The non-linear relationship between parental wealth and children's post-secondary transitions in Germany

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Abstract

Our paper addresses the relationship between parental wealth and children's post-secondary transitions. More specifically, we contrast the children's likelihood to make a transition into further education or the labor market with the likelihood to stay inactive, i.e., to engage neither in further education nor in labor market activity (NEET). While previous research argues that there is a general positive association between parental wealth and children's educational and occupational transitions, we argue that for children of wealthy parents, this association might be weaker or even negative. Our study focuses on Germany, where wealth has a weak correlation with the traditional measures of parental socio-economic background. For our empirical analyses, we apply data from the German Socio-Economic Panel Study (SOEP) and use binary logistic regression models for discrete-time event history analyses. Although not statistically significant, our results show that the relationship between parental wealth and children's post-secondary transitions is not linear. Our study contributes to previous research by providing a detailed examination of the potential mechanisms underlying the relationship between parental wealth and children's post-secondary transitions.

Keywords
Demotivation; inactivity; educational transitions; intergenerational mobility; NEET; parental background

Characters: 71,889

1. Introduction

The classical status attainment model (Blau and Duncan 1967) has been criticized early on for focusing only on education, income and occupation as measures of parents socio-economic status (SES), ignoring further important dimensions of social origin (Bowles and Gintis 2002; Featherman and Hauser 1976; Hauser and Warren 1997; Henretta and Campbell 1978; Hodge 1981). Addressing this criticism, we contribute to existing efforts to understand the role of wealth as an additional measure of social origin on status attainment in the process of intergenerational social mobility (Beller and Hout 2006; Hällsten and Pfeffer 2017; Keister and Deeb-Sossa 2001; Pfeffer 2014; Piketty 2000).

Social stratification scholars are increasingly interested in wealth as an additional dimension of social stratification (e.g.; Keister and Moeller 2000; Lersch 2017; Piketty and Zucman 2014; Semyonov and Lewin-Epstein 2011; Skopek, Buchholz, and Blossfeld 2014; Spilerman 2000). Its centrality in the process of intergenerational mobility derives from its unique features, which only partially overlap with those of the traditional measures of socio-economic background (Spilerman 2000). Wealth can stem either from self-accumulation over one's life-course or from transfers (e.g., inter-vivo transfers or bequests). Unlike education, occupational status, and earned income, the accumulation of which generally requires time, effort, and ability, transferred wealth offers access to capital and goods independent of individual investment and ability. Because wealth is less volatile than income, it is a more accurate indicator of an individual's long-term consumption potential and capacity to maintain a particular standard of living (Spilerman 2000).

There is a vast body of research about the relationship between parental wealth and various outcomes of children's education, e.g., educational attainment and educational achievement. This literature theorizes and finds an independent positive effect of parental wealth on these outcomes, similar to the effects of the traditional measures of parental background (Belley and Lochner 2007; Conley 2001; Hällsten and Pfeffer 2017; Hill and Duncan 1987; Karagiannaki 2017; Morgan and Kim 2006; Orr 2003; Parsons 1975; Pfeffer 2011; Rumberger 1983; Wiborg 2017; Williams Shanks 2007; Yeung and Conley 2008). The same positive effect is present in the relationship between parental wealth and children's occupational outcomes (Karagiannaki 2017; McKnight and Karagiannaki 2013), social class (Albertini and Radl 2012), and other outcomes in children's adult life, e.g., employment probability, earnings, and living standard (Karagiannaki 2017; Keister 2007; Spilerman 2004).

While the focus of the above-mentioned studies is the different educational and labor market activities, in our study, we focus on the opposite, namely the state of inactivity, which we define as being assigned to neither an educational nor a labor market activity (NEET). NEET stands for a person or group of persons who is "not in education, employment or training" (OECD 2008). More specifically, we are interested in whether children of wealthy parents are more likely to stay inactive as opposed to making a transition into further education or the labor market, after completing secondary school for the first time with higher

education entrance certificate (Abitur or Fachabitur). Our main argument is that up to a certain amount of wealth, an increase in parental wealth is positively associated with a transition into educational or labor market activities. Above that threshold, we expect to find the opposite effect: an increase in children's likelihood to stay inactive, suggesting what we call a demotivation effect of parental wealth.

For this effect to occur, it is not necessary for parental wealth to have been transferred. Instead, the mere expectation a child has of receiving the parents' wealth in the future is sufficient for such an effect to take place. Our hypothesized demotivation effect is, thus, an extension of the empirically confirmed "Carnegie effect", which states that inherited wealth (Bø, Halvorsen, and Thoresen 2019; Holtz-Eakin, Joulfaian, and Rosen 1993) and the expectation of an inheritance (Monteiro, Burns, and Piraino 2018; Weil 1994) decrease the recipients' work efforts.

We contribute to the literature by making a key theoretical extension to the relationship between parental wealth and children's educational and occupational transitions. We do so by introducing a specification of potential mechanisms underlying this relationship. In this paper, we test our hypotheses within the German context, which is briefly described in the next section. We then present our theoretical model. Afterwards, we describe our data, variables and empirical models, followed by a presentation of our results. We close with a discussion of the main findings and their theoretical consequences.

2. The distribution of wealth and the educational system in Germany

Germany is an interesting case study for two main reasons: First, the correlations between wealth and the traditional measures of SES in Germany have been found to be surprisingly weak (the correlations are all below 0.3; Pfeffer 2011). This should make it easier to isolate the associations between parental wealth and educational and occupational transitions in Germany net of the traditional measures of SES (parental education, occupational status, and income). The second reason is that Germany has been scarcely studied in the context of the relations between education and wealth. So far only two studies analyzed the relationship between parental wealth and children's educational and occupational outcomes in Germany, namely Pfeffer (2011) and Pfeffer and Hällsten (2012). In these studies, the authors analyze the effect of (grand-)parental wealth on educational transitions and attainment (degree attainment, grade point averages in the 9th grade) in three different country contexts: the USA, Germany, and Sweden. Based on the specific functions of wealth, the authors expect (grand-)parental wealth to exert a positive effect on children's educational outcomes. Their empirical analyses support this expectation for all three countries. With our study, we join the efforts to better understand the precise role of parental wealth for the intergenerational transmission of educational advantages and disadvantages. Going beyond previous research, we propose parental wealth to exert two opposing effects on children's post-secondary transitions.

Median household wealth in Germany is low compared to other European countries and the USA (Davies et al. 2011; Skopek et al. 2014). One reason for this is the generous public pension system in Germany, with public pensions crowding out household savings at least partly (Alessie, Angelini, and van Santen 2013; Hurd, Michaud, and Rohwedder 2012). The value of individual public pension entitlements is usually not included in the measurement of private wealth in surveys (Frick and Grabka 2013). Another reason for the low median household wealth in Germany is that whilst homeownership represents one of the main building blocks of private wealth internationally, in Germany home ownership rates are relatively low (Skopek et al. 2012). Nevertheless, owner-occupied property is the most common asset among households in the middle of the wealth distribution also in Germany (Skopek et al. 2012). Household wealth in Germany consists, to a large extent, of owner-occupied housing, followed by other real assets and financial assets.

An important characteristic of the German wealth distribution is the existence of significant differences in household wealth between East and West Germany. Individuals, who lived in East Germany before the fall of the wall in 1989, are less wealthy than their counterparts in West Germany. These differences are largely due to the lower prevalence of real estate ownership in the former German Democratic Republic (GDR), which has a lasting impact on the distribution of wealth until today (Frick and Grabka 2009b, 2009a). Household wealth inequality stands at a medium to high level in Germany (Gini coefficient = .82) (Credit Suisse Research Institute 2018),[1] which might be due to Germany's low wealth tax of 1% of total wealth holdings per annum for private households. However, in 1997, the levying of wealth tax was terminated. Also, such a tax was never levied in the former GDR.

The medium to high level of wealth inequality in Germany is accompanied by a highly stratified education system. Generally, Germany has a mostly public education system free from tuition fees.[2] The elementary school system in most Federal States contains four, in some Federal States six years of general education (for more information about the German educational system, see Helbig and Nikolai, 2015 or Schneider, 2008). The secondary school system in Germany is a complex tracking system; children are usually selected into different tracks after elementary school. Of the different tracks, only upper-secondary schools (Gymnasium or Fachgymnasium) or schools with an upper-secondary track (e.g., Gesamtschulen or private schools like Waldorfschulen) provide students the necessary criterion to enter higher education. The remaining tracks typically direct students into vocational training, preparing them for skilled non-manual or manual labor.

Although it is theoretically possible for students to change the secondary school track to which they were assigned, these changes and particularly changes to more advanced school tracks are rare (P. Blossfeld 2018; Buchmann and Dalton 2002; Tamm 2007). Changes

[1] In the same year – 2017 – the Gini coefficient for wealth inequality was .85 in the USA, .87 in Sweden and .79 in Norway (Credit Suisse Research Institute 2018).

[2] Some Federal States have adopted low to moderate tuition fees for university studies since 2007. However, after a few years, all of these Federal States have abandoned university tuition fees.

following the completion of the first secondary school track in order to catch up with a higher qualification are becoming more common recently, especially with regard to the Abitur and Fachabitur (Statistisches Bundesamt 2017). Because we are interested in children's first secondary school qualification, this, however, is not relevant here. Moreover, the probability of attending a school with an upper-secondary track directly after elementary school has strongly increased over the cohorts (P. N. Blossfeld 2018). Despite the option to catch up on more advanced qualifications later on, in the German educational system, educational decisions are risky and educational inequality is high (Dustmann 2004; Schindler and Reimer 2010).

After finishing secondary school with Abitur or Fachabitur in Germany, students can choose between a vocational and a higher education track. Alternatively, they can directly enter the labor market. The latter is not a popular option in Germany; less than 10% of all secondary school graduates with Abitur or Fachabitur followed this track in 2017 (Statistisches Bundesamt 2018: 88f.). The vocational training track typically combines subject-specific and general education in vocational schools and work-based training at a company as an apprentice. However, pure school-based vocational training also exists. The vocational education and training (VET) track is traditionally very strong in Germany and represents an attractive low-risk alternative to the higher education track (Becker and Hecken 2009; Hillmert and Jacob 2003; Müller and Pollak 2010). The higher education track includes going to university or a university of applied sciences; depending on the Federal State, 60-80% of the children who finish secondary education with Abitur or Fachabitur in a given year choose this track (Helbig, Jähnen, and Marczuk, 2015). Based on the highly stratified educational system and the high level of wealth inequality in the German society, it is plausible to assume that in Germany wealth is associated with children's post-secondary transitions.

