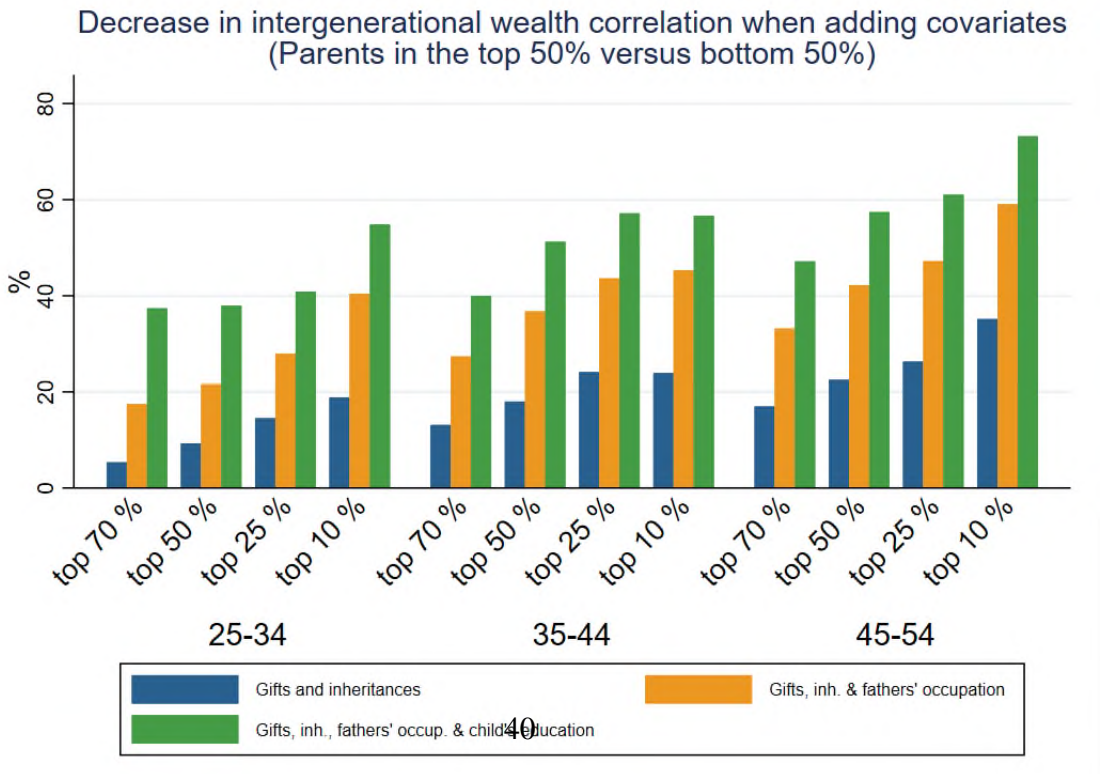
Regarding the determinants of intergenerational wealth correlation, whatever the age group, gifts and inheritances have a larger explanatory power at the top of the wealth distribution than at the bottom (Figures 10). The increase is particularly striking at young ages. This may reflect the fact that transfers represent a higher share of children's wealth when they are younger than later in life. Regarding the effect of having parents in the top 50% wealth group, when adding father's occupation and children's education for all age groups, the explained share remains between 42% and 64%.

Figure 10: Decrease in marginal effects of parental wealth to the probability of belonging to the top 10% wealth group when adding covariates, by age group

(a) Panel a: Parents in top 70% vs bottom 30%



(b) Panel b: Parents in top 50% vs bottom 50%



7.4 Robustness when using net wealth rather than gross wealth

As explained in section 2.1, we use the concept of gross wealth. However, from 2010 onwards (i.e. for 3 waves: 2010, 2015 and 2017), we can compute respondents' net wealth. In order to investigate how our results could be extended to net wealth, we restrict our sample to these 3 waves and compute the probability of belonging to the top 70% and 50% of the net wealth distribution according to our instruments (Appendix figures E9). They are as high as those computed for the gross wealth distribution (Figures 2). Table E7 shows the R-squared and F-Statistics for the first-stage estimates (see section 5 for explanations), which remain high, even though they are lower than the ones computed for our benchmark approach (Table E2). All these elements are suggestive that we could use our method to study intergenerational net wealth correlation (but with a much lower span of time due to the fact that only 3 surveys would be available for it).

8 Conclusion

To overcome major data limitation, we propose a new method to estimate the intergenerational wealth correlation in the absence of detailed administrative data on the wealth of two generations at the individual level. This method relies on qualitative information about the parents'ownership of housing assets (the main residence and other real estate properties) that can be easily collected in housing or wealth surveys. This information is combined with a two-sample two-stage least squares (TSTSLS) approach to study how IWC has evolved over the 20^{th} century.

First, we show that the ownership of housing assets can be used as a proxy for the position in the wealth distribution. Owning one's main residence (with or without having any other real estate property) is associated with belonging to the top 70% of the wealth distribution, while owning other real estate in addition to the main residence is associated with a position within the top 50%. We document that such a pattern is true for France but also for the U.S. and for other Europeans countries. Because the mapping between real estate properties and wealth groups is not perfect, we use a TSTSLS approach to correct for the low and downward bias due to this potential misclassification. Two other major features of our method are worth mentioning. First, it enables the estimation of the intergenerational wealth correlation at similar life-cycle periods for both children and parents. Second, it allows to estimate the intergenerational correlation for several children' cohorts and to assess potential differences across these cohorts.

Using these particular elements of the French wealth survey, we estimate the intergenerational wealth correlation between two generations for numerous cohorts born after World War II and provide new findings for France. Our baseline analysis focuses on the intergenerational correlation between the wealth positions of children and parents measured at the same life-cycle stage (mid-life cycle). First, the probabilities of

belonging to the top wealth groups increase with the wealth of the parents, which confirms the persistence of the position in the wealth distribution over generations already observed in other countries. Moreover, this intergenerational correlation has increased over time for the probability of belonging to the different top wealth groups (top 75%, top 50%, top 25% and top 10%). This is also true for rank-rank correlations. Second, we find that the higher we move up the children's wealth distribution, the greater the role of parental wealth. Third, we also find evidence of persistence of the effect of parental wealth over the life cycle: our main conclusions are robust when we take the wealth of the second generation at younger and older life-cycle stages, while the parents' wealth is measured at a fixed life-cycle stage (mid-life cycle). Fourth, we turn to the source of this intergenerational wealth correlation. We find that about 50% to 60% of it is accounted for by a mix of direct intergenerational wealth transfers, father's occupation and children's education. Gifts and bequests explain a larger share of the link between parental wealth and the probability of belonging to the top 10% compared with the probability of belonging to larger top wealth groups. Finally, we document that differences in parental wealth are also associated with differences in children's asset composition, and find more investments in high-yielding assets for children with wealthier parents.

Taken together, our results are thus in line with the literature showing the increasing importance of wealth over recent decades. They could illustrate a determinant for the growing feeling that France is an unfair country.[45] They also suggest that public policies may play a role in enhancing equality of opportunity by promoting equal access to education and financial litteracy, and designing appropriate redistribution schemes.

[45] According to a regular survey about the perception of inequality in France, the share of individuals who consider that France is a "rather unfair" country has increased continuously from 2000 onwards. It rose from 68% in 2000 to 76% in 2018. Alesina et al. (2018) also document that the French are very sceptical about the idea that all individuals have equal opportunity to success.

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APPENDIX

A Data

A.1 Average ages by cohort and age group

Table A1 presents the distribution of ages by by cohort and age group for our sample. For each age group, whenever we observe both the minimum and maximum ages of the age group, the average age is similar across cohorts. This rules out a potential structural change in the average ages of observed children over time.

Table A1: Average ages by cohort and age group

Cohort	Age group	Average age	Minimum age	Maximum age
1948-1952	25-34	34.0	34	34
1953-1957	25-34	31.0	29	33
1958-1962	25-34	29.9	25	34
1963-1967	25-34	30.0	25	34
1968-1972	25-34	30.0	26	34
1973-1977	25-34	29.9	25	34
1978-1982	25-34	30.4	25	34
1983-1987	25-34	30.1	25	34
1988-1992	25-34	26.9	25	29
1938-1942	35-44	44.0	44	44
1943-1947	35-44	40.8	39	43
1948-1952	35-44	39.6	35	44
1953-1957	35-44	39.5	35	44
1958-1962	35-44	39.9	36	44
1963-1967	35-44	39.8	35	44
1968-1972	35-44	39.9	35	44
1973-1977	35-44	40.0	35	44
1978-1982	35-44	36.7	35	39
1933-1937	45-54	51.0	49	53
1938-1942	45-54	49.5	45	54
1943-1947	45-54	49.2	45	54
1948-1952	45-54	49.9	46	54
1953-1957	45-54	49.5	45	54
1958-1962	45-54	49.6	45	54
1963-1967	45-54	49.8	45	54
1968-1972	45-54	46.6	45	49

A.2 Occupations:

Our measure of occupation is based on the standard French classification. It is the main occupation at the time of the survey interview. The question is asked to the reference person and his/her partner (if any).

A.3 Educational attainment:

This is the highest qualification obtained at the time of the survey interview. The question is asked to the reference person and his/her partner. Measure of educational attainment based on the standard French classification. We use the following translation for French diploma (see the Ministry of Education).

Table A2: Measure of educational attainment

Primary education certificate	**Short vocational course**	**Vocational Lower degree**	**Vocational upper secondary degree**	**General upper secondary degree**	**College**	**Bachelor degree, post-graduate qualification and elite school degree**
CEP	**CAP**	**BEPC**	**Bac technique / Brevet professionnel**	**Bac general**	**Bac to Bac +2**	**Bac +3 and higher**

A.4 Simulation of wealth distribution for the 1986 and 1992 surveys

In 1986 and 1992, wealth is reported in brackets. In order to compute wealth ranks (and top wealth groups), we use interval regressions in order to compute a wealth distribution. For closed intervals we use a lognormal distribution for the residuals. For the last part of the distribution (above the last threshold) we use a residual simulated method based on a Pareto distribution (with coefficient 2).

We take into account the numerous socio-demographic and economic correlations in the reported wealth. Indeed, we introduce as independent variables: the presence of a partner, the occupation, age and education of the members of the household (the reference partner and their potential partner), their receipt of gifts or inheritance, the occupation of the father of the reference person as well as information about whether

the parents of the members of the household were either homeowners or owned real estate other than the main residence.

