

## Accounting for Intergenerational Wealth Mobility in France over the 20th Century: Method and Estimations

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### ABSTRACT

We propose a new and simple method to study intergenerational wealth correlation between two generations, which is easy to implement in wealth (and housing) surveys and aims at overcoming the strong data limitation faced in most of the countries. We show that the ownership of housing assets can be used to proxy for three wealth groups for all cohorts. Misclassification induces a low and downward bias in the estimate of the intergenerational correlation. Using France as an example, we estimate intergenerational wealth correlation for cohorts covering the 20th century and focus on the wealth positions measured at the mid-life cycle of both children and parents. First, probabilities to belong to top wealth groups are increasing with the wealth of the parents. This intergenerational correlation has increased over time for most of the top wealth groups. Second, the higher we move up along the children's wealth distribution, the larger the role of parental wealth: the persistence in the top 50% is 38% higher than under perfect mobility and the deviations from perfect mobility are larger in higher top wealth groups. Third, 50 to 60% of the correlation is accounted for by a mix of intergenerational wealth transfers, fathers' occupation and children's education. Fourth, gifts and bequests explain a larger share of the link between parental wealth and the probability to belong to the top 10% compared to larger top wealth groups. We also find evidence of persistence of the effect of parental wealth over the life-cycle.

**Keywords:** Intergenerational Wealth Correlation, Multigenerational Mobility, Real Estate, Homeownership, Bequest

**JEL classification:** D31, J62.

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## NON-TECHNICAL SUMMARY <sup>3</sup>

The relative importance of wealth has sharply increased in advanced economies (Piketty and Zucman, 2014). While such an 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. Compared to intergenerational correlations in income or education that have been widely studied, the empirical work on the intergenerational correlation in wealth is more recent. Our contribution to this literature is twofold.

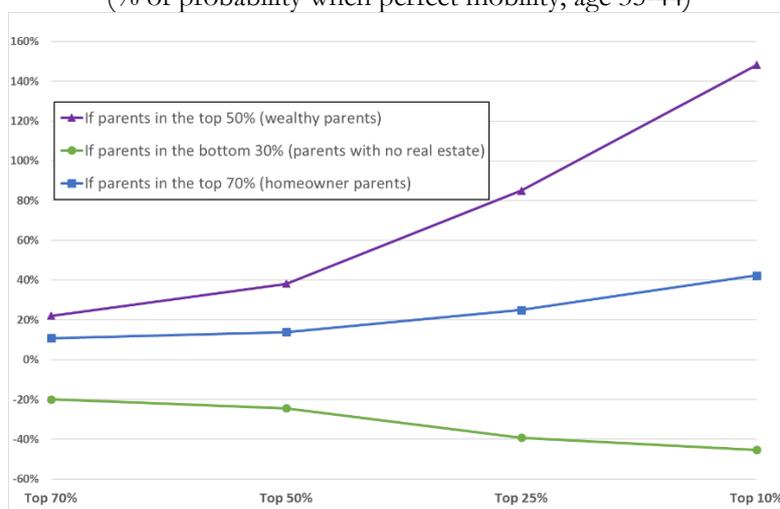
Our first contribution is related to the measurement of intergenerational wealth correlation in the absence of extensive administrative data or long panel dataset. We propose a new method to overcome this lack of data and estimate the correlation of wealth across two generations (parents and children). Our analysis is based on the French Wealth Survey (Insee) which measures household's wealth. Interestingly, this survey collects information on whether the parents of the respondents were owner of real estate assets during the respondents' childhood. We document that the 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 such survey questions thus provide a convincing measure of the intergenerational correlation. In France, having no real estate property is almost certainly associated with belonging to the bottom 30% of the wealth distribution, whatever the birth cohort; being owner of the main residence (with or without other real estate property) is associated with belonging to the top 70%; while being owners of other real estate, in addition to the main residence, is associated with a position in the top 50%. The bias due to misclassification is low and is a downward bias. Our method thus slightly underestimates the correlation. Using data from other European countries and the US, we show that our method can be extended to other countries to convincingly proxy for wealth positions, and thus to extend the study of intergenerational wealth mobility to numerous other countries.

Our second contribution is to use our method to study intergenerational wealth correlation and unveil new results for France for children cohorts born all over the 20th. First, the probabilities to belong to top wealth groups increase with the wealth of the parents. This intergenerational correlation has increased over time for the probability to belong to the top 75%, 50% and 25% wealth groups and remains high and stable for the the top 10%. Second, we find non-linearities in the intergenerational correlation across the wealth distribution (cf. Figure). The higher we move up along the children's wealth distribution, the larger the role of parental wealth. Third, the effect of parental wealth appears persistent over the life-cycle. Fourth, 50 to 60% of the correlation is accounted for by a mix of intergenerational wealth transfers, fathers' occupation and children's education. Finally, gifts and bequests explain a larger share of the link between parental wealth and the probability to belong to the top 10% compared to larger top wealth groups.

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**Probability to belong to top wealth group, by parental wealth: deviations from the probability when perfect intergenerational wealth mobility**  
(% of probability when perfect mobility, age 35-44)



Notes: Children with parents in the top 50% wealth group have a probability of being in the top 10% wealth group 150% higher than the probability that would prevail in case of perfect mobility.

Source: French Wealth Surveys (Insee) 1986, 1992, 2003, 2010, 2015, 2017, Authors' calculations.

## Mobilité intergénérationnelle du patrimoine en France au 20<sup>e</sup> siècle : méthode et estimations

### RÉSUMÉ

Nous proposons une nouvelle méthode pour estimer la corrélation des patrimoines entre deux générations en l'absence de données administratives en panel. Cette méthode peut facilement être mise en œuvre via l'introduction de questions qualitatives dans les enquêtes sur le patrimoine des ménages. Le biais associé à cette méthode est faible et négatif, conduisant à une légère sous-estimation de la corrélation. En France, nous trouvons que la richesse des parents a un rôle croissant le long de la distribution du patrimoine des enfants. Les probabilités d'être dans les tops 75 %, 50 % et 25 % des patrimoines sont plus fortement corrélées au patrimoine des parents pour les cohortes les plus récentes. Cette corrélation est stable et élevée pour le top 10 %. 50 à 60 % de la corrélation s'explique par un mix de transferts intergénérationnels, profession des pères et éducation des enfants. Les transferts expliquent une part plus grande de la corrélation dans le top 10 % que pour les autres groupes de richesse. Ces effets sont persistants au cours du cycle de vie.

**Mots-clés :** corrélation intergénérationnelle, actifs immobiliers, héritages et donations

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## 1. Introduction

The relative importance of wealth has sharply increased in advanced economies. The U.S. 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 this two trends, France is clearly not an exception.<sup>1</sup> In a context of slow growth, the relative importance of wealth, and particularly of past accumulated wealth seem to move on a rising curve.<sup>2</sup> While such an 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). Regarding this latter issue, the correlation of wealth across generations may be driven by various factors. It may reflect income correlation. As shown by the standard theory of income mobility (Becker and Tomes, 1979, 1986), such an intergenerational 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 transmission of preferences (risk attitudes, patience) related to saving and consumption behaviour. While the intergenerational correlations in income or education have been widely studied<sup>3</sup>, the empirical work on the intergenerational correlation in wealth is more recent.<sup>4</sup> It aims at estimating the elasticities between the wealth of two or more generations and at assessing the role played by some specific channels (earnings, education, intergenerational transfers, genetics, etc.). For France, to our knowledge, only two papers study intergenerational wealth correlation (Arrondel and Grange, 2006; Bourdieu et al., 2017). They focus on wealth at death and cover the 19th century and the beginning of the 20th century.<sup>5</sup>

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<sup>1</sup> In France, after a strong decrease 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 went from 40% in the 1970 to 60% in 2010. See also Garbinti et al. (2018, 2020) for income and wealth inequality developments in France.

<sup>2</sup> In the classical Harrod-Domar-Solow formula, the wealth to income ratio is determined as the ratio between aggregate saving rates (net of capital depreciation) and the income growth rate, pointing out that the lower economic growth, the stronger the multiplicative effect of accumulation on the wealth to income ratio.

<sup>3</sup> e.g. Auten et al. (2013), Chetty et al. (2014), Chetty et al. (2017), Corak et al. (2014), Lee and Solon (2009), Long and Ferrie, (2013), Olivetti and Paserman, (2015).

<sup>4</sup> See Charles and Hurst (2003), Arrondel and Grange (2006), Hansen (2014), Pfeffer and Killewad (2015), Bourdieu et al. (2017), Adermon et al. (2018), Boserup et al. (2017a), Fagereng et al. (2018) or Majlesi et al. (2019).

<sup>5</sup> These two studies compare wealth upon death for a sample of father-child pairs. 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. Both studies find significant correlation in wealth at death between the children and their father. They also show that wealth mobility varies over this period, which may be related to changes in the composition of the population with

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 (like in Adermon et al., 2018, Boserup et al. 2017a, 2017b) or long panel dataset (like the PSID used by Charles and Hurst, 2003). We propose a new method to overcome this lack of data and estimate the correlation of wealth across two generations (parents and children). Compared to previous studies, our method is much less demanding in terms of data. Interestingly, it does not require matching administrative or fiscal records for two generations and can easily be implemented in wealth or housing surveys. It allows estimating the intergenerational wealth correlation considering the positions in the wealth distribution at similar life-cycle periods for both children and parents.<sup>6</sup> Our analysis is based on the French Wealth Survey conducted by the National Statistical Institute.<sup>7</sup> Like the SCF for the US, the French Wealth Survey aims at measuring wealth at the household level. Interestingly, the survey also collects information on whether the parents of the household (i.e. for both the reference person and his/her partner) were owner of their main residence when he/she was 14 years old and if they were owners of other kinds of real estate. We document that the 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 therefore that such survey questions enable to provide a measure of the intergenerational correlation. At the end of the day, our method relies on two simple items that can easily be implemented in wealth and housing surveys to foster new national studies on intergenerational wealth mobility.

From our methodological approach, we derive three main results. First, information about the ownership of the main residence as well as other real estate properties can be used to proxy for three wealth groups for all cohorts. More precisely, in the case of France, having no real estate property is almost certainly associated with belonging to the bottom 30% of the wealth distribution, whatever the birth cohort; being owner of the main residence (with or without having any other real estate property) is associated with belonging to the top 70% of the wealth distribution; while being owners of other real estate, *in addition* to the main residence is associated with a position within the top 50% of the wealth distribution. Second, the bias due

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rising middle classes. Another strand of the literature studies intergenerational social mobility based on social classes (defined according to the occupation).

<sup>6</sup> This is an interesting feature since it eliminates life-cycle effects, as shown in Boserup et al (2017a). It also allows to use estimates from intergenerational wealth correlation in order to infer intergenerational correlation in lifetime economic resources.

<sup>7</sup> We use all existing waves of this survey, i.e. 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

to misclassification is low and is a downward bias. By using our method, we are thus underestimating the intergenerational correlation. Third, using data from other European countries and from the US, we show that our method can be extended to other countries to convincingly proxy for wealth position, and thus to extend the study of intergenerational wealth mobility to numerous other countries.

Our second contribution is to use our method to study intergenerational wealth correlation and unveil new results for France. We estimate the intergenerational wealth correlation between two generations for cohorts born all over the 20th (from before 1933 to 1992). Our baseline analysis focus 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 to belong to top wealth groups<sup>8</sup> (top 70%, top 50%, top 25% and top 10%) for people aged between 35 and 44 years old. We also assess the role played by direct transfers of wealth (receipt of gifts and inheritances) and human capital investment in explaining this intergenerational wealth correlation.

Regarding the intergenerational wealth correlation, first the probabilities to belong to top wealth groups increase with the wealth of the parents, which confirm 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 to belong to the top 75%, top 50% and top 25% wealth groups and remains high (and stable) for the probability to belong to the top 10%. Such a result is in line with the evidence from the literature highlighting the concern of a decreasing intergenerational mobility over time for other countries (Adermon et al., 2018, Boserup et al., 2017a). It is also consistent with previous findings highlighting the growing importance of accumulated wealth in France.<sup>9</sup>

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<sup>8</sup> We use gross wealth because the first waves of the survey collect only information about gross wealth. Using the probability to belong to top wealth groups allows us to account for non-linearities in the intergenerational wealth correlation at the top of the distribution.

<sup>9</sup>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 went from 40% in the 1970 to 60% in 2010. Moreover, the probability to be part of top wealth groups has decreased for top labor earners which also mirrors an increasing role of past wealth in wealth accumulation (Garbinti et al, 2020). Regarding homeownership, Bonnet et al. (2018) show that the apparent stability of homeownership among young households from the 1970s hides a growing disparity between the best and the least well-off and that family support (in particular through gifts and bequests) plays a significant role in this diverging path for recent years. Spilerman and Wolf (2012) estimate the waiting time from marriage to homeownership based on the use of one wave of the same survey we use (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 status.

Second, we find non-linearities in the intergenerational correlation across the wealth distribution. The higher we move up along the children's wealth distribution, the larger the role of parental wealth: the difference in probability to belong to top wealth groups between children with parents in the bottom 30% on the one hand and parents in the top 70% or in the top 50% on the other hand increases as we move up to higher top wealth groups. The persistence in the top 50% is 38% higher than under perfect mobility, and the deviations from perfect mobility are even higher in higher top wealth groups (150% 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 considering the wealth of the second generation at younger and older life-cycle positions while the wealth of the parents is measured at a fixed life-cycle stage (mid-life-cycle).

Fourth, we turn to the source of this intergenerational wealth correlation and find that about 50% to 60% of it is accounted for by a mix of direct intergenerational wealth transfers, fathers' occupation and children's education. Finally, gifts and bequests explain a larger share of the link between parental wealth and the probability to belong to the top 10% compared to larger top wealth groups. This share appears lower than what has been previously found in Scandinavian countries. We discuss this point.

This paper is organized as follows. Section 2 presents the data we use and some descriptive statistics. Section 3 shows how the ownership of the main residence and of 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 US, the French Wealth Survey aims at measuring wealth at the household level. It collects household level detailed 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.<sup>10</sup>We use all waves of the French wealth survey. These waves refer 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.<sup>11</sup>

Our concept of wealth is individual gross wealth excluding durable goods.<sup>12</sup>While wealth is measured at the household level in the survey, we present the core of our analysis based on individualized wealth. It means that, for couples<sup>13</sup>, we divide 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 the singles and wealth of the couples over the long run. First, due to the decline in marriage rates and the rise of single-headed households, the number of households has increased faster than the number of adults. Such differences in households' 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, Postel-Vinay and Rosenthal 2006, 2014 or Garbinti, Goupille-Lebret and Piketty 2020 for a more recent development). However, all our results are also available at the household level. In the end, considering individual or household level units lead to the same main results.

We focus on the probability to belong to top wealth percentiles (Top 75%, top 50%, top 25%, and top 10% for a given age group within each cohort). We use all available waves of the survey. We set the lower age bound to 25 years old in order to preserve the sample size, and the upper is limited to 54 years old to abstract from specific wealth disaccumulation behaviours

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<sup>10</sup> A panel component started in 2014 and is only available in the 2014 and 2017 surveys. The number of panel households by cohorts is however too limited for analyzing the intergenerational wealth correlation over the 20<sup>th</sup> century using this panel component.

<sup>11</sup> The financial assets at the top of the distribution may be underestimated in this type of surveys because of offshore wealth or of a covering of the very top of the distribution that, despite the oversampling methods, may not be precise enough (see Bricker et al. (2016), Vermeulen (2018) or Garbinti et al. (2020) for a discussion and for other references).

<sup>12</sup> For the two first waves of the survey (1986 and 1992), wealth is reported in brackets. We compute ranks after having simulated the wealth distribution from these brackets and using economic and socio-demographic information. See Appendix A for more details about this procedure. From 2010, durable goods are reported in the survey. In 2010 the amount is fully simulated by Insee while from 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 comparability reasons.

<sup>13</sup> On average, 58% of the reference persons live in couple when surveyed in our sample.

that may be unique to older ages.<sup>14</sup> We define then three age categories: 25-34, 35-44, and 45-54 years old. Our benchmark category is the 35 to 44-year-old individuals, since they are in the middle of their life-cycle. It allows also 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., 2017a, to account for the wealth accumulation profile over the life -cycle). The other age groups are studied as robustness tests for our findings, and allows assessing the intergenerational correlation for children of different ages while the wealth of the parents is measured at a fixed age (Boserup et al., 2017a).

The wealth of the parents is collected thanks to the survey, which makes it quite unique to study the intergenerational wealth correlation. More precisely, it collects information on whether the parents of the household (i.e. for both the reference person and his/her partner) were owners of their main residence when she/he was 14 years old, and if they were owners of 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 (thanks to wealth indicators such as real estate or main residence ownership). In Section 3 we show that these wealth indicators can be used as a convincing tool to assess the wealth rank of the parents, once having assess the period of the parents' lifetime to which refers the reported information about their real estate holding. The survey also provides retrospective information regarding the formation and duration of marital relationships (for how long individuals live together, if they have been in a couple with someone else before), the inheritances and gifts received (and when) both for the reference person and the partner as well as their education.

## **2.2. Sample**

### **Sample definition**

The seven waves of the French wealth survey cover individuals born all over the 20<sup>th</sup> century. At the time of the survey, we observe older individuals for older cohorts; while for cohorts that are more recent our sample includes only young individuals. Since our population of interest is aged over 25, we restrict our sample to individuals born before 1992 (who are thus aged 25 in

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<sup>14</sup> And in particular to transmission behaviors that may occur in order to avoid inheritance taxes (see for instance Kopczuk 2013 for a broad review about responses to taxation of intergenerational transfers, Garbinti and Goupille-Lebret 2018 for a focus on France, or Infante and Goupille-Lebret 2018 for an illustration on French inheritance taxes).

2017). We also exclude cohorts before 1933 with only few observations. We then define cohort groups based on the year of birth of the individual that we group into 5-yearcohorts.<sup>15,16</sup> There is more than 5,600 observations by cohort for cohorts born between 1948 and 1972 (Table 1). Our benchmark group of individuals aged between 35 and 44 gathers more than 20,000 individuals born between 1943 and 1982.

### **Some descriptive statistics**

The evolution over time of occupation of the individuals (Figure 1.a), or of their father (Figure 1.b), as well as the education attainment observed in our sample reflects well the development of the French economy<sup>17</sup>, with a decreasing share of farmers, craftsmen and small proprietors, and increasing education levels over the 20<sup>th</sup> century.<sup>18</sup>

### **3. Accounting for the wealth position based on the ownership of housing assets**

To study intergeneration wealth correlation, our methodology relies on the use of two simple qualitative survey questions about the ownership of the main residence and the ownership of other real estates (than the main residence) by the parents of the interviewees. In this section, we first present these items. Second, we detail why they can be used to measure the rank of the parents in the wealth distribution, and therefore that such survey questions enable to provide a measure of the intergenerational rank-rank correlation. Third, we show that in case of measurement errors, our estimate can be viewed as a lower bound for intergenerational immobility. Finally, using data from the Survey of Consumer Finance for the U.S. and the Household Finance and Consumption Survey for European countries, we show that our method could be easily extended to other countries.

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<sup>15</sup> Ideally, it would have been more interesting to not group any cohort but this choice would have made our point estimates very imprecise due to the size of our sample. 5-yearcohorts appear as a good trade-off between no regrouping and regrouping over a longer period (10 years for instance) that would have considerably restricted the number of cohort-groups studied.

<sup>16</sup>For household level based analysis, we define cohorts based on the birth cohort of the reference person within the household.

<sup>17</sup> See for instance Figure 2 in Bauer et al., 2018.

<sup>18</sup> The larger share of inactive people or people who never worked for the most recent cohorts simply reflects that they are younger at the time of interview and may not have fully completed their education.

### 3.1. Qualitative questions about the holding of real estate by parents during the childhood of surveyed individuals

#### *Variables*

The information regarding the real estate assets of the parents during childhood is elicited with the following questions: “*During the childhood of [the reference person], were the parents [of the reference person] owners of:*

- *their main residence (Yes/No)*
- *any other real estate properties (Yes/No)”*.

A similar question is also asked for the partner of the reference person. This allows 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 question about the amount of wealth of the parents during 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. On the contrary, questions about the ownership of the main residence and of other real estate properties(secondary home or investment property) are easy to answer and do not lead to a significant amount of missing answers.<sup>19</sup>

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 near to the ideal type of data one would want to use, approaches relying on this kind of matching (as used in Adermon et al., 2018 or Boserup et al., 2017a, 2017b) are really demanding in terms of data. Currently, they are scarcely possible in the vast majority of countries, while two qualitative questions about the ownership of housing assets by parents during the childhood of the individual are easy to implement in any wealth or housing survey.

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

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<sup>19</sup> In our sample, the number of missing values is lower than 2% for all these items.

### *Descriptive statistics*

With these two qualitative questions, we are able to split the population of parents into four categories:

- parents without any real estate properties (that will be our reference category);
- parents owning their main residence without any other real estate property (labelled as “*homeowner parents*”);
- parents owning other real estate properties in addition to their main residence (labelled as “*wealthy parents*”);
- and a residual category (labelled as “*others*”) for parents that were owning other real estate properties without holding their main residence (they only represent 2% of the sample, see Table 1).

In the next subsection, we show that these categories (no real estate, homeowner, wealthy) allow to convincingly proxy some wealth ranks.

### **3.2. How ownership of real estate property reflects position in the wealth distribution**

In this section we show that:

- i) Having no real estate property is almost certainly associated with belonging to the bottom 30% of the wealth distribution, whatever the birth cohort;
- ii) Being owner of the main residence (with or without having any other real estate property) is associated with belonging to the top 70% of the wealth distribution;
- iii) Being owners of other real estate, *in addition* to the main residence is associated with a position within the top 50% of the wealth distribution.

In order to assess how our categories of real estate holding can be translated into wealth rank, we proceed in two steps. First, we assess to which period of the parents’ lifetime refers the reported information about their real estate holding. It allows assessing which population (age, and household composition) should be considered to properly proxy the wealth position of the parents of our surveyed individuals. We show that parents of the surveyed individuals (whatever the cohort) are very likely to belong to households with a woman aged between 35 to 44 years old, which we use as a benchmark group for parents. Second, we study the wealth rank of this population according to its real estate holdings. We present several robustness tests to show that

our conclusions are not sensitive to the choice of this benchmark group. Finally, we assess the potential bias of the approach we propose.

### **3.2.1. Real estate holding of the parents during the childhood of the interviewees: to which period of the parents' lifetime refers the reported information?**

First, the question asked about parental ownership of real estate assets concerns this detention during the childhood of the surveyed individuals. "Childhood" is defined as "before 14 years old" in the questionnaire. In order to assess the wealth rank of parents based on the real estate holding, we need to look at the wealth rank for households with at least one child aged below 14 years. Since it is very unlikely that young children understand concepts such as main residence, we first focus on household with children aged more than 10 years (and less than 14). We show that similar conclusions are obtained when we do not use this restriction on the minimum age of children.

Second, let us notice that we observe individuals born from 1933 to 1992.<sup>20</sup> In France, the average age of women at childbirth has followed a U-shaped curved over the 20<sup>th</sup> century. It is 29.4 years old for child born in 1901, it decreases to 26.5 for those born in 1977 and then come back to 29.4 for children born in 2000 (Appendix Figure A1). 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 close to 14 years old, their mothers should be on average from 40 to 43 years old.

Finally, to assess the wealth rank of the parents depending on the ownership of real estate property, we use as a benchmark group the households (couples or single-headed) with at least one child aged 10 to 14 years old and a woman aged 35 to 44 years old. Such an age interval accounts for the fact that the mother's age for the first (resp. last born) child is younger (resp. older) than the average age of women at childbirth.<sup>21</sup> Since this counterfactual group for parents is a proxy, we test the robustness of our conclusion by extending the age of women from 30 to 54 years old and show that results are identical.

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<sup>20</sup> 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.

<sup>21</sup>As shown in Daguët (2000, 2002) the mother's age for the first child is around 3 years younger compared to the average age. It is 3 years older for the last born. See also Toulemon L. (2001).

### 3.2.2. Wealth ranks of the parents according to their real estate holding

Following our previous discussion about the life-time period when parental wealth is referred, we first focus on the wealth rank of individuals in households with a woman aged 35 to 44 years old.<sup>22</sup> Figure 3 shows the composition of the different wealth groups. As expected, individuals without any real estate are over represented in the bottom of the distribution. On average, they represent more than 92% of the bottom 30%. At the opposite, individuals owning their main residence are over represented in the middle and top of the distribution. They represent more than 90% of the wealth group above the 50<sup>th</sup> percentile of wealth on average. While homeowners with no other real estate constitute the vast majority of the middle of the distribution (over 70% of the p30-p89), as long as we go up in the distribution, wealthy individuals represent an increasingly large group and are the majority of the top 5%. In appendix figures A2a to A2d, we break down Figure 4 by cohort and show that our conclusions are the same for all cohorts.

To map our real estate holding categories to the corresponding wealth group, we look at the probability to belong to some specific wealth groups depending on the real estate holding categories. First, the probability of being in the bottom 30% and 50% wealth groups for individuals without any real estate is very high, for all cohorts<sup>23</sup> (Figure 4, dark blue lines).

For all cohorts, the probability to belong to the bottom 30% is very high. It is 91.4% on average and higher than 87% for all cohorts but one. This means that we can easily assume that the very large majority of parents without any real estate refers to individuals in the bottom 30% of the wealth distribution. We test the robustness of this conclusion by looking at households with other demographics (having at least one child aged less than 14 years old, having at least one child but without setting an age limit to the child, and individuals without children). It has no effect on our conclusion. We also graph these probabilities for all these demographics extending

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<sup>22</sup> In our main approach, we compute wealth rank by survey and 5 year-age cohort for individuals ages from 25 to 54 years old. 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 the cases (for more than 77% of the cohort\*survey). Here, due to the restriction to the households with a women aged from 35 to 44, some intersections lead to a number of observations below 30. We thus decide to exclude the cohorts when the number of observations in a survey is lower than 30. It leads to the exclusion of two cohorts for four surveys (1998, 2004, 2010 and 2015) which represents a total of 164 observations over 22,888.

<sup>23</sup> Here we impose restrictions on the individuals we are focusing on (household with a woman aged 35 to 44 and with a child aged less than 14 years old and more than 10). It decreases the size of the cohorts. We thus use in the following graphs cohorts where the number of observations is higher than 30. Concretely it leads to the exclusion of the first to third oldest cohorts of the sample.

the range of women's age from 30 to 54 years old (Appendix Figure A3). Again, it makes no difference on our conclusions.

In Appendix figure A4, we break down the wealth groups to which belong the different cohorts for our benchmark group.<sup>24</sup> On average, individuals with no real estate are only 5.3% to belong to the p30p46 wealth group and 3.7% to belong to the top 50%.

Second, we turn to the ownership of the main residence (with or without other real estate). Figure 5 presents the probability of being in the top 70% when being homeowner (with or without other real estate). This probability is higher than 93% for all cohort but one (where it reaches 89.5%). The average probability is 94.8%. We also present this probability for other demographic characteristics (in Figure 6 and Appendix Figure A5) and prove our conclusion is not affected by this choice.