3. Theoretical framework and hypotheses

Our theoretical argumentation builds on the work of Conley (2001), Hällsten and Pfeffer (2017), as well as Pfeffer (2011, 2018). These authors argue that the effect of (grand-)parental wealth on children's educational and occupational outcomes is based on three specific mechanisms of wealth: the purchasing mechanism, the social insurance mechanism and the social norms mechanism. The purchasing mechanism refers to the fact that parental wealth (or income) can be used to purchase goods and services related to educational success. These goods and services can include tuition and living costs, or an extra year in the educational system. The social insurance mechanism represents the psychological benefits of having wealth and being able to make use of it, if necessary. In this sense, wealth acts as an insurance against perceived potential negative outcomes of educational and occupational decisions. Parental wealth can, for example, motivate children to make riskier and far-sighted plans and decisions, i.e., in our scenario to decide for higher education, knowing that they will be financially protected in case of problems or failure (cf. Hillmert and Jacob 2010).

Finally, the social norms mechanism operates through the positive association between wealth and pro-education norms. This association is based on the belief within families with high or moderate wealth that education is an important means for status attainment and the preservation of family wealth.[3] The assumption is that parents' pro-educational norms feed into higher ambitions of their children for educational and occupational attainment and may, thus, contribute to children having higher educational and occupational achievements. The social norms mechanism can thus be associated with Bourdieu's concept of symbolic cultural capital (Bourdieu 1977: 188, 2012: 234f.).

While the first two mechanisms are straightforward to grasp, the third one, associated with social norms is unclear and problematic. First, it is unclear whether and how parents' educational norms are transferred to their children. Bourdieu, for example, did not specify how the intergenerational transmission of cultural capital could work. Moreover, it is possible that wealthy parents do not value education and economic activity, because they built up their wealth through inheritance and not through active efforts in terms of education or participation in the labor market. Finally, even if wealthy parents support pro-education (or pro-employment/pro-occupation) norms, independent of their own educational and occupational background, their children may or may not internalize these norms. Indeed, Jæger (2011) argues that researchers have yet to show that parents' education strategies indeed affect the educational success of their children.

Our following argumentation is based on the assumption that children of wealthy parents, who grow up with the expectation of receiving a large amount of wealth, behave differently from children of less-wealthy parents. That the mere expectation of receiving wealth significantly affects individual behavior has been shown in various studies. Weil (1994) as well as Basiglio et al. (2019) showed that the savings behavior of the young is affected by the expectation of an inheritance, resulting in a reduction in savings.[4] Weil (1994) moreover found that expected inheritance and actual received inheritance have a similar-sized impact on saving behavior. Monteiro et al. (2018) analyze the effect of the expectation to receive an inheritance (i.e., transferred wealth) on behavior and motivation in the labor market. Comparing similar individuals that differ only in the amount of expected transferred wealth, they find that individuals with higher expected wealth show lower productivity in a lab environment, as compared to those with lower expected wealth. The authors interpret this drop in performance as the result of an entitlement effect, which means that individuals who expect to receive high amounts of wealth feel less need to prove themselves (Monteiro et al. 2018). This negative productivity effect of high wealth is found only with regards to expected parental wealth (treatment group) but not in terms of (different amounts of) lottery wins

[3] Even if wealthy families do not share this belief, they might still positively value education, because these families typically have a network of wealthy families who share that belief and take over their high educational ambitions for their children.
[4] Due to data restrictions, inheritance expectations refer only to the next ten years. Weil (1994) argues that this will most likely result in an underestimation of the expected bequest effect on savings behavior.

(control group). It can thus be considered as an identity effect of parental wealth on labor market behavior.[5]

In our case, children of wealthy parents might not value tracks that demand active efforts in terms of an investment of time, but may instead choose to maximize their leisure time. The reason behind that is that these children do not need to invest in an economic activity in order to maintain their living standard, and they also do not need to prove themselves by pursuing a certain educational track or job. Unlike the other two mechanisms, the social norms mechanism is of a contradictory nature and can result in either a positive motivation effect or a negative demotivation effect, depending on the parents' position in the distribution of wealth.

Focusing exclusively on investments in (higher) education, Esser (1999: 272) implicitly acknowledges the contradictory nature of the social norms mechanism. He states that we should expect children's motivation for education to be lower among the higher social classes as compared to the middle social classes, as the SES of the higher classes is not solely based on the merits of having better school education. Esser is, however, well aware of the independent value of higher education in contemporary societies, and of the fact that education is a central mean to transform, hide or legitimate economic capital (Bourdieu 1984; Bourdieu and Passeron 1977).[6] He is, therefore, skeptical about the extent to which children in wealthy families can afford to or are willing to give up on higher education.

To sum up, we argue that transitions of students who finish secondary school for the first time with an Abitur or Fachabitur into further education or the labor market promise increased benefits through the attained job. For wealthy children, these potential benefits come with opportunity costs – namely time that could have been spent on leisure activities. If the level of material wealth that children expect to receive from their parents is high, the additional increase in benefits from a well-paying job can be lower than the opportunity costs, leading to a negative utility difference. Figure 1 illustrates this argument for children from different groups of parental wealth. For a child with low parental wealth, every additional unit of earned income will increase his or her utility at a high rate. For a child with higher but below-average parental wealth, the increase in his or her utility occurs at a lower rate as compared to a child with low wealth, as the wealthier child can use the parental wealth as a financial source in addition to his or her income. For a child with above-average parental wealth, the increase in utility by every additional unit of income earned might be zero, because this child has already enough financial resources to cover his or her financial needs.

The interesting case is the child with high parental wealth. This child expects so much wealth that each additional unit of earned income decreases his or her utility, as earned

[5] Recent research from Sweden (Hällsten and Pfeffer 2017) though, did not detect any nonlinearity in the relationship between grandparental wealth and children's educational outcomes (GPA from 9th grade). This speaks against the existence of an educational demotivation effect of parental wealth in Sweden.

[6] Moreover, higher education is helpful in order to maintain or accumulate wealth. For the very wealthy, however, this should be of lower importance, as wealth has the characteristic of self-accumulation (DiPrete and Eirich 2006).

income presupposes an active engagement – an investment of time – which the child cannot use for leisure. For this reason, we maintain that high parental wealth can demotivate a child to make a transition into further education or the labor market after finishing secondary education and lead the child to stay inactive (NEET) instead.

=== Figure 1 about here ===

Based on our assertions above, we expect that as parental wealth increases, children become more likely to make a transition into further education or the labor market (*hypothesis 1: status attainment*). Beyond a specific level of wealth, however, this relationship will weaken or reverse, suggesting that an increase in parental will increase the likelihood of inactivity (NEET) (*hypothesis 2: demotivation)*, due to the expected reduction in the effect of pro-educational norms.

Although hypothesis two suggests permanent demotivation of children of wealthy parents, it is also possible that parental wealth results "only" in a temporary demotivation, i.e., a postponement effect. More specifically, high parental wealth might be expected to allow children to carry out extra-curricular activities (e.g., participating in a social project, voluntary work, or travelling). These activities are often pursued during the so-called "gap year" before a student makes a transition into either further educational or occupational activities. Relying on parental wealth, children of wealthy parents have both the financial means to afford such a gap year (purchasing effect) and the financial security during and after the gap year (social insurance effect). Caprioglio O'Reilly (2006) labels gap year activities as potentially status-enhancing, as they are likely to result in improved job prospects, and higher incomes. Given the status-enhancing effect of gap years, children who decide for them are likely to share the pro-educational norms of their parents. As such, postponement should not be identical with demotivation. Empirically, however, it is not possible to separate the two concepts (postponement and demotivation) from each other, because the SOEP data does not allow us to follow a significant number of children long enough to do that, and because it is difficult to identify gap year activities in the dataset. The potential demotivation effect of high parental wealth on children's post-secondary transitions (hypothesis 2) might thus in fact be a postponement effect. To diminish the impact of gap years as far as possible, in our analytical design, we do not truncate the time after graduation from secondary school with higher entrance certificate.

Finally, in our analysis we will not be able to sharply differentiate between the three mechanisms underlying the relationship between parental wealth and children's post-secondary transitions. However, if we find empirical support for our second hypothesis, this can be understood as evidence for the contradictory nature of the social norms mechanism.

4. Data, variables, and methods

4.1. Data and variables

We test our hypotheses based on data from the SOEP 2016 (SOEP V33.1 2018). The SOEP is a household-based panel with a yearly questionnaire that has been running since 1984 (Goebel et al. 2018; Haisken-DeNew and Frick 2005). As such, it is the longest panel study in Germany, allowing us to analyze educational careers of children who finished secondary education for the first time between 1992 and 2015. We follow children's educational and occupational careers after finishing secondary education for the first time with Abitur or Fachabitur until their first post-secondary transition, which takes place on average after 9.4 months with a maximum of 14 years.[7] In 2002, the SOEP included for the first time very extensive questions on individual wealth. Since then, individual wealth has been surveyed every five years.

Our analysis sample consists of all children of SOEP respondents who answered the youth questionnaire at age 17, and who graduated from secondary school for the first time with Abitur or Fachabitur. Our sample includes 1,045 children. The sample size is small because for us to be able to observe all needed information, respondents need to be included in both the youth and the main sample of the SOEP. Graduation from secondary school with Abitur or Fachabitur takes place usually between the age of 18 and 19. Moreover, we can only use parent-child tuples for which we have wealth measurements in the SOEP years 2002, 2007 or 2012. Because the children observations come from different SOEP samples (Haisken-DeNew and Frick 2005; SOEP 2019), we take into account the differences in the sampling design weights.[8] Since we have multiple siblings from one-parent-dyads in the data, we correct the standard errors for clustering at the mother level.

Post-secondary transitions. Our dependent variable is a respondent's probability to make a first transition to higher education, VET, or labor market activity after leaving school for the first time with an upper secondary degree (Abitur or Fachabitur) – compared with the inactivity track defined as NEET (neither in further education nor in labor market activity), which is the initial state in our analyses. In this way, we are best able to identify our demotivation effect namely, the relationship between wealth and disengagement from higher education, vocational training and/or labor market activities. We labeled children who are

[7] The SOEP data contain information since 1984, but we restrict the analysis sample to children who finished secondary education after 1991, to avoid heterogeneity which might follow from the different education systems in the former GDR and West Germany until 1990.