Appendix Table A3 presents the gross wealth distribution in brackets for the two surveys. As it turns out, the top 5% and the top 10% are well captured by the brackets of these surveys. This allays the concern about incorrect imputation of our top wealth groups. This is also the case for the top 50% that is fully captured for both years. The top 25% is quite well approximated by the brackets from the 1992 survey (which distinguishes the top 20%) and a little less well by the 1986 survey (which distinguishes the top 10% and the top 34%).

Table A3: Wealth brackets for 1986 and 1992 surveys

1986 survey			**1992 survey**		
Francs	**Percents**	**Top**	Francs	**Percents**	**Top**
0-2,000	16%	101%	0-20,000	9%	100%
2,000-1,0000	21%	85%	20,000-50,000	10%	91%
10,000-30,000	14%	64%	50,000-100,000	9%	81%
30,000-50,000	16%	50%	100,000-300,000	13%	72%
50,000-100,000	23%	34%	300,000-500,000	13%	59%
100,000-150,000	6%	11%	500,000-1,000,000	25%	46%
150,000-250,000	3%	5%	1,000,000-1,500,000	9%	21%
250,000-above	2%	2%	1,500,000-2,000,000	5%	12%
			2,000,000-2,500,000	3%	7%
			2,500,000-3,000,000	1%	4%
			3,000,000-above	3%	3%

B Correlation between parental real estate ownership and the children's wealth

To assess the magnitude and the significance of these diverging patterns, we estimate a linear probability model. We regress the dummy for belonging to a given top wealth group (top 70%, 50%, 25% or 10%) on the dummies for the real estate asset category of the parents. We systematically use as the reference category the dummy for having no real estate.[46] We introduce the cohort of birth and its interaction with the real estate asset category of the parents to allow for differences in the effect of the parental ownership of real estate across cohorts.

We first focus on individuals aged between 35 and 44, which allows us to consider the position of both parents and children at similar stages in their life cycle (see 4.1). Tables B1 and B2 display the regression results, which test for the difference in access

[46]Since we are either interested in parents who are homeowners or parents who are homeowners with other real estate properties, for our regression, we exclude the dummies for those we are not interested in. It simplifies the presentation of the results without making any difference in the coefficients presented in the table, it just changes the number of observations.

to the top wealth groups between individuals whose parents were either homeowner (with or without other real estate property) (Table B1) or homeowner with other real estate property (Table B2) and individuals whose parents had no real estate.

Table B1: Probability of being in top wealth groups and average children's rank (Parents who are homeowners)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (parents with no real estate)	0.56 ***	0.38 ***	0.15 ***	0.05 ***	39.95 ***
Homeowner parents	0.21 ***	0.19 ***	0.16 ***	0.09 ***	15.44 ***
Cohort*homeowner parents					
1943-1947	-0.07 *	-0.06	-0.08 **	-0.02	-6.18 **
1948-1952	-0.07 **	-0.02	-0.04	-0.02	-4.34 **
1953-1957	-0.05	-0.05	-0.02	-0.01	-3.4 *
1958-1962	-0.08 **	-0.02	-0.05 *	-0.01	-4.01 **
1963-1967	-0.04	0.01	-0.01	-0.01	-1.82
1968-1972	-0.02	0.01	-0.02	-0.02	-1.28
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	0	0.03	-0.02	-0.02	-0.1
Other controls: cohorts					
Obs.	19 892	19 892	19 892	19 892	19 892

Note: individuals aged 35 to 44 years old. Robust standard errors clustered at the household level.

Table B2: Probability of being in top wealth groups and average children's rank (Homeowner parents with other real estate properties)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (parents with no real estate)	0.56 ***	0.38 ***	0.15 ***	0.05 ***	39.95 ***
Homeowner parents with other real estate properties	0.29 ***	0.31 ***	0.31 ***	0.19 ***	24.59 ***
Cohort*Homeowner parents with other real estate properties					
1943-1947	-0.13 **	-0.11 *	-0.15 ***	-0.09 **	-10.27 ***
1948-1952	-0.12 ***	-0.08	-0.13 ***	-0.08 **	-9.1 ***
1953-1957	-0.07 *	-0.09 **	-0.06	-0.04	-6.26 **
1958-1962	-0.08 *	0.01	-0.06	-0.01	-3.15
1963-1967	-0.04	0.01	-0.01	-0.01	-1.87
1968-1972	-0.04	-0.03	-0.04	-0.05	-3.01
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.01	0.01	-0.03	-0.04	-1.57
Other controls: cohorts					
Obs.	10 173	10 173	10 173	10 173	10 173

Note: individuals aged 35 to 44 years old. Robust standard errors clustered at the household level.

The probabilities of belonging to the top wealth groups increase with the ownership of real estate by the parents. We find statistically significant higher probabilities of belonging to the top wealth groups for individuals whose parents are homeowners compared with individuals whose parents did not own any real estate property (Table B1). For instance, the probability of belonging to the top 70% for individuals in the reference cohort[47] (1973-1977) whose parents had no real estate is 56%, while it is 21 percentage points higher (i.e. 78%) when the parents were homeowners. The probability of belonging to the top 70% is even higher (85%) for individuals with parents who own real estate in addition of their main residence (29 percentage points higher than

[47] We use as a reference cohort the cohort with the highest number of observations.

with parents in the bottom 30%, see Table B2). In other words, the probability of belonging to the top 70% is 1.38 time higher for children whose parents are homeowners (and 1.52 time higher when parents are homeowners with other real estate) compared with children whose parents were in the bottom 30%. For most of the regressions we find that for the oldest cohort the effect of having parents either homeowners or with other real estate in addition of their main residence is significantly lower than for the reference cohort, suggesting that the correlation between parental real estate ownership and children's wealth has increased over time.

C Assessing the potential bias due to misclassification

In section 4.2, we have shown how some real estate categories are good proxies for the top 70% wealth group (owners of the main residence only) and the top 50% (owners of other real estate in addition to their main residence). Then, we could directly use these categories to study the children's wealth rank depending on having parents in the top 70% or 50%. Despite the interest of this approach, this mapping between the real estate assets held by the parents and their classification in top wealth groups is not perfect and some misclassification issues may occur. This section aims to assess the potential biases.

If we want to assess the wealth gap between individuals with parents in the top 70% of the wealth distribution and individuals in the bottom 30%, we can start with a simple model with two groups. We denote T the dummy for having parents in the top 70% wealth group (then T=0 means having parents in the bottom 30% group) and y the outcome of interest. The model to be estimated is:[48]

$$y = \alpha + \beta T + u \tag{6}$$

Because of potential misclassification, we can only observe $\tilde{T}$, which is a proxy for T. Thus using the data, the OLS estimate for β is:

$$\hat{\beta}_{OLS} = E[y|\tilde{T} = 1] - E[y|\tilde{T} = 0]$$

We have:

$E[y|\tilde{T} = 1] = \alpha + \beta P[y|\tilde{T} = 1]$ and $E[y|\tilde{T} = 0] = \alpha + \beta P[y|\tilde{T} = 0]$

So: $\hat{\beta}_{OLS} = \beta\,[P(T = 1|\tilde{T} = 1) - P(T = 1|\tilde{T} = 0)]$

Thus[49]: $\hat{\beta}_{OLS} \leq \beta$

As we can see, misclassification implies a downward bias. The bias is all the smaller as the probability of observing someone in the top group when she truly is

[48] All equations are at the individual level but for the sake of simplicity, we do not denote with a subscript i (referring to individual i).

[49] $P(T = 1|\tilde{T} = 1) \leq 1$ and $P(T = 1|\tilde{T} = 0) \geq 0$, so $P(T = 1|\tilde{T} = 1) \leq 1$ - $P(T = 1|\tilde{T} = 0) \leq 1$.

$(P(T=1|\tilde{T}=1))$ is high, and as the probability that someone in the bottom group is misclassified $(P(T=1|\tilde{T}=0))$ is low.

To assess the magnitude of this bias, we now turn to the data. Using the previous computations for the classification of the counterfactual parents, for $T=\mathbf{1}_{\text{being in the top 70 \% wealth group}}$, $\tilde{T}=\mathbf{1}_{\text{being a homeowner}}$ (with $\tilde{T}=0$ for those having no real estate), we have: $P(T=1|\tilde{T}=1)=94.8\%$ and $P(T=1|\tilde{T}=0)=8.6\%$. Thus, based on our data, the true β is 13.8% higher than the estimated $\hat{\beta}_{OLS}$.[50]

If we now turn to the wealth gap between individuals with parents in the top 50% of the wealth distribution and individuals in the bottom 50%, the top 50% wealth group is now $T=\mathbf{1}_{\text{being in the top 50 \%}}$ with $\tilde{T}=\mathbf{1}_{\text{being a homeowner with other real estate}}$ (and with $\tilde{T}=0$ for those having no real estate[51]), we have: $P(T=1|\tilde{T}=1)=95.9\%$ and $P(T=1|\tilde{T}=0)=3.7\%$. The true β is then 7.8% higher than the estimated $\hat{\beta}_{OLS}$.

Consequently, if we regress the dummy for belonging to a top wealth group (for instance "being in the top 25% wealth group") on the dummy for having parents in the corresponding bottom wealth group (using parents with no real estate as the reference group), the estimated $\hat{\beta}$ can be viewed as a lower bound for intergenerational immobility and the bias does not appear large.

Interestingly, it can be shown that β_{TSTSLS} (obtained in equation 4) is equal to β_{OLS} divided by $[P(T=1|\tilde{T}=1)-P(T=1|\tilde{T}=0)]$, which is exactly the rescaling leading to the true value of β that we have computed previously.[52]

D Child's wealth rank computations from Boserup et al. (2017) and Adermon et al. (2018)

For Denmark, Boserup et al. (2017) find that $\mathbb{E}$(child wealth rank) $=37+0.27\cdot$ Parental wealth rank (Figure 1). The average child wealth rank is then 40 for children born between 1960 and 1965 with parents in the bottom 30%[53], and 57.25 with parents in the top 50%. Consequently, for children born to parents in the bottom 30% it is roughly the same average wealth rank as in France for the 1973-1977 cohort but the effect of having parents in the top 50% turns out to be stronger in France than in Denmark.