The probability to belong to higher wealth groups tends to decrease significantly. For instance, the probability to belong to the top 60% is 82.5% on average and ranges from 73% to 91% (Appendix Figure A6). Identifying "homeowners" (with and without other real estate) as belonging to the top 70% seems therefore as a rather cautious view.<sup>25</sup> We thus map homeowner parents with the top 70% of the wealth distribution.

Third, we split homeowners into two categories. Homeowners with no other real estate and homeowners with other real estate (wealthy).

On average, homeowners with no real estate are 93.4% to belong to the top 70% and more than 95.5% from the 1960s (Appendix Figure A8). But their probability to belong to the top 50% is always lower than 72%. They are almost as numerous to belong to the p30p49 as to the p50p74 (Appendix Figure A9).<sup>26</sup> Individuals owning both their main residence and other real estate ("wealthy individuals ») are much more represented in the upper part of the wealth distribution.

From 1943, they are more than 91% to belong to the top 50% wealth group, and 94.8% on average over the period (Figure 6). As for our previous conclusions, there is no differences across the groups with other demographics that we use to test the robustness of our conclusions

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<sup>24</sup> Individuals belonging to households (couples or single-headed) with no real estate, with one child aged 10 to 14 years old and a woman aged 35 to 44 years old. We obtain very similar results with the other tested groups.

<sup>25</sup> See also appendix figure A7, for a breaking down into wealth groups by cohort. It shows that individuals in our benchmark group who are homeowner are mainly in the top 50% wealth group but with a significant part (around 30%) in the p30-p49.

<sup>26</sup> Appendix Figure A10 shows our conclusion is robust when using groups of individuals with other demographics.

(see also Appendix Figure A11). Moreover, on the contrary to homeowners without any other real estate, a large part of homeowners with other real estate properties belong to higher top wealth groups: for instance, on average they are more than 43% to belong to the top 10% (Appendix Figure A12). We thus map parents owning other real estate in addition to their main residence with the top 50% wealth group. Those conclusions about the most appropriate mapping are robust if we measure wealth at the household level (see Online appendix figures OA4 to OA7). In Online appendix figures OA8 to OA10, we also show that we obtain very similar conclusions when using net wealth instead of gross wealth. To do so, we restrict our sample to the surveys from 2010 for which net wealth is available. The probability to be in the bottom 30% wealth group for individuals with no real estate decreases only for the two youngest cohorts. It is likely to reflect the increase in main residence liability for new homeowners. Consequently, if one would like to extend the analysis to net wealth, it may lead to a different mapping for parents with no real estate born after the 1970s. For older cohorts, the mapping with the bottom 30% still appear relevant.

### **3.3. Assessing potential biases due to misclassification**

In the previous section, we have shown that our real estate categories allow us to identify three wealth groups: bottom 30% (without any real estate property), top 70% (owners of the main residence only) and top 50% (owners of other real estate in addition to the main residence). However, this mapping is not perfect and some misclassification issues may affect it. This section aims at assessing the potential biases.

Since we are interested in assessing the wealth gap between individuals with parents in the bottom 30% of the wealth distribution and individuals with parents in the top 70%, we first start with a simple model with two groups. We note  $T$  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:<sup>27</sup>

$$y = \alpha + \beta \cdot T + u$$

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<sup>27</sup> All equations are at the individual level but for the sake of simplicity, we do not report a subscript  $i$  (referring to an individual  $i$ ).

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

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

We have:

$$E(y | \tilde{T} = 1) = \alpha + \beta \cdot P(T = 1 | \tilde{T} = 1) \text{ and } E(y | \tilde{T} = 0) = \alpha + \beta \cdot P(T = 1 | \tilde{T} = 0)$$

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

Thus<sup>28</sup>: 
$$|\hat{\beta}_{OLS}| \leq |\beta|$$

As one can see, misclassification implies a downward bias. The bias is all the smaller as the probability to observe someone in the top group when she truly is ( $P(T = 1 | \tilde{T} = 1)$ ) 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, 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  $\beta$  is 13.8% higher than the estimated  $\hat{\beta}_{OLS}$ .<sup>29</sup> Consequently, if we regress the dummy to belong to a top wealth group (for instance “being in the top50% wealth group”) on the dummy for having homeowner parents (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.

Second, since we want to estimate the wealth gap between individuals with parents in the top 50% wealth group (wealthy parents) and individuals with parents in the bottom 30% (parents with no real estate), it means that there is an intermediary group (parents in the p30p49). We thus turn to a model with 3 groups: B (for bottom), M (for middle) and T (for top). As previously, these groups are observed with errors. The dummies referring to the corresponding observed groups are  $\tilde{B}$ ,  $\tilde{M}$  and  $\tilde{T}$ . The model to be estimated is now:

$$y = \alpha + \beta^M \cdot M + \beta^T \cdot T + v$$

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<sup>28</sup>  $P(T = 1 | \tilde{T} = 1) \leq 1$  and  $P(T = 1 | \tilde{T} = 0) \geq 0$ , so  $P(T = 1 | \tilde{T} = 1) - P(T = 1 | \tilde{T} = 0) \leq 1$ .

<sup>29</sup> Since  $\hat{\beta}_{OLS} = 0.862 \beta$ .

And: 
$$\widehat{\beta}^T_{OLS} = E(y | \tilde{T} = 1) - E(y | \tilde{B} = 1)$$

We have:

$$E(y | \tilde{T} = 1) = \alpha + \beta^M \cdot P(M = 1 | \tilde{T} = 1) + \beta^T \cdot P(T = 1 | \tilde{T} = 1)$$

$$E(y | \tilde{B} = 1) = \alpha + \beta^M \cdot P(M = 1 | \tilde{B} = 1) + \beta^T \cdot P(T = 1 | \tilde{B} = 1)$$

So: 
$$\widehat{\beta}^T_{OLS} = \beta^T [P(T = 1 | \tilde{T} = 1) - P(T = 1 | \tilde{B} = 1)]$$

$$+ \beta^M [P(M = 1 | \tilde{T} = 1) - P(M = 1 | \tilde{B} = 1)]$$

As with the previous model with only two groups, the bias is all the smaller as the probability to observe a parent in the top group when she truly is in this group is high, and as the probability to misclassify a parent in the top group when she is in the bottom group is low. This first part of the right-hand equality implies a downward bias. The second part is due to the presence of the third group M. The bias implied by this second part is likely to be also a downward bias, for instance if  $\beta^M$  has the same sign as  $\beta^T$  and if the individuals in the middle group are more often misclassified in the bottom group than in the top group. This term is all the smaller as the share of individuals in the middle group who are misclassified in the bottom group is close to the share of these individuals misclassified in the top group.

Our data allows us to confirm that our estimates are lower bounds. We use the computations presented in 3.2.2 for the classification of the individuals with no real estate ( $\tilde{B}$ ) and the wealthy individuals ( $\tilde{M}$ ) in the bottom 25% (group B), p30p49 (group M), top 50% (group T) of the wealth distribution.

We have:  $P(T = 1 | \tilde{T} = 1) - P(T = 1 | \tilde{B} = 1) = 95.9\% - 3.7\% = 92.2\% < 1$

and  $P(M = 1 | \tilde{T} = 1) - P(M = 1 | \tilde{B} = 1) = 4\% - 5.3\% = -1.3\% < 0$

Consequently, since we can assume that  $\beta^M \geq 0$ :  $\beta^T \geq \widehat{\beta}^T_{OLS}$

And, once again, since in our regressions,  $y$  is the fact that a child belongs to a top wealth group, our estimates can be viewed as a lower bound for intergenerational immobility.

More precisely, we have  $\beta^T = 1.085 \widehat{\beta}^T_{OLS} + 0.014 \beta^M$  (since  $\widehat{\beta}^T_{OLS} = 0.922 \beta^T - 0.013 \beta^M$ ), which means that the bias is not large and is likely to be even smaller than the previous we found with the model with two groups. Indeed, there are two parts in the right hand term. The

first part means that  $\beta^T$  is 8.5% higher than the estimated  $\widehat{\beta}_{OLS}^T$ . The second term is likely to be very small since  $\beta^M$  is likely to be smaller than  $\beta^T$  and its value is divided by 71.<sup>30</sup>

### 3.4. Possible extension to other countries

Relying on wealth surveys for other countries, we show that our indicators based on the ownership of real estate properties can also be relevant in other countries. However, their interpretation may need to be adapted because they may reflect different wealth positions depending on the country.

We present how the different categories of real estate holding are distributed across the wealth distribution for three other European countries (Germany, Italy and Spain) and for the U.S, based respectively on the Household Finance and Consumption Survey and on the Survey of Consumer Finance. These countries are interesting because they present very different situations regarding homeownership. While only 44% of the German households own their main residence, Spanish ones are 83% to be homeowners. Italy occupies an intermediate position with a homeownership rate of 68%. For the U.S., the homeownership rate was about 64% in 2016. Such differences have to be kept 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 may thus illustrate how national differences regarding the housing market may play a role on the mapping between the parental wealth indicators and the wealth distribution. To facilitate comparisons across countries and with France, we compute wealth ranks the same way as we do for France.<sup>31</sup>

For all countries, homeowners' wealth positions are close to the French ones. Individuals owning both their main residence and other real estate (wealthy individuals) are only 4% (for the U.S.) and 7.4% (for Italy) to belong to the bottom 50% wealth group. It is 9.2% in Germany

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<sup>30</sup> In the extreme case where  $\beta^T = \beta^M$ , we would have  $\beta^T = 1.10 \widehat{\beta}_{OLS}^T$  which means that as long as  $\beta^M < \beta^T$  the true beta is less than 10% higher than the estimate one.

<sup>31</sup>As for France, we compute wealth ranks among individuals living in households with a woman aged from 35 to 44 years old, and then we focus on these individuals when they have at least one child aged less than 14 years old (see Section 3.2). Wealth is studied at the individual level. Figures 8a to 8c present the results when the wealth of a couple is divided by 2 – and without dividing it for singles (as we do in the case of France). Appendix Figures A12a to 12b present the results when the wealth of the household is divided by the number of adults aged more than 25 years old in addition to the reference person and her/his partner. For instance, the wealth of a couple with 2 children aged 26 and 28 years old is divided by 4. We present this variant because the household composition may differ strongly according to countries. As it turns out our conclusions are not sensitive to the way we treat household composition.

and 12.6% in Spain (Figure 7). It means that whatever the country, wealthy individuals can easily be mapped with the top 50% wealth group. For all countries, homeowners with no other real estate mostly belong to the top 70% which seems a pretty reasonable mapping (95.4% in Spain belong to the top 70% wealth group, 97.3% in Germany while it is more than 99% in Italy and in the U.S.). For individuals holding no real estate at all, the situation turns out to be different across countries. While in Spain, Italy and in the U.S., they can be mapped with the bottom 30% (92.7% of them belong to the bottom 30% in Spain and 86.7% in Italy and 84.8% in the U.S.), for Germany, it is only 69.8%. Consequently, in Germany, they should rather be mapped with the bottom 40% or 50% than with the bottom 30%. In appendix figures FA13a to FA13c, we present variants for these four countries. We first change the concept of individual wealth by dividing wealth by the number of adults aged over 25 years old in the household to account for household composition that may differ in Southern countries. It makes no difference on our conclusions. We then present graphs for net wealth instead of gross wealth. For all countries but Italy, it leads to a decrease in the share of individuals with no real estate belonging the bottom 30%. For net wealth, it may then be more appropriate to map them with the bottom 50%.<sup>32</sup>

## **4. Intergenerational wealth correlation**

### **4.1. Empirical design**

Figures 8a to 8e displays the percentage of households by wealth status of the second generation (non-homeowner parents, homeowner parents and wealthy parents) in several top wealth groups (top 70%, top 50%, top 25%, and top 10%).

This figure suggests a positive association between the probability to belong to top wealth groups and the wealth of the parents. The probability to belong to all top wealth groups is higher for individuals with wealthy parents (top 50% parents), compared to individuals with homeowner parents (top 70%), which is itself higher than for individuals with non-homeowner parents (bottom 30%). Figures 8 also suggests that there may be non-linearities in the intergenerational wealth correlation and differences in its development over time across the wealth distribution. For instance, the probability to belong to the top 75%, the top 50% or the

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<sup>32</sup> Usually wealth surveys also contain information about other children's outcome such as earnings or education. Our method allows to analyse the link between parental wealth and these outcomes. We study these correlations in a companion paper (Garbinti and Savignac, 2020).

top 25% increases for individuals with wealthy parents over time, while it appears stable (and high) regarding the probability to belong to the top 10%.

To assess the magnitude and the significance of these diverging patterns, we estimate a linear probability model (Equation 1). We regress the dummy for belonging to a given top wealth group (top 70%, 50%, 25%, or 10%) on a dummy for the parental wealth position. We introduce the cohort of birth and its interaction with the parental wealth position to allow for differences in the effect of parental wealth across cohorts. Such an approach allows us to account for non-linearities in the intergenerational wealth correlation at the top of the wealth distribution (as previously documented in Adermon et al., 2018, Boserup et al., 2017a, 2017b). Under perfect intergenerational mobility, and without any control variables, these probabilities would be respectively 70%, 50%, 25%, and 10%.

Relying on Section 3.2 and Section 3.3, we are able to document two different discrepancies and their evolutions. First, we focus on the diverging access to top wealth groups between children from parents in the top 70% wealth group (i.e. homeowner parents with or without other real estate property) and children from parents in the bottom 30% (i.e. parents with no real estate). Second, we focus on the discrepancy between children from parents in the top 50% wealth group (wealthy parents, i.e. parents with other real estate property in addition to their main residence) and children from parents in the bottom 30% (parents with no real estate). Note that we are thus able to assess the persistence over two generations in the top 70% and top 50% wealth group through the probability to belong to the top 70% (respectively top 50%) with homeowner parents (resp. wealthy parents).

Concretely, for each top wealth group  $p$ , we estimate the following linear probability model at the individual level<sup>33</sup>:

$$\begin{aligned} \text{Prob (Individual } i \text{ belongs to the top } p\% \text{ wealth group)} = \\ \beta_0 + \beta_c \text{cohort} + \beta^{\text{Top wealth}} \mathbf{1}_{\text{Top wealth parents}} + \beta_c^{\text{Top wealth}} \mathbf{1}_{\text{Top wealth parents}} * \text{cohort} + \varepsilon \end{aligned} \quad (\text{Equation 1})$$

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<sup>33</sup> Each coefficient should be subscripted with [a,b] and p to emphasize the fact that estimations depend on both the considered age group [a,b] and the top wealth group p. We abstract from this formalism for the sake of simplicity. We also abstract from the subscript i (for individual) that should appear for each variable and for the error term.

Where  $\mathbf{1}_{Top\ wealth\ parents}$  is the corresponding top wealth indicators for parental wealth position (Top 70% for homeowner parents or Top 50% for wealthy parents as defined in Section 3). We thus use bottom 30% parents (i.e. parents with no real estate as the reference category). *cohort* stands for the birth cohort of the individual, and  $\varepsilon$  is the error term.

To favour comparisons with existing studies covering other countries, we also estimate equation 1 using the rank of the individual in the wealth position as a dependant variable. It allows to directly estimate the average wealth rank of children depending on the parents' wealth position.

## 4.2. Baseline results

As previously explained, 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 of their life-cycle (see Section 3). Table 2 displays the regression results which tests for the difference in access to top wealth groups between individuals whose parents were in the top 70% wealth group (ie. homeowner parents with or without other real estate property) and individuals whose parents were in the bottom 30% (i.e. parents with no real estate). Table 3 provides the results of the regression focusing on the gap between individuals with parents in the bottom 30% and in the top 50% (i.e. parents who were owners of other real estate properties in addition to their main residence). Henceforth, for the sake of simplicity, we do not precise again the mapping between parental wealth position (bottom 30%, top 70% and top 50%) and their holding assets category (no real estate, homeowners with or without other real estate).

The probabilities to belong to top wealth groups increase with the wealth of the parents. We find statistically significant higher probabilities to belong to top wealth groups for individuals with homeowner parents compared to individuals whose parents did not have any real estate property (Table 2). For instance, the probability to belong to the top 70% for individuals in the reference cohort<sup>34</sup> (1973-1977) whose parents where in the bottom 30% is 56% while it is 21 percentage points higher (i.e. 78%) when the parents were in the top 70%. The probability to belong to the top 70% is even higher (85%) for individuals with parents that were in the top 50% (29 percentage points higher than with parents in the bottom 30%, see Table 3). In other words, the probability to belong to the top 75% is 1.38 time higher for children of parents in the top 70% (and 1.52 time higher with parent in the top 50%) compared to children whose

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<sup>34</sup> We use as a reference cohort the cohort where the number of observations is the highest.

parents were in the bottom 30%. Two additional findings are worth to be mentioned. First, the higher we move up along the children's wealth distribution, the larger the role of parental wealth. Indeed, the difference in probability to belong to top wealth groups between children with parents in the bottom 30% and in the top 70% increases as we move up to higher top wealth groups: this ratio levels at 2.6 regarding the probability to belong to the top 10%. Such non linearities are particularly striking in light of the literature, and in particular in comparison with the results obtained for Denmark by Boserup et al. (2017a) who find a linear relationship between wealth ranks of parents and children except at the top 10%.

Table 4 presents average child wealth ranks for different countries and for France. In appendix B we explain how we compute these wealth ranks for Denmark from Boserup et al (2017a) and for Sweden from Adermon et al (2018).

As a result, parental wealth turns out to have a stronger effect in France than in Denmark but a lower effect than in Sweden.

Indeed, for similar cohorts (1960-1965 in Denmark and 1958-1962 in France), the average wealth rank of children with parents in the bottom 30% is roughly the same (41 in Denmark and 43 in France) while it is much higher for wealthy parents in France: the gap between children from parents in the bottom 30% and those from parents in the 50% is 15 percentage points in Denmark and 21.4 percentage points in France (which is more than 42% higher).

On the contrary, the gap in child's wealth rank depending on parental wealth is much higher in Sweden. For the cohort born in 1927 it is 23.4 percentage points while it is 18.4 in France for the cohort 1953-1957. This stronger gap in Sweden seems to be due to a clear lower average wealth rank for children from parents in the bottom 30%.<sup>35</sup>

To have a better idea of the orders of magnitude across parents' wealth groups, we compute deviations between the observed probability to belong to the top wealth groups and the probability that would prevail in the situation of perfect intergenerational mobility (Figure 9). 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 to belong to different top wealth groups, one should not interpret a

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<sup>35</sup> This higher gap is also observed to the oldest cohort observed in Sweden (1927) and in France (1943-1947). Though these cohorts are 15 to 20 younger in France, this result remains indicative of a higher gap in Sweden.

lower gap in the probabilities to belong to the top 10% (between children of rich and poor parents) compared to the gap in the probability to belong 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 one in order to compare the effect of parental wealth on the probability to access 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.<sup>36</sup> Consistent with our previous findings, the deviation is higher for the wealthiest parents (from the top 50% compared to 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%. For them, the probability to access the top 70% (resp. top 10%) is 20% (resp. 45%) lower than the probability under perfect mobility. The persistence in the top 70% across two generations is 22% higher than under perfect mobility. As we move up along the wealth distribution, the deviations are strikingly larger. The persistence in the top 50% is 38% higher than under perfect mobility, and the deviations from perfect mobility are even higher in higher top wealth groups (150% for the top 10% with parents in the top 50% wealth group for instance).

Interestingly, the magnitude of the intergenerational correlation is significantly lower for some older cohorts compared to younger ones. Such evidence of increasing intergenerational correlation over time is obtained both when looking at individuals whose parents were in the top 70% and in the top 50% (Tables 2 and 3). For individuals whose parents were in the top 70% (resp. top 50%), the probability to belong to the top 70% is lower from 8 to 7 percentage points (resp. 8 to 13 percentage points) for the cohorts born before 1967 compared to the reference one (1973-1977). Regarding higher top wealth groups, we still find a significant gap across cohorts for individuals with wealthy parents regarding the probability to belong to the top 50% to the top 10%: the correlation for two of the oldest cohorts is significantly lower than for the reference one. For the gap between individuals with parents in the top 70% and those with parents in the bottom 30%, coefficients are of lower magnitude which leads to a less significant gradient over time, but in no case with find evidence of a decrease in

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<sup>36</sup> 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 in % of this probability). For instance, for the top70%, we compute for children of parents in the bottom wealth group:  $\text{Proba}(\text{Top70\%}|\text{parents in bottom wealth group})/0.70-1$ .

intergenerational wealth correlation across generations. This increasing gap is also observed in Sweden (see Table 4).

Interestingly, our results can also be compared with previous findings for France. Bourdieu et al. (2019) show mobility results between wealth at death for child/father pairs. They use a concept of bottom wealth group composed of individuals leaving no asset at death. This bottom group represents from 25% (in 1848) to 30% father-child pairs (in the 20<sup>th</sup> century). It is thus close to our bottom 30% wealth group. They find that children (died between 1848 and 1960) from parents in this bottom group have a 42% to 45% probability to be in the same bottom group (Table 3, panels a, b and c, Bourdieu et al 2019). We find that children of parents in the bottom 30% have a 36% probability to belong to the bottom 30% wealth group for the cohort 1943-1947 and 44% for the cohort 1973-1977. The orders of magnitude are thus comparable (even though the wealth groups are not fully the same). Results from Arrondel and Grange (2006) are more directly comparable with ours since they provide information about the top 50% wealth (at death) group. For children died between 1800 and 1938 with parents in the top 50% wealth group, they find a 52% probability of being in the top 50% wealth group (Table 3, Arrondel and Grange 2006). We find a 58% probability for children born between 1943 and 1947 and this probability increases to 69% for those born between 1973 and 1977. This pattern is fully consistent with a decrease in intergenerational wealth mobility over time from the 19<sup>th</sup> century.

## **5. Sources of the intergenerational correlation: accounting for intergenerational transfers and human capital**

The intergenerational wealth correlation may result from several channels. First, it may be due to direct transfers of wealth (*inter vivos* and inheritances) from the previous to the next generation. Second, following the Backer and Tomes (1979, 1986) approach, 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.<sup>37</sup> Instead, 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., 2017a) and add sequentially control variables in our baseline regression to assess how much these control variables explain the intergenerational wealth correlation. The French wealth survey provides reliable qualitative information on whether any members of the household have received substantial gifts or inheritances (and when).<sup>38</sup> It also provides some information regarding the human capital of the parents (occupation of the father of the reference person and of the father of the partner<sup>39</sup>), and we control for education of the second generation. Since we introduce in our regressions numerous interactions between cohorts and other covariates, 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. It allows to easily summarize the information. Tables 5 and 6 present the marginal effects for the different top wealth groups, for the different sets of additional control 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%).<sup>40</sup>

As expected, adding potential explanatory variables for the intergenerational correlation decreases the marginal effects of parental wealth on the probability to belong to top wealth groups. Overall, the three sets of variables we are able to control for globally explain from 50% to 60% of the marginal effect of parental wealth on the probability to belong to top wealth groups. We document some striking differences across top wealth groups by computing the reduction in the marginal effects of parental wealth between before and after adding controls.

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<sup>37</sup> Part of this difficulty is also coming from the availability of information that would be required to identify each channel.

<sup>38</sup> However, information about how much has been received is not well reported, particularly in the old waves of the survey. A significant share of transfers is reported without any amount, and when amount is reported it is scarcely a clear amount and generally an amount between brackets. An additional difficulty is that some people report 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 the 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 to not 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).

<sup>39</sup> Unfortunately, there is no information regarding education of the parents.

<sup>40</sup> Appendix tables A2a to A2f and A3a to A3f present the detailed results by cohort.

First, gifts and inheritances play an increasing role in the correlation between parental wealth and the probability for children to belong to the top wealth groups, as long as we move along the children wealth distribution. On average, the marginal effects of having parents in the top 50% versus bottom 30% on the probability to belong to a top wealth group is lowered by 11% (for the top 70%) to 22% (for the top 10%) when accounting for gifts and inheritances received. 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. But, here we do not have the exact amount of inheritance, just the receipt. When adding fathers' occupation as a proxy for the amount of financial capital transmitted also well as for some human capital transfers, the explained part reaches more than 40% for the 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 to older ones. Such a striking pattern is illustrated by figure 10: controlling for gift and inheritances reduces the marginal effects of parental wealth (top 50 parents) on the probability to belong to the top 10% from 10% to 18% for the three oldest cohorts to 24% to 47% for the youngest ones.<sup>41</sup> Such a result is in line with Alvaredo et al., 2017 that find rising share of inherited wealth at the aggregate level between 1970 and 2010 (see footnote 2). Third, adding controls about parental occupation and education of the children further reduce the marginal effect of parental wealth which amounts to about half of the marginal effect obtained without any control variables.

## **6. Robustness tests on other life-cycle stages**

Our baseline estimates are obtained considering children and parents' wealth at similar stages of their life cycle (mid-life cycle). While our dataset is not a panel<sup>42</sup>, we nevertheless observe the wealth of children of the same cohorts at various life-cycle positions, which allows first testing the robustness of the results obtained for mid-life-cycle individuals and second investigating possible differences across the life cycle in the role of parental wealth on the probability to belong to top wealth groups. We then consider the wealth positions of two other

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<sup>41</sup> For the marginal effect of having a parents in the top70% wealth group versus the bottom 30%, it ranges from 10% to 15% for the three oldest cohorts to 24 to 33% for the three youngest ones (Appendix Figure A14).

<sup>42</sup> Based on the Danish tax administrative records, Boserup et al. (2017a) are able to rely on a panel dataset to study the intergenerational correlation over the life cycle of the second generation.

groups of individuals (i.e. aged between 25 and 34 and between 45 and 54) to complement our baseline analysis (based on individuals aged 35 to 44).

Figure 11 synthesizes the information for the different groups. It confirms the main findings obtained with the baseline age group and points out the persistence over the life cycle of the differences in the wealth positions related to parental wealth.

First, the probabilities to belong to top wealth groups increase with the wealth of the parents for all age groups. Second, the higher we move up along 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 wealth groups at the three life cycle stages.

Regarding intergenerational wealth correlation over the life-cycle, Boserup et al (2017a) find a U-shaped pattern: the correlation is higher when children move into adulthood (20 years old) and in their forties than in their mid-twenties. Clearly our method and data, though informative about several dimensions, do not allow to study this point as precisely as they do especially because we just have parental wealth at a given point of their life-cycle. Nevertheless, if we turn to the most comparable results (the probability to be 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 life-cycle in France.

Regarding the source of intergenerational wealth correlation, whatever the age group, gifts and inheritances explain it more at the top of the wealth distribution than at the bottom (Figure 12).<sup>43</sup> The increase is particularly striking at young ages. It may reflect that transmissions represent a higher share of the children's wealth when they are younger than later in life. When adding fathers' occupation and children education for all age groups, the explained share remains between 42% and 64%.