[8] Our analysis sample consists of 228 children from Sample A "Residents in the Federal Republic of Germany", 42 children from Sample B "Foreigners in the Federal Republic of Germany", 171 children from Sample C "German Residents in the German Democratic Republic (GDR)", 23 children from Sample D "Immigrants", 42 children from Sample E "Refreshment", 265 children from Sample F "Refreshment II", 146 children from Sample G "High Income", 33 children from Sample H "Refreshment III", 28 children from Sample J "Refreshment IV", 5 children from Sample L1 "Cohort Sample", 47 children from Sample L2 "Family Types I" and 15 children from Sample L3 "Family Types II". The sample design weights reflect the differences in the sampling probabilities across and partly also within the different samples. They do not reflect differences in the response propensities across observations net of the sampling probabilities. The sample design weights are used as Horvitz-Thompson weights for all reported statistics and regressions.

officially registered as unemployed and children who are inactive, but stated that they probably or definitely intend to get a job in the future as "active" (activity track), conceptualizing this state as an intention for an investment in further education or labor market activities. Children in vocational schools are also included in the activity track.

Since the educational system in Germany is characterized by a high level of social stratification in education, by analyzing the transition after completion of secondary school with Abitur or Fachabitur, we are studying a socially selective group of individuals who are more likely to come from a high socioeconomic background. Accordingly, our analysis sample has low variance in parental SES, as well as wealth (see Table 1). In Appendix A1 we moreover provide a comparison of the distribution of our variables of interest in our analysis sample to the 2012 SOEP sample.

Apart from this social selectivity given by our research design, one might argue that by examining a rather late educational transition, we fail to observe large parts of the materialization of wealth in children's educational careers. Indeed, wealth might be more relevant in children's early school career, specifically in the transition from elementary to secondary school. While we agree with this criticism, it is our interest in the educational demotivation effect that drove our decision to focus on this late-stage transition. The demotivation effect is most likely to be observed in this late-stage transition for two reasons. First, the decision pertaining to the transition is likely to be initiated primarily by the children, with a less direct influence of the parents as compared to earlier decisions in their educational careers (Becker and Hecken 2009). Second, at this stage, children, for the first time in their educational careers, have the option to stay inactive. This option is not available to students after elementary school, as all children have to attend some form of secondary education. This makes it more difficult to detect educational demotivation. If the demotivation effect does not appear after finishing secondary education, it is even less likely to appear at the transition from elementary to secondary school.

Moreover, one can argue that the larger decision freedom found in the transition we observe also applies for parents who can withhold their wealth from their children should these chose the "wrong" path, leading to restricted options for the child. The consequences of this possibility for our analysis are, however, limited. First, in order for the demotivation effect to occur, it is not necessary for parental wealth to have been transferred; and second, in Germany it is almost impossible to (completely) disinherit (biological) children.

Parental wealth. Our main independent variable is parental wealth. In the SOEP data, wealth was so far surveyed on the individual level in 2002, 2007, and 2012[9] and consists of seven different components: owner-occupied real estate (including debt), other real estate

[9] In March 2019, the 2017 data SOEP has been published, including another wealth module. The wealth imputations, however, will be available by the end of 2019. As we trust the quality of the imputations done by the SOEP team and for the reason of comparability of the wealth imputation procedures, we refrained from running our own imputation procedure and thus decided not to include the 2017 data. In addition, including the 2017 data would not increase our sample size considerably.

(including debt), financial assets, business assets, tangible assets, private pensions (including life insurance and building savings contracts), and consumer credit. As in most surveys, public pension wealth is not included in the wealth measure. For our measure of parental wealth, we excluded private pensions, as we expect this component to be a mediator of the other wealth components as well as our dependent variable.

Many recent studies model wealth in terms of net wealth (total wealth net of debts on it) (Belley and Lochner 2007; Karagiannaki 2017; Pfeffer 2011, 2018). However, this can lead to misleading results, as households with large amounts of negative net wealth (i.e., debts are larger than gross wealth) are a heterogeneous group. Having large amounts of negative net wealth can indicate economic deprivation, but it can also mean high economic potential because to take up a substantial credit, households are required to prove that they have high financial securities (ambivalent nature of net debt: Hällsten and Pfeffer 2017). In Germany, this requirement is much stricter as compared to the USA. As a result, gross wealth and gross debts measures are strongly correlated (Pearson's r=.36) in the SOEP 2012 data, and more so in our analysis sample (Pearson's r=.62). In line with Hochman and Skopek (2013), as well as Wiborg (2017), we therefore decided to operationalize wealth as gross wealth, controlling for gross debts.

In addition to the compound wealth, we also estimate the separate effects of financial wealth and owner-occupied real estate wealth on the transition in the activity track (further education or labor market activity). The reason behind that decision is that we assume that the effect of wealth should be moderated by the liquidity of the wealth component. The easier wealth can be transferred the stronger the effect should be on child outcomes. Therefore we expect stronger effects for financial wealth and weaker effects for real estate. This is because first, financial wealth is more accessible than other types of wealth. Second, financial wealth can be more directly transferred to children than other types of wealth. Third, because financial wealth is more common among high-wealth households as compared to other types of wealth, especially owner-occupied real estate wealth (Skopek et al. 2012). In our analyses, we logarithmized our wealth measures in order to approximate the skewed distribution of wealth to a normal distribution. To include parents with zero gross wealth, we gave a value of one to their respective wealth measure.

To test for the expected nonlinearity of the effect of wealth (demotivation effect), we run models with a squared term of each of our logarithmized wealth measures. As a robustness check, we test for the expected nonlinearity of the effect of wealth with alternative specifications in terms of splines. We run a three-group solution with knots on zero, first and second terciles, and €10m.

Our analysis sample includes children who left school for the first time with an upper secondary degree (Abitur or Fachabitur) between 1992 and 2015 (most recent available measure) and were born between 1972 and 1997. For each child, we merge the parental

wealth measurement (from all living parents) that is closest to the respective year in which the child completed secondary education with Abitur or Fachabitur.[10] This leads to a gap between the measurement of wealth and the time of exit from secondary education between 10 years before exit and three years after exit. To take into account this potential measurement bias, we control for the lag in measurement. To adjust for inflation, we divide wealth by the consumer price index at the time of the wealth measurement provided in the SOEP data. Our reference year is 2012. To control for business cycle effects, we include an indicator that measures the relative quarterly change in seasonally and inflation adjusted GDP per capita. To tackle the problem of item nonresponse with wealth information, we use the multiply imputed (n=5) wealth data provided by the SOEP (Frick, Grabka, and Marcus 2010).[11]

Parental SES. We control for the traditional measures of socio-economic background: parental education, income, social class and employment status. We operationalize parental education using the CASMIN classification and distinguish between three groups: (i) elementary education (CASMIN 1a, 1b, 1c); (ii) secondary qualification or maturity certificates with and without vocational qualification (CASMIN 2a, 2b, 2c_gen, 2c_voc); and (iii) tertiary education (CASMIN 3a, 3b).[12] We adapt Erikson's (1984) dominance coding strategy for occupational status to our education index by using the highest code for each partner to classify the couple.

Among employed parents, we measure parental social class as the highest EGP status (Erikson and Goldthorpe 1992) of both parents. We merged the 11 classes into six EGP classes: higher managerial and professional workers (I), lower managerial and professional workers (II), routine clerical, service and sales work (III), small self-employed and self-employed farmers (IV), manual supervisors and skilled manual workers (V/VI), and semi- and unskilled manual workers and agricultural labor (VII). We use an additional dummy that indicates that both parents are not employed.[13]

We operationalize parental income as the highest log net income among both parents.[14] For not employed parents, we assign zero income.[15] We adjust for inflation relative to 2012 using the consumer price index. The parental socio-economic variables are correlated as expected. The correlations are shown in the appendix in Table A2.

Further controls. For the parents, we additionally control for the age of the oldest parent and whether at least one parent was living in East Germany in 1989 and for parental marital history, using information reported by the mothers. We include dummies indicating if

[10] The parental characteristics are all measured by the time of the completion of secondary education with Abitur, which means that we ignore changing partners throughout time.
[11] We use the MI suite in Stata to estimate our regressions with the multiply imputed wealth variates with adjusted (Ruben's rule) standard errors.
[12] The small sample size does not allow a separation of the CASMIN groups 2a and 2c_gen from 2b and 2c_voc.
[13] Social class of not employed parents is captured in the employment dummy that measures if at least one parent is employed.
[14] We follow convention and use log income, as log income is roughly normally distributed and log income reflects multiplicative effects of human capital on net income (Becker and Chiswick 1966).
[15] Income of not employed parents is included in the employment dummy that measures if at least one parent is employed.

both parents are married, if they are divorced or widowed, or if they have not been married before the exit of the child from secondary education. For the respondents (children), we control for the number of siblings in the family,[16] as well as their sex and immigration background (native, second-generation and first-generation migrant), and school exit year.

We measured all variables except wealth at the time of school graduation. Table 1 shows the descriptive statistics of our variables. The weighted mean gross wealth in our sample is about €643k and the median gross wealth about €435k. The wealthiest household possesses a gross wealth of more than €9.7m. Mean and median gross debts are about €142k and €30k, respectively. The most indebted household possesses debts of almost €3.0M.

== Table 1 here ==

4.2. Method

To empirically test our hypotheses, we apply an event history analysis with a piecewise constant exponential hazard rate. Children enter the risk set after leaving secondary school for the first time with Abitur or Fachabitur, i.e., the process time starts when children exit secondary education. By that time they are labeled as being inactive (NEET). We model process time in months, although the variables from which the process time is constructed contain yearly information.[17] Children leave the risk set by transitioning into further education or the labor market (activity track). That means that a child experiences a relevant transition when he or she attends university, takes up a full-time employment or an apprenticeship, formally registers as unemployed or looks for a job. The process time is censored if no such event happens until the last panel wave, in which the child participates. Children who enter the military or civil service are temporarily not at risk for making a transition out of the inactivity state. As we expect a continuing "aging process" with respect to the transition rate across time during the time in the military and civil service, we let the process time continue during the time children spend in military or civil service (elapsed time approach: Box-Steffensmeier and Jones 2004: 158-161)[18]. We use process time dummies for the first, second, third and fourth year after leaving secondary school with Abitur or Fachabitur and a dummy for five years or more. In our analyses sample, the mean duration from school exit to the time of the last observation before the transition or the last measurement in SOEP is 9.4 months.