As regards Sweden, Adermon et al (2018) find that for the generation of children born in 1928: $\mathbb{E}$(child wealth rank) $= 37.3+0.296\cdot$ Parental wealth rank (Figures 1a and 1b, and Table 3). So, for children with parents in the bottom 30%, the average

[50] Since $\hat{\beta}_{OLS}=0.862\beta$.

[51] if we restrict our estimation sample to individuals either with no real estate or holding both their main residence and an addition real estate property.

[52] Indeed, equation (3) can be rewritten as $y_{Child}=\delta+\beta_{TSTSLS}\hat{b}Z+\mu$ while equation (6) can be rewritten as $y_{Child}=\gamma+\beta_{OLS}Z+\varepsilon$, so $\hat{\beta}_{TSTSLS}=\hat{\beta}_{OLS}/\hat{b}$ and, as shown in 3.3, $\hat{b}=[P(T=1|\tilde{T}=1)-P(T=1|\tilde{T}=0)]$. This result is similar to the classical two-stage least squares (TSLS) approach where, in the just-identified case, the TSLS estimate can be written as the ratio of the reduced-form and the first-stage estimates.

[53] $\frac{1}{30}\int_0^{30}(37+0.27x)\cdot dx$.

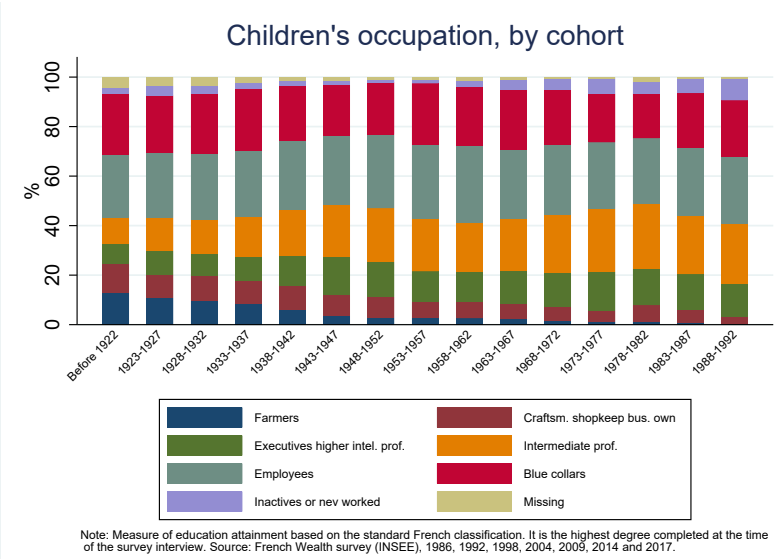
wealth rank is 41.7, which is lower than for the French 1943-1947 cohort, and 59.5 with parents in the top 50%, which is about the same as for this French cohort, showing that the gap was larger in Sweden.

For children born in 1957, they find: E(child wealth rank) = 28.6+0.391*Parental wealth rank, which means that for children whose parents were in the bottom 30% the average wealth rank is 34.5, and 57.9 for those whose parents were in the top 50%.

E Other Appendix Figures and Tables

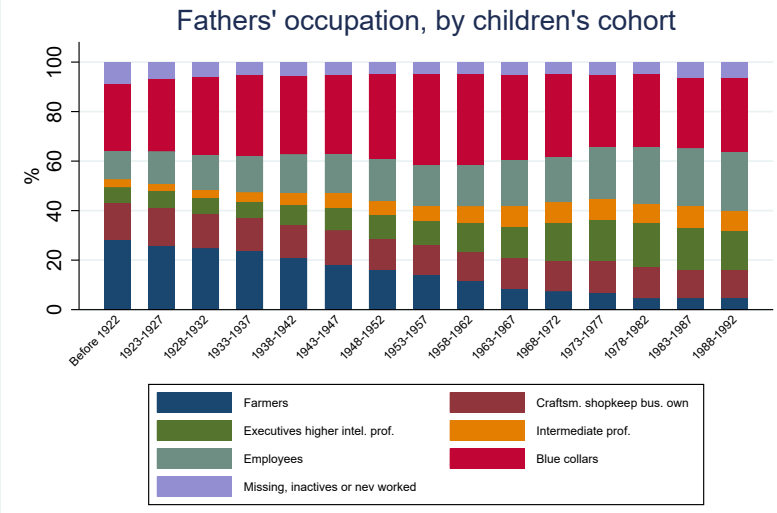
Figure E1: Occupation of children and fathers

(a) Panel a



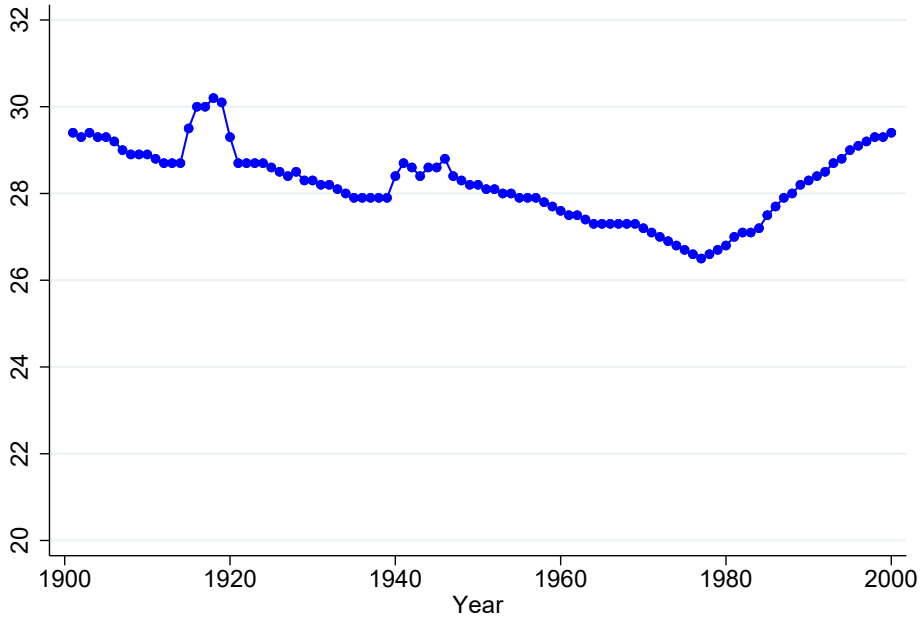
Note: Measure of education attainment based on the standard French classification. It is the highest degree completed at the time of the survey interview. Source: French Wealth survey (INSEE), 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

(b) Panel b



Note: Measure of education attainment based on the standard French classification. It is the highest degree completed at the time of the survey interview. Source: French Wealth survey (INSEE), 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

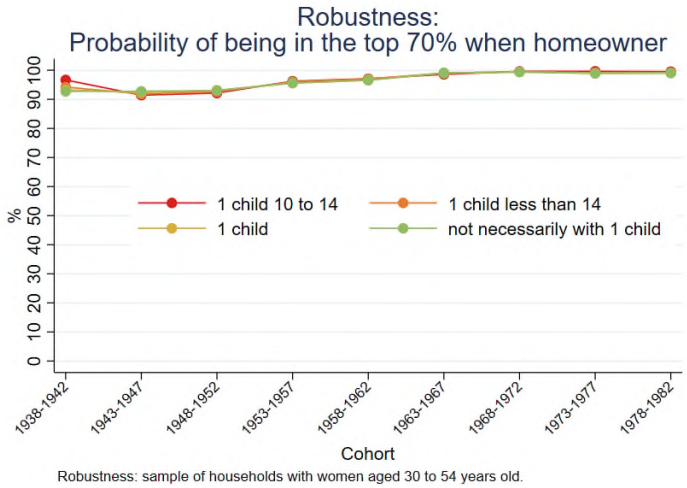
Figure E2: Mother's age at childbirth, by year



Source: Daguet F. (2000, 2002)

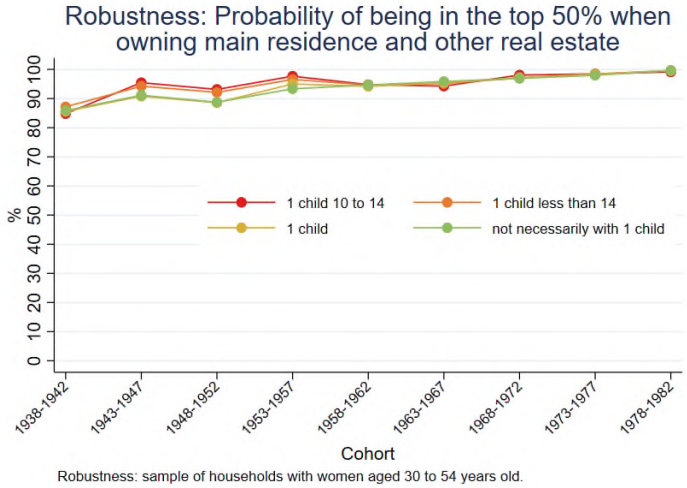
Figure E3: Robustness to the choice of counterfactual parents. Probability of being in some wealth groups by asset holding category for households with a women aged to 30 to 54.

(a) Panel a



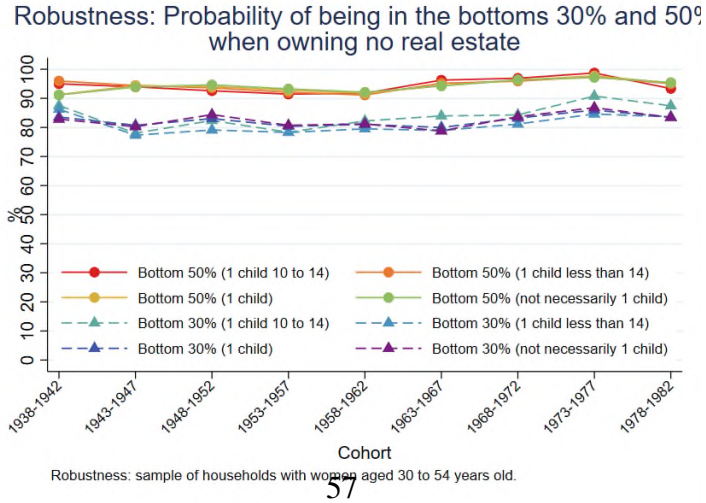
Robustness: sample of households with women aged 30 to 54 years old.

(b) Panel b



Robustness: sample of households with women aged 30 to 54 years old.