## **Conclusion**

To overcome strong data limitation, we propose a new method to estimate the intergenerational wealth correlation that can be easily implemented by adding simple qualitative questions in wealth or housing surveys regarding the ownership of housing assets by the parents of the

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<sup>43</sup> See appendix figure A15 for parents in the top70% versus bottom 30%

interviewees. Using this particular feature of the French wealth survey, we use France as an example and show that information about real estate holding (main residence and other real estate properties) can be used to define three wealth groups for all cohorts. We find that having no real estate property is almost certainly associated with belonging to the bottom 30% of the wealth distribution, whatever the birth cohort; being owner of the main residence (with or without having any other real estate property) is associated with belonging to the top 70% of the wealth distribution; while being owners of other real estate, *in addition* to the main residence is associated with a position within the top 50% of the wealth distribution. We show that possible misclassification of some individuals in another wealth group leads to a small and downward bias, which induces an underestimation of the intergenerational wealth correlation. Using wealth surveys covering other European countries (HFCS) and the SCF for the U.S., we show that this method can be used in different countries while the mapping between the three groups based on the ownership of housing assets and the position in the wealth distribution may slightly differ across countries. Our method then represents an alternative solution that can be easily implemented to study intergenerational wealth mobility in most of the countries and particularly where there is no available administrative or survey data with long time spans matching information on several generations.<sup>44</sup>

Regarding the intergenerational wealth correlation in France, we find some striking results in light of previous results obtained for other countries. While the probabilities to belong to top wealth groups increase with the wealth of the parents, there are non-linearities in this correlation: the higher we move up along the children's wealth distribution, the larger the role of parental wealth. More specifically, we find an increasing effect of parental wealth across the children wealth distribution from a large top wealth group (the top 70%) to the top 10%. Our results are obtained considering parents and children wealth positions measured both at mid-life cycle stage, and they are robust considering younger and older life-cycle position of the children which points out the persistence of the effect of parental wealth over the life-cycle. Second, we find evidence of increasing correlation for more recent cohorts compared to older ones. Third, about 50% to 60% of the intergenerational correlation is accounted for by a mix of direct intergenerational wealth transfers, fathers' occupation and children's education. Fourth, gifts and bequests explain a larger share of the link between parental wealth and the probability

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<sup>44</sup> Note that given the other information collected in the surveys, our method also allows to study the link between parental wealth and other children's outcomes such as earnings or education. We study this correlation in a companion paper (Garbinti and Savignac, 2020).

to belong to the top 10% compared to larger top wealth groups. Taken all together, our results are then in line with the literature showing the increasing importance of wealth over the recent decades. They may also be viewed as pointing out some elements that could explain the increasing feeling that France is an unfair country.<sup>45</sup> They also suggest that public policies may play a role in enhancing equality of opportunity by promoting equal access to education and designing appropriate redistribution schemes.

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<sup>45</sup> Indeed, 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 continuously increased from 2000 onwards. It rose from 68% in 2000 to 76% in 2018. Alesina et al. (2018) also document that the French are very skeptical about the fact that all individuals have equal opportunity to success.

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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%
<b>Age group</b>												
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%
<i>Total</i>	<i>100%</i>											
<b>Parents' real estate holding category</b>												
Parents with no real estate	55%	52%	47%	43%	41%	37%	32%	31%	28%	27%	30%	33%
Homeown par with no oth real est	32%	35%	38%	42%	44%	46%	48%	51%	53%	56%	54%	51%
Wealthy parents	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%
<i>Total</i>	<i>100%</i>											

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

**Table 2. Probability to be in a top wealth group**

	<b>Top 70%</b>	<b>Top 50%</b>	<b>Top 25%</b>	<b>Top 10%</b>
<b>Constant (Bottom 30% parents)</b>	0.56 ***	0.38 ***	0.15 ***	0.05 ***
<b>Homeowner parents (Top 70% parents)</b>	0.21 ***	0.19 ***	0.16 ***	0.09 ***
<b>Cohort*homeowner parents</b>				
1943-1947	-0.07 *	-0.06	-0.08 **	-0.02
1948-1952	-0.07 **	-0.02	-0.04	-0.02
1953-1957	-0.05	-0.05	-0.02	-0.01
1958-1962	-0.08 **	-0.02	-0.05 *	-0.01
1963-1967	-0.04	0.01	-0.01	-0.01
1968-1972	-0.02	0.01	-0.02	-0.02
1973-1977	Ref.	Ref.	Ref.	Ref.
1978-1982	0	0.03	-0.02	-0.02
Other controls: cohorts				
<b>Obs.</b>	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 3. Probability to be in a top wealth group				
	Top 70%	Top 50%	Top 25%	Top 10%
<b>Constant (Bottom 30% parents)</b>	0.56 ***	0.38 ***	0.15 ***	0.05 ***
<b>Wealthy parents (Top 50% parents)</b>	0.29 ***	0.31 ***	0.31 ***	0.19 ***
<b>Cohort*wealthy parents</b>				
1943-1947	-0.13 **	-0.11 *	-0.15 ***	-0.09 **
1948-1952	-0.12 ***	-0.08	-0.13 ***	-0.08 **
1953-1957	-0.07 *	-0.09 **	-0.06	-0.04
1958-1962	-0.08 *	0.01	-0.06	-0.01
1963-1967	-0.04	0.01	-0.01	-0.01
1968-1972	-0.04	-0.03	-0.04	-0.05
1973-1977	Ref.	Ref.	Ref.	Ref.
1978-1982	-0.01	0.01	-0.03	-0.04
Other controls: cohorts				
<b>Obs.</b>	10 173	10 173	10 173	10 173

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

**Table 4. Marginal effect of having parents in the top70% (homeowner) versus parents in the bottom 30% (no real estate)**

	Baseline	Additional controls			Reduction in intergenerational wealth correlation		
	(1)	(2)	(3)	(4)	(1) to (2)	(1) to (3)	(1) to (4)
Top 70%	0.18 ***	0.16 ***	0.13 ***	0.11 ***	-11%	-26%	-39%
Top 50%	0.19 ***	0.15 ***	0.12 ***	0.09 ***	-16%	-34%	-49%
Top 25%	0.14 ***	0.11 ***	0.08 ***	0.06 ***	-22%	-43%	-58%
Top 10%	0.07 ***	0.06 ***	0.04 ***	0.03 ***	-22%	-46%	-58%
<i>Additional controls:</i>							
* 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			

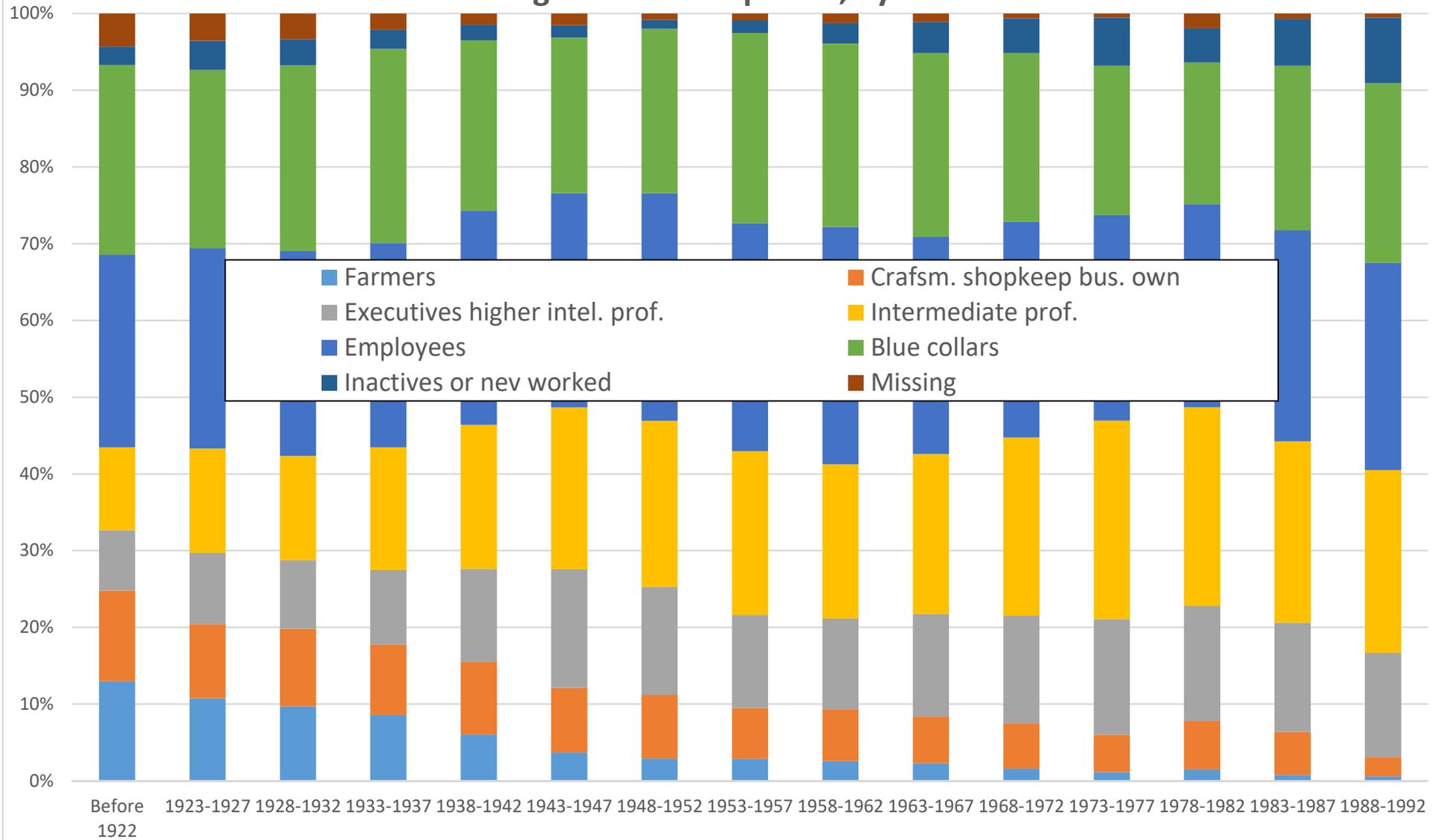
Note: individuals aged 35 to 44 years old. Robust standard errors clustered at the household level.

**Table 5. Marginal effect of having parents in the top50% (wealthy) versus parents in the bottom 30% (no real estate)**

	Baseline	Additional controls			Reduction in intergenerational wealth correlation		
	(1)	(2)	(3)	(4)	(1) to (2)	(1) to (3)	(1) to (4)
Top 70%	0.23 ***	0.19 ***	0.15 ***	0.11 ***	-16%	-37%	-54%
Top 50%	0.28 ***	0.23 ***	0.17 ***	0.12 ***	-18%	-40%	-58%
Top 25%	0.25 ***	0.2 ***	0.15 ***	0.11 ***	-22%	-42%	-57%
Top 10%	0.15 ***	0.12 ***	0.09 ***	0.07 ***	-23%	-41%	-53%
<i>Additional controls:</i>							
* 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			

Note: individuals aged 35 to 44 years old.

Figure 1.a. Occupation, by cohort



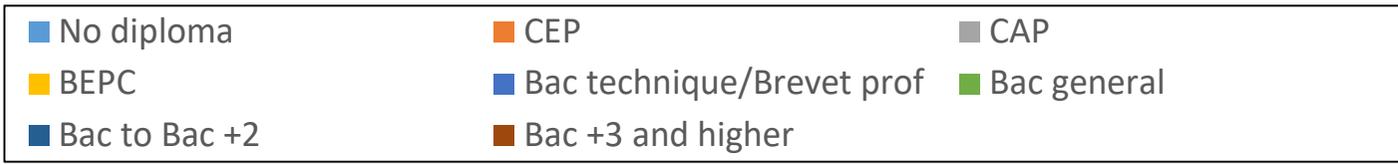
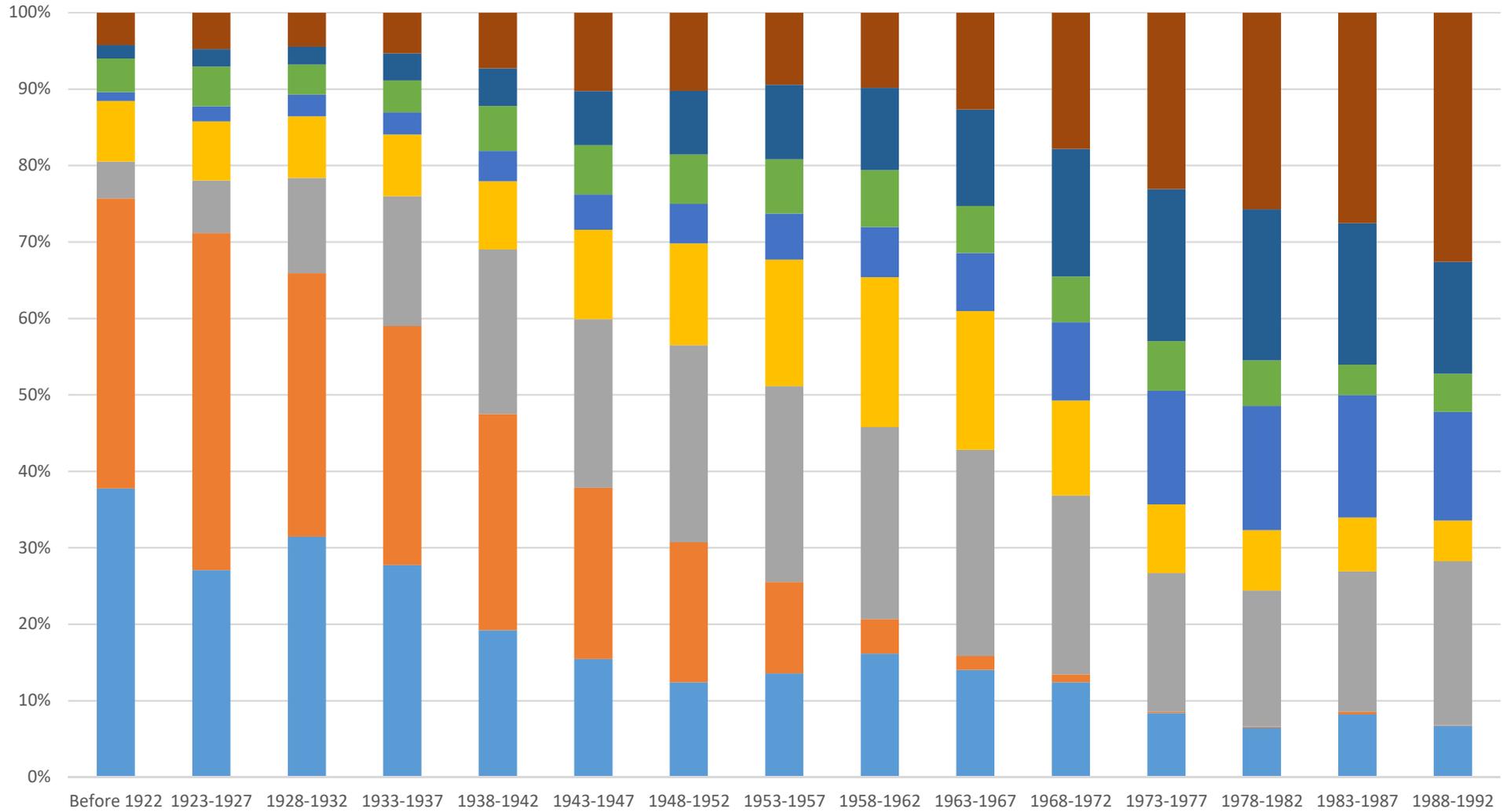
Note: Measure of education attainment based on the standard French classification. It is the highest degree completed at the time of the survey interview. Source: French Wealth survey (INSEE), 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

**Figure 1.b. Fathers' occupation, by children's cohort**

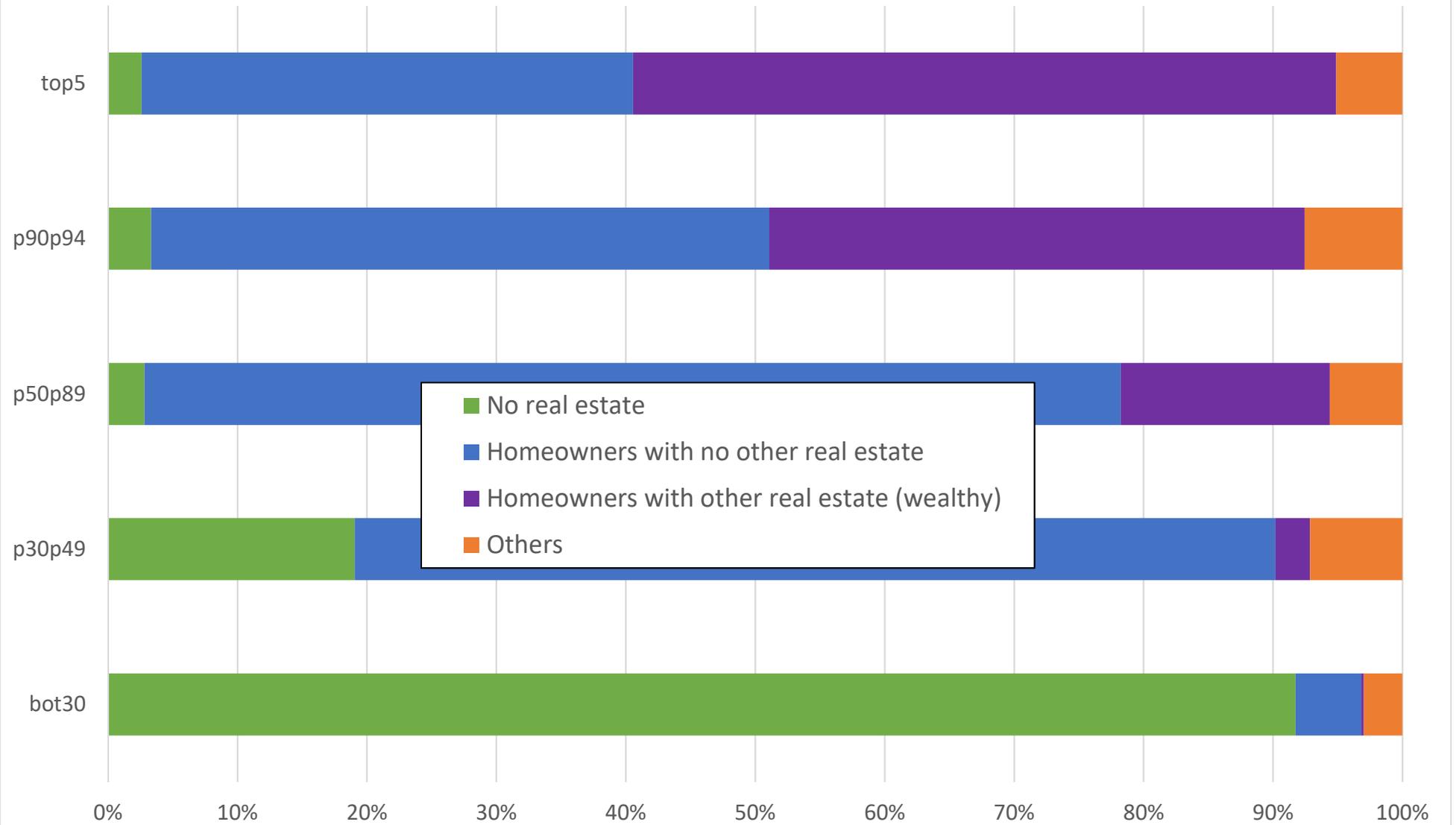


Measure of occupation is based on the standard French classification. It is the main occupation of the father during the childhood of the individual.  
 Source: French Wealth survey (INSEE), 1986, 1992, 1998, 2004, 2009, 2014 and 2017.

Figure 2. Education, by cohort

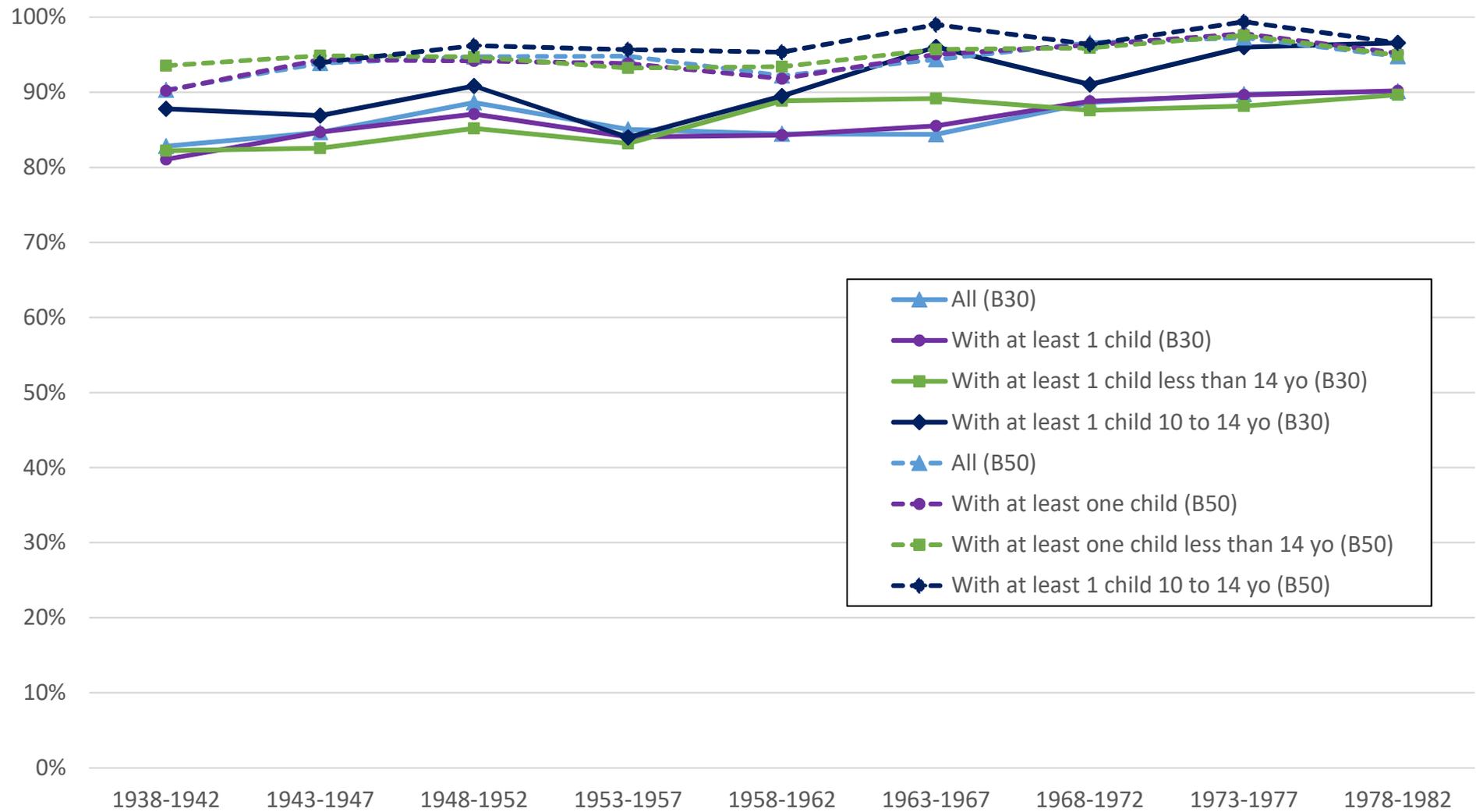


### Figure 3. Real estate holding, by wealth group



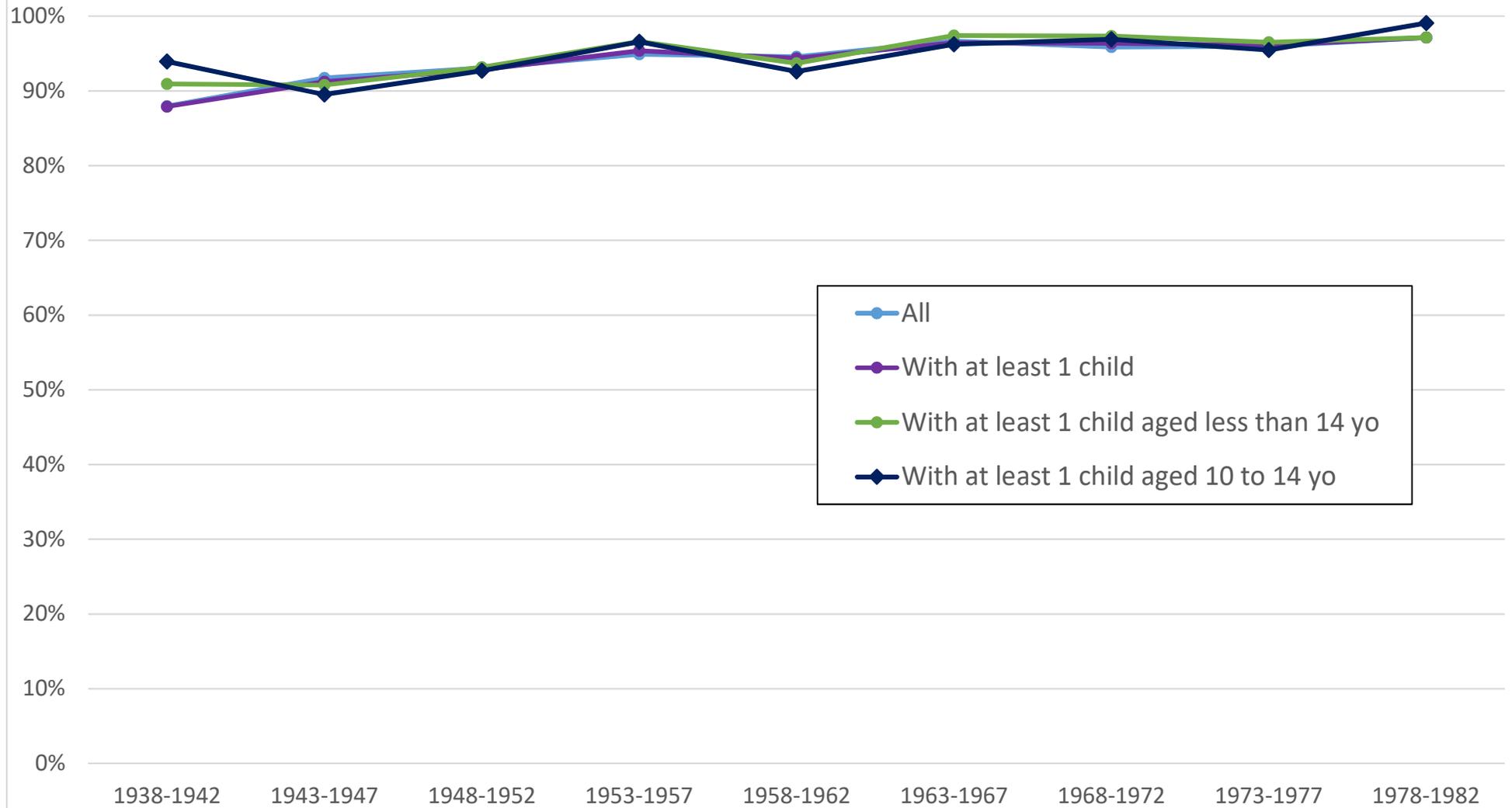
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