[16] We control for number of siblings by including the share of inheritances which is implied by the number of siblings. E.g. an only child has a share of one, two children imply .5, three children imply a share of a third and so forth.

[17] We construct the time until transition as the minimum of the age at which a child first attended university, first took up full time employment or an apprenticeship, or for the first time formally registered as unemployed, or was looking for a job, or the age at the time of the last survey.

[18] Interruptions of the process time by military and civil service necessarily lead to multiple spells for each child. Box-Steffensmeier and Jones (2004: 158-161) define two approaches of how to deal with multiple spells, namely the elapsed time approach and the gap time approach. The elapsed time approach assumes that although the unit is temporarily out of the risk set, the clock runs on, i.e. the transition rate continues at a later time, when the units returns into the risk set. The gap time approach assumes that the clock stops during the time out of the risk set and continues at the time when the unit reenters the risk set at the time it left.

5. Results

We use discrete-time event history modeling to test our two hypotheses: (1) with increasing parental wealth, children become more likely to make a transition into further education or the labor market; and (2) beyond a specific level of wealth, however, this relationship will weaken or reverse, becoming in favor of inactivity (NEET). Table 2 shows the condensed results of our models in two specifications. The left column shows the model with a quadratic function of our gross wealth measure. This should capture both the increasing transition rate with wealth (hypothesis 1) and the demotivation effect (hypothesis 2) in the form of a decreasing slope with higher wealth. The right column shows the same model with a linear spline specification of the effect of our grosswealth measure. This should show us if the quadratic specification leads to spurious results due to outliers. The full models with all coefficients can be found in the Appendix (Table A3).

== Table 2 here ==

The first model shows a positive coefficient of 1.09 for the linear wealth term and of 1.00 for the quadratic term. The coefficient of the quadratic term is effectively zero. For easier interpretation, we have plotted the average predicted hazard rates of transition out of inactivity 12 months after exiting from secondary education across wealth, as shown in Figure 2. At the lower end of the plot, we have added the distribution of gross parental wealth.

== Figure 2 here ==

For children with zero parental wealth, the hazard rate within the first year is about 6%. For children with gross parental wealth of €10k, the hazard rate is about 9% which amounts to an increase by about 53%, i.e., children of parents with gross wealth of €10k are about 1.5 times as likely to leave inactivity as compared to children of parents with no gross wealth. The peak is reached at €21k however, with a very wide confidence interval extending from about €16 to about €3m, showing that this point estimate is very uncertain. At about €100k of parental wealth, the estimated hazard rate starts to decrease visibly. For children with gross parental wealth of €10m, the hazard rate is about 8%, i.e., a decrease in comparison to €10k by about 15%. These findings support our two hypotheses. To put these figures into perspective, the predicted transition rate for parental income one standard deviation below the mean (about €1,600) corresponds to 8.5% and for one standard deviation above the mean (about €5,500) corresponds to 9.8%. This means that the transition rate out of inactivity for children with parental income of one standard deviation above the mean is about 14% higher than for children with parental income one standard deviation below the mean. Note that this difference should not be interpreted as the causal effect of parental income on the transition rate. The second model in Table 2 shows the results of the linear spline specification with knots at the terciles. Again, for easier interpretation, we estimated the predicted transition rate 12 months after the first graduation from secondary education with Abitur or Fachabitur as shown in Figure 3.

== Figure 3 ==

Figure 3 also shows an increase in the transition rate out of inactivity from about 6% up until the first tercile of gross wealth of about 12%. Between the first and second tercile, we find an abrupt and unexplained decrease in the transition rate to about 8% and above the second wealth tercile a very weak increase to about 10% for €100m gross wealth.

To find out, whether the relationship between parental wealth and childrens post-secondary transitions is driven by a specific wealth component, we break up our aggregated wealth measure, and run separate models to estimate the effect of financial wealth and of owner-occupied real estate wealth separately from all other wealth components. Although it is available in the data, we do not estimate effects of other real estate wealth and business wealth, because we do not expect effects for these illiquid and least fungible components. Moreover, for these components we have an even more skewed distribution in the data than for the other components. In our analysis sample, more than 60% of the parents have no other real estate wealth, and more than 80% have no business wealth. For the effects of financial wealth and owner-occupied real estate wealth, we basically run the same regression models as above. However, we assume that owner-occupied real estate wealth is a mediator of the effect of financial wealth, i.e. controlling for it would lead to over-control bias for the financial wealth effect. On the other hand, financial wealth is a confounder of owner-occupied real estate wealth, and therefore has to be controlled, to avoid an omitted-variable bias. Table 3 shows the results of our four regressions models.

== Table 3 ==

The first column shows the quadratic specification for the financial wealth effect separate from the other wealth components, the second column shows the linear-spline specification for financial wealth separate from the other wealth components. Again we use the terciles as the knots for the splines. The third and fourth columns show the respective regressions that estimate the quadratic and linear-spline specifications of owner-occupied real estate wealth separate from the other wealth components. For easier interpretation of the results, we have estimated the predicted transition rates 12 months after exiting secondary education that are implied by all four models. These are displayed in Figure 4–7.

== Figure 4 here ==

== Figure 5 here ==

== Figure 6 here ==

== Figure 7 here ==

Figure 4 shows almost no discernable effect of financial wealth on the transition rate. Figure 5 shows a little more variation across wealth. The predicted transition rate for zero financial wealth starts out at 8%, falls to 6% for the first tercile, increases to about 10% for the second tercile, and slightly drops to about 9% for €100m in financial wealth. The effect of owner-occupied real estate wealth alone is more similar to the effect of our compound wealth

measure (see Figures 6 and 7). With the quadratic specification we find again an inverted U-shape. The transition rate for zero wealth is about 8%. It increases to about 14% for about €1k in owner-occupied real estate wealth, drops to about 11% for about €100k, and continues to decrease to 5% for €10m in owner-occupied real estate wealth. In sum, the effect of financial wealth alone on the transition out of inactivity is negligible, whereas for the effect of owner-occupied real estate wealth, we find a similar inverted U-shape as for our compound wealth measure. Interestingly and contrary to our expectations, it is owner-occupied real estate wealth and not financial wealth which seems to drive the relationship between parental wealth and post-secondary transitions in Germany. An ad-hoc explanation for this finding would be that owner-occupied wealth might be the most visible component of parental wealth for children, thus driving the overall wealth effect on their post-secondary transitions.

Overall, our findings do not reach statistical significance within conventional borders, and the confidence intervals of the estimated hazard rate are wide throughout the parental wealth distribution for both the quadratic and the spline specifications. Thus, our estimates have to be considered as imprecise. The most robust finding is the decrease in the transition rate around the peak of the wealth distributions between €10k and €100k of overall gross wealth and owner-occupied real estate wealth.

6. Discussion

Our study addresses the importance of wealth as an additional measure of parental socio-economic background in the analysis of children's post-secondary transitions. Our aim was to find out if we can find empirical support for our theoretically suggested demotivation effect of parental wealth on children's post-secondary transitions, counteracting the status attainment effect. While previous research argues for a positive association between parental wealth and educational as well as occupational transitions, we argue that for children of very wealthy parents this association might weaken or even become negative due to the contradictory nature of the social norms function. In order to pursue this research goal, we contrasted the likelihood of children after their first completion of secondary school with higher education entrance certificate (Abitur or Fachabitur) to make a transition into further education or the labor market (activity track) with their likelihood to stay inactive – i.e. to engage neither in further education nor in labor market activity (NEET).

From a conservative standpoint, we conclude that in Germany, parental wealth is not related to children's post-secondary transitions, as none of our findings reaches statistical significance within the conventional borders ($p \leq 0.05$). On a general level, we could interpret this finding as a positive characteristic of the German educational system, where in contrast to the US and Sweden, parental wealth is not necessary or does not allow for educational advantages in post-secondary transitions, nor does high wealth imply demotivation after finishing secondary education for the first time with Abitur or Fachabitur.

However, the fact that our analyses do not yield statistically significant results does not mean that the expected relationships do not exist. There are at least four reasons why the

suggested relationships are statistically insignificant in our data. First, we have a comparatively small sample size, making it difficult to find statistically significant relationships. Second, we expect demotivation to be driven only by a small group of our sample, namely the very rich, who are underrepresented in survey data.[19] Further, it is possible that the demotivation effect among the rich, which is caused by the social norms function, is offset by the (stronger) positive effects of the purchasing and the social security function of wealth. Finally, we analyze a socially selective group of individuals showing rather low variations in parental SES, including parental wealth. All in all, while the SOEP data is so far the best available dataset to study the relationship between parental wealth and children's post-secondary transitions in Germany, our research design and its limitations make it challenging to detect it.

Letting aside statistical significance, in line with previous research, our findings speak for a positive relationship between parental wealth and children's post-secondary transitions in Germany. Specifically, we found that parental wealth increases children's likelihood to make a transition into further education or the labor market (activity track) after finishing secondary education for the first time with Abitur or Fachabitur. This likelihood is 46% higher for children with €10k of parental (gross) wealth as compared to those with zero parental wealth (quadratic specification). An interpretation of this effect could be that wealth provides either a form of purchasing opportunity or an insurance option or both to children allowing them to purchase goods and services related to educational success and to take higher risks in planning their future. It is interesting to consider that contrary to our expectations, this relationship seems to be more strongly driven by owner-occupied real estate wealth than by financial wealth.

While we find no clear support for a demotivation effect among children of (very) wealthy parents, in both of our model specifications – quadratic term and splines – we find support for a non-linear relationship between parental wealth and children's post-secondary transitions. At some point within the range of parental wealth of over €16k up to €3m (quadratic specification), the likelihood to make a transition into the labor market or into higher education starts to decrease in favor of staying on the NEET track. However, based on the small number of cases, our findings remain too vague as to identify the functional form of the relationship between parental wealth and children's post-secondary transitions. We have to leave this task to future research.