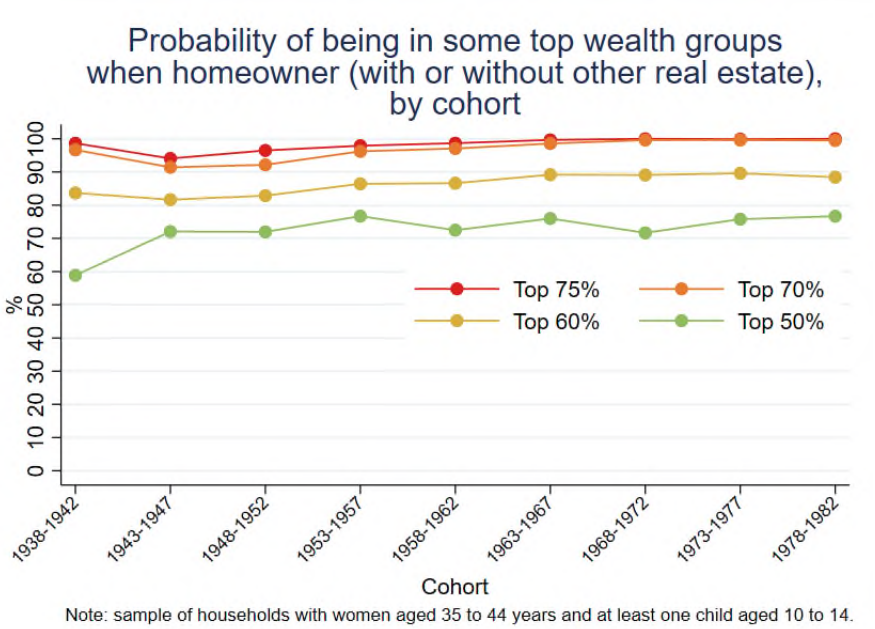
(c) Panel c



Robustness: sample of households with women aged 30 to 54 years old.

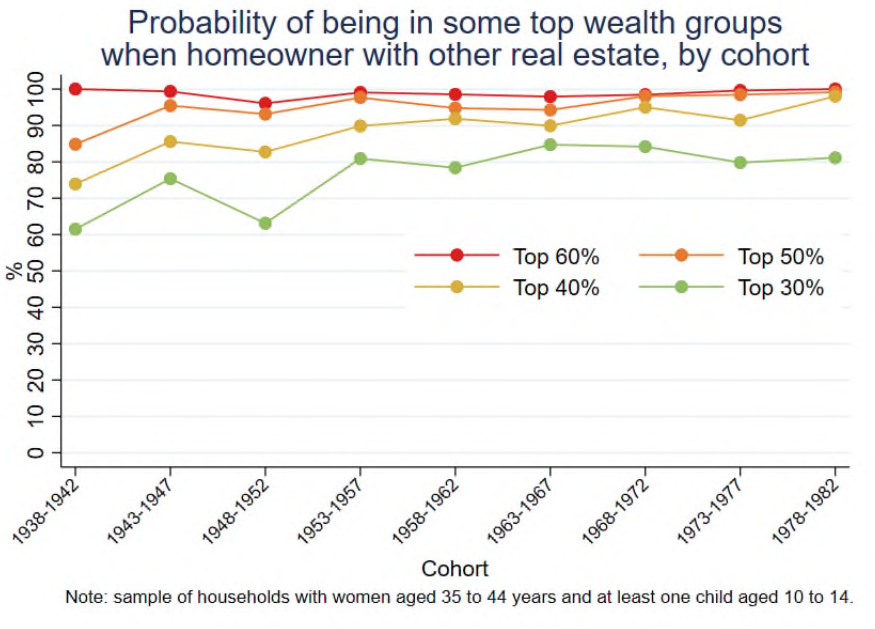
Figure E4: Probability of being in some top wealth groups by asset holding category

(a) Panel a



Note: sample of households with women aged 35 to 44 years and at least one child aged 10 to 14.

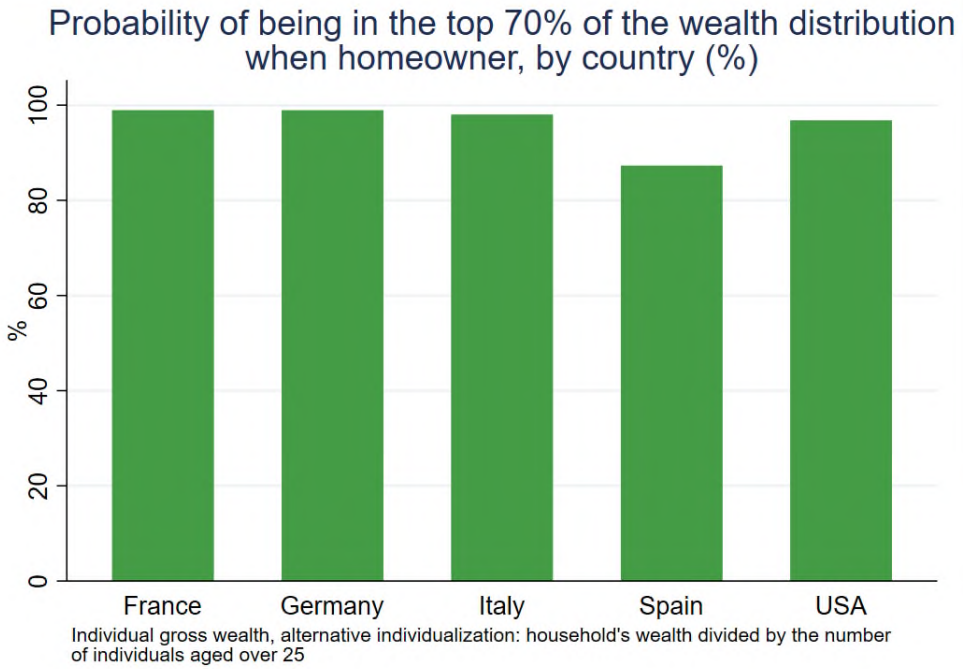
(b) Panel b



Note: sample of households with women aged 35 to 44 years and at least one child aged 10 to 14.

Figure E5: Robustness: Probability of belonging to top wealth groups by real estate categories for Germany, Italy, Spain and the U.S. when the wealth of the household is divided by the number of adults aged over 25 in addition to the reference person and her/his partner

(a) Panel a: Probability of being in the top 70%



(b) Panel b: Probability of being in the top 50%

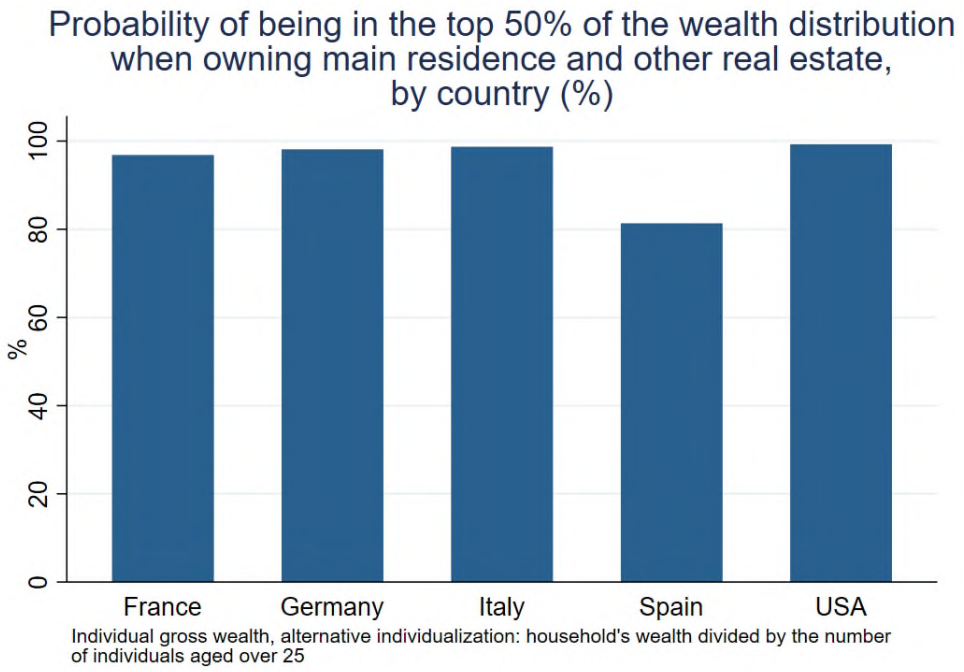
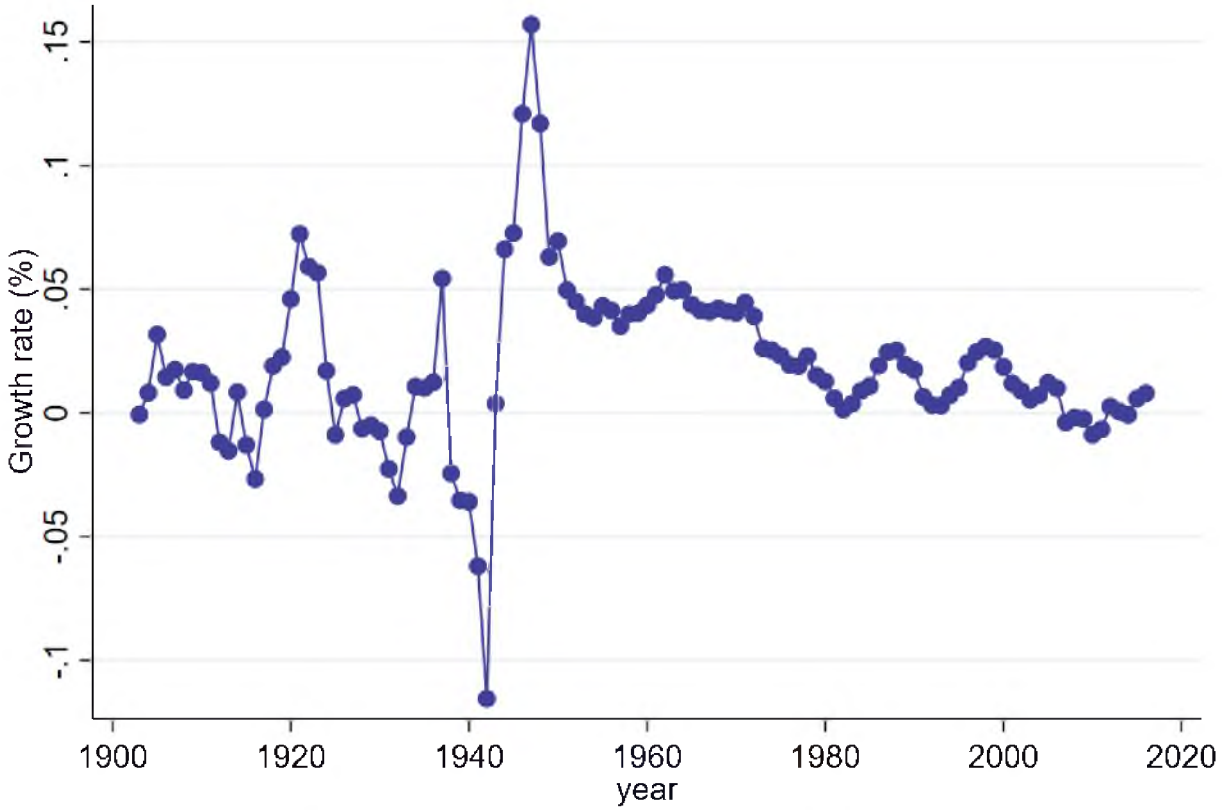