**Figure 4. Probability to be in the bottoms 30% and 50% when having no real estate, by cohort**



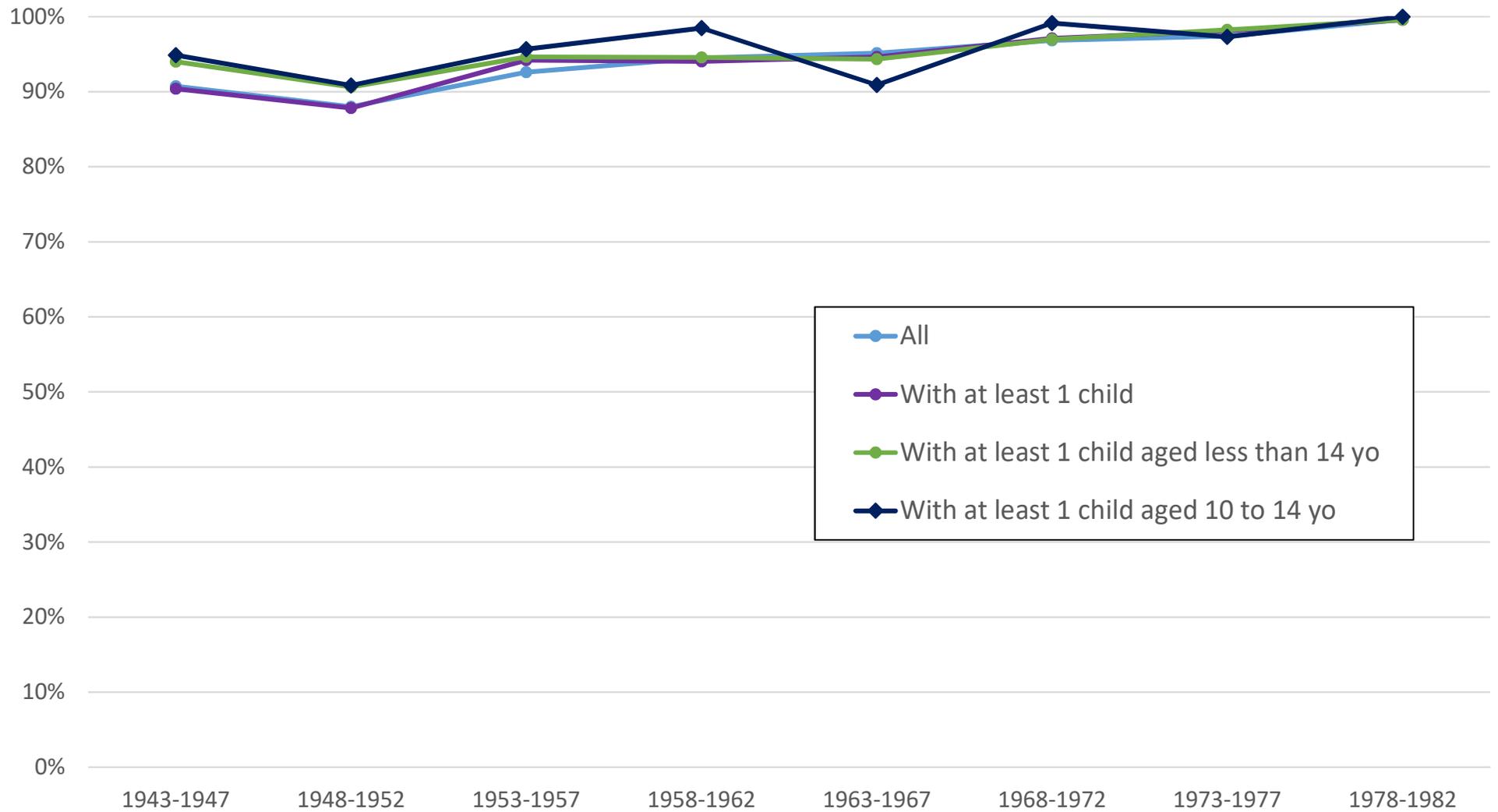
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

**Figure 5. Probability to be in the top 70% when homeowner (with or without other real estate), by cohort**



Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

**Figure 6. Probability to be in the top 50% when homeowner with other real estate ("wealthy"), by cohort**



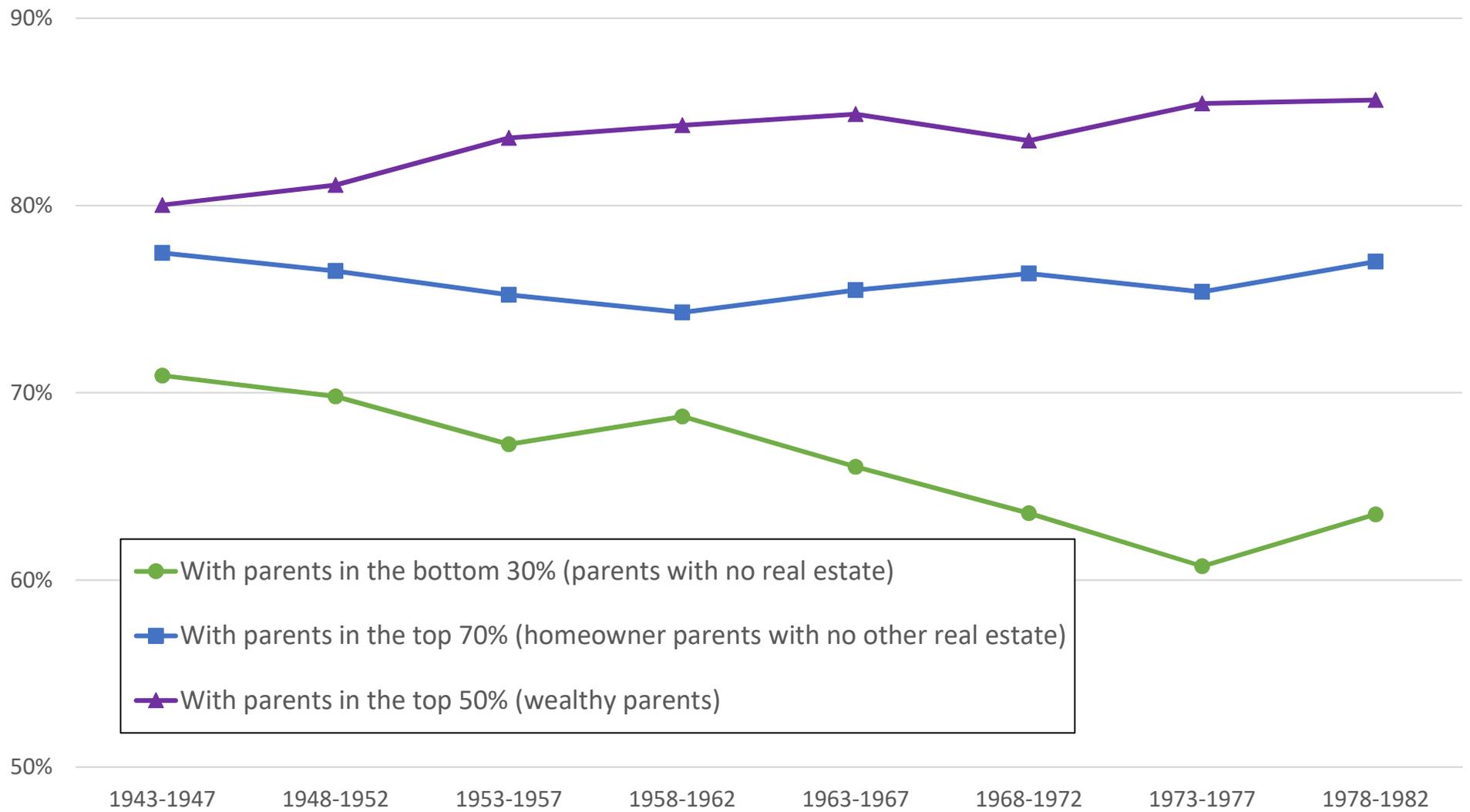
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

**Figure 7. Wealth position by real estate holding category: Germany, Spain, Italy and United States**

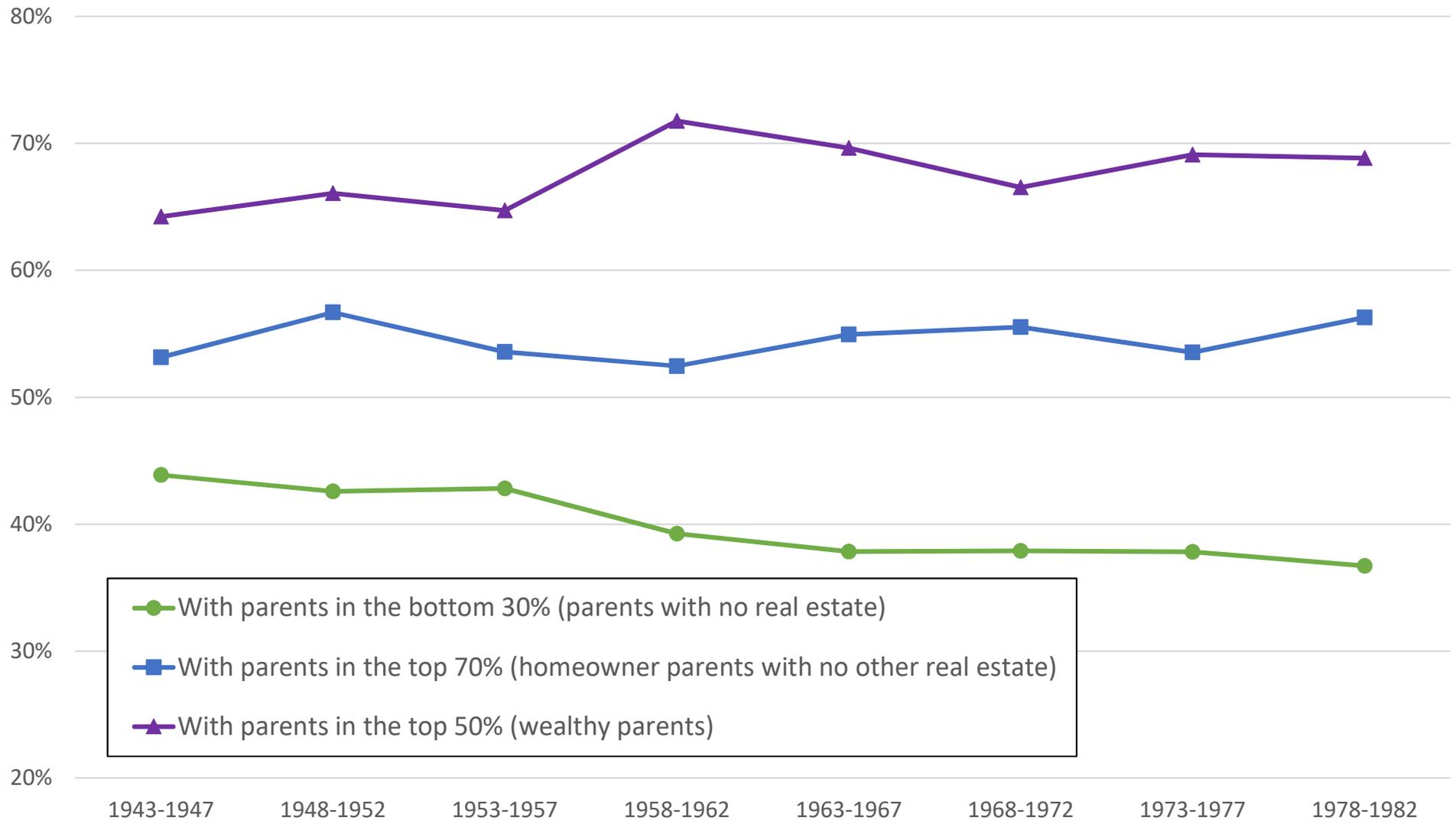


Note: Gross wealth. Wealth of couple divided by 2.

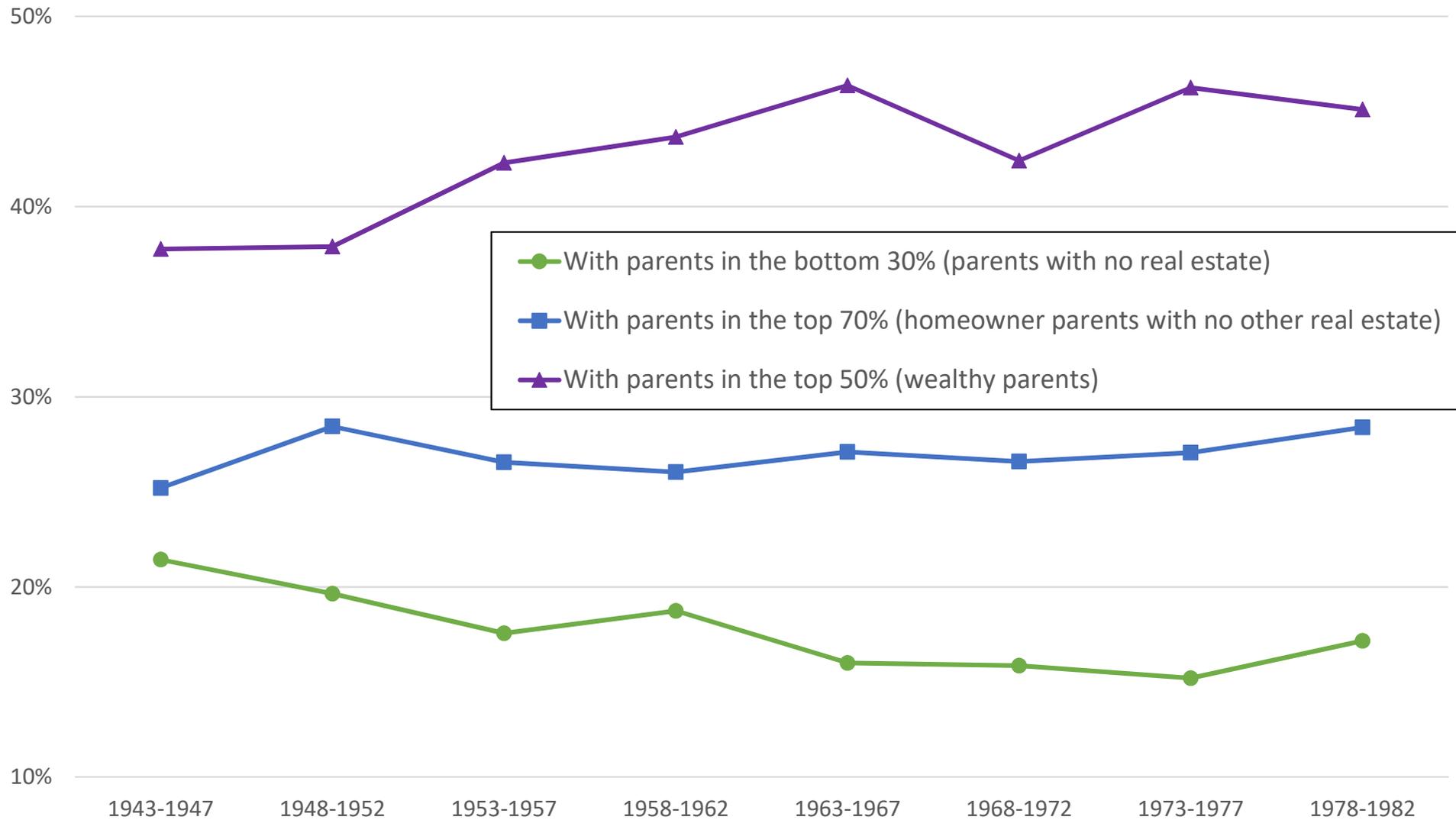
**Figure 8a. Probability to be in the Top 70% between 35 and 44 years old, by parental wealth**



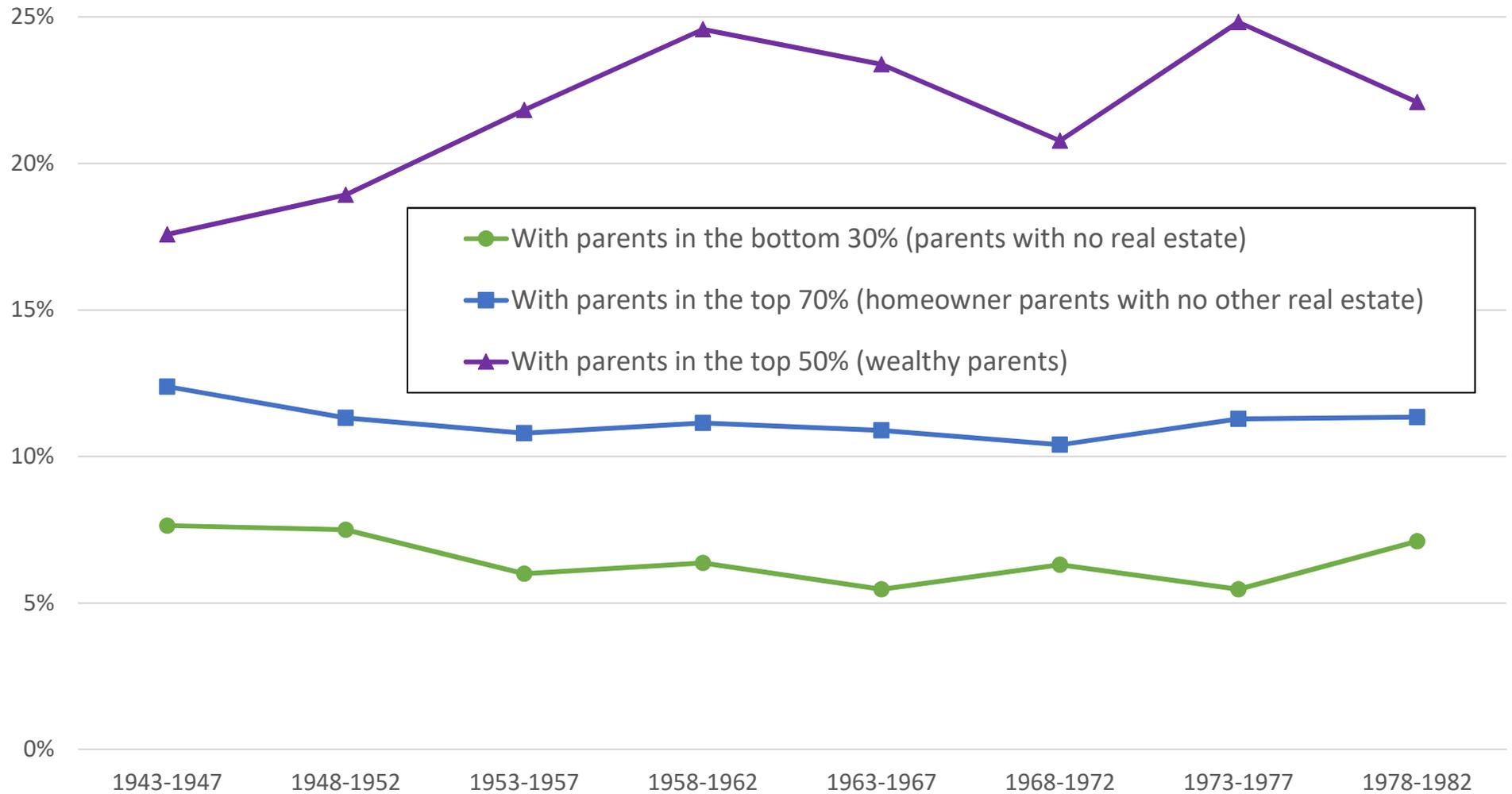
**Figure 8b. Probability to be in the Top 50% between 35 and 44 years old, by parental wealth**



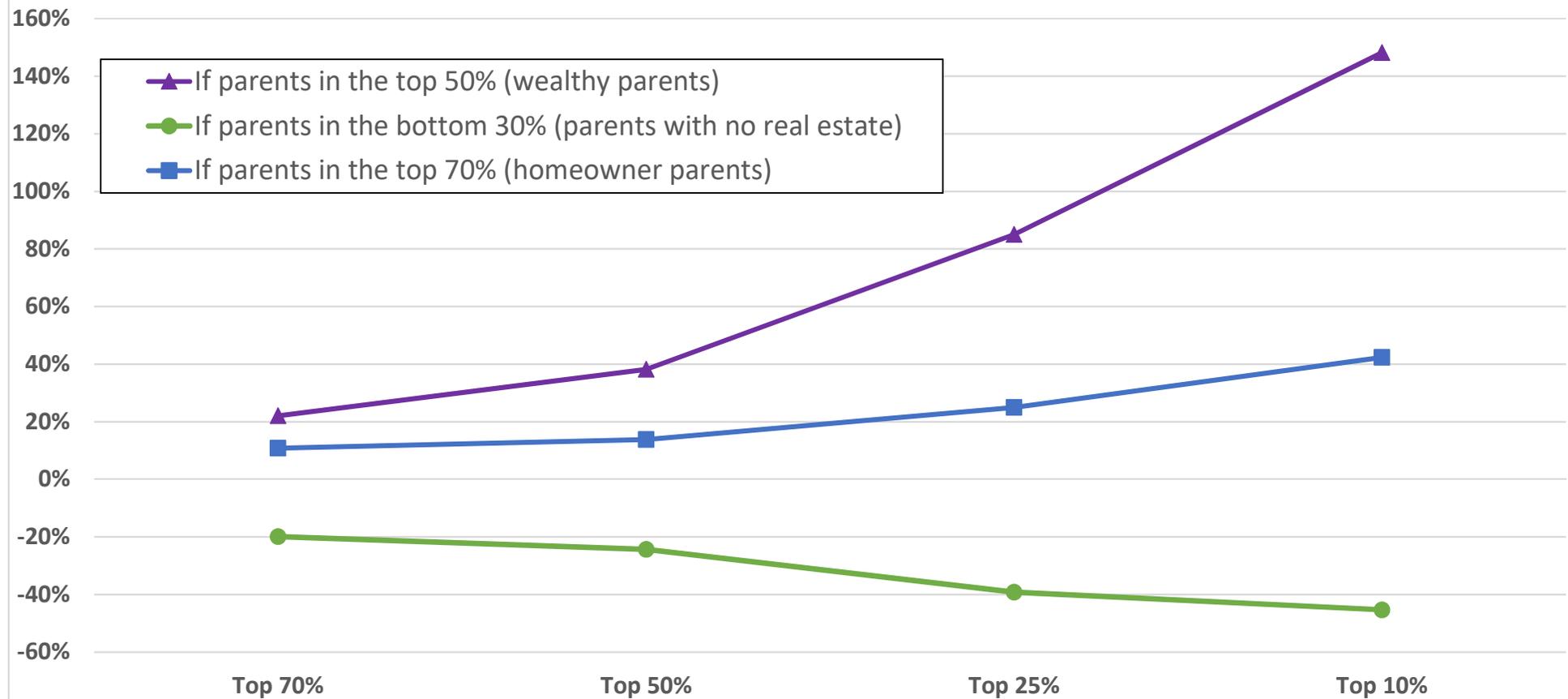
**Figure 8c. Probability to be in the Top 25% between 35 and 44 years old, by parental wealth**



**Figure 8d. Probability to be in the Top 10% between 35 and 44 years old, by parental wealth**



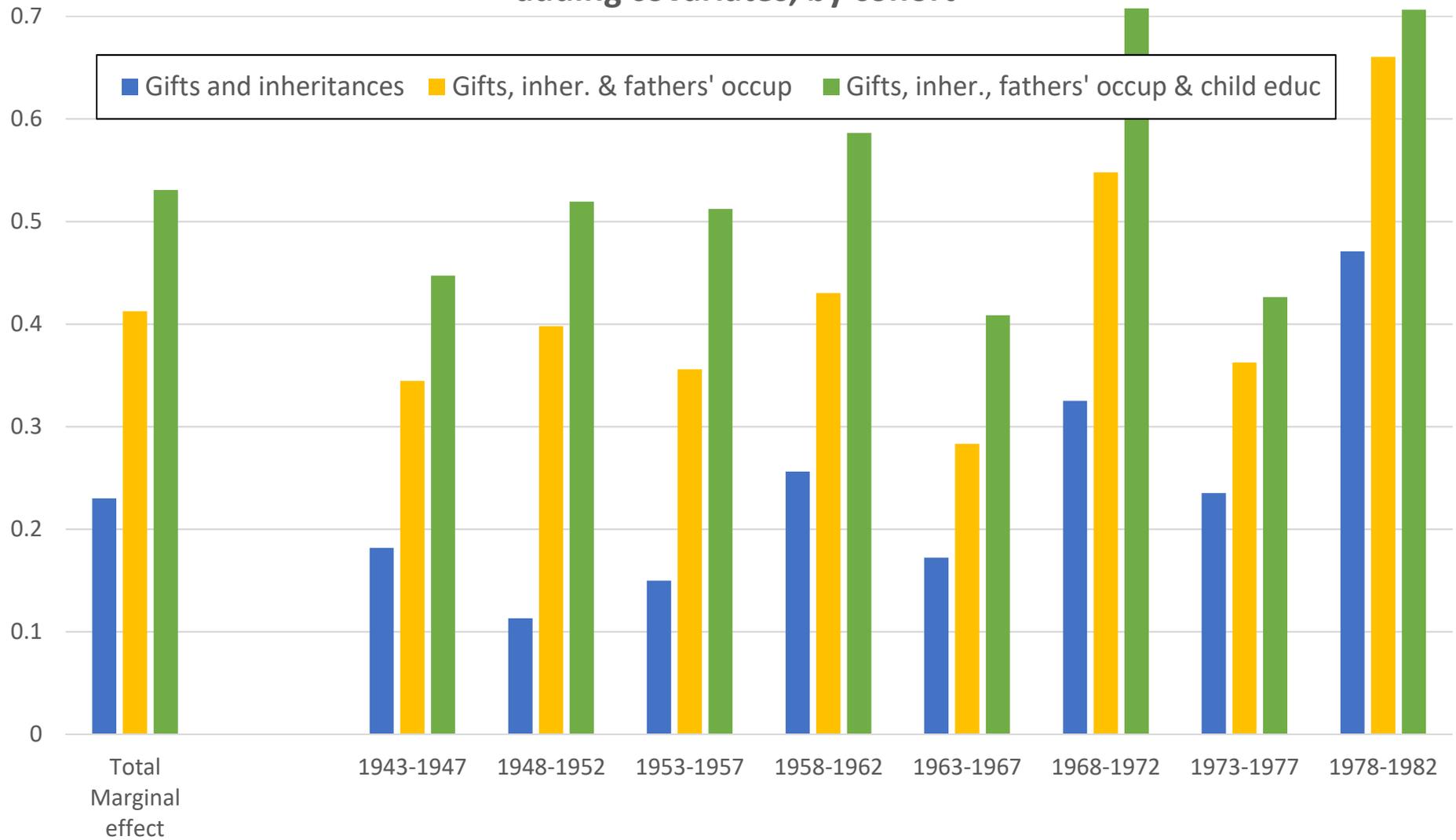
**Figure 9. Probability to belong to top wealth groups, by parental wealth groups: Deviation from the probability when perfect intergenerational mobility (% of probability when perfect mobility), 35-44 years old**



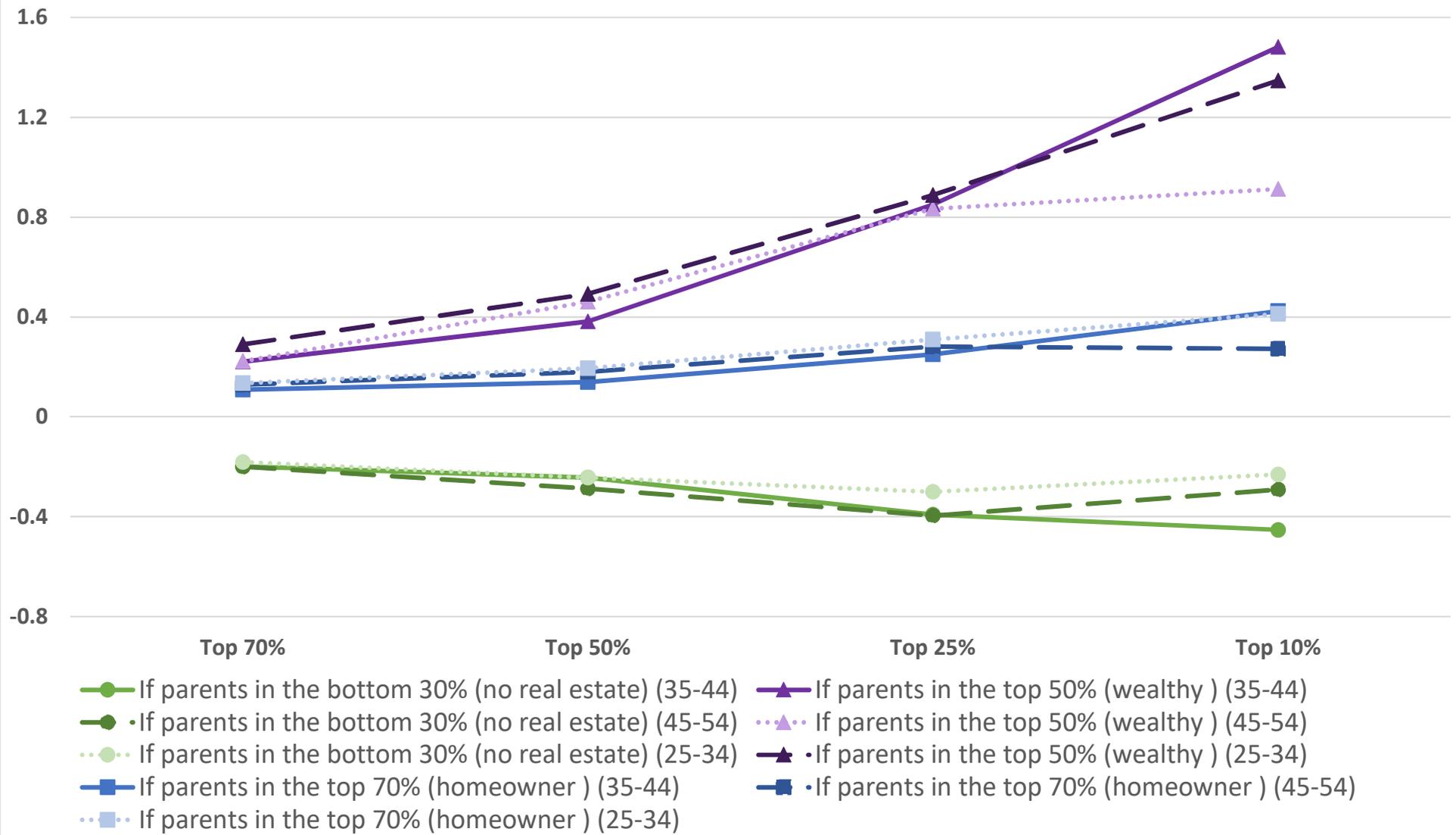
Note: Deviations are computed as the probability of being in a given top wealth group conditional on having parents in the top or bottom wealth groups minus the probability in a situation of perfect intergenerational mobility (and expressed in % of this probability). For instance, for the top70%, we compute for children of parents in the bottom wealth group:  $\text{Proba}(\text{Top70\%} | \text{parents in bottom wealth group}) / 0.70 - 1$ .