To sum up, based on our research design, we cannot argue that there is a statistically significant relationship between parental wealth and children's post-secondary transitions in Germany. Nevertheless, our study serves as an important starting point, both in theoretical and

[19] To address this data scarcity, in 2017 and 2018 the SOEP has collected internationally uniquely detailed data on high-worth individuals. They collected this information based on register data detailing the ownership structure of companies to survey the hard-to-reach population of wealthy households (Schröder et al. 2018). The data is expected to be available to the research community by 2019.

empirical terms, to spur further research on this relationship in general and in Germany in particular. Future studies should pay attention to the functional form of the relationship between parental wealth and children's post-secondary transitions. We recommend that researchers replicate our study on Germany using more recent data. In a few years, the SOEP will provide additional waves of parental wealth, and the new data will include uniquely detailed data on high-worth individuals (cf. Schröder et al. 2018). Another promising dataset for replication analyses is the National Educational Panel Study (NEPS). The NEPS provides longitudinal data on educational processes from birth until late adulthood by following six different starting cohorts. Some of the starting cohorts include measures of parental wealth. In a few years, it will be possible to replicate our analyses using, for example, the NEPS starting cohort of 9th graders (SC4). Finally, we encourage researchers to identify the actual mechanisms underlying the relationship between parental wealth and children's post-secondary transitions. Given that the main hurdle to this type of investigation is lack of suitable data, we also call data providers to include questions in their surveys enabling researchers to pursue this goal, preferably allowing cross-national comparisons.

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Table 1: Summary statistics

	%	Mean	SD	Median	Min	Max
Dependent variables (C)						
Transition into higher education	62.4					
Transition into higher labor market	29.1					
Staying inactive (censored)	8.5					
Independent variables						
WEALTH COMPONENTS (P)						
Gross financial, real estate and business wealth		639877.1	1190286.6	434338.5	0.0	9755738.7
		13972.2	81289.7	0.0	0.0	663269.2
Gross financial, real estate and business debt		141784.4	415266.7	30010.3	0.0	3011895.0
Gross financial wealth		51480.1	130439.9	14786.0	0.0	1009846.9
Gross financial debt		13972.2	81289.7	0.0	0.0	663269.2
Gross privately used real estate wealth		389696.6	407328.1	350457.8	0.0	2297801.3
Gross privately used real estate debt		80547.1	176362.2	0.0	0.0	782875.5
Gross other real estate wealth		123498.5	606355.5	0.0	0.0	6523960.6
Gross other used real estate debt		47265.2	303690.5	0.0	0.0	2935781.7
Business wealth		75202.2	659704.6	0.0	0.0	4111185.6
EDUCATION (P)						
Both parents not more than elementary	7.6					
At least one parent sec. educ., none higher	37.6					
At least one parent tertiary education	54.7					
INCOME (P)						
Sum of parents' net income		3582.9	1970.6	3283.3	0.0	11779.8
SOCIAL CLASS (P)						
Both parents not employed	4.3					
At least one parent higher level manager/professional	31.8					
At least one parent lower level manager/professionals	36.9					
At least one parent routine non-manual worker	17.6					
At least one parent small self-employed	3.2					
At least one parent manual supervisor/skilled manual worker	4.1					
At least one parent unskilled manual worker/agric. labourer	2.1					
MARITAL STATUS (P)						
Parents never married	16.2					
Parents divorced/widowed	18.0					
Parents married	65.8					
FURTHER CONTROLS						
At least on parent lived in east Germany in 1989 (P)	26.2					
Child native (C)	89.6					
Child 2nd generation migrant (C)	2.8					
Child 1st generation migrant (C)	7.5					
Age oldest living parent (P)		50.5	5.9	50.0	40.0	69.0
Child female (C)	53.8					
Number of siblings (C)		1.3	0.9	1.0	0.0	4.0

Note: Average statistics across all analysis samples implied by combinations of imputations; Estimation with sample design weights. (P) stands for parents; (C) stands for children.

Table 2: Condensed logistic regression models: Transition into higher education or labor market (financial, real estate and business wealth combined)

	Quadratic Specification exp(b)/se	Linear splines specification exp(b)/se
Log. gross financial, real estate and business wealth	1.09	
	(0.08)	
Log. gross financial, real estate and business wealth, squared	1.00	
	(0.00)	
Log. gross financial, real estate and business wealth, linear spline on [0 EUR, 286k EUR]		1.06*
		(0.03)
Log. gross financial, real estate and business wealth, linear spline on [286k EUR, 631k EUR]		0.96*
		(0.02)
Log. gross financial, real estate and business wealth, linear spline on [631k EUR, 100M EUR]		1.01
		(0.01)
Log. gross financial, real estate and business wealth debt	0.99	0.99
	(0.01)	(0.01)
1st year after exit from secondary education (ref.cat.)		
2nd year after exit from secondary education	2.59***	2.62***
	(0.38)	(0.38)
3rd year after exit from secondary education	1.56	1.64*
	(0.36)	(0.38)
4th year after exit from secondary education	0.35**	0.37**
	(0.13)	
After 4th year after exit from secondary education	0.05***	0.05***
	(0.03)	
Constant	4.3×10^{7}**	2.3×10^{7}**
	(2.3×10^{8})	(1.3×10^{8})
Number of children	1045	1045
Number of children X months	10880	10880

Note: Estimation with sample design weights; Cluster-robust standard errors with correction for multiple imputations of wealth; * p<.05, ** p<.01, *** p<.001.

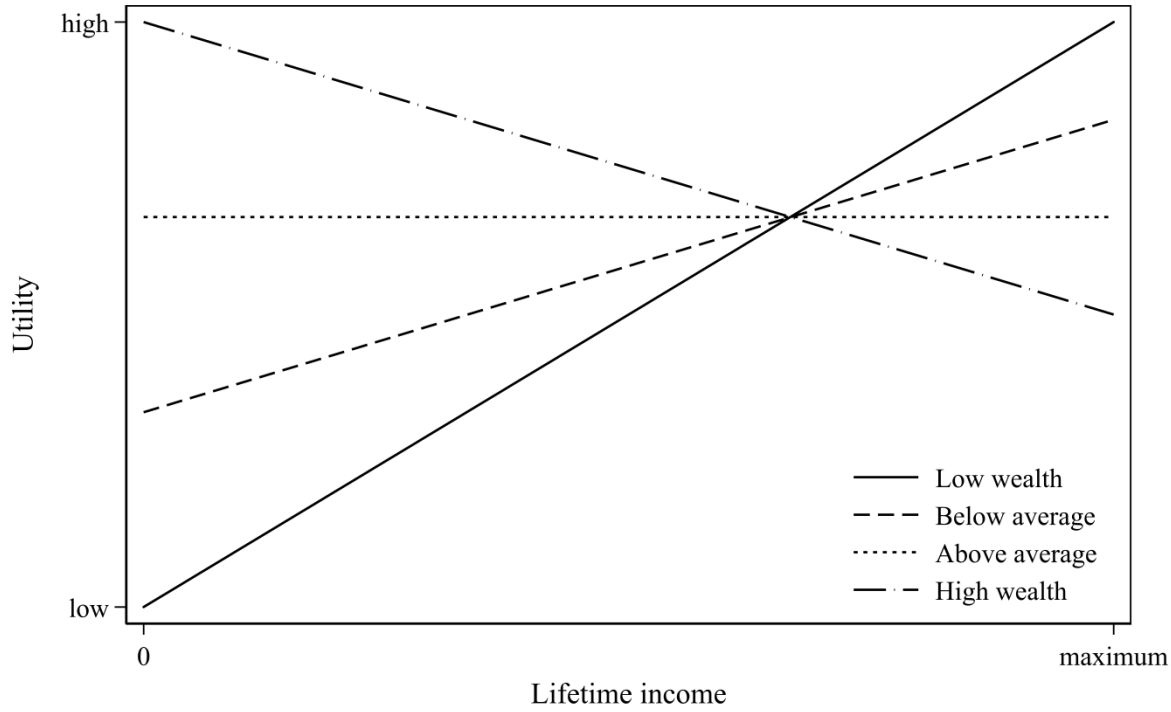
Table 3: Condensed logistic regression models: Transition into higher education or labor market (financial and real estate wealth separately)

	Financial wealth, quadratic spec.		Financial wealth, splines spec.		Priv. used real estate wlt., quadr. spec.		Priv. used real estate wlt., splines spec.	
	exp(b)	se	exp(b)	se	exp(b)	se	exp(b)	se
Log. gross financial wealth	1.02	(0.06)			1.01	(0.01)	1.01	(0.01)
Log. gross financial wealth, squared	1.00	(0.01)						
Log. gross financial wealth, linear spline on [0 EUR, 3164 EUR]			0.97	(0.05)				
Log. gross financial wealth, linear spline on [3164 EUR, 34k EUR]			1.05	(0.05)				
Log. gross financial wealth, linear spline on [34k EUR, 100M EUR]			0.99	(0.02)				
Log. gross financial debt	1.01	(0.01)	1.02	(0.02)	1.02	(0.01)	1.01	(0.01)
Log. gross privately used real estate wealth					1.20	(0.15)		
Log. gross privately used real estate wealth, squared					0.99	(0.01)		
Log. gross privately used real estate wealth, linear spline on [0 EUR, 208k EUR]							1.05*	(0.02)
Log. gross privately used real estate wealth, linear spline on [208k EUR, 475k EUR]							0.95*	(0.02)
Log. gross privately used real estate wealth, linear spline on [475k EUR, 100M EUR]							1.02	(0.01)

Log. gross privately used real estate debt					0.98	(0.01)	0.98	(0.01)
Log. gross business wealth	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)
Log. gross other real estate wealth	0.99	(0.01)	0.99	(0.01)	0.99	(0.01)	0.99	(0.01)
Log. gross other real estate debt	1.02	(0.02)	1.02	(0.02)	1.02	(0.02)	1.02	(0.02)
1st year after exit from secondary education (ref.cat.)								
2nd year after exit from secondary education	2.61***	(0.39)	2.62***	(0.39)	2.65***	(0.39)	2.64***	(0.39)
3rd year after exit from secondary education	1.55	(0.37)	1.57	(0.37)	1.60*	(0.38)	1.64*	(0.38)
4th year after exit from secondary education	0.35**	(0.13)	0.35**	(0.13)	0.36**	(0.14)	0.39**	(0.14)
After 4th year after exit from secondary education	0.05***	(0.03)	0.05***	(0.03)	0.05***	(0.03)	0.06***	(0.04)
Constant	7.5×10^{7}**	(4.1×10^{8})	7.5×10^{7}**	(4.1×10^{8})	4.6×10^{7}**	(2.5×10^{8})	2.5×10^{7}**	(1.3×10^{8})
Number of children	1045		1045		1045		1045	
Number of children X months	10880		10880		10880		10880	