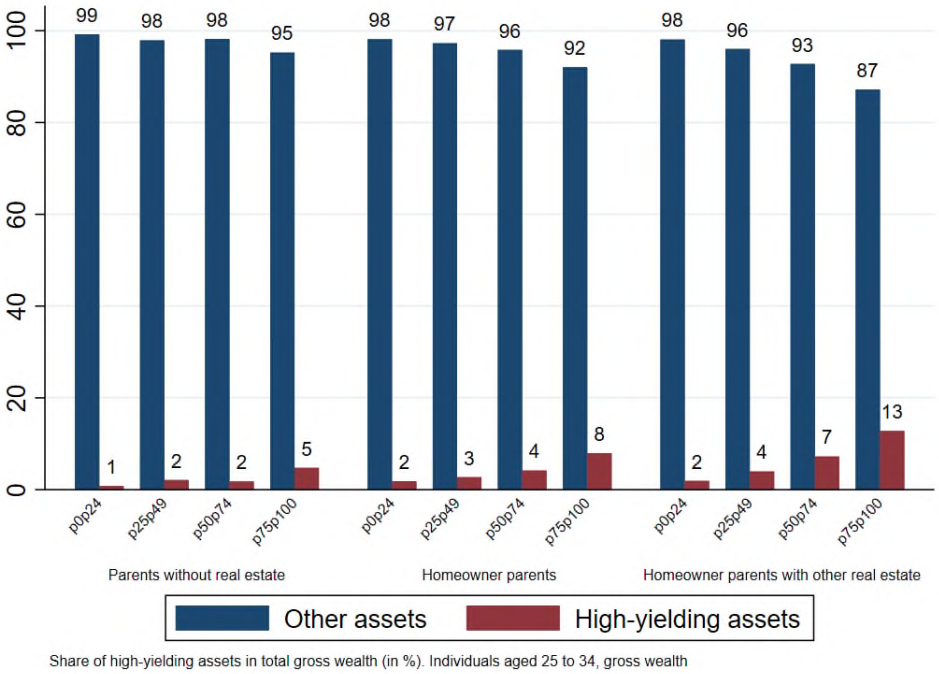
Figure E6: Growth rates 1900-2018, France (5 year-moving averages)



Note: 5-year moving averages.
Source: National income growth rate: Garbinti et al. (2018).

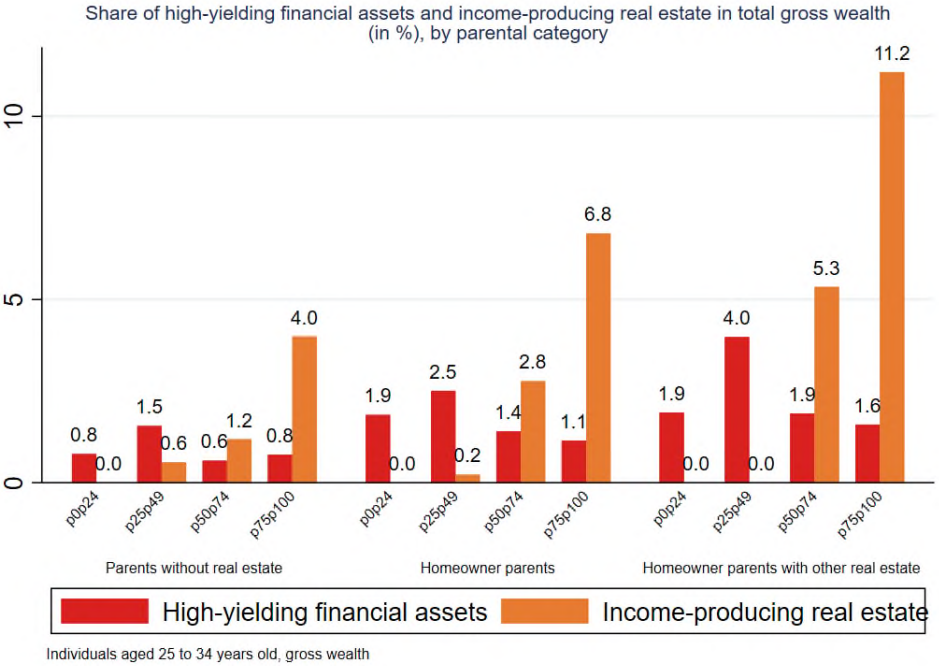
Figure E7: Share of high-yielding assets in total gross wealth, by parental category

(a) Panel a



Share of high-yielding assets in total gross wealth (in %). Individuals aged 25 to 34, gross wealth

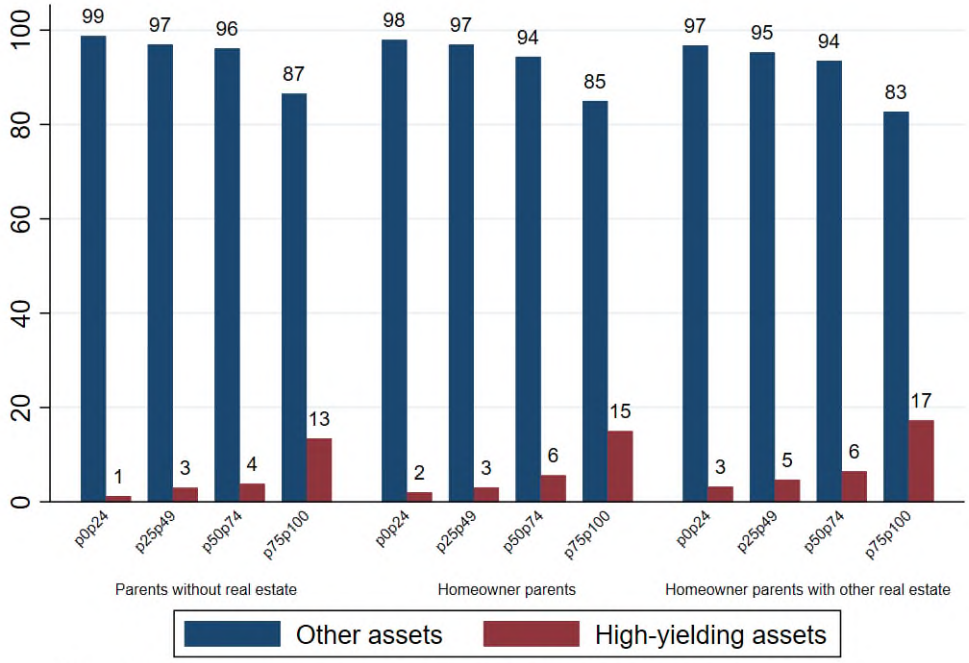
(b) Panel b



Individuals aged 25 to 34 years old, gross wealth

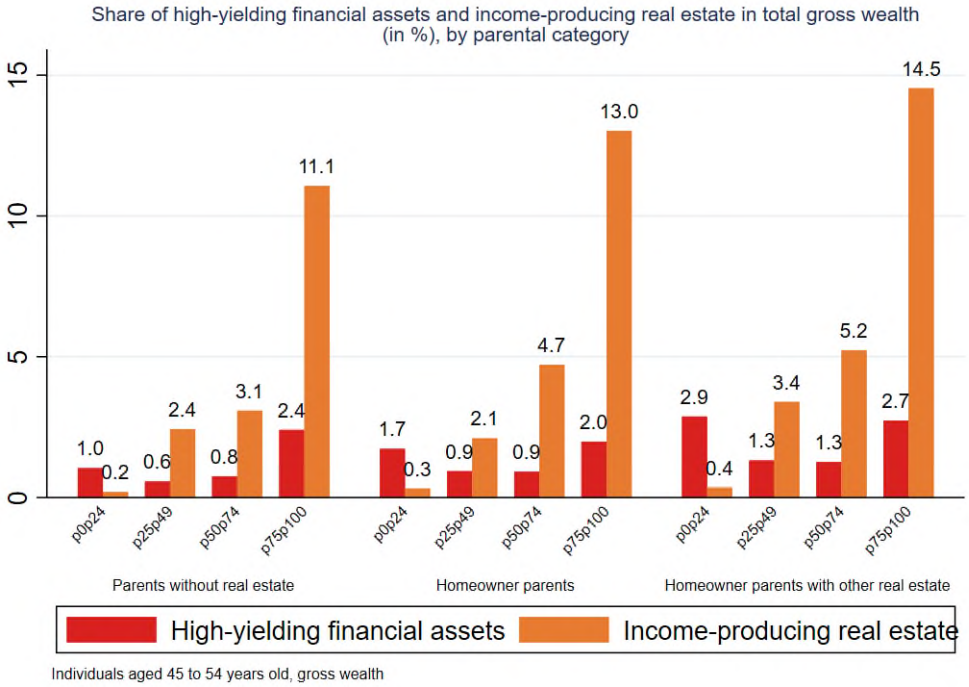
Figure E8: Share of high-yielding assets in total gross wealth, by parental category

(a) Panel a



Share of high-yielding assets in total gross wealth (in %). Individuals aged 45 to 54, gross wealth