Lecture: Children with parents in the top 50% wealth group have a probability of being in the top 10% wealth group that is 150% higher than the probability that would prevail in case of perfect mobility. When having parents in the bottom 30%, this probability is 45% lower than the probability when perfect mobility

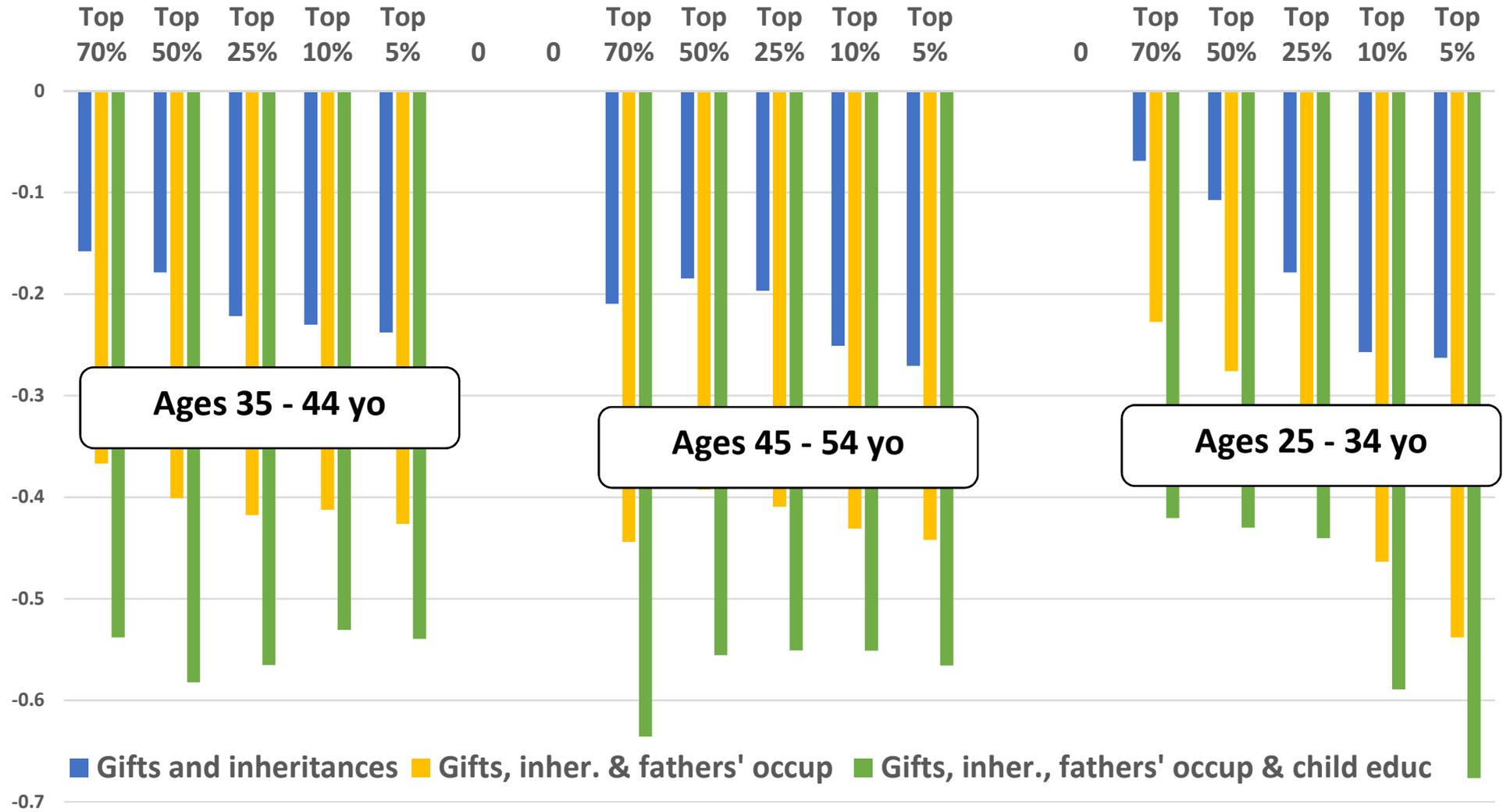
**Figure 10. Decrease in marginal effects of parental wealth (parents in the top 50% versus bottom 30%) to belong to the top 10% wealth group when adding covariates, by cohort**



**Figure 11. Probability to belong to top wealth groups, parents in the top 50% vs bottom 30%: Deviation from the probability when perfect intergenerational mobility, by age groups (% of probability when perfect mobility)**



**Figure 12. Decrease in intergenerational wealth correlation when adding covariates**



Note: decrease in the marginal effect of having parents in the top 50% wealth group versus bottom 30%.

## APPENDIX

### A. Data

**A.1. 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 spouse.

**A.2. Education attainment:** It is the highest degree completed at the time of the survey interview. The question is asked to the reference person and his spouse. Measure of education attainment based on the standard French classification. We use the following translation for French diploma (see [https://publication.enseignementsup-recherche.gouv.fr/eesr/10EN/EESR10EN\\_Annexe\\_8-levels\\_of\\_educational\\_attainment.php](https://publication.enseignementsup-recherche.gouv.fr/eesr/10EN/EESR10EN_Annexe_8-levels_of_educational_attainment.php))

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

### A.3. 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 account for 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 the potential partner), their receipt of gift or inheritance, the occupation of the father of the reference person as well as information about whether parents of the members of the household were either homeowner or with real estate other than main residence.

Appendix Table A1 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 of an incorrect imputation of our top wealth groups. It is also the case for the top 50% that is fully captured for both years. The top 25% is rather well approximated by the brackets from the 1992 survey (which allow to distinguish the top 20%) and a bit less by the 1986 survey (that distinguishes the top 10% and the top 34%).

## **B. Child's wealth rank computations from Boserup et al 2017a and Adermon et al 2018**

For Denmark, Boserup et al (2017a)<sup>1</sup> find that  $E(\text{child wealth rank}) = 37 + 0.27 * \text{Parental wealth rank}$ .

Then the average child wealth rank is 41.1 for children born between 1960 and 1965 with parents in the bottom 30% and 56.1 with parents in the top 50%.<sup>2</sup> Consequently, for children born to parents in the bottom 30% it is roughly the same average wealth rank than in France for the cohort 1973-1977 but the effect of having parents in the top 50% turns out to be higher in France than in Denmark.

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<sup>1</sup> See their figure 1.

<sup>2</sup>  $E(\text{child wealth rank} \mid \text{parental wealth rank} \in \text{Bottom } 30\%)$

$$= \frac{1}{29} \sum_{j=1}^{j=29} E(\text{child wealth rank} \mid \text{parental wealth rank} = j)$$

$$= 37 + \frac{1}{29} \sum_{j=1}^{j=29} 0.27j = 37 + \frac{435}{29} * 0.27 = 41.05$$

and

$$E(\text{child wealth rank} \mid \text{parental wealth rank} \in \text{Top } 50\%)$$

$$= 37 + \frac{1}{50} \sum_{j=50}^{j=100} 0.27j = 37 + \frac{3825}{50} * 0.27 = 56.1. \text{ Note that the child average rank is } 54.8 \text{ for parents in the top } 70\%.$$

Regarding Sweden, Adermon et al (2018)<sup>3</sup> find that for the generation of children born in 1928:  $E(\text{child wealth rank}) = 37.3 + 0.296 * \text{Parental wealth rank}$ . So, for children with parents in the bottom 30%, the average wealth rank is 41.7 which is lower than for the French cohort 1943-1947 and 59.5 with parents in the top 50% which is about the same than for this French cohort, showing that the gap was higher in Sweden.

For children born in 1957, they find:  $E(\text{child wealth rank}) = 28.6 + 0.391 \text{ Parental wealth rank}$ , 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%.

### **C. Appendix Tables and Figures**

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<sup>3</sup> See their figures 1a and 1b and table 3.

## Appendix Tables & Figures

### Appendix Tables

[Table A.1. Wealth brackets for 1986 and 1992 surveys](#)

[Table A.2a. Marginal effect of having parents in the top50% \(wealthy\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top70% wealth group](#)

[Table A.2b. Marginal effect of having parents in the top50% \(wealthy\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top50% wealth group](#)

[Table A.2c. Marginal effect of having parents in the top50% \(wealthy\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top25% wealth group](#)

[Table A.2d. Marginal effect of having parents in the top50% \(wealthy\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top10% wealth group](#)

[Table A3.a. Marginal effect of having parents in the top70% \(homeowners\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top70% wealth group](#)

[Table A.3b. Marginal effect of having parents in the top70% \(homeowners\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top50% wealth group](#)

[Table A.3c. Marginal effect of having parents in the top70% \(homeowners\) versus parents in the bottom 30% \(no real estate\) on the propability to belong to the top25 wealth group](#)  
[estate\) on the propability to belong to the top10% wealth group](#)

### Appendix Figures

Figure A.1. Mothers'age at childbirth, by year of birth

Figure A.2a. Real estate holding within the bottom 30%, by cohort

Figure A.2b. Real estate holding within the p30-p49, by cohort

Figure A.2c. Real estate holding within the p50-p89, by cohort

Figure A.2d. Real estate holding within the p90-p94, by cohort

Figure A.2e. Real estate holding within the top5%, by cohort

Figure A.3. Probability to be in the bottoms 30 and 50 when having no real estate, by cohort

Figure A.4. Wealth groups when no real estate, by cohort

Figure A.5. Probability to be in the top 70% when homeowner (with or without other real estate), by cohort

Figure A.6. Probability to be in some top wealth groups when homeowner (with or without other real estate), by

Figure A.7. Wealth groups when homeowner, by cohort

Figure A.8. Probability to be in some top wealth groups when homeowner without other real estate, by cohort

Figure A.9. Wealth groups when homeowner with no real estate, by cohort

Figure A.10. Probability to be in the top 75 when homeowner with no other real estate, by cohort

Figure A.11. Probability to be in the top 50 when homeowner with other real estate ("wealthy"), by cohort

Figure A.12. Wealth groups when homeowner with other real estate ("wealthy"), by cohort

Figure A.13a. Wealth position by real estate holding category: Germany, Spain, Italy and United States

Figure A.13b. Wealth position by real estate holding category: Germany, Spain, Italy and United States

Figure A.13c. Wealth position by real estate holding category: Germany, Spain, Italy and United States

Figure A.14. Decrease in marginal effects of parental wealth (parents in the top 70% versus bottom 30%) to belong to

Figure A.15. Decrease in intergenerational wealth correlation when adding covariates

**Table A.1. 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%

**Table A.2a. Marginal effect of having parents in the top50% (wealthy) versus parents in the bottom 30% (no real estate) on the propability to belong to the top70% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 70%							
	Baseline	Additional controls			(2)	(3)	(4)	
	(1)	(2)	(3)	(4)				
<b>Wealthy parents (Top 50% parents)</b>	0.23 ***	0.19 ***	0.15 ***	0.11 ***	-16%	-37%	-54%	
<b>Wealthy parents at cohort</b>								
1943-1947	0.16 ***	0.13 ***	0.08	0.04	-21%	-51%	-74%	
1948-1952	0.17 ***	0.16 ***	0.12 ***	0.08 **	-6%	-30%	-52%	
1953-1957	0.22 ***	0.21 ***	0.17 ***	0.14 ***	-6%	-23%	-37%	
1958-1962	0.22 ***	0.17 ***	0.12 ***	0.08 **	-20%	-46%	-64%	
1963-1967	0.25 ***	0.22 ***	0.17 ***	0.1 ***	-13%	-34%	-59%	
1968-1972	0.25 ***	0.19 ***	0.13 ***	0.09 **	-24%	-47%	-65%	
1973-1977	0.29 ***	0.24 ***	0.2 ***	0.17 ***	-17%	-31%	-43%	
1978-1982	0.28 ***	0.21 ***	0.15 ***	0.11 **	-25%	-46%	-59%	
<b>Obs.</b>	10 173	10 173	10 173	10 173	Mean	-16%	-39%	-57%
<b>Additional controls:</b>								
* 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				

**Table A.2b. Marginal effect of having parents in the top50% (wealthy) versus parents in the bottom 30% (no real estate) on the propability to belong to the top50% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 50%				(2)	(3)	(4)	
	Baseline	Additional controls						
	(1)	(2)	(3)	(4)				
<b>Wealthy parents (Top 50% parents)</b>	0.28 ***	0.23 ***	0.17 ***	0.12 ***	-18%	-40%	-58%	
<b>Wealthy parents at cohort</b>								
1943-1947	0.2 ***	0.17 ***	0.12 **	0.08	-18%	-40%	-59%	
1948-1952	0.23 ***	0.22 ***	0.16 ***	0.13 ***	-6%	-30%	-45%	
1953-1957	0.22 ***	0.2 ***	0.15 ***	0.1 ***	-9%	-32%	-53%	
1958-1962	0.33 ***	0.26 ***	0.19 ***	0.13 ***	-19%	-41%	-61%	
1963-1967	0.32 ***	0.27 ***	0.2 ***	0.12 ***	-16%	-37%	-61%	
1968-1972	0.29 ***	0.21 ***	0.15 ***	0.1 **	-28%	-46%	-67%	
1973-1977	0.31 ***	0.26 ***	0.2 ***	0.16 ***	-16%	-37%	-49%	
1978-1982	0.32 ***	0.21 ***	0.11 **	0.07	-35%	-64%	-78%	
<b>Obs.</b>	10 173	10 173	10 173	10 173	Mean	-18%	-41%	-59%
<b>Additional controls:</b>								
* 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				

Note: individuals aged 35 to 44 years old.

**Table A.2c. Marginal effect of having parents in the top50% (wealthy) versus parents in the bottom 30% (no real estate) on the propability to belong to the top25% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 25%				(2)	(3)	(4)	
	Baseline	Additional controls						
	(1)	(2)	(3)	(4)				
<b>Wealthy parents (Top 50% parents)</b>	0.25 ***	0.2 ***	0.15 ***	0.11 ***	-22%	-42%	-57%	
<b>Wealthy parents at cohort</b>								
1943-1947	0.16 ***	0.12 ***	0.08	0.06	-24%	-52%	-64%	
1948-1952	0.18 ***	0.17 ***	0.12 ***	0.09 ***	-7%	-35%	-49%	
1953-1957	0.25 ***	0.22 ***	0.17 ***	0.13 ***	-12%	-31%	-46%	
1958-1962	0.25 ***	0.15 ***	0.1 ***	0.04	-39%	-60%	-84%	
1963-1967	0.3 ***	0.26 ***	0.22 ***	0.15 ***	-15%	-29%	-49%	
1968-1972	0.27 ***	0.2 ***	0.17 ***	0.12 ***	-25%	-35%	-53%	
1973-1977	0.31 ***	0.24 ***	0.17 ***	0.15 ***	-24%	-45%	-53%	
1978-1982	0.28 ***	0.17 ***	0.11 **	0.09 *	-38%	-62%	-69%	
<b>Obs.</b>	10 173	10 173	10 173	10 173	Mean	-23%	-44%	-58%
<b>Additional controls:</b>								
* 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				

Note: individuals aged 35 to 44 years old.

**Table A.2d. Marginal effect of having parents in the top50% (wealthy) versus parents in the bottom 30% (no real estate) on the propability to belong to the top10% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 10%							
	Baseline	Additional controls			(2)	(3)	(4)	
	(1)	(2)	(3)	(4)				
<b>Wealthy parents (Top 50% parents)</b>	0.15 ***	0.12 ***	0.09 ***	0.07 ***	-23%	-41%	-53%	
<b>Wealthy parents at cohort</b>								
1943-1947	0.1 ***	0.08 **	0.07 *	0.05	-18%	-34%	-45%	
1948-1952	0.11 ***	0.1 ***	0.07 ***	0.05 **	-11%	-40%	-52%	
1953-1957	0.16 ***	0.13 ***	0.1 ***	0.08 ***	-15%	-36%	-51%	
1958-1962	0.18 ***	0.14 ***	0.1 ***	0.08 ***	-26%	-43%	-59%	
1963-1967	0.18 ***	0.15 ***	0.13 ***	0.11 ***	-17%	-28%	-41%	
1968-1972	0.14 ***	0.1 ***	0.07 ***	0.04 *	-33%	-55%	-71%	
1973-1977	0.19 ***	0.15 ***	0.12 ***	0.11 ***	-24%	-36%	-43%	
1978-1982	0.15 ***	0.08 **	0.05	0.04	-47%	-66%	-71%	
<b>Obs.</b>	10 173	10 173	10 173	10 173	<b>Mean</b>	-24%	-42%	-54%
<b>Additional controls:</b>								
* 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				

Note: individuals aged 35 to 44 years old.

**Table A3.a. Marginal effect of having parents in the top70% (homeowners) versus parents in the bottom 30% (no real estate) on the propability to belong to the top70% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 70%							
	Baseline	Additional controls			(2)	(3)	(4)	
	(1)	(2)	(3)	(4)				
<b>homeowner parents (Top 70% parent homeowner parents at cohort</b>	0.18 ***	0.16 ***	0.13 ***	0.11 ***	-11%	-26%	-39%	
1943-1947	0.14 ***	0.12 ***	0.08 **	0.06 *	-18%	-40%	-56%	
1948-1952	0.14 ***	0.13 ***	0.11 ***	0.08 ***	-6%	-24%	-43%	
1953-1957	0.16 ***	0.15 ***	0.13 ***	0.11 ***	-6%	-18%	-31%	
1958-1962	0.14 ***	0.11 ***	0.09 ***	0.07 ***	-16%	-30%	-51%	
1963-1967	0.18 ***	0.15 ***	0.12 ***	0.1 ***	-13%	-30%	-46%	
1968-1972	0.2 ***	0.17 ***	0.14 ***	0.11 ***	-15%	-29%	-44%	
1973-1977	0.21 ***	0.19 ***	0.16 ***	0.14 ***	-11%	-24%	-36%	
1978-1982	0.21 ***	0.19 ***	0.17 ***	0.17 ***	-10%	-18%	-20%	
<b>Obs.</b>	19 892	19 892	19 892	19 892	Mean	-12%	-27%	-41%
<b>Additional controls:</b>								
* 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				

Note: individuals aged 35 to 44 years old.

**Table A.3b. Marginal effect of having parents in the top70% (homeowners) versus parents in the bottom 30% (no real estate) on the propability to belong to the top50% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 50%							
	Baseline	Additional controls						
	(1)	(2)	(3)	(4)	(2)	(3)	(4)	
<b>homeowner parents (Top 70% parent homeowner parents at cohort</b>	0.19 ***	0.15 ***	0.12 ***	0.09 ***	-16%	-34%	-49%	
1943-1947	0.13 ***	0.1 ***	0.06	0.03	-24%	-55%	-74%	
1948-1952	0.17 ***	0.16 ***	0.12 ***	0.1 ***	-8%	-29%	-43%	
1953-1957	0.14 ***	0.12 ***	0.09 ***	0.07 ***	-12%	-33%	-54%	
1958-1962	0.17 ***	0.14 ***	0.11 ***	0.08 ***	-19%	-36%	-53%	
1963-1967	0.2 ***	0.17 ***	0.14 ***	0.1 ***	-14%	-31%	-49%	
1968-1972	0.2 ***	0.16 ***	0.13 ***	0.09 ***	-19%	-35%	-53%	
1973-1977	0.19 ***	0.16 ***	0.12 ***	0.09 ***	-18%	-36%	-51%	
1978-1982	0.22 ***	0.19 ***	0.16 ***	0.15 ***	-16%	-29%	-31%	
<b>Obs.</b>	19 892	19 892	19 892	19 892	<b>Mean</b>	-16%	-35%	-51%
<b>Additional controls:</b>								
* 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				

Note: individuals aged 35 to 44 years old.

**Table A.3c. Marginal effect of having parents in the top70% (homeowners) versus parents in the bottom 30% (no real estate) on the propability to belong to the top25% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 25%				(2)	(3)	(4)	
	Baseline	Additional controls						
	(1)	(2)	(3)	(4)				
<b>homeowner parents (Top 70% parent homeowner parents at cohort</b>	0.14 ***	0.11 ***	0.08 ***	0.06 ***	-22%	-43%	-58%	
1943-1947	0.08 **	0.05 *	0.01	0	-29%	-83%	-103%	
1948-1952	0.12 ***	0.11 ***	0.07 ***	0.06 ***	-10%	-40%	-52%	
1953-1957	0.14 ***	0.12 ***	0.09 ***	0.07 ***	-13%	-33%	-51%	
1958-1962	0.11 ***	0.07 ***	0.05 **	0.02	-35%	-55%	-81%	
1963-1967	0.15 ***	0.12 ***	0.1 ***	0.07 ***	-20%	-36%	-53%	
1968-1972	0.14 ***	0.1 ***	0.08 ***	0.05 ***	-26%	-45%	-62%	
1973-1977	0.16 ***	0.12 ***	0.09 ***	0.07 ***	-24%	-45%	-57%	
1978-1982	0.14 ***	0.11 ***	0.08 ***	0.08 ***	-25%	-42%	-42%	
<b>Obs.</b>	19 892	19 892	19 892	19 892	Mean	-23%	-47%	-63%
<b>Additional controls:</b>								
* 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				

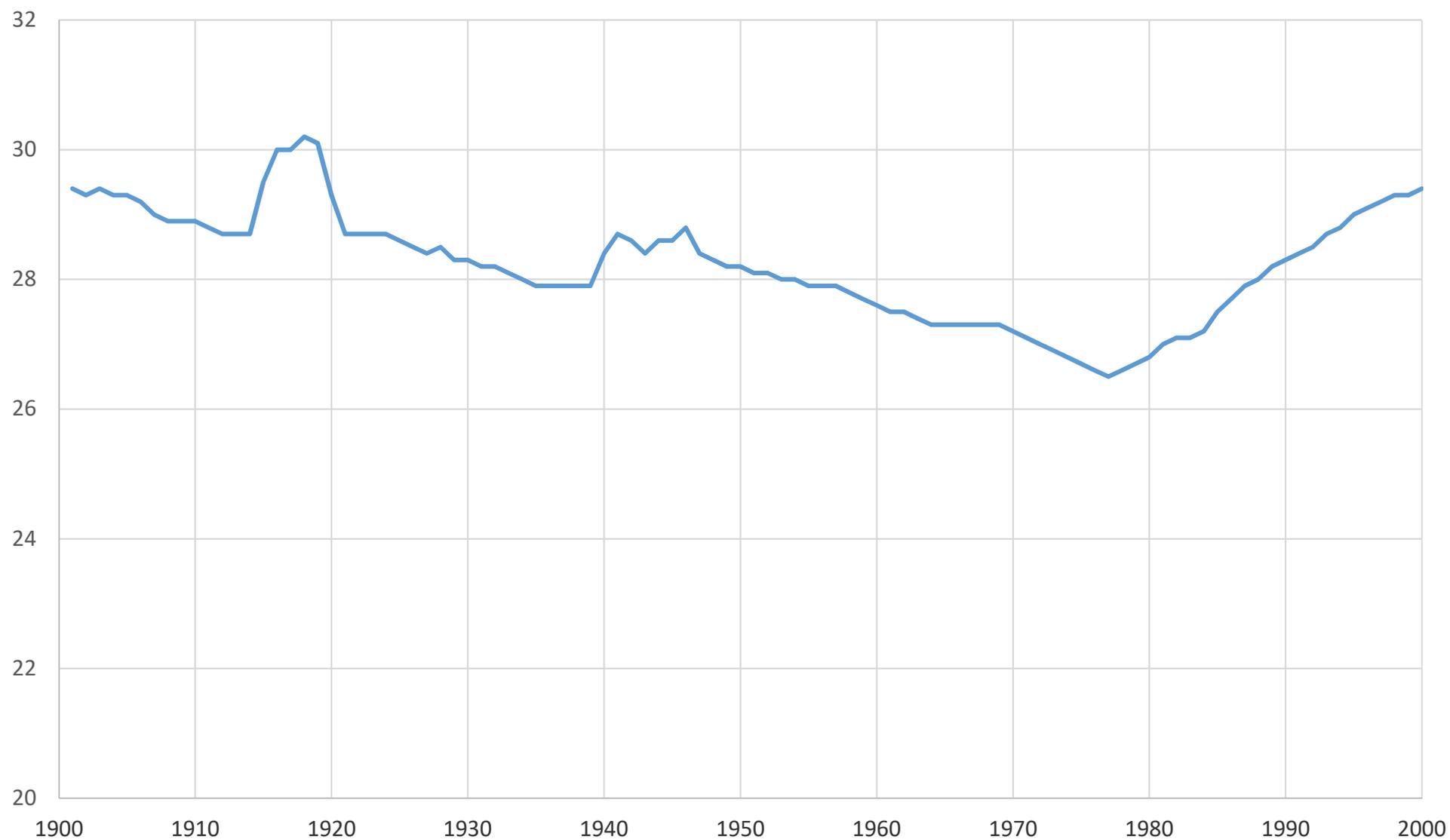
Note: individuals aged 35 to 44 years old.