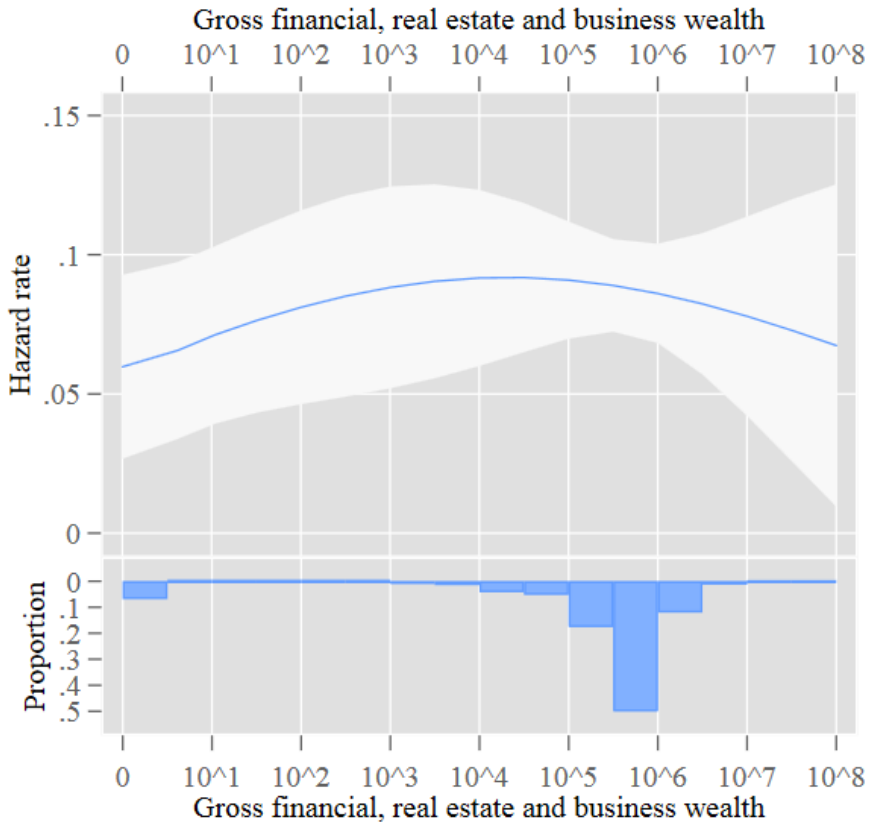
Note: Estimation with sample design weights; Cluster-robust standard errors with correction for multiple imputations of wealth; * p<.05, ** p<.01, *** p<.001.

Figure 1: Returns of lifetime income net of opportunity costs



Note: Own illustration.

Figure 2: Average predicted transition probabilities across wealth (quadratic specification)



Note: Maximum at 21043.4 [15.8, 28109654.4]

Figure 3: Average predicted transition probabilities across wealth (splines specification)

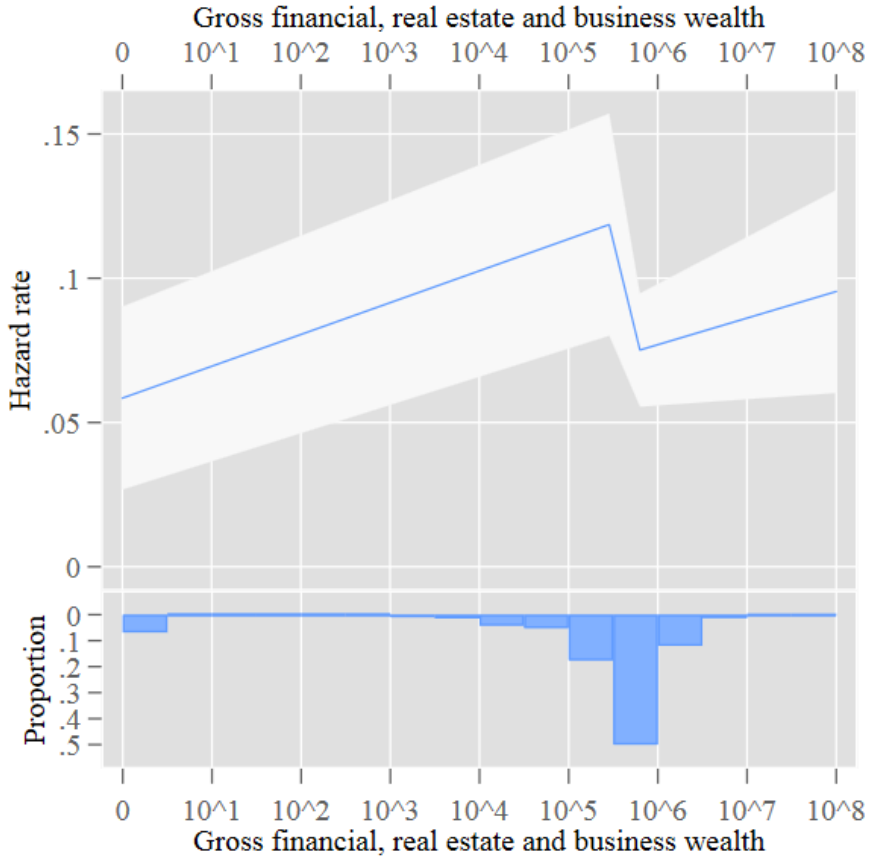
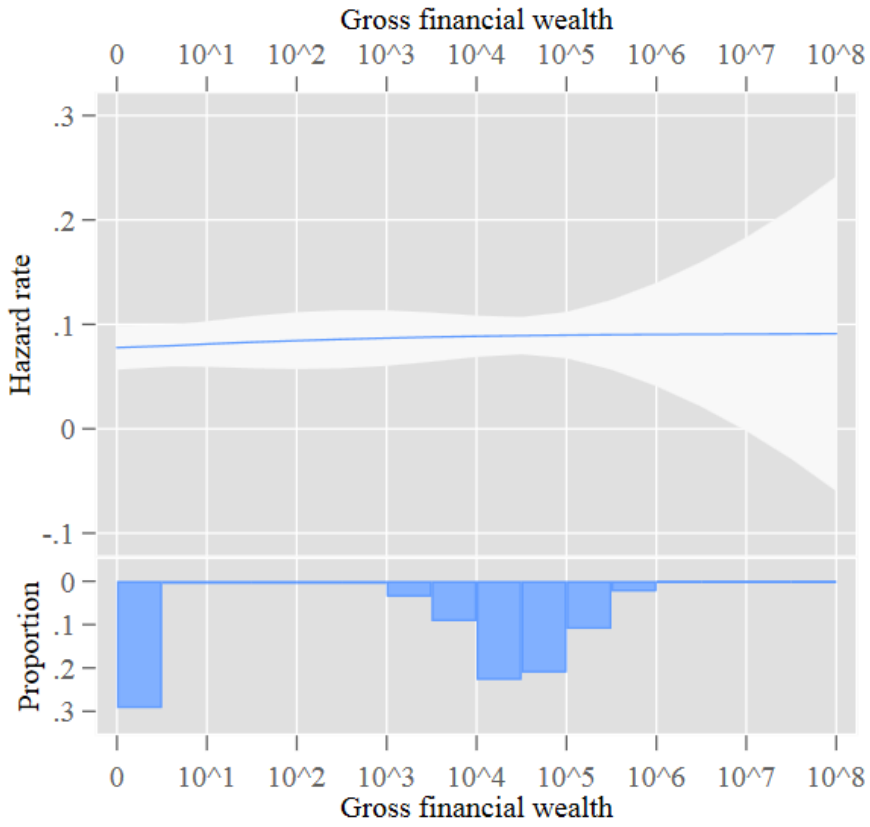


Figure 4: Average predicted transition probabilities across financial wealth (quadratic specification)



Note: Maximum at 1.0e+06 [0.0,9.1e+57]

Figure 5: Average predicted transition probabilities across financial wealth (splines specification)

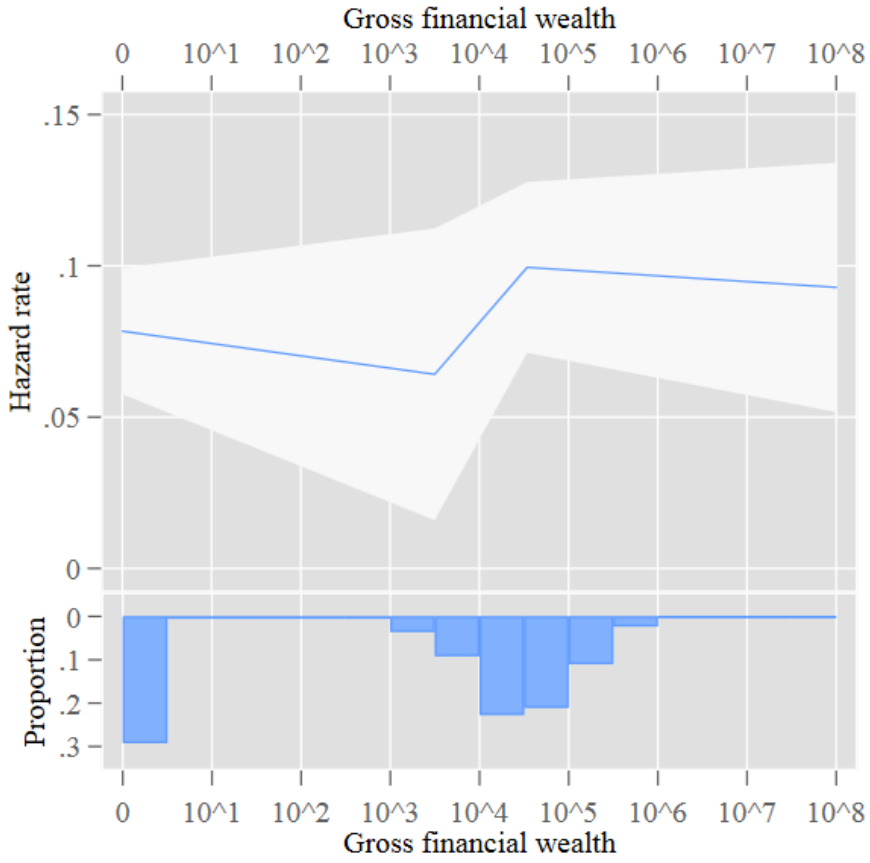


Figure 6: Average predicted transition probabilities across privately used real estate wealth (quadratic specification)