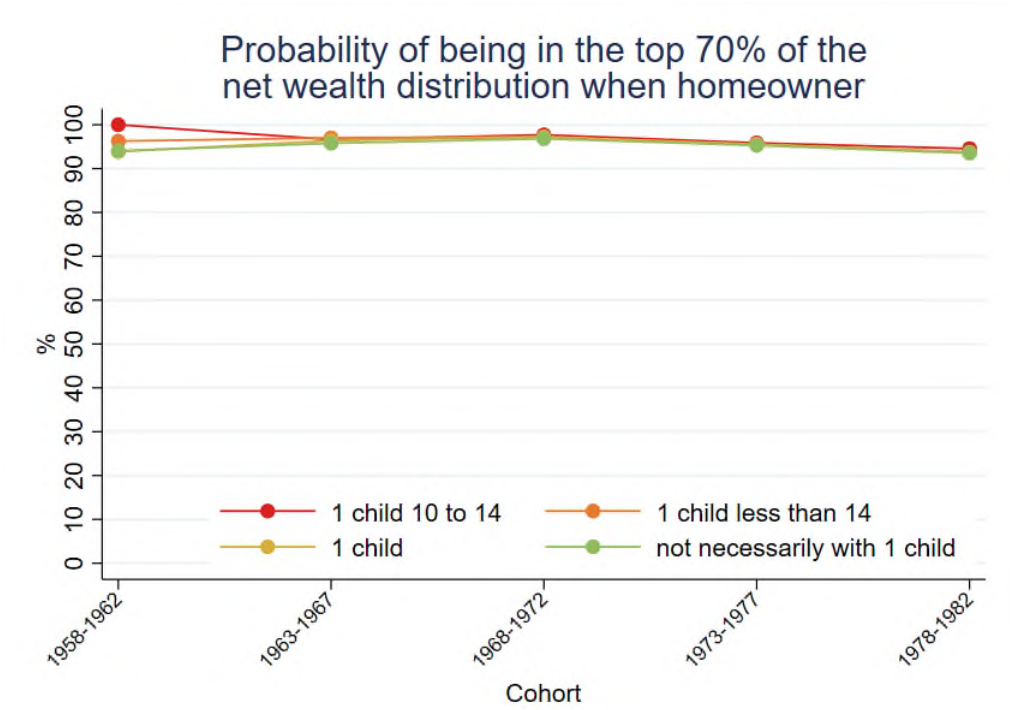
(b) Panel b



Individuals aged 45 to 54 years old, gross wealth

Figure E9: Probability of being in the top 70% and top 50% of the **net** wealth distribution, by asset holding category

(a) Panel a



(b) Panel b

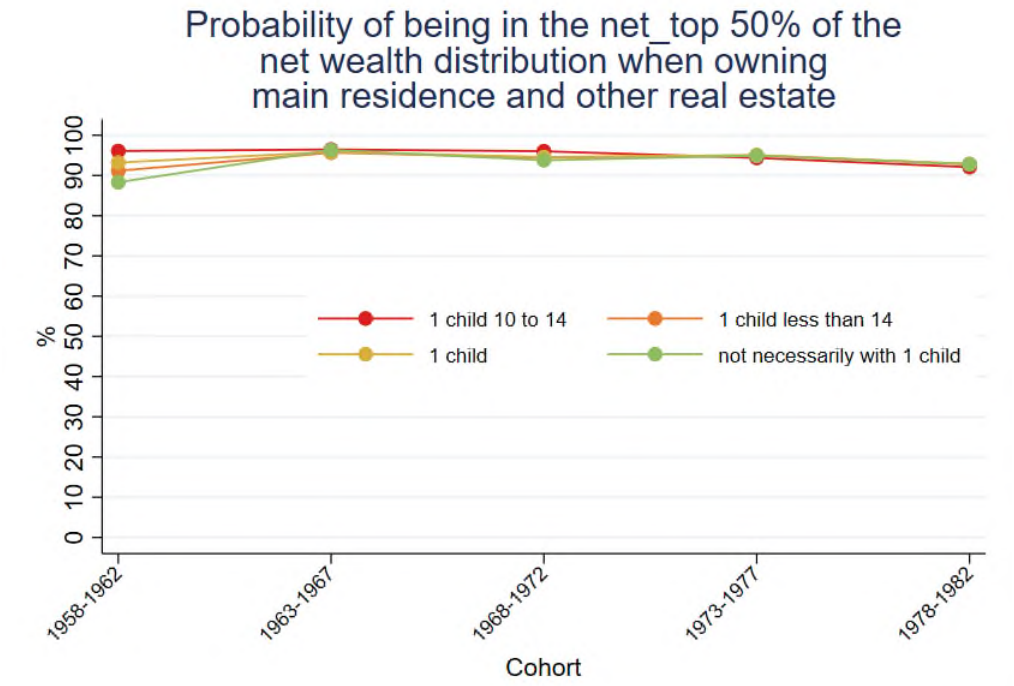


Table E1: Two sample two stage least squares estimations (Children with parents in the top 70% wealth group)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (Bottom 30% parents)	0.49***	0.31***	0.10***	0.02*	34***
Parents in top 70 %	0.31***	0.28***	0.23***	0.13***	23***
Cohorts * Parents in top 70 %					
1943-1947	-0.16**	-0.13**	-0.14**	-0.06*	-12**
1948-1952	-0.15**	-0.08	-0.09*	-0.05*	-10**
1953-1957	-0.14**	-0.12**	-0.08*	-0.04	-9**
1958-1962	-0.16**	-0.09	-0.10**	-0.04	-10**
1963-1967	-0.12**	-0.05	-0.06	-0.03	-7**
1968-1972	-0.06	-0.04	-0.06	-0.05*	-6*
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.05	-0.01	-0.05	-0.04*	-4
Other controls: cohorts					
Obs.	20680	20680	20680	20680	20680

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors(300 replications), clustered at the household level.

Table E2: R-squared and F-Statistics for the first-stage regression for different sample of counterfactual parents

Sample of counterfactual parents	**Explained wealth categories**	**R-squared**	**F-Statistics**
Benchmark:	**top 50% wealth group**	**39%**	**930**
at least one child aged 10 to 14	**top 70% wealth group**	**68%**	**525**
	Wealth rank	**56%**	**604**
Alternative sample 1:	top 50% wealth group	39%	1 176
at least one child aged less than 14	top 70% wealth group	64%	599
	Wealth rank	55%	810
Alternative sample 2:	top 50% wealth group	38%	1 311
at least one child (whatever the age)	top 70% wealth group	64%	809
	Wealth rank	55%	966
Alternative sample 3:	top 50% wealth group	38%	1 311
No restriction on the fact of having a child	top 70% wealth group	64%	809
	Wealth rank	55%	966

Note: For our benchmark TSTSLS estimates, the F-Statistics for the first-stage regression is 930 and the R-squared is 39% when predicting the top 50% wealth group of the parents. They are 525 and 68% for the top 70%. When predicting the parental wealth rank, results are identical when changing the restriction on the age of children or on the fact of having at least one child.

Table E3: Robustness to the choice of counterfactual parents (parents in the top 70% versus in the bottom 30%

	(1) **Benchmark sample** household with woman aged 35 to 44 1 child 10 to 14	(2) household with woman aged 35 to 44 1 child less than 14	(3) household with woman aged 35 to 44 1 child	(4) household with woman aged 35 to 44 no restriction	(5) household with woman aged 30 to 54 1 child 10 to 14	(6) household with woman aged 30 to 54 1 child less than 14	(7) household with woman aged 30 to 54 1 child	(8) household with woman 30 to 54 no restriction
				Top 70%				
Constant (Bottom 30% parents)	0.49***	0.49***	0.52***	0.52***	0.45***	0.46***	0.51***	0.52***
Parents in top 70 %	0.31***	0.30***	0.27***	0.28***	0.35***	0.34***	0.29***	0.29***
Cohorts * Parents in top 70 %								
1943-1947	-0.16**	-0.13*	-0.09	-0.09	-0.06	0.06	-0.10**	-0.10*
1948-1952	-0.15**	-0.09	-0.09*	-0.09*	-0.09	0.08	-0.10**	-0.10**
1953-1957	-0.14**	-0.08	-0.06	-0.07	-0.04	0.09	-0.07*	-0.07*
1958-1962	-0.16**	-0.09*	-0.10**	-0.10**	-0.12	0.00	-0.11***	-0.11**
1963-1967	-0.12**	-0.05	-0.04	-0.05	-0.06	0.05	-0.06	-0.06
1968-1972	-0.06	-0.06	-0.01	-0.02	-0.09*	-0.09*	-0.02	-0.01
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.05	-0.01	0.01	0.01	-0.05	-0.01	0.00	0.00
N	20680	20698	20682	20672	20685	20698	20675	20695
				Top 50%				
Constant (Bottom 30% parents)	0.31***	0.32***	0.34***	0.34***	0.28***	0.29***	0.34***	0.34***
Parents in top 70 %	0.28***	0.27***	0.24***	0.25***	0.31***	0.30***	0.26***	0.26***
Cohorts * Parents in top 70 %								
1943-1947	-0.13**	-0.06	-0.08	-0.08*	-0.09	0.05	-0.08*	-0.08*
1948-1952	-0.08	-0.01	-0.01	-0.02	0.01	0.22	-0.02	-0.02
1953-1957	-0.12**	-0.07	-0.06	-0.06	-0.04	0.08	-0.06*	-0.06*
1958-1962	-0.09	-0.01	-0.02	-0.03	-0.01	0.12	-0.02	-0.03
1963-1967	-0.05	0.03	0.02	0.01	0.02	0.14*	0.01	0.01
1968-1972	-0.04	-0.03	0.01	0.01	-0.06	-0.06	0.01	0.01
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.01	0.03	0.05	0.05	0.00	0.03	0.04	0.04
N	20680	20698	20682	20672	20685	20698	20675	20695
				Top 25%				
Constant (Bottom 30% parents)	0.10***	0.10***	0.12***	0.12***	0.07**	0.08**	0.12***	0.12***
Parents in top 70 %	0.23***	0.23***	0.20***	0.21***	0.26***	0.25***	0.22***	0.21***
Cohorts * Parents in top 70 %								
1943-1947	-0.14**	-0.09	-0.10**	-0.11**	-0.14	-0.04	-0.11**	-0.11***
1948-1952	-0.09*	-0.04	-0.04	-0.05	-0.04	0.12	-0.05	-0.05
1953-1957	-0.08*	-0.02	-0.02	-0.02	-0.01	0.12	-0.03	-0.03
1958-1962	-0.10**	-0.04	-0.06*	-0.06*	-0.08	0.02	-0.06**	-0.07**
1963-1967	-0.06	0.01	0.00	-0.01	-0.01	0.09	-0.01	-0.01
1968-1972	-0.06	-0.05	-0.02	-0.02	-0.07	-0.07**	-0.02	-0.02
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.05	-0.02	-0.01	-0.01	-0.05	-0.03	-0.01	-0.02
N	20680	20698	20682	20672	20685	20698	20675	20695
				Top 10%				
Constant (Bottom 30% parents)	0.02*	0.02*	0.04***	0.04***	0.01	0.01	0.04***	0.04***
Parents in top 70 %	0.13***	0.13***	0.11***	0.11***	0.14***	0.14***	0.12***	0.12***
Cohorts * Parents in top 70 %								
1943-1947	-0.06*	-0.03	-0.03	-0.03	-0.02	0.04	-0.03	-0.03
1948-1952	-0.05*	-0.02	-0.03	-0.03	-0.03	0.06	-0.03	-0.03*
1953-1957	-0.04	-0.01	-0.01	-0.01	0.01	0.08	-0.01	-0.01
1958-1962	-0.04	0.00	-0.01	-0.01	-0.02	0.05	-0.02	-0.02
1963-1967	-0.03	0.00	-0.01	-0.01	-0.02	0.04	-0.01	-0.01
1968-1972	-0.05*	-0.05**	-0.03*	-0.03	-0.06**	-0.06***	-0.03	-0.03
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.04*	-0.03	-0.03	-0.02	-0.05	-0.04	-0.03	-0.03
N	20680	20698	20682	20672	20685	20698	20675	20695
				Child's rank				
Constant (Bottom 30% parents)	34***	35***	37***	37***	32***	32***	37***	37***
Parents in top 70 %	23***	22***	20***	20***	25***	25***	21***	21***
Cohorts * Parents in top 70 %								
1943-1947	-12**	-8*	-8**	-8**	-8	2	-8**	-8**
1948-1952	-10**	-5	-5	-5*	-5	10	-6**	-6**
1953-1957	-9**	-5	-4	-4	-3	8	-5*	-5**
1958-1962	-10**	-4	-5*	-5**	-6	4	-6**	-6**
1963-1967	-7**	-2	-2	-3	-3	6	-3	-3
1968-1972	-6*	-5*	-1	-2	-7*	-7**	-2	-2
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-4	-1	0	0	-4	-1	-0	-0
N	20680	20698	20682	20672	20685	20698	20675	20695