**Table A.3d. Marginal effect of having parents in the top70% (homeowners) versus parents in the bottom 30% (no real estate) on the propability to belong to the top10% wealth group**

	Marginal effects				Reduction between before and after adding controls			
	Top 10%							
	Baseline	Additional controls			(2)	(3)	(4)	
	(1)	(2)	(3)	(4)				
<b>homeowner parents (Top 70% parent homeowner parents at cohort</b>	0.07 ***	0.06 ***	0.04 ***	0.03 ***	-22%	-46%	-58%	
1943-1947	0.06 ***	0.06 ***	0.04 *	0.03	-10%	-40%	-54%	
1948-1952	0.06 ***	0.05 ***	0.03 **	0.02 *	-14%	-52%	-63%	
1953-1957	0.08 ***	0.07 ***	0.05 ***	0.04 ***	-15%	-39%	-56%	
1958-1962	0.08 ***	0.06 ***	0.04 ***	0.02 *	-24%	-49%	-68%	
1963-1967	0.08 ***	0.06 ***	0.05 ***	0.04 ***	-23%	-42%	-54%	
1968-1972	0.06 ***	0.04 ***	0.03 **	0.02	-33%	-58%	-76%	
1973-1977	0.09 ***	0.07 ***	0.05 ***	0.04 ***	-24%	-42%	-51%	
1978-1982	0.06 ***	0.05 **	0.03 *	0.04 *	-24%	-47%	-44%	
<b>Obs.</b>	19 892	19 892	19 892	19 892	Mean	-21%	-46%	-58%
<b>Additional controls:</b>								
* 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				

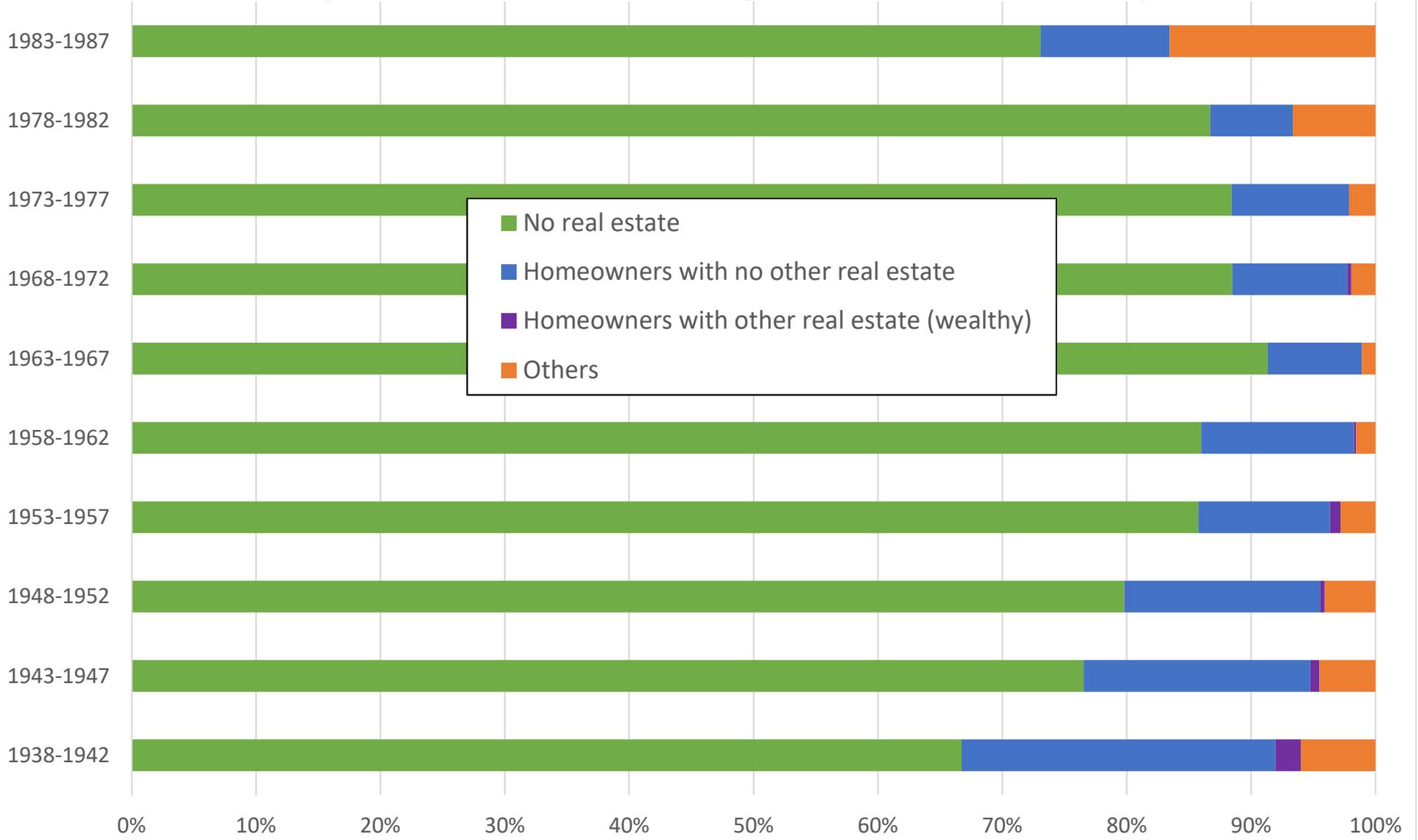
Note: individuals aged 35 to 44 years old.

**Figure A.1. Mothers'age at childbirth, by year of birth**



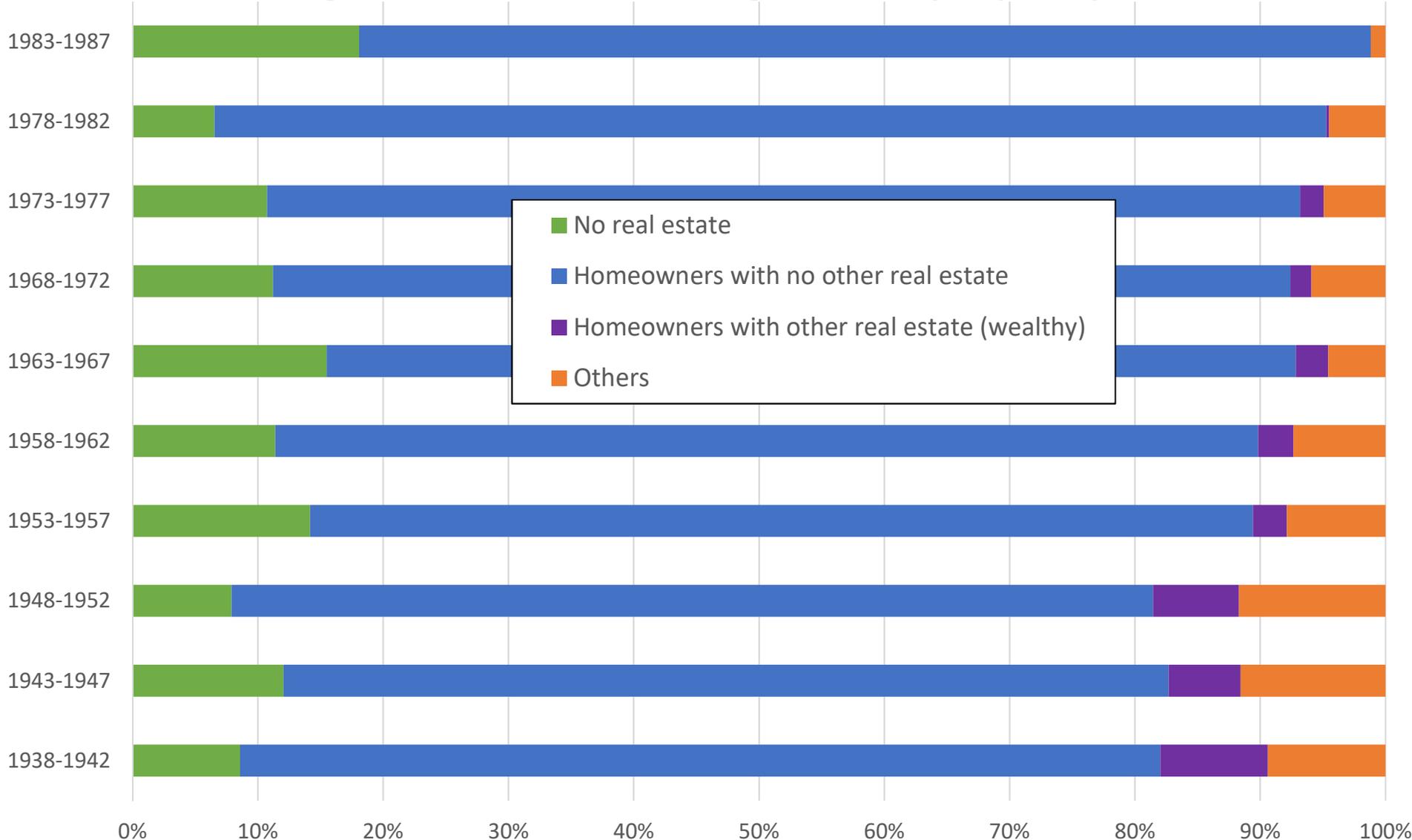
Source: Daguet F. (2000, 2002)

**Figure A.2a. Real estate holding within the bottom 30%, by cohort**



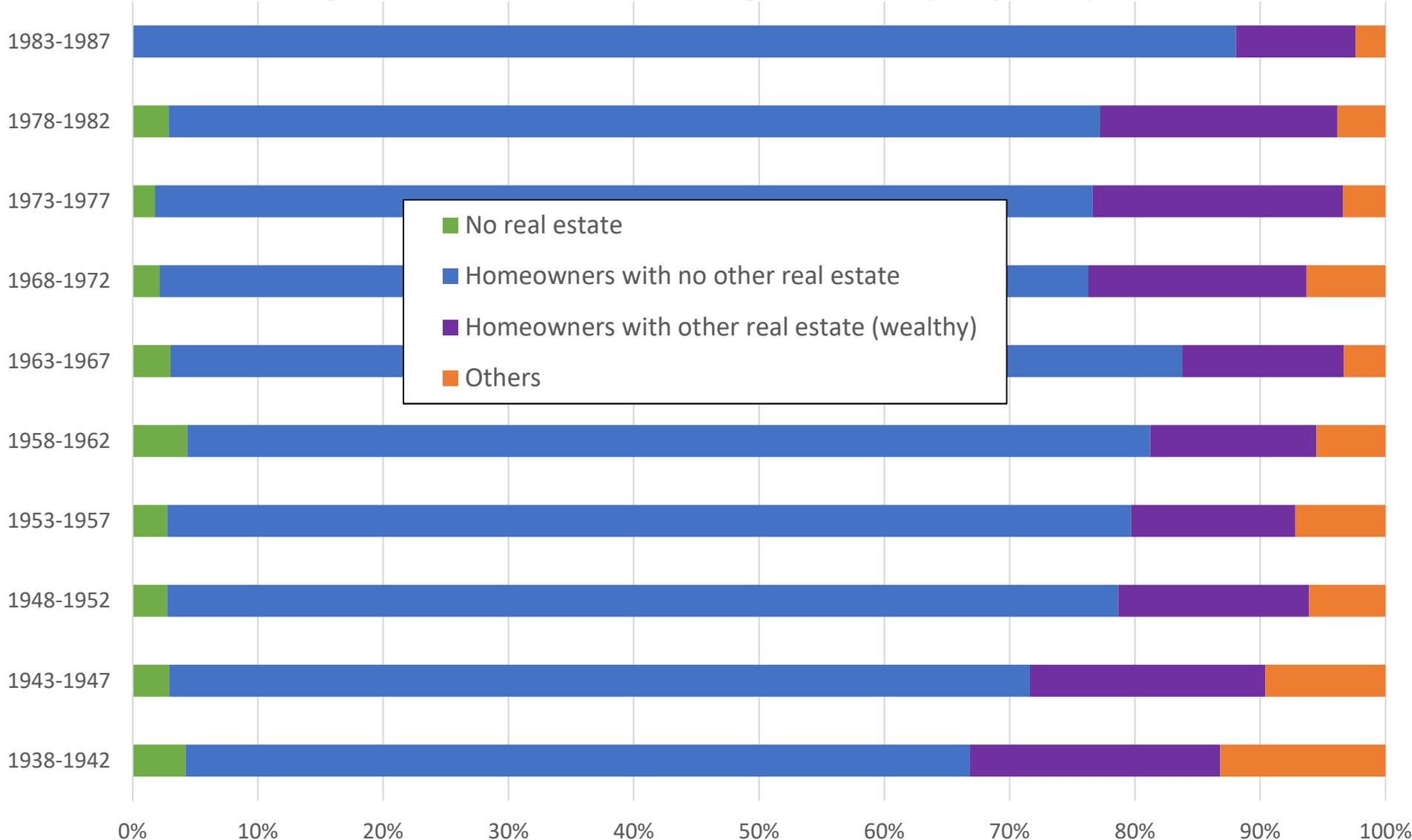
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

Figure A.2b. Real estate holding within the p30-p49, by cohort



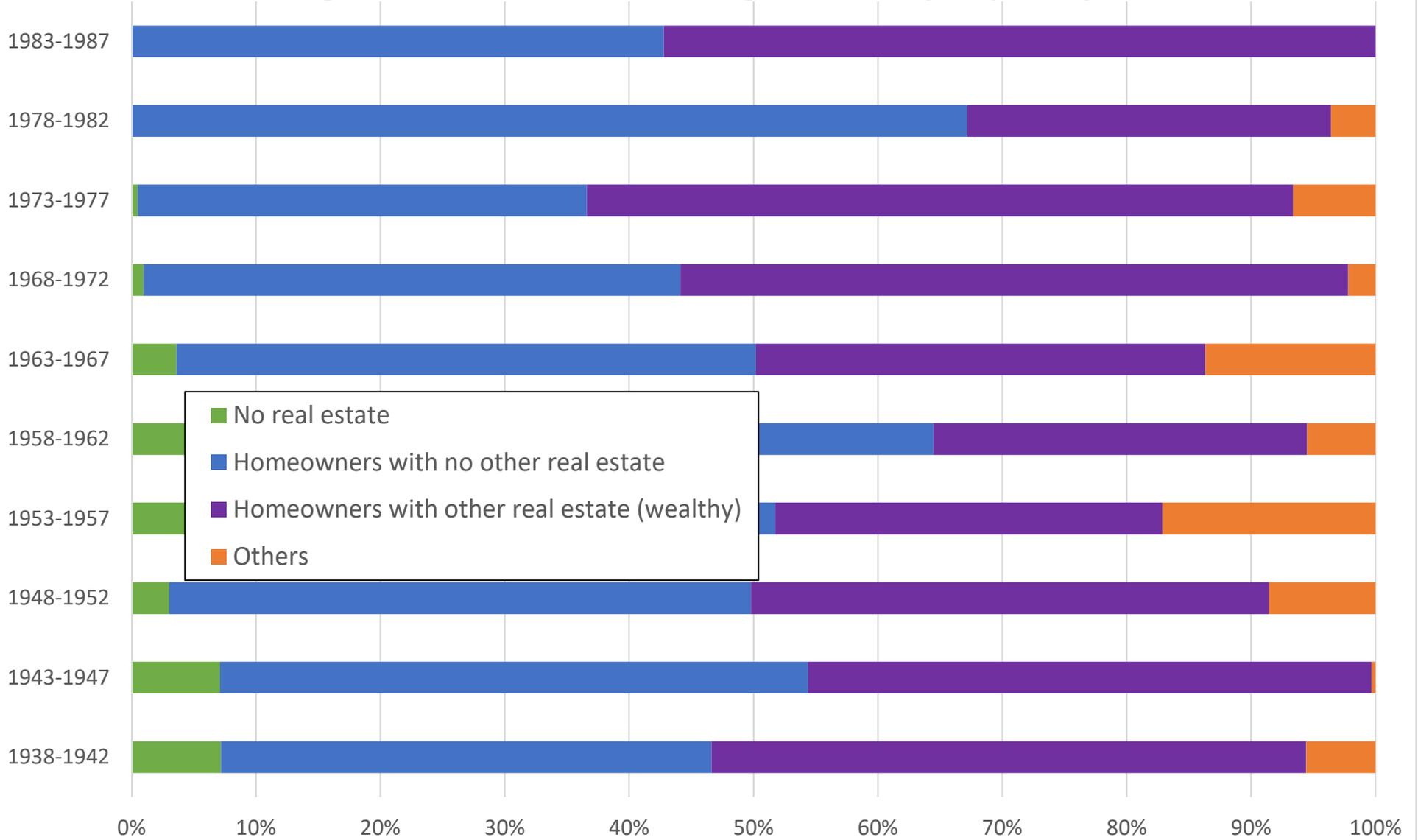
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

Figure A.2c. Real estate holding within the p50-p89, by cohort



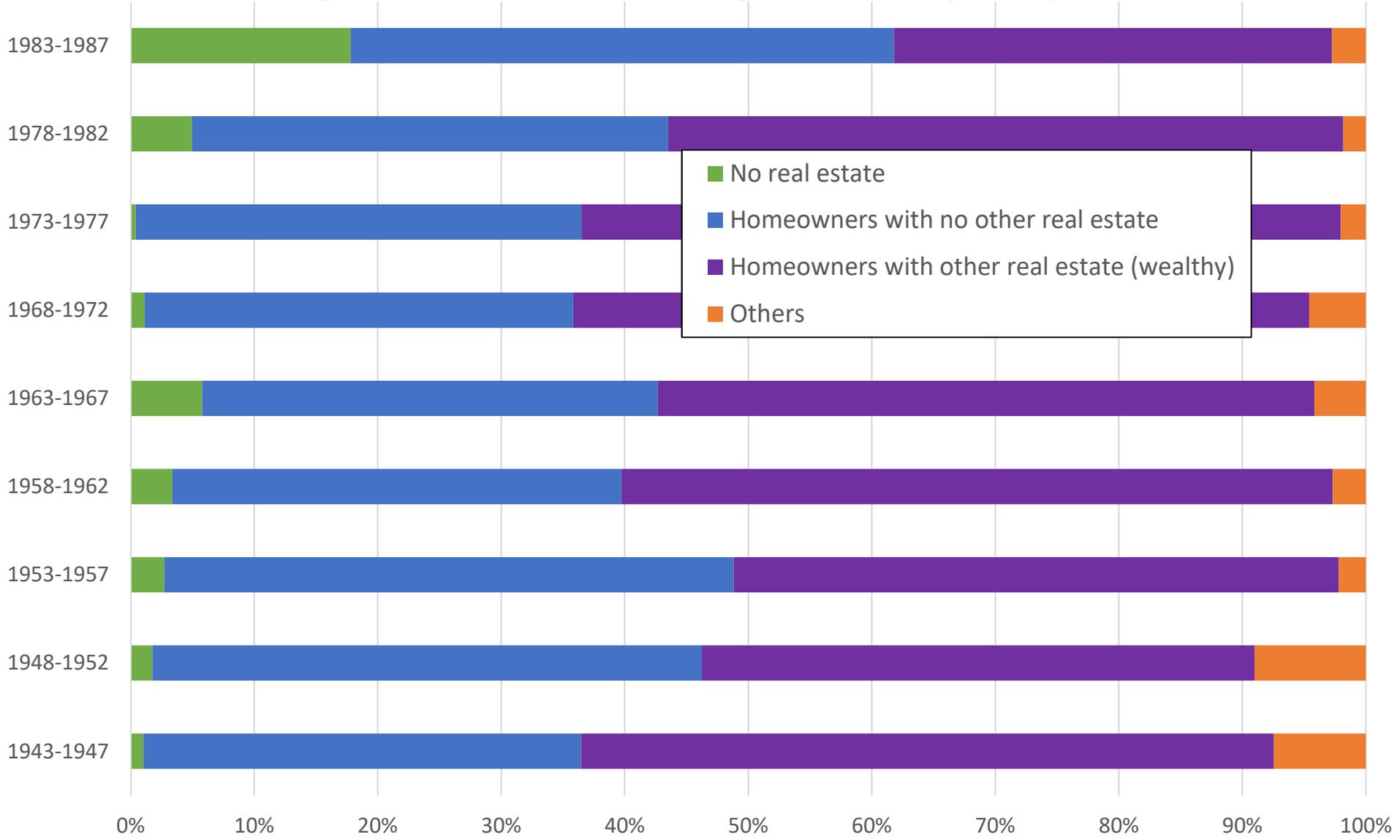
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

Figure A.2d. Real estate holding within the p90-p94, by cohort



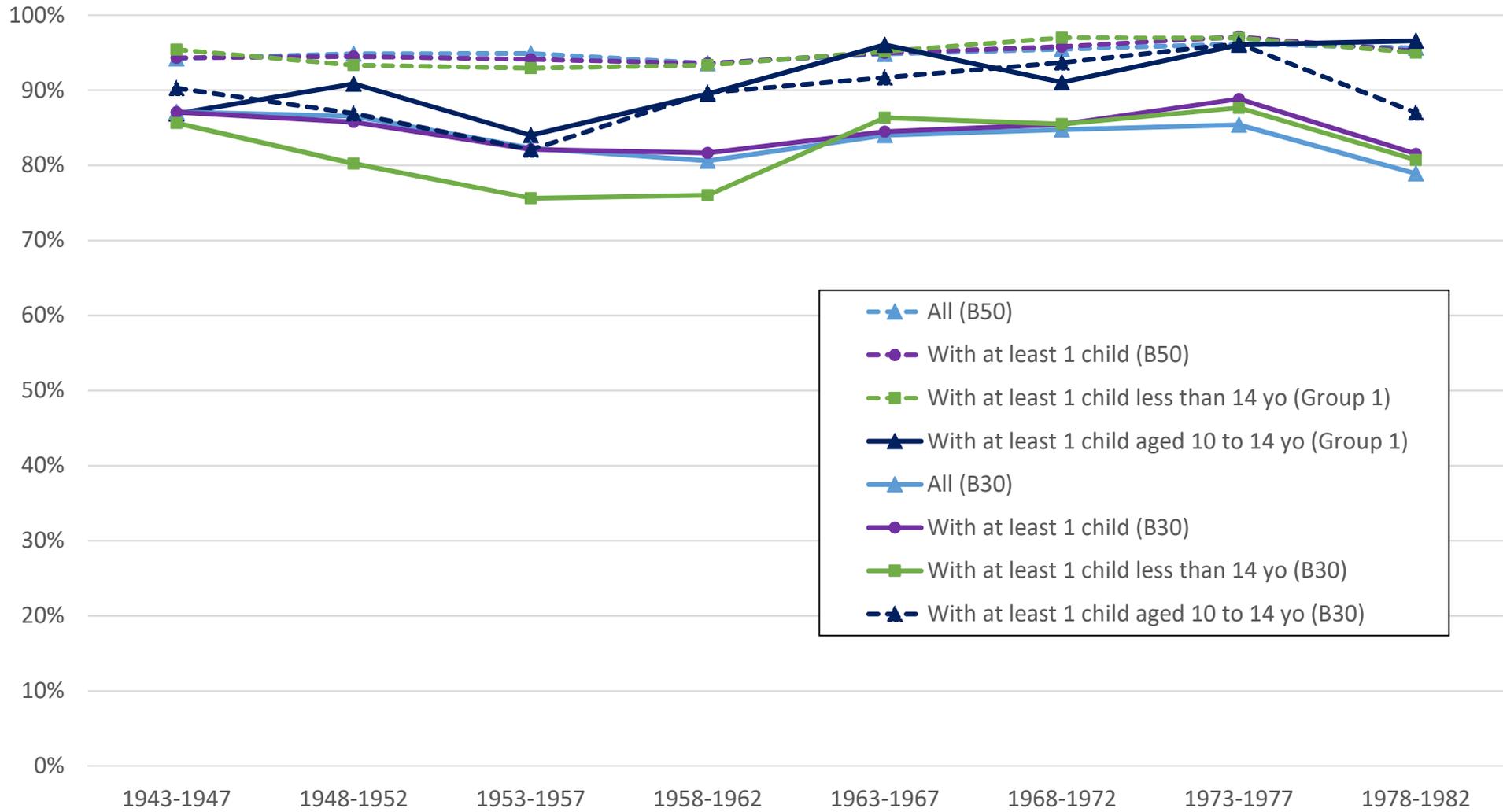
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

Figure A.2e. Real estate holding within the top5%, by cohort



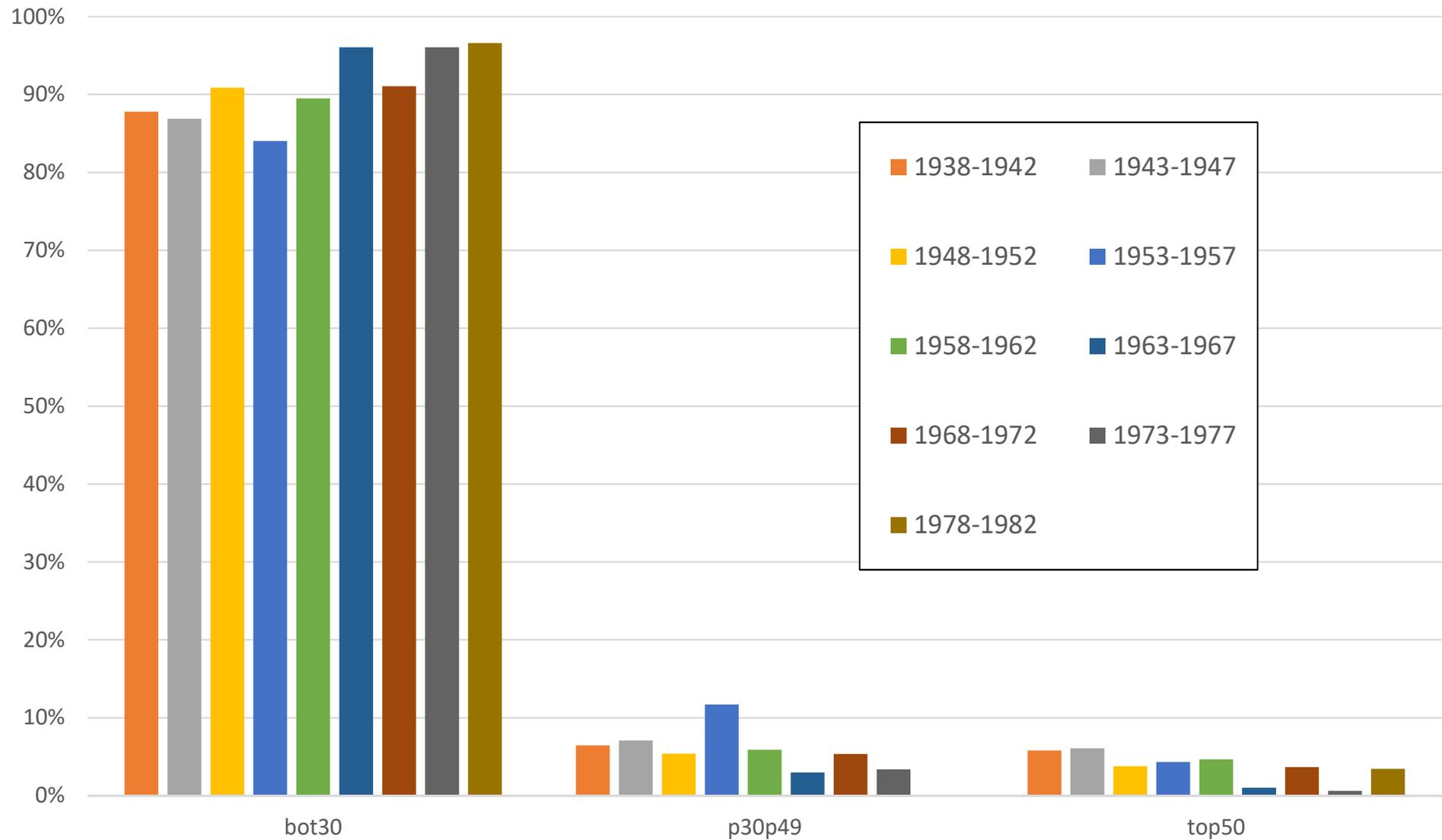
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year old woman.