Note: Maximum at 979.9 [329.6,2,913.3]

Figure 7: Average predicted transition probabilities across privately used real estate wealth (splines specification)

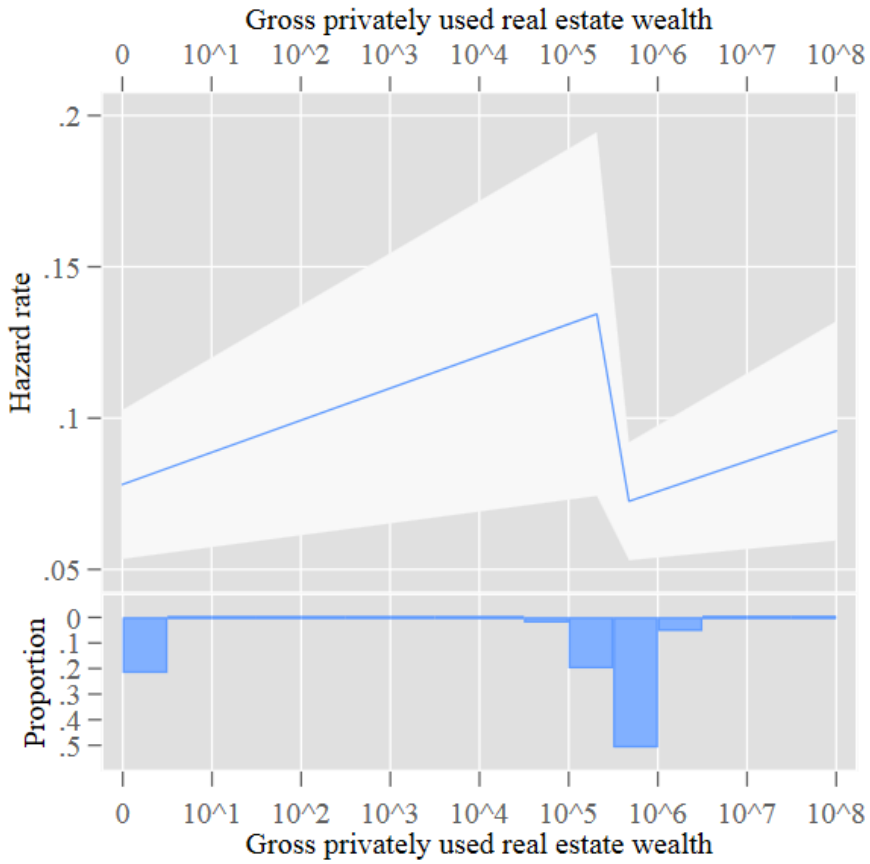


Table A1: Summary statistics of the GSOEP 2012 sample

	%	Mean	SD	Median	Min	Max
Independent variables						
WEALTH COMPONENTS (P)						
Gross financial and real estate wealth		146,782	362,735	24,486	0	38,436,520
Gross financial and real estate debt		26,560	87,990	0	0	3,917,728
Gross financial wealth		19,584	80,660	490	0	3,917,728
Gross financial debt		2,783	36,253	0	0	3,917,728
Privately used real estate wealth		92,264	148,476	0	0	2,938,296
Privately used real estate debt		17,639	47,924	0	0	1,106,758
Other real estate wealth		25,593	184,649	0	0	9,794,319
Other real estate debt		6,138	61,100	0	0	2,938,296
Business wealth		9,342	162,135	0	0	32,951,700
EDUCATION (P)						
Both parents not more than elementary education	37.2					
At least one parent secondary education, none higher	40.8					
At least one parent tertiary education	22.1					
INCOME (P)						
Household net income		2,823	2,034	2,449	0	195,886
SOCIAL CLASS (P)						
Not employed	45.3					
At least one parent higher level manager/professional	7.7					
At least one parent lower level manager/professional, none higher	14.6					
At least one parent routine non-manual worker, none higher	14.6					
At least one parent small self-employed, none higher	2.8					
At least one parent manual supervisor/skilled manual worker, none higher	7.4					
Both parents not more than unskilled manual worker/agric. labourer	7.6					

Note: Income and wealth values are in Euros in 2011 rates. N= 24,974. (P) stands for parents; (C) stands for children.

Comparison of our analysis sample with the 2012 SOEP sample: Regarding parental education, in our analytical sample, we have a very strong underrepresentation of the low educated (–30%) and an overrepresentation of the highly educated (+33%) as compared to the 2012 sample. The mean and median parental incomes are about 800 Euros higher in our analytical sample as compared to the 2012 sample. In our analytical sample we have a strong overrepresentation of the manager and professional class (+46%) among the respondents' parents, and an underrepresentation of the working class (–9%) as compared to the 2012 sample. Regarding gross parental wealth, we have a very strong positive selection in our analysis sample. Compared to the 2012 sample, mean wealth in the analysis sample is about four times higher and median wealth even about 18 times higher. Similar trends apply to gross debts. The low variance in the measures of parental background might become a problem for the statistical power of our analyses.

Table A2: Correlations of wealth components and parental socio-economic background variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
WEALTH COMPONENTS																				
(1) Gross financial, real estate and business wealth	1.00	0.62	0.33	0.09	0.31	0.59	0.77	0.64	0.67	-0.01	-0.09	0.10	0.11	-0.03	0.15	-0.06	-0.08	0.04	-0.02	-0.04
(2) Gross financial, real estate and business debt	0.62	1.00	0.08	0.33	0.67	0.55	0.77	0.89	0.05	-0.05	-0.07	0.10	0.11	-0.02	0.11	-0.03	-0.07	0.01	-0.03	-0.03
(3) Gross financial wealth	0.33	0.08	1.00	-0.03	-0.05	0.18	0.18	0.14	0.11	-0.07	-0.10	0.14	0.10	-0.02	0.14	-0.02	-0.09	-0.02	-0.06	-0.03
(4) Gross financial debt	0.09	0.33	-0.03	1.00	0.06	0.09	0.10	0.15	0.02	-0.01	-0.04	0.04	0.07	-0.03	0.08	-0.04	-0.01	-0.01	-0.01	-0.02
(5) Gross privately used real estate wealth	0.31	0.67	-0.05	0.06	1.00	0.60	0.24	0.31	-0.02	-0.06	-0.09	0.12	0.10	0.01	0.06	0.03	-0.06	-0.05	-0.02	-0.04
(6) Gross privately used real estate debt	0.59	0.55	0.18	0.09	0.60	1.00	0.41	0.38	0.04	-0.06	-0.07	0.10	0.13	-0.03	0.11	-0.01	-0.09	0.02	0.00	-0.08
(7) Gross other real estate wealth	0.77	0.77	0.18	0.10	0.24	0.41	1.00	0.89	0.17	-0.02	-0.05	0.06	0.07	-0.02	0.11	-0.06	-0.06	0.06	-0.00	-0.01
(8) Gross other used real estate debt	0.64	0.89	0.14	0.15	0.31	0.38	0.89	1.00	0.08	-0.03	-0.04	0.05	0.07	-0.03	0.10	-0.04	-0.05	0.04	-0.02	-0.02
(9) Business wealth	0.67	0.05	0.11	0.02	-0.02	0.04	0.17	0.08	1.00	0.05	-0.06	0.03	0.03	-0.01	0.07	-0.04	-0.02	0.01	-0.02	-0.01
EDUCATION																				
(10) Both partner not more than elementary education	-0.01	-0.05	-0.07	-0.01	-0.06	-0.06	-0.02	-0.03	0.05	1.00	-0.22	-0.32	-0.21	0.14	-0.16	-0.02	-0.01	0.02	0.24	0.07
(11) At least one parent secondary education, none higher	-0.09	-0.07	-0.10	-0.04	-0.09	-0.07	-0.05	-0.04	-0.06	-0.22	1.00	-0.85	-0.07	-0.04	-0.23	-0.07	0.25	0.14	0.06	0.09
(12) At least one	0.10	0.10	0.14	0.04	0.12	0.10	0.06	0.05	0.03	-0.32	-0.85	1.00	0.18	-0.03	0.31	0.08	-0.24	-0.15	-0.19	-0.12

partner tertiary education																			
INCOME																			
(13) Log sum of parental net income	0.11	0.11	0.10	0.07	0.10	0.13	0.07	0.07	0.03	-0.21	-0.07	0.18	1.00	-0.86	0.28	0.14	-0.02	-0.06	-0.00	-0.04
SOCIAL CLASS																			
(14) Both parents not employed	-0.03	-0.02	-0.02	-0.03	0.01	-0.03	-0.02	-0.03	-0.01	0.14	-0.04	-0.03	-0.86	1.00	-0.14	-0.16	-0.10	-0.04	-0.04	-0.03
(15) At least one parent higher level manager/professional	0.15	0.11	0.14	0.08	0.06	0.11	0.11	0.10	0.07	-0.16	-0.23	0.31	0.28	-0.14	1.00	-0.52	-0.32	-0.12	-0.14	-0.10
(16) At least one parent lower level manager/professional, none higher	-0.06	-0.03	-0.02	-0.04	0.03	-0.01	-0.06	-0.04	-0.04	-0.02	-0.07	0.08	0.14	-0.16	-0.52	1.00	-0.35	-0.14	-0.16	-0.11
(17) At least one parent routine non-manual worker, none higher	-0.08	-0.07	-0.09	-0.01	-0.06	-0.09	-0.06	-0.05	-0.02	-0.01	0.25	-0.24	-0.02	-0.10	-0.32	-0.35	1.00	-0.08	-0.10	-0.07
(18) At least one parent small self-employed, none higher	0.04	0.01	-0.02	-0.01	-0.05	0.02	0.06	0.04	0.01	0.02	0.14	-0.15	-0.06	-0.04	-0.12	-0.14	-0.08	1.00	-0.04	-0.03
(19) At least one parent manual supervisor/skilled manual worker, none higher	-0.02	-0.03	-0.06	-0.01	-0.02	0.00	-0.00	-0.02	-0.02	0.24	0.06	-0.19	-0.00	-0.04	-0.14	-0.16	-0.10	-0.04	1.00	-0.03
(20) Both parents not more than unskilled manual worker/agric. labourer	-0.04	-0.03	-0.03	-0.02	-0.04	-0.08	-0.01	-0.02	-0.01	0.07	0.09	-0.12	-0.04	-0.03	-0.10	-0.11	-0.07	-0.03	-0.03	1.00

Note: Estimation with sample design weights.