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Table E4: Robustness to the choice of counterfactual parents (parents in the top 50% versus in the bottom 50%

	(1) **Benchmark sample** household with woman aged 35 to 44 1 child 10 to 14	(2) household with woman aged 35 to 44 1 child less than 14	(3) household with woman aged 35 to 44 1 child	(4) household with woman aged 35 to 44 no restriction	(5) household with woman aged 30 to 54 1 child 10 to 14	(6) household with woman aged 30 to 54 1 child less than 14	(7) household with woman aged 30 to 54 1 child	(8) household with woman 30 to 54 no restriction
				Top 70%				
Constant (Bottom 50% parents)	0.53***	0.53***	0.54***	0.53***	0.51***	0.52***	0.54***	0.54***
Parents in top 50 %	0.32***	0.32***	0.33***	0.34***	0.35***	0.34***	0.36***	0.35***
Cohorts * Parents in top 50 %								
1943-1947	-0.23**	-0.15**	-0.12	-0.11	-0.19**	-0.15**	-0.08	-0.08
1948-1952	-0.24***	-0.13**	-0.10*	-0.11*	-0.19***	-0.15**	-0.09	-0.09*
1953-1957	-0.19***	-0.10*	-0.06	-0.06	-0.15**	-0.12**	-0.04	-0.04
1958-1962	-0.23**	-0.12*	-0.08*	-0.09*	-0.19***	-0.15***	-0.07*	-0.08
1963-1967	-0.17**	-0.06	-0.03	-0.04	-0.13**	-0.09*	-0.02	-0.02
1968-1972	0.00	0.00	0.03	0.02	-0.02	-0.02	0.00	0.01
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.01	-0.02	-0.02	-0.03	-0.02	-0.02	-0.02	-0.02
N	20680	20698	20682	20672	20685	20698	20675	20695
				Top 50%				
Constant (Bottom 50% parents)	0.35***	0.35***	0.36***	0.35***	0.33***	0.33***	0.35***	0.35***
Parents in top 50 %	0.30***	0.30***	0.30***	0.31***	0.32***	0.32***	0.34***	0.34***
Cohorts * Parents in top 50 %								
1943-1947	-0.26**	-0.12*	-0.07	-0.07	-0.19**	-0.16**	-0.04	-0.05
1948-1952	-0.20**	-0.06	0.00	-0.01	-0.13*	-0.08	0.01	0.01
1953-1957	-0.19**	-0.11*	-0.04	-0.05	-0.15***	-0.12**	-0.04	-0.04
1958-1962	-0.17*	-0.04	0.04	0.03	-0.12*	-0.07	0.05	0.05
1963-1967	-0.14*	0.00	0.06	0.06	-0.08	-0.03	0.07	0.06
1968-1972	0.03	0.03	0.07	0.06	0.02	0.02	0.03	0.04
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.01
N	20680	20698	20682	20672	20685	20698	20675	20695
				Top 25%				
Constant (Bottom 50% parents)	0.12***	0.12***	0.13***	0.12***	0.10***	0.11***	0.12***	0.12***
Parents in top 50 %	0.27***	0.27***	0.27***	0.27***	0.29***	0.28***	0.30***	0.31***
Cohorts * Parents in top 50 %								
1943-1947	-0.24**	-0.15**	-0.09	-0.10	-0.21***	-0.19***	-0.10	-0.11*
1948-1952	-0.20**	-0.10*	-0.04	-0.05	-0.16***	-0.11**	-0.05	-0.05
1953-1957	-0.16**	-0.07	0.01	0.01	-0.12**	-0.09*	0.01	0.01
1958-1962	-0.20**	-0.09*	-0.02	-0.03	-0.16***	-0.13***	-0.03	-0.04
1963-1967	-0.14*	-0.03	0.04	0.04	-0.09*	-0.06	0.04	0.03
1968-1972	0.00	0.01	0.04	0.04	0.00	0.00	0.00	0.00
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.02	-0.03	-0.03	-0.03	-0.02	-0.03	-0.03	-0.04
N	20680	20698	20682	20672	20685	20698	20675	20695
				Top 10%				
Constant (Bottom 50% parents)	0.03**	0.03**	0.03***	0.03***	0.02	0.02**	0.03***	0.03***
Parents in top 50 %	0.16***	0.16***	0.16***	0.16***	0.17***	0.16***	0.18***	0.18***
Cohorts * Parents in top 50 %								
1943-1947	-0.13***	-0.07*	-0.04	-0.04	-0.10**	-0.08**	-0.04	-0.04
1948-1952	-0.13**	-0.06*	-0.03	-0.03	-0.10***	-0.08**	-0.04	-0.04
1953-1957	-0.09**	-0.04	0.01	0.01	-0.07**	-0.05*	0.01	0.00
1958-1962	-0.11*	-0.03	0.01	0.02	-0.08**	-0.06*	0.01	0.01
1963-1967	-0.09*	-0.03	0.02	0.02	-0.07*	-0.05	0.01	0.01
1968-1972	-0.03	-0.02	0.00	0.00	-0.02	-0.02	-0.03	-0.03
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.03	-0.04	-0.04	-0.04	-0.03	-0.04	-0.04	-0.05
N	20680	20698	20682	20672	20685	20698	20675	20695
				Child's rank				
Constant (Bottom 50% parents)	37***	37***	38***	38***	36***	36***	38***	38***
Parents in top 50 %	25***	24***	25***	25***	26***	26***	27***	27***
Cohorts * Parents in top 50 %								
1943-1947	-20**	-12**	-8	-8*	-16***	-14***	-6	-7*
1948-1952	-18**	-9*	-5	-6	-14***	-10**	-5	-5
1953-1957	-15**	-8*	-3	-3	-12***	-9**	-2	-2
1958-1962	-17**	-7*	-2	-2	-13***	-10**	-2	-2
1963-1967	-13*	-4	1	0	-9**	-6*	1	0
1968-1972	-0	-0	3	2	-1	-1	0	0
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-1	-2	-2	-2	-2	-2	-2	-2
N	20680	20698	20682	20672	20685	20698	20675	20695

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Table E5: Robustness: Two sample two stage least squares estimations at the household level (Children with parents in the top 70% wealth group)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (Bottom 30% parents)	0.24***	0.14**	0.01	-0.01	22***
Parents in top 70 %	0.58***	0.46***	0.32***	0.15***	36***
Cohorts * Parents in top 70 %					
1943-1947	-0.33**	-0.17*	-0.18**	-0.05	-18**
1948-1952	-0.38***	-0.23**	-0.16**	-0.08**	-21**
1953-1957	-0.32**	-0.22**	-0.17**	-0.07**	-19**
1958-1962	-0.35***	-0.22**	-0.15**	-0.07**	-19***
1963-1967	-0.27**	-0.12*	-0.08	-0.04	-13**
1968-1972	-0.06	0.07	0.03	0.00	-1
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.21***	-0.13*	-0.11**	-0.09***	-12***
Other controls: cohorts					
Obs.	11920	11920	11920	11920	11920

Note: TSTSLS estimates. Household level. Child's ranks are expressed in percentiles. Bootstrapped standard errors(300 replications), clustered at the household level.

Table E6: Robustness: Two sample two stage least squares estimations at the household level (Children with parents in the top 50% wealth group)

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (Bottom 50% parents)	0.34***	0.22***	0.05**	0.00	28***
Parents in top 50 %	0.56***	0.45***	0.34***	0.18***	36***
Cohorts * Parents in top 50 %					
1943-1947	-0.38***	-0.21*	-0.16**	-0.07	-20**
1948-1952	-0.35***	-0.21**	-0.20**	-0.12***	-21***
1953-1957	-0.25**	-0.18**	-0.12*	-0.05	-16**
1958-1962	-0.30***	-0.17*	-0.08	-0.01	-15**
1963-1967	-0.21**	-0.06	-0.01	0.00	-9
1968-1972	-0.18***	-0.05	-0.02	-0.04	-8**
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.15**	-0.06	-0.07	-0.09*	-8**
Other controls: cohorts					
Obs.	11920	11920	11920	11920	11920

Note: TSTSLS estimates. Household level. Child's ranks are expressed in percentiles. Bootstrapped standard errors(300 replications), clustered at the household level.