**Figure A.3. Probability to be in the bottoms 30 and 50 when having no real estate, by cohort**



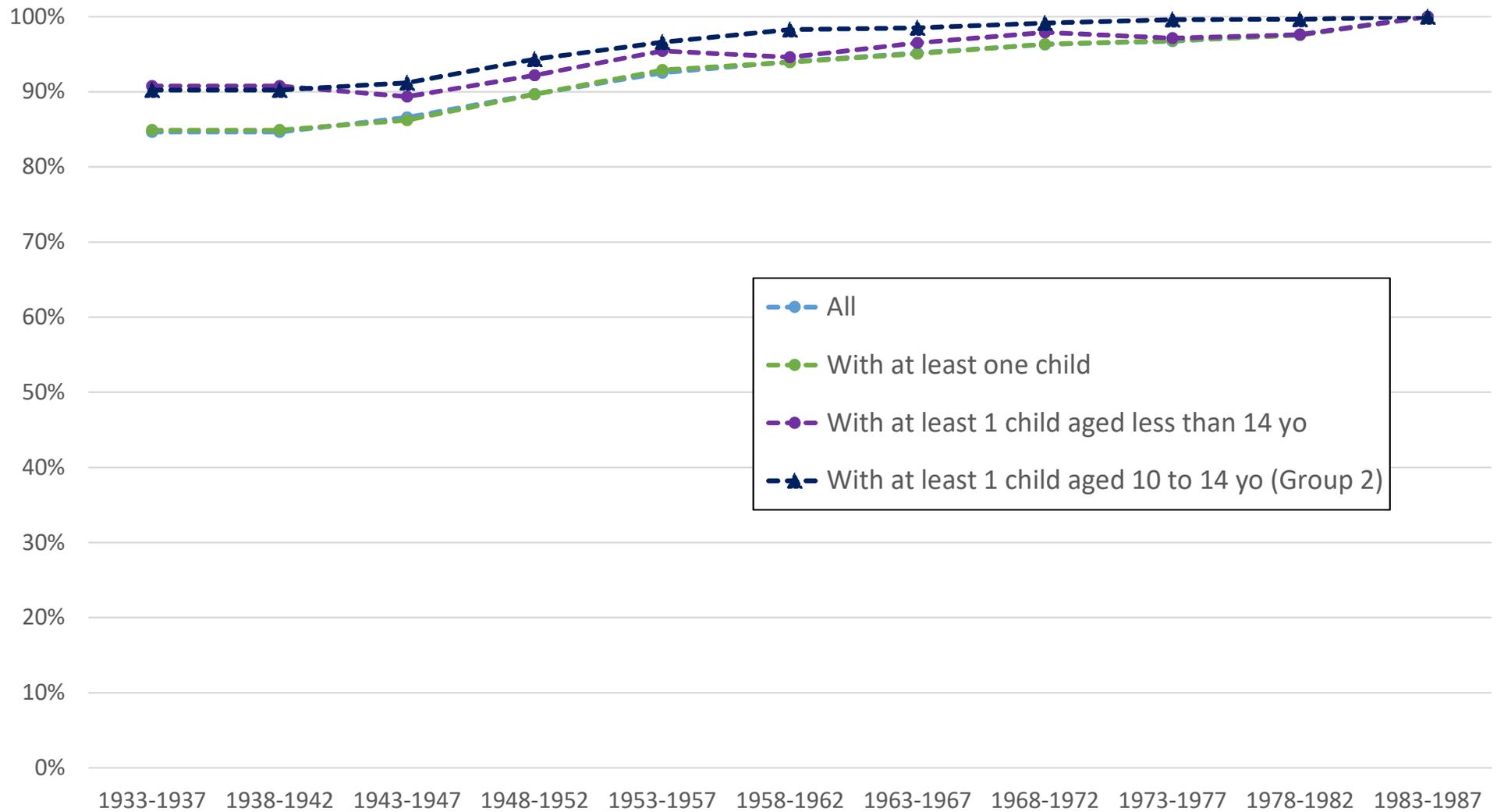
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 30 to 54 year old woman.

Figure A.4. Wealth groups when no real estate, by cohort



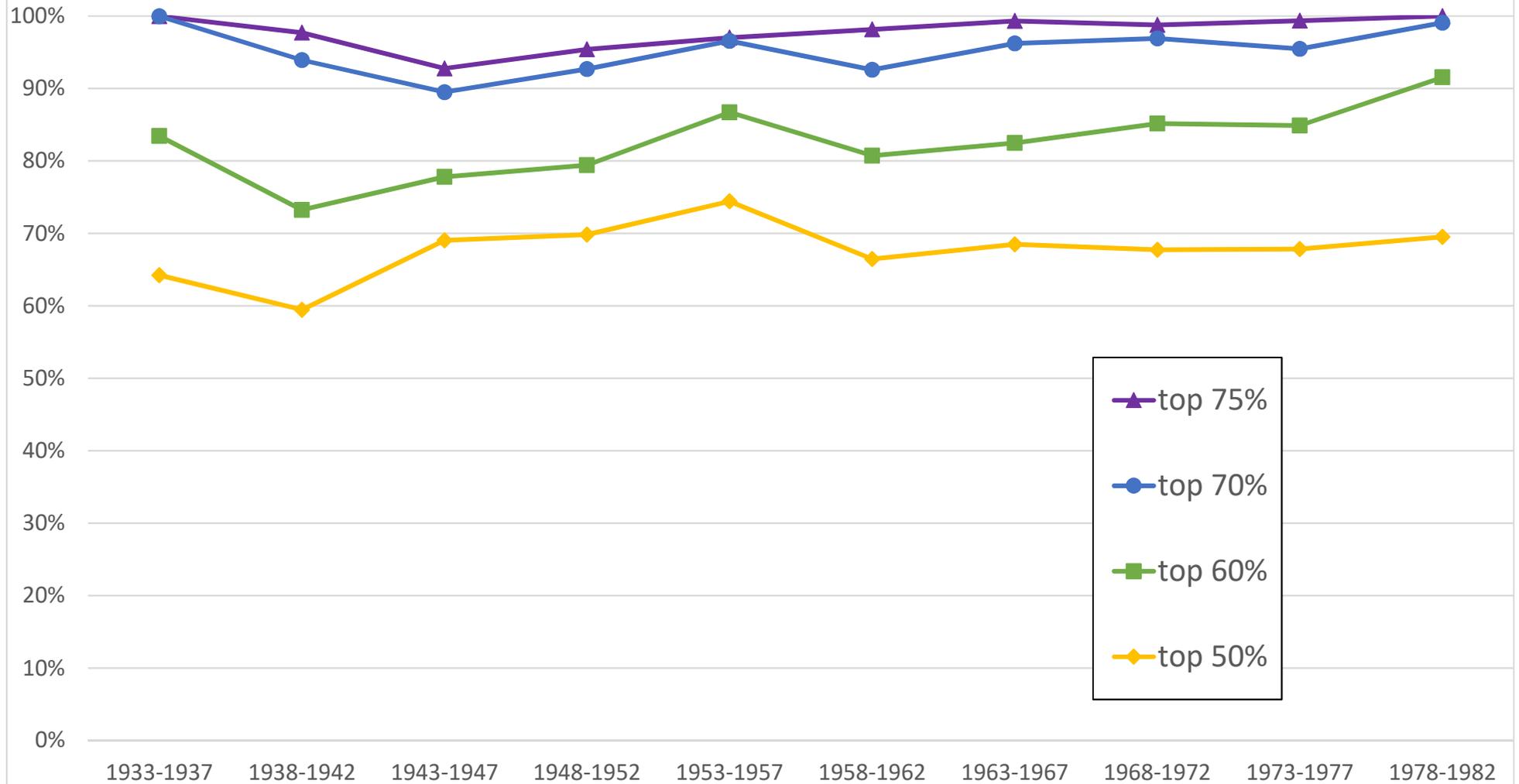
Note: Individuals in households with at least one child aged 10 to 14 yo and a woman aged from 35 to 44 yo. Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year-old woman.

Figure A.5. Probability to be in the top 70% when homeowner (with or without other real estate), by cohort



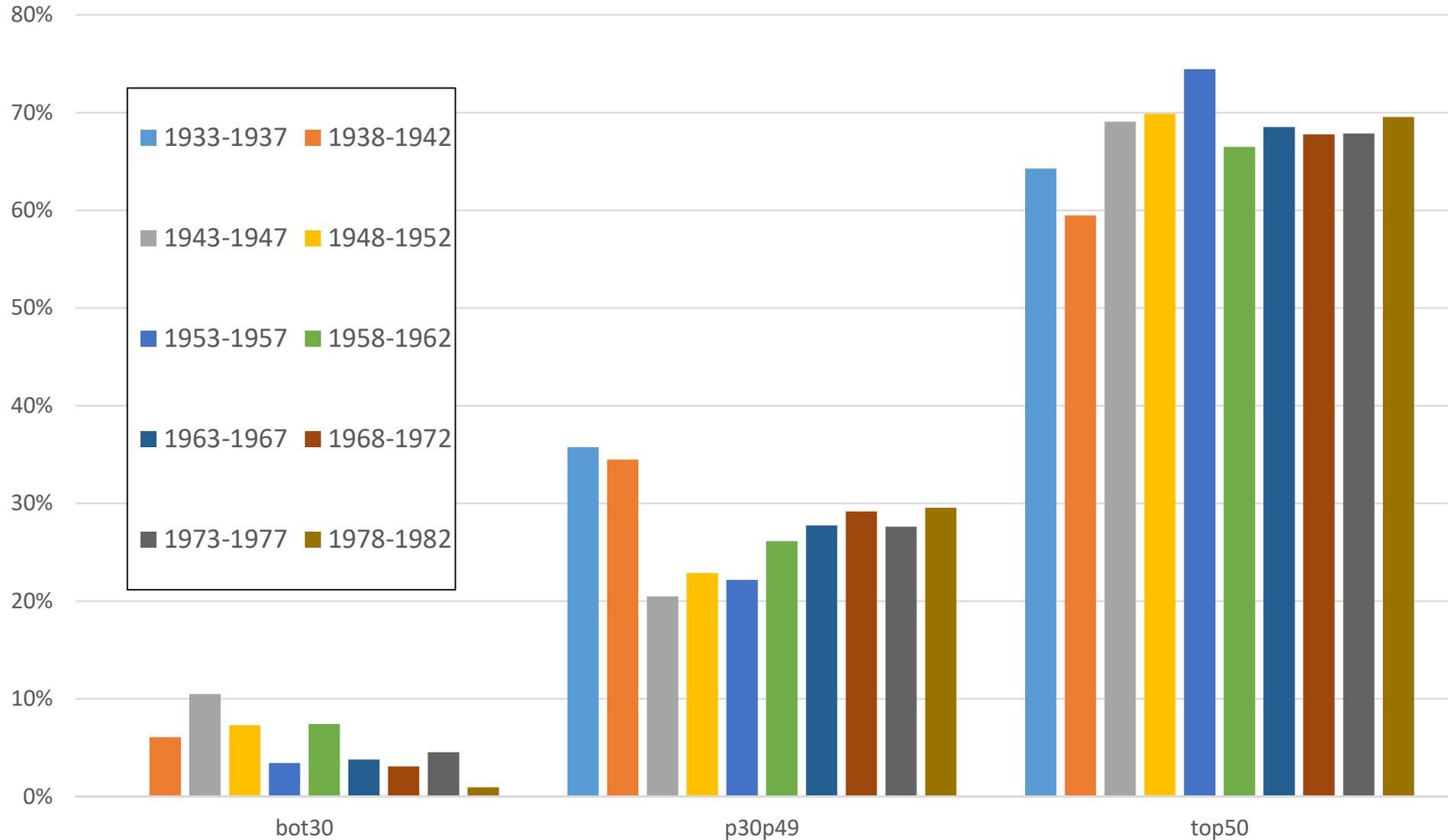
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 30 to 54 year old woman

**Figure A.6. Probability to be in some top wealth groups when homeowner  
(with or without other real estate), by cohort**



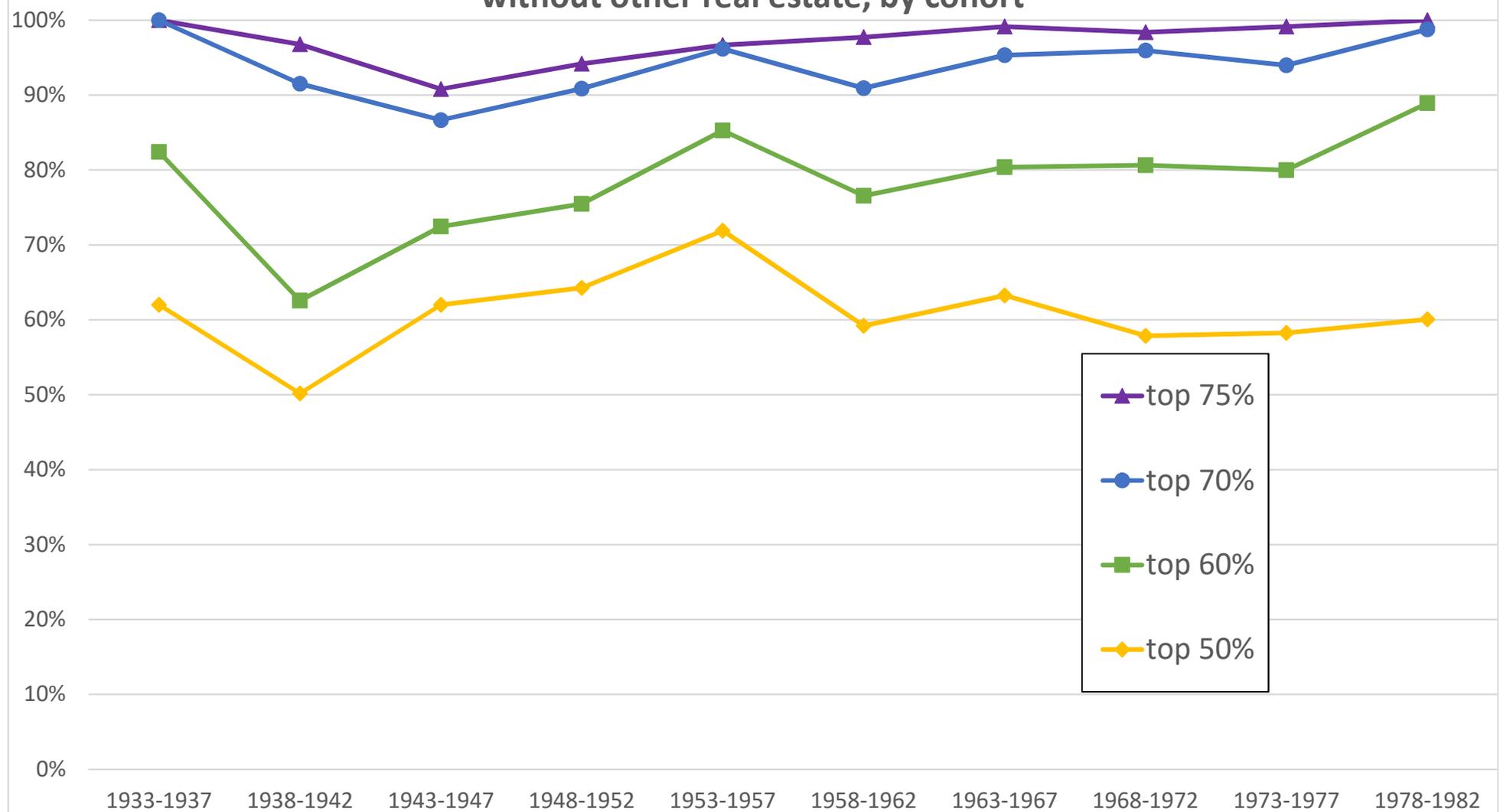
Note: Individuals in households with at least one child aged less than 14 yo and a woman aged from 35 to 44 yo. Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year-old woman.

Figure A.7. Wealth groups when homeowner, by cohort



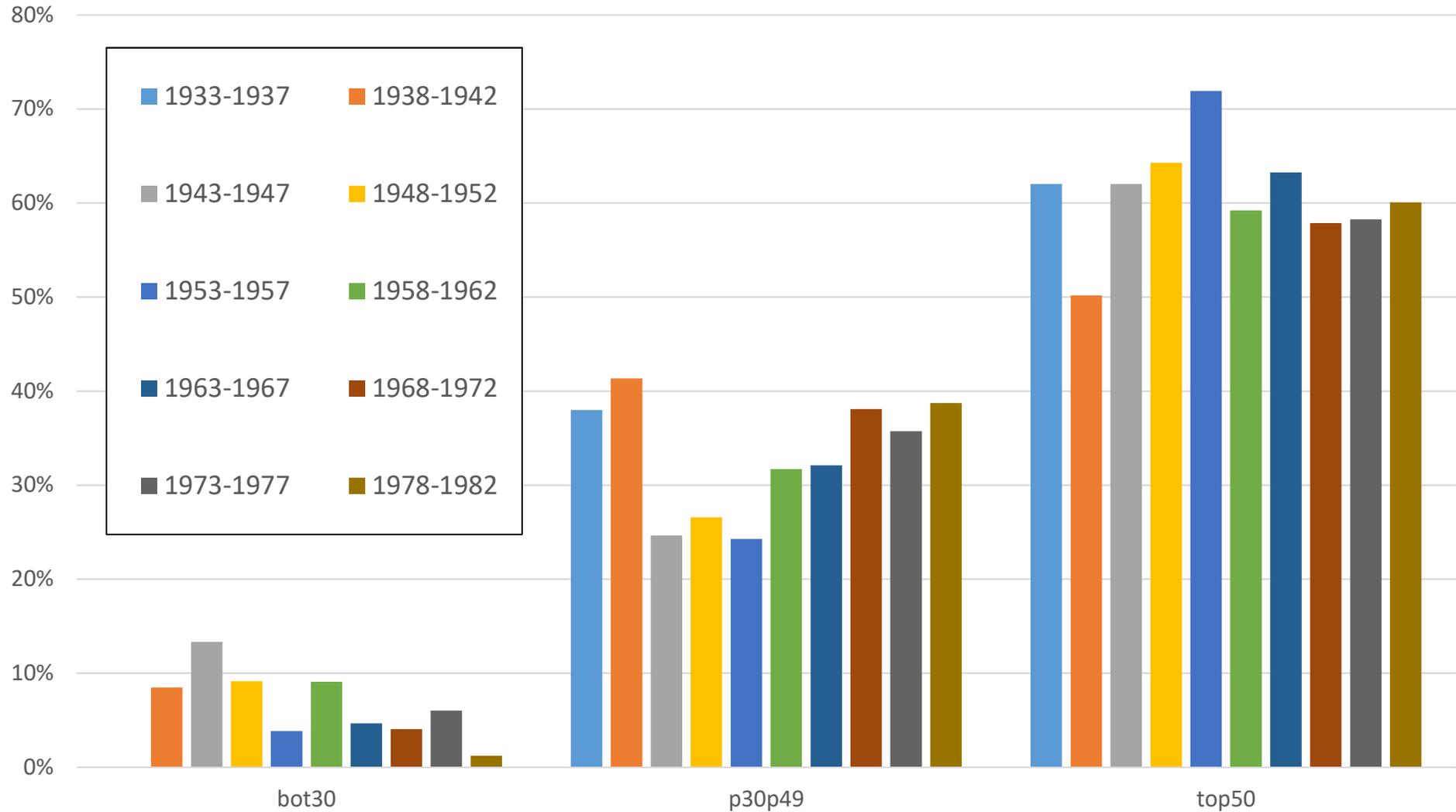
Note: Individuals in households with at least one child aged 10 to 14 yo and a woman aged from 35 to 44 yo. Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year-old woman.

**Figure A.8. Probability to be in some top wealth groups when homeowner without other real estate, by cohort**



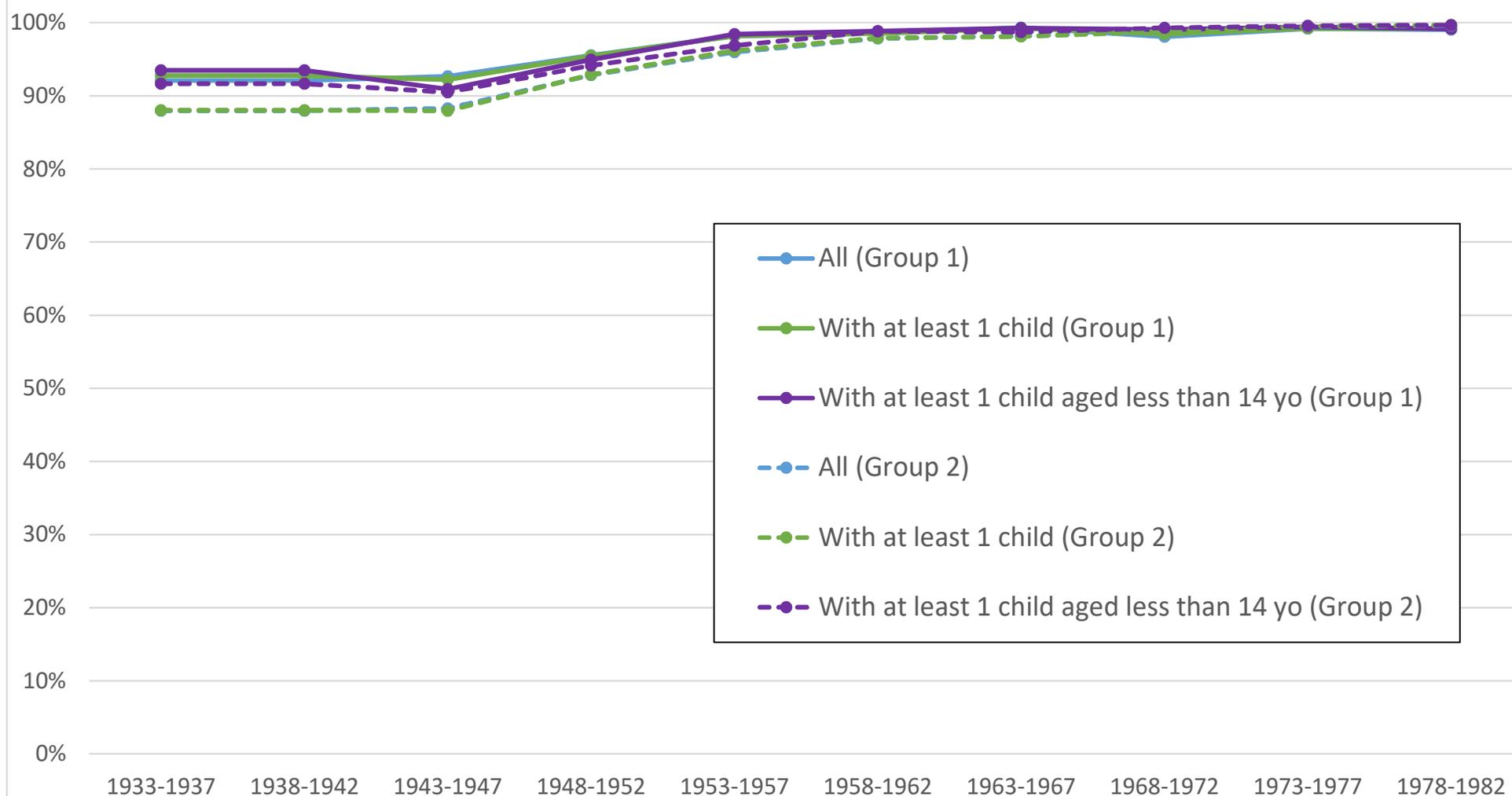
Note: Individuals in households with at least one child aged 10 to 14 yo and a woman aged from 35 to 44 yo. Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year-old woman.