Table E7: Robustness: R-squared and F-Statistics for the first-stage regression for different sample of counterfactual parents for groups of the net wealth distribution

Sample of counterfactual parents	**Explained wealth categories (net wealth)**	**R-squared**	**F-Statistics**
Benchmark:	**top 50% wealth group**	34%	704
at least one child aged 10 to 14	**top 70% wealth group**	53%	471
	Wealth rank	49%	650
Alternative sample 1	top 50% wealth group	30%	718
at least one child aged less than 14	top 70% wealth group	45%	768
	Wealth rank	46%	950
Alternative sample 2:	top 50% wealth group	32%	1 417
at least one child (whatever the age)	top 70% wealth group	49%	977
	Wealth rank	48%	1 281
Alternative sample 3:	top 50% wealth group	34%	1 459
No restriction on the fact of having a child	top 70% wealth group	53%	971
	Wealth rank	49%	1 283

Table E9: Two sample two stage least squares estimations with the different set of imputations for the 1986 and 1992 surveys (Parents in the top 70%)

	Top 70%					Top 50%					Top 25%					Top 10%					Child's rank				
Imputations set	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Constant	0.49***	0.50***	0.51***	0.52***	0.51***	0.31***	0.33***	0.33***	0.34***	0.34***	0.10***	0.11***	0.11***	0.12***	0.12***	0.02*	0.03**	0.03**	0.04***	0.03**	34***	36***	36***	37***	36***
Parents in top 70 %	0.31***	0.29***	0.28***	0.28***	0.28***	0.28***	0.26***	0.25***	0.25***	0.25***	0.23***	0.22***	0.21***	0.21***	0.21***	0.13***	0.12***	0.12***	0.12***	0.12***	23***	21***	21***	21***	21***
Cohorts * Parents in top 70 %																									
1943-1947	-0.16**	-0.15**	-0.13**	-0.12*	-0.13*	-0.13**	-0.11*	-0.12**	-0.09	-0.12**	-0.14**	-0.10*	-0.12**	-0.08*	-0.10*	-0.06*	-0.01	-0.02	-0.04	-0.05*	-12**	-10*	-10**	-10*	-10**
1948-1952	-0.15**	-0.13*	-0.11*	-0.14**	-0.11*	-0.08	-0.09	-0.05	-0.05	-0.07	-0.09*	-0.12**	-0.06	-0.06	-0.07*	-0.05*	-0.05*	-0.04	-0.04	-0.04*	-10**	-10**	-7*	-8*	-8*
1953-1957	-0.14**	-0.11*	-0.10*	-0.08	-0.11*	-0.12**	-0.09*	-0.10**	-0.08	-0.09*	-0.08*	-0.08*	-0.06	-0.06	-0.07*	-0.04	-0.03	-0.03	-0.02	-0.03	-9**	-8*	-8**	-7*	-7*
1958-1962	-0.16**	-0.14**	-0.13**	-0.13**	-0.13**	-0.09	-0.07	-0.06	-0.06	-0.06	-0.10**	-0.09*	-0.08**	-0.08**	-0.09*	-0.04	-0.03	-0.03	-0.03	-0.03	-10**	-8*	-8**	-7*	-8**
1963-1967	-0.12**	-0.10*	-0.09*	-0.09*	-0.09*	-0.05	-0.03	-0.03	-0.03	-0.03	-0.06	-0.05	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.02	-0.02	-7**	-6*	-5*	-5	-6*
1968-1972	-0.06	-0.04	-0.06	-0.04	-0.01	-0.04	-0.02	-0.03	-0.02	0.01	-0.06	-0.04	-0.05	-0.04	-0.02	-0.05*	-0.04*	-0.04*	-0.04*	-0.03	-6*	-4	-5*	-4	-2
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.05	-0.03	-0.02	-0.01	-0.02	-0.01	0.01	0.02	0.02	0.02	-0.05	-0.04	-0.03	-0.03	-0.03	-0.04*	-0.04	-0.03	-0.03	-0.03	-4	-2	-2	-1	-2
N	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Table E10: Two sample two stage least squares estimations with the different set of imputations for the 1986 and 1992 surveys (Parents in the top 50%)

	Top 70%					Top 50%					Top 25%					Top 10%					Child's rank				
Imputations set	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Constant	0.49***	0.50***	0.51***	0.52***	0.51***	0.31***	0.33***	0.33***	0.34***	0.34***	0.10***	0.11***	0.11***	0.12***	0.12***	0.02*	0.03**	0.03**	0.04***	0.03**	34***	36***	36***	37***	36***
Parents in top 70 %	0.31***	0.29***	0.28***	0.28***	0.28***	0.28***	0.26***	0.25***	0.25***	0.25***	0.23***	0.22***	0.21***	0.21***	0.21***	0.13***	0.12***	0.12***	0.12***	0.12***	23***	21***	21***	21***	21***
Cohorts * Parents in top 70 %																									
1943-1947	-0.16**	-0.15**	-0.13**	-0.12*	-0.13*	-0.13**	-0.11*	-0.12**	-0.09	-0.12**	-0.14**	-0.10*	-0.12**	-0.08*	-0.10*	-0.06*	-0.01	-0.02	-0.04	-0.05*	-12**	-10*	-10**	-10*	-10**
1948-1952	-0.15**	-0.13*	-0.11*	-0.14**	-0.11*	-0.08	-0.09	-0.05	-0.05	-0.07	-0.09*	-0.12**	-0.06	-0.06	-0.07*	-0.05*	-0.05*	-0.04	-0.04	-0.04*	-10**	-10**	-7*	-8*	-8*
1953-1957	-0.14**	-0.11*	-0.10*	-0.08	-0.11*	-0.12**	-0.09*	-0.10**	-0.08	-0.09*	-0.08*	-0.08*	-0.06	-0.06	-0.07*	-0.04	-0.03	-0.03	-0.02	-0.03	-9**	-8*	-8**	-7*	-7*
1958-1962	-0.16**	-0.14**	-0.13**	-0.13**	-0.13**	-0.09	-0.07	-0.06	-0.06	-0.06	-0.10**	-0.09*	-0.08**	-0.08**	-0.09*	-0.04	-0.03	-0.03	-0.03	-0.03	-10**	-8*	-8**	-7*	-8**
1963-1967	-0.12**	-0.10*	-0.09*	-0.09*	-0.09*	-0.05	-0.03	-0.03	-0.03	-0.03	-0.06	-0.05	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.02	-0.02	-7**	-6*	-5*	-5	-6*
1968-1972	-0.06	-0.04	-0.06	-0.04	-0.01	-0.04	-0.02	-0.03	-0.02	0.01	-0.06	-0.04	-0.05	-0.04	-0.02	-0.05*	-0.04*	-0.04*	-0.04*	-0.03	-6*	-4	-5*	-4	-2
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.05	-0.03	-0.02	-0.01	-0.02	-0.01	0.01	0.02	0.02	0.02	-0.05	-0.04	-0.03	-0.03	-0.03	-0.04*	-0.04	-0.03	-0.03	-0.03	-4	-2	-2	-1	-2
N	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680	20680	20694	20680	20694	20680

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors (300 replications), clustered at the household level.

Table E8: R-squared and F-Statistics for the first-stage regression for the United States and for different Europeans countries

Countries	Explained wealth categories	R-squared	F-Statistics
United States	top 50% wealth group	45%	3 443
	top 70% wealth group	63%	1 769
	Wealth rank	57%	2 015
Germany	top 50% wealth group	56%	538
	top 70% wealth group	68%	554
	Wealth rank	62%	414
Spain	top 50% wealth group	28%	417
	top 70% wealth group	49%	1 401
	Wealth rank	48%	464
Italy	top 50% wealth group	59%	3 966
	top 70% wealth group	77%	2 283
	Wealth rank	66%	1 589

Note: Data: SCF 2016 for the United States, and HFCS (second wave) for the European countries.

Table E11: Robustness: Two sample two stage least squares estimations (Children with parents in the top 70% wealth group), with a first-stage equation linear in cohorts

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (Bottom 30% parents)	0.53***	0.35***	0.13***	0.04***	38***
Parents in top 70 %	0.26***	0.23***	0.19***	0.11***	19***
Cohorts * Parents in top 70 %					
1943-1947	-0.10**	-0.07	-0.09**	-0.03	-7**
1948-1952	-0.08**	-0.02	-0.04	-0.02	-5**
1953-1957	-0.07*	-0.06*	-0.02	-0.01	-4**
1958-1962	-0.09**	-0.02	-0.05*	-0.01	-4**
1963-1967	-0.04	0.02	0.00	0.00	-2
1968-1972	-0.01	0.01	-0.02	-0.03	-2
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	0.00	0.03	-0.02	-0.03	-1
Other controls: cohorts					
Obs.	20694	20694	20694	20694	20694

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors(300 replications), clustered at the household level. Alternative specification for the first-stage equation, see section 4.3

Table E12: Robustness: Two sample two stage least squares estimations (Children with parents in the top 50% wealth group), with a first-stage equation linear in cohorts

	Top 70%	**Top 50%**	**Top 25%**	**Top 10%**	**Child's rank**
Constant (Bottom 50% parents)	0.55***	0.36***	0.12***	0.03***	38***
Parents in top 50 %	0.32***	0.30***	0.27***	0.16***	24***
Cohorts * Parents in top 50 %					
1943-1947	-0.13***	-0.10**	-0.13**	-0.07*	-10***
1948-1952	-0.12***	-0.05	-0.09**	-0.06**	-8***
1953-1957	-0.09**	-0.09**	-0.05*	-0.03	-6***
1958-1962	-0.10**	-0.01	-0.07*	-0.02	-5**
1963-1967	-0.05	0.02	0.00	-0.01	-2
1968-1972	-0.02	0.00	-0.03	-0.04*	-2
1973-1977	Ref.	Ref.	Ref.	Ref.	Ref.
1978-1982	0.00	0.03	-0.02	-0.04	-1
Other controls: cohorts					
Obs.	20694	20694	20694	20694	20694

Note: TSTSLS estimates. Individual level. Bootstrapped standard errors(300 replications), clustered at the household level. Alternative specification for the first-stage equation, see section 4.3