**Figure A.9. Wealth groups when homeowner with no real estate, by cohort**



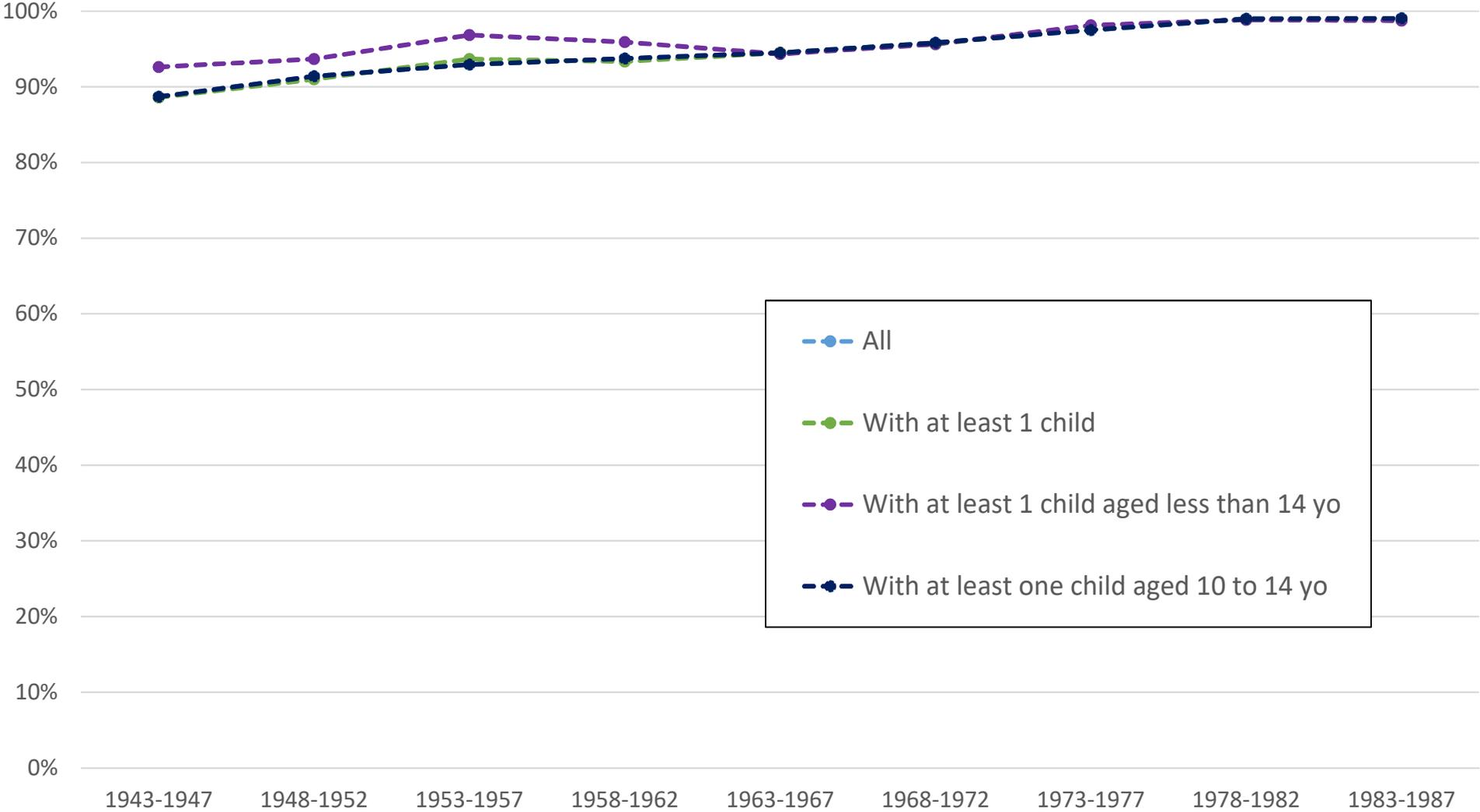
Note: Individuals in households with at least one child aged 10 to 14 yo and a woman aged from 35 to 44 yo. Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year-old woman.

**Figure A.10. Probability to be in the top 75 when homeowner with no other real estate, by cohort**



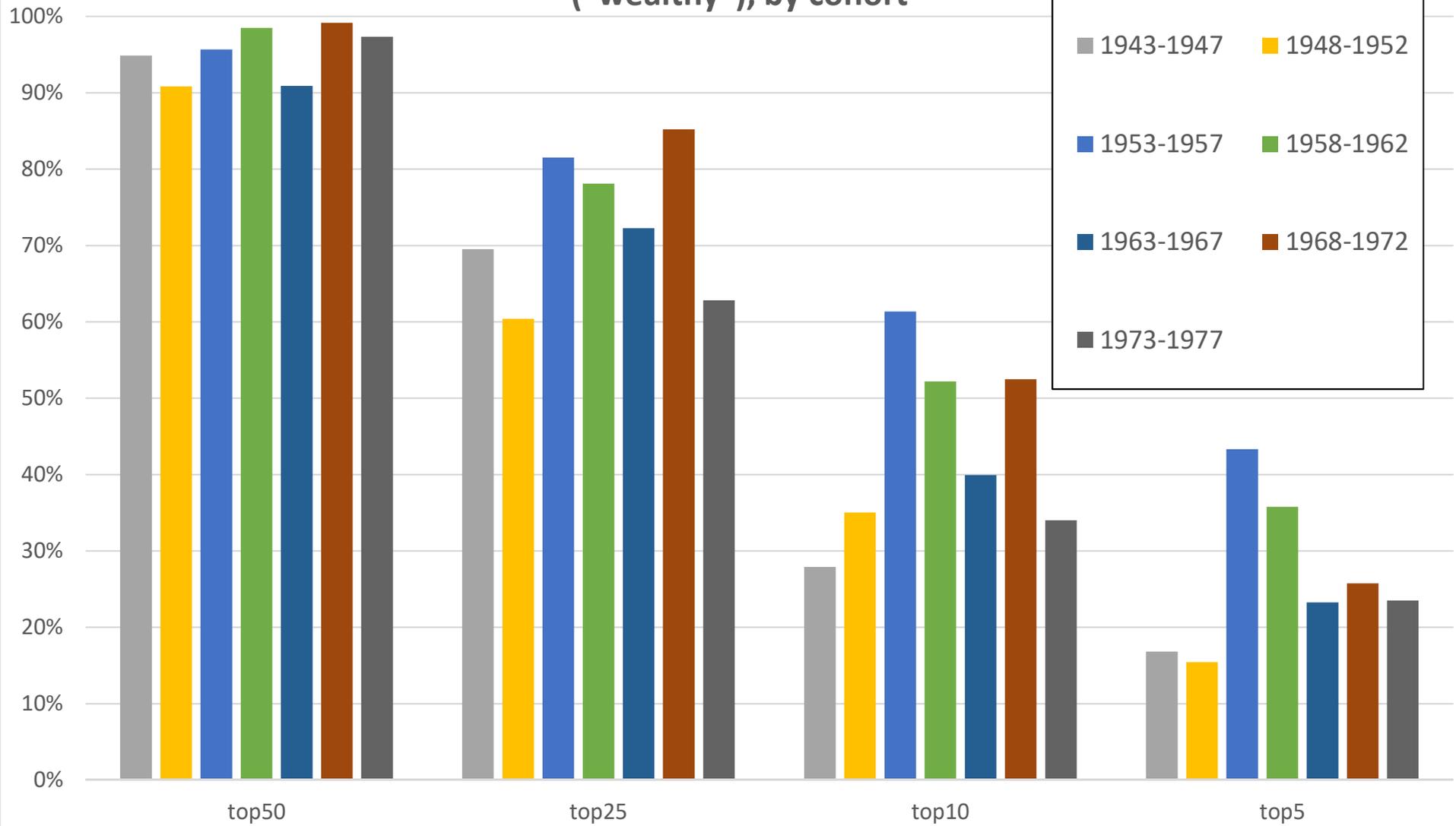
Note: Group 1 (resp. Group 2): Individuals in households with a woman aged from 35 to 44 yo (resp. 30 to 54 yo). Wealth ranks computed by survey \* cohort for individuals in households within the corresponding group.

Figure A.11. Probability to be in the top 50 when homeowner with other real estate ("wealthy"), by cohort



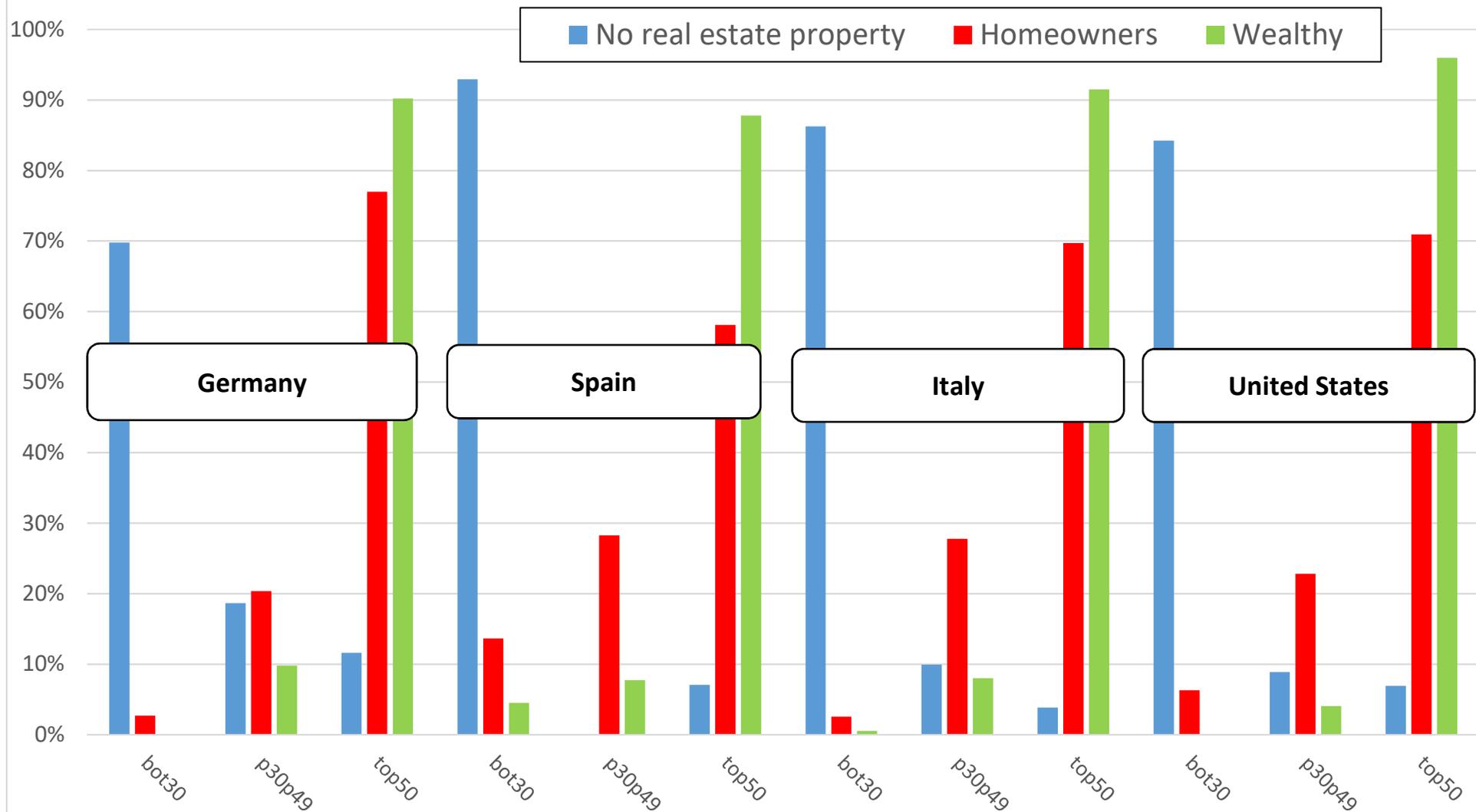
Note: Wealth ranks computed by survey \* cohort for individuals in households with a 30 to 54 year old woman.

**Figure A.12. Wealth groups when homeowner with other real estate ("wealthy"), by cohort**



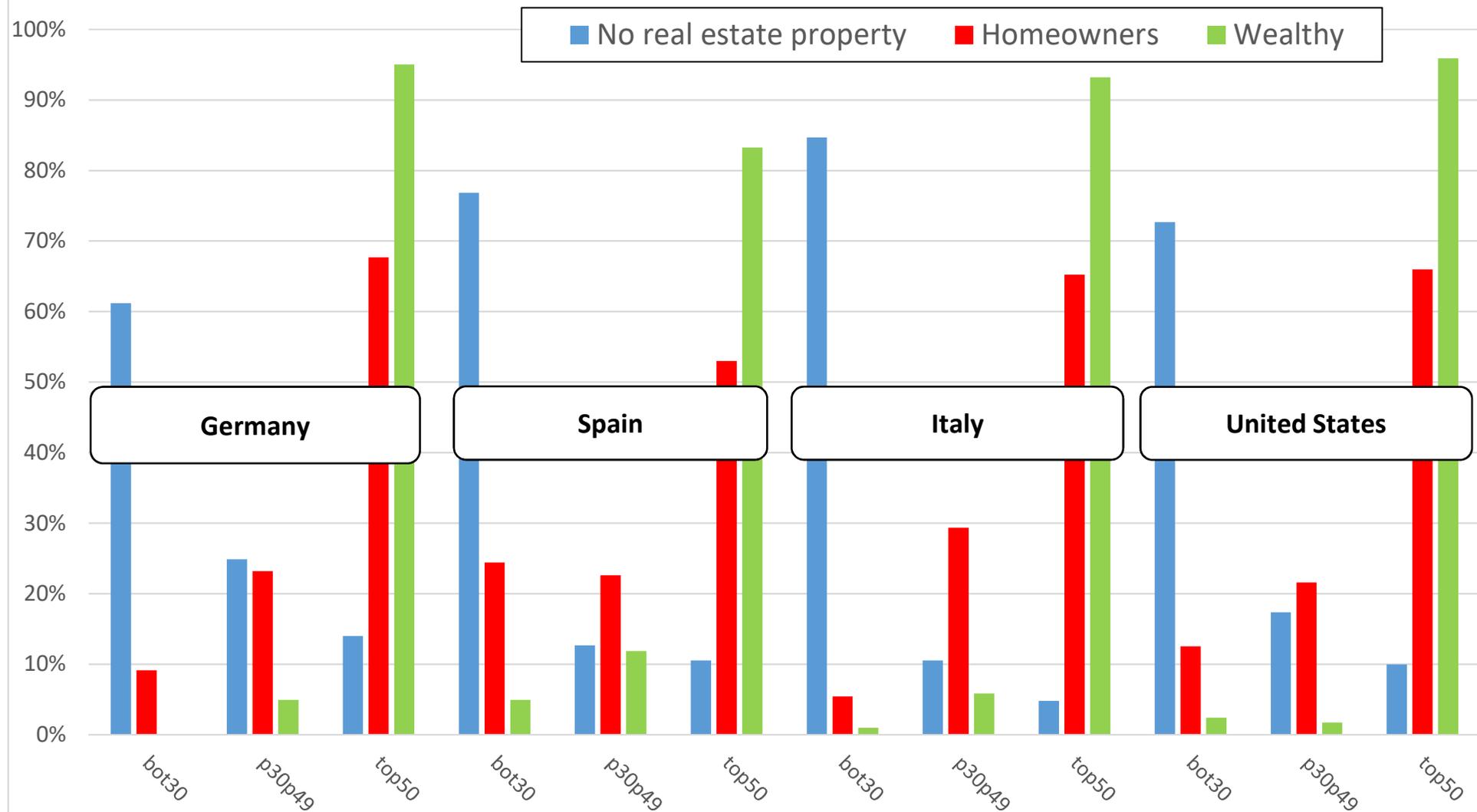
Note: Individuals in households with at least one child aged 10 to 14 yo and a woman aged from 35 to 44 yo. Wealth ranks computed by survey \* cohort for individuals in households with a 35 to 44 year-old woman.

**Figure A.13a. Wealth position by real estate holding category: Germany, Spain, Italy and United States**



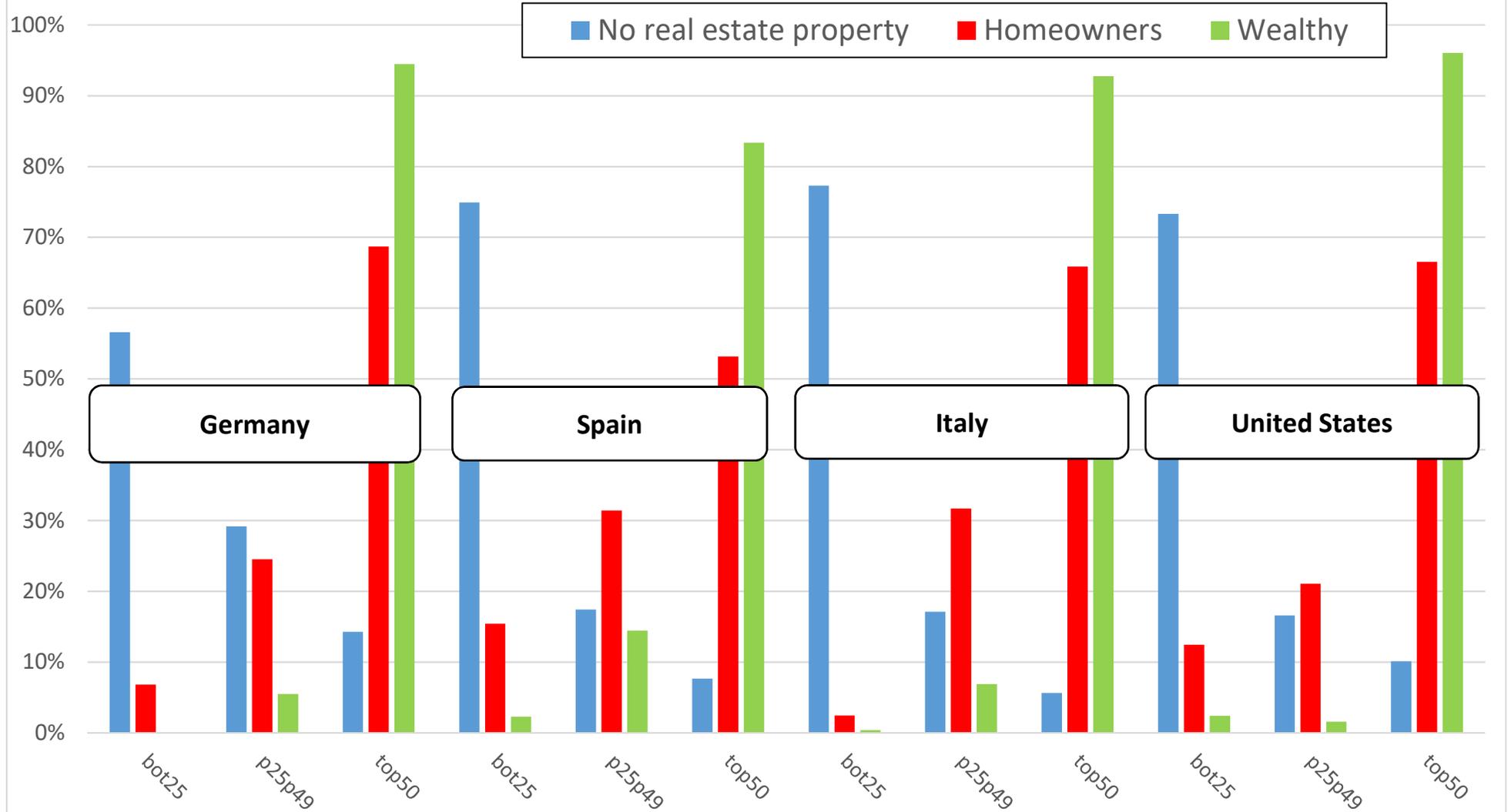
Note: Gross wealth. Wealth of household divided by number of individuals aged over 25 years old..

**Figure A.13b. Wealth position by real estate holding category: Germany, Spain, Italy and United States**



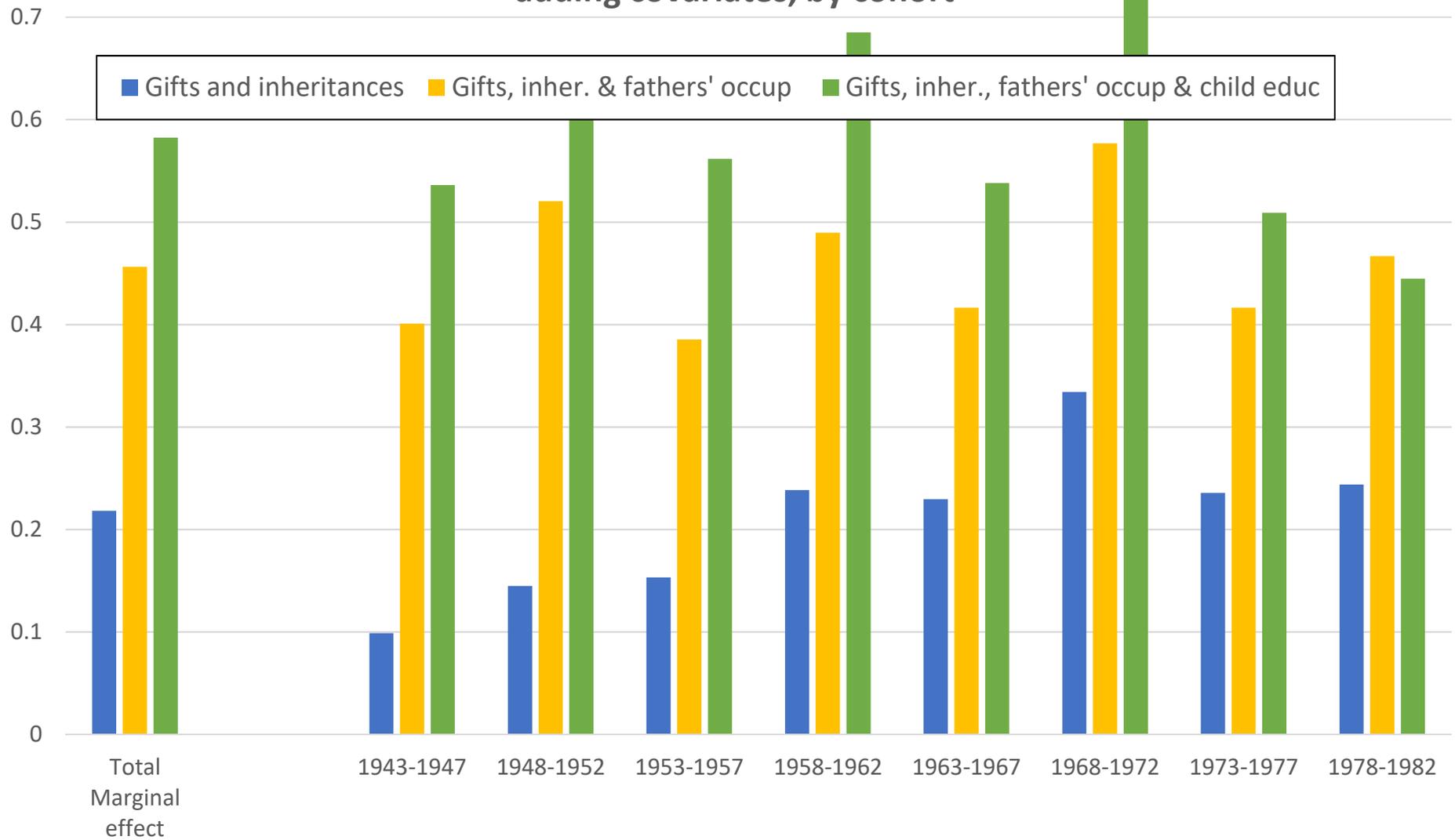
Note: Net wealth. Wealth of couple divided by 2.

**Figure A.13c. Wealth position by real estate holding category: Germany, Spain, Italy and United States**

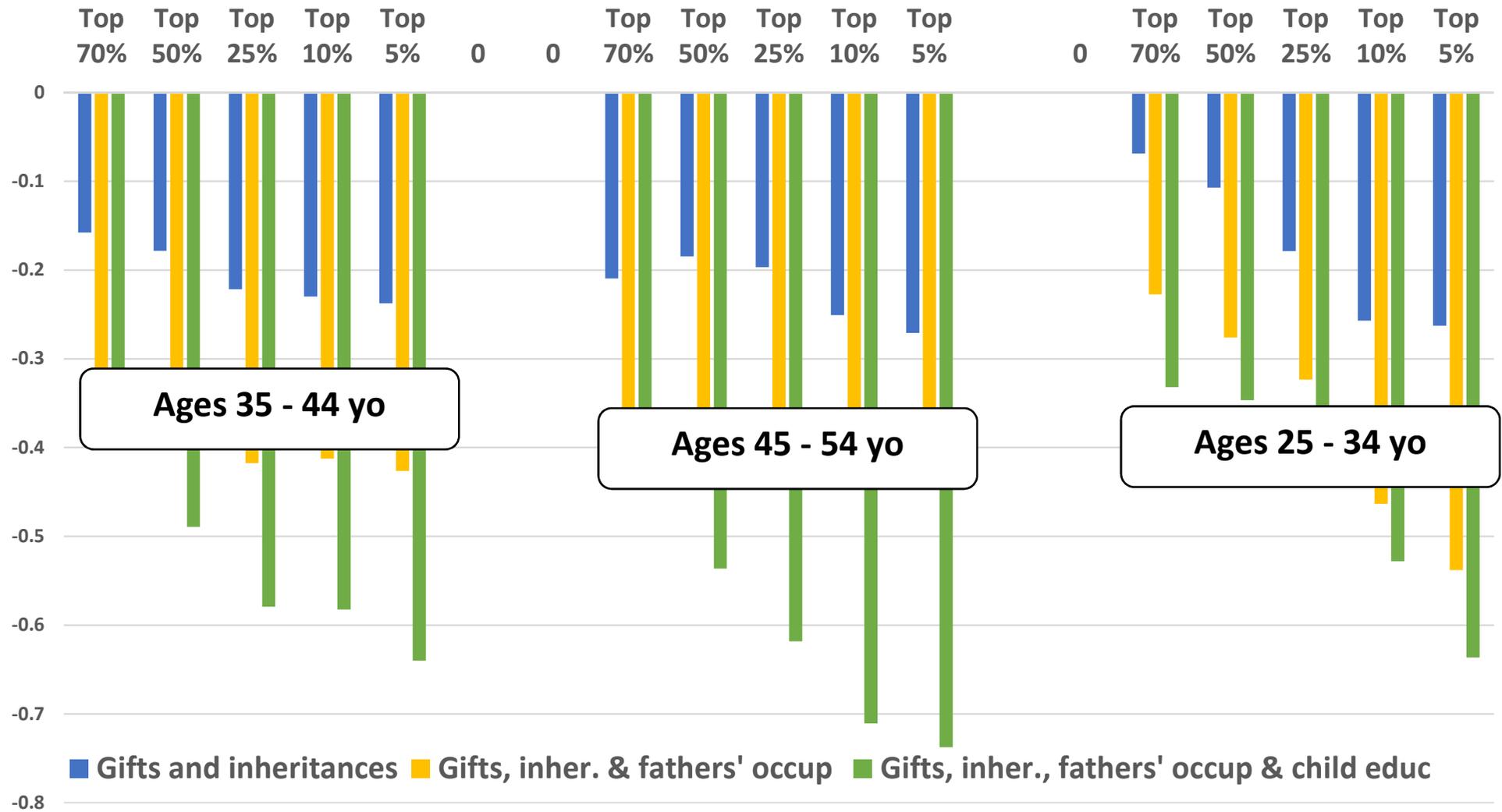


Note: Net wealth. Wealth of household divided by number of individuals aged over 25 years old..

**Figure A.14. Decrease in marginal effects of parental wealth (parents in the top 70% versus bottom 30%) to belong to the top 10% wealth group when adding covariates, by cohort**



**Figure A.15. Decrease in intergenerational wealth correlation when adding covariates**



Note: decrease in the marginal effect of having parents in the top 70% wealth group versus bottom 30%.