Table A3: Complete logistic regression models: Transition into higher education or labor market (combined and separate wealth components, quadratic and splines specification)

	Combined wealth, quadr. spec.		Combined wealth, splines spec.		Financial wealth, quadratic spec.		Financial wealth, splines spec.		Priv. used real estate wlt., quadr. spec.		Priv. used real estate wlt., splines spec.	
	exp(b)	se	exp(b)	se	exp(b)	se	exp(b)	se	exp(b)	se	exp(b)	se
WEALTH COMPONENTS (P)												
Log. gross financial, real estate and business wealth	1.09	(0.08)										
Log. gross financial, real estate and business wealth, squared	1.00	(0.00)										
Log. gross financial, real estate and business wealth, linear spline on [0 EUR, 286k EUR]			1.06*	(0.03)								
Log. gross financial, real estate and business wealth, linear spline on [286k EUR, 631k EUR]			0.96*	(0.02)								
Log. gross financial, real estate and business wealth, linear spline on [631k EUR, 100M EUR]			1.01	(0.01)								
Log. gross financial, real estate and business wealth debt	0.99	(0.01)	0.99	(0.01)								
Log. gross financial wealth					1.02	(0.06)			1.01	(0.01)	1.01	(0.01)
Log. gross financial wealth, squared					1.00	(0.01)						
Log. gross financial wealth, linear spline on [0 EUR, 3164 EUR]							0.97	(0.05)				
Log. gross financial wealth, linear spline on [3164 EUR, 34k EUR]							1.05	(0.05)				
Log. gross financial wealth, linear spline on [34k EUR, 100M EUR]							0.99	(0.02)				
Log. gross financial debt					1.01	(0.01)	1.01	(0.01)	1.02	(0.01)	1.01	(0.01)
Log. gross privately used real estate wealth									1.20	(0.15)		
Log. gross privately used real estate wealth, squared									0.99	(0.01)		
Log. gross privately used real estate wealth, linear spline on [0 EUR, 208k EUR]											1.05*	(0.02)
Log. gross privately used real estate wealth, linear spline on [208k EUR, 475k EUR]											0.95*	(0.02)
Log. gross privately used real estate wealth, linear spline on [475k											1.02	(0.01)

EUR, 100M EUR]												
Log. gross privately used real estate debt									0.98	(0.01)	0.98	(0.01)
Log. gross business wealth					1.01	(0.01)	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)
Log. gross other real estate wealth					0.99	(0.01)	0.99	(0.01)	0.99	(0.01)	0.99	(0.01)
Log. gross other real estate debt					1.02	(0.02)	1.02	(0.02)	1.02	(0.02)	1.02	(0.02)
EDUCATION (P)												
Both partner not more than elementary education (ref.cat.)												
At least one parent secondary education, none higher	0.74	(0.17)	0.75	(0.18)	0.75	(0.17)	0.76	(0.17)	0.77	(0.17)	0.77	(0.17)
At least one partner tertiary education	0.77	(0.19)	0.79	(0.20)	0.78	(0.19)	0.80	(0.20)	0.81	(0.20)	0.80	(0.20)
INCOME (P)												
Log sum of parental net income	1.12	(0.10)	1.12	(0.11)	1.10	(0.11)	1.09	(0.11)	1.14	(0.12)	1.12	(0.12)
OCCUPATION (P)												
Both parents unemployed	3.57	(2.55)	3.52	(2.75)	3.21	(2.52)	2.98	(2.41)	3.74	(3.00)	3.43	(2.76)
At least one parent higher level manager/professional (ref.cat.)												
At least one parent lower level manager/professional, none higher	1.10	(0.17)	1.09	(0.17)	1.15	(0.17)	1.12	(0.17)	1.15	(0.17)	1.14	(0.17)
At least one parent routine non-manual worker, none higher	0.88	(0.16)	0.89	(0.17)	0.94	(0.18)	0.92	(0.17)	0.92	(0.17)	0.95	(0.18)
At least one parent small self-employed, none higher	0.87	(0.25)	0.79	(0.24)	0.82	(0.24)	0.80	(0.24)	0.78	(0.24)	0.66	(0.22)
At least one parent manual supervisor/skilled manual worker, none higher	1.83	(0.64)	1.73	(0.63)	1.99	(0.70)	1.94	(0.68)	1.99*	(0.69)	2.09*	(0.72)
Both parents not more than unskilled manual worker/agric. labourer	0.50	(0.25)	0.46	(0.24)	0.52	(0.26)	0.52	(0.26)	0.46	(0.24)	0.38	(0.21)
MARITAL STATUS (P)												
Parents never married (ref.cat.)												
Parents divorced/widowed	0.94	(0.18)	0.96	(0.19)	0.91	(0.18)	0.90	(0.18)	0.90	(0.18)	0.88	(0.17)
Parents married	0.73*	(0.12)	0.75	(0.12)	0.72*	(0.12)	0.73*	(0.12)	0.70*	(0.11)	0.70*	(0.11)
FURTHER CONTROLS												
Age of oldest living parent	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)	1.01	(0.01)
Reciprocal of number of siblings	1.18	(0.37)	1.22	(0.38)	1.18	(0.37)	1.15	(0.37)	1.19	(0.38)	1.37	(0.42)
Child female	1.79***	(0.22)	1.80***	(0.22)	1.75***	(0.21)	1.76***	(0.21)	1.78***	(0.21)	1.77***	(0.22)
At least one parent lived in east Germany in 1989	0.95	(0.16)	0.90	(0.16)	0.99	(0.17)	0.96	(0.17)	0.93	(0.16)	0.93	(0.17)
Child native (ref.cat.)												
Child 1st. generation migrant	1.61	(0.80)	1.63	(0.80)	1.53	(0.71)	1.49	(0.71)	1.64	(0.77)	1.61	(0.81)
Child 2nd. generation migrant	1.38	(0.26)	1.39	(0.27)	1.33	(0.26)	1.34	(0.26)	1.41	(0.27)	1.39	(0.27)
Time interval between measurement	1.08	(0.10)	1.07	(0.10)	1.07	(0.10)	1.07	(0.10)	1.09	(0.10)	1.09	(0.11)

of wealth and exit of secondary education												
School exit cohort 1992-1998	6.69*	(6.14)	6.35	(6.01)	5.95	(5.64)	5.92	(5.61)	7.20*	(6.87)	7.04	(7.21)
School exit cohort 1999	5.46*	(3.87)	5.16*	(3.78)	5.46*	(3.94)	5.53*	(4.00)	6.26*	(4.57)	6.47*	(5.11)
School exit cohort 2000	1.87	(1.54)	1.92	(1.58)	1.64	(1.36)	1.70	(1.41)	2.02	(1.67)	2.10	(1.82)
School exit cohort 2001	3.82*	(2.46)	3.73*	(2.48)	3.55*	(2.26)	3.59*	(2.30)	3.92*	(2.55)	4.18*	(2.95)
School exit cohort 2002	2.89*	(1.51)	3.01*	(1.63)	2.66	(1.39)	2.68	(1.42)	3.03*	(1.62)	3.05	(1.78)
School exit cohort 2003	4.36**	(2.06)	4.47**	(2.20)	4.00**	(1.90)	4.05**	(1.95)	4.14**	(2.02)	4.41**	(2.33)
School exit cohort 2004	1.97	(0.89)	2.10	(0.98)	1.88	(0.86)	1.92	(0.89)	1.88	(0.88)	2.03	(1.03)
School exit cohort 2005	3.25	(2.07)	3.17	(2.08)	3.03	(1.96)	3.04	(1.99)	3.56	(2.34)	3.46	(2.45)
School exit cohort 2006	3.46	(2.22)	3.63*	(2.36)	3.24	(2.07)	3.32	(2.13)	3.80*	(2.44)	3.88*	(2.64)
School exit cohort 2007	3.79*	(2.07)	3.92*	(2.20)	3.32*	(1.81)	3.42*	(1.87)	3.60*	(2.00)	3.83*	(2.30)
School exit cohort 2008	4.76**	(2.51)	4.85**	(2.63)	4.46**	(2.34)	4.61**	(2.45)	4.69**	(2.53)	4.84**	(2.80)
School exit cohort 2009	2.17	(0.98)	2.30	(1.08)	2.09	(0.96)	2.14	(0.99)	2.27	(1.06)	2.43	(1.23)
School exit cohort 2010	4.18*	(2.68)	4.39*	(2.88)	3.82*	(2.48)	3.95*	(2.57)	4.36*	(2.86)	4.81*	(3.40)
School exit cohort 2011	2.87	(1.71)	2.64	(1.64)	2.67	(1.62)	2.78	(1.70)	2.86	(1.76)	2.91	(1.93)
School exit cohort 2012	2.52	(1.31)	2.64	(1.42)	2.47	(1.31)	2.52	(1.35)	2.56	(1.38)	2.74	(1.60)
School exit cohort 2013	1.55	(0.78)	1.63	(0.84)	1.46	(0.73)	1.46	(0.74)	1.56	(0.80)	1.68	(0.92)
School exit cohort 2014	0.44	(0.24)	0.45	(0.25)	0.43	(0.22)	0.47	(0.24)	0.46	(0.24)	0.47	(0.27)
School exit cohort 2015 (ref.cat.)												
Relative change in GDP (per capita, seasonally and inflation adjusted	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)	0.00***	(0.00)
1st year after exit from secondary education (ref.cat.)												
2nd year after exit from secondary education	2.59***	(0.38)	2.62***	(0.38)	2.61***	(0.39)	2.62***	(0.39)	2.65***	(0.39)	2.64***	(0.39)
3rd year after exit from secondary education	1.56	(0.36)	1.64*	(0.38)	1.55	(0.37)	1.57	(0.37)	1.60*	(0.38)	1.64*	(0.38)
4th year after exit from secondary education	0.35**	(0.13)	0.37**	(0.14)	0.35**	(0.13)	0.35**	(0.13)	0.36**	(0.14)	0.39**	(0.14)
After 4th year after exit from secondary education	0.05***	(0.03)	0.05***	(0.03)	0.05***	(0.03)	0.05***	(0.03)	0.05***	(0.03)	0.06***	(0.04)
Constant	4.3×10^{7}**	(2.3×10^{8})	2.3×10^{7}**	(1.3×10^{8})	7.5×10^{7}**	(4.1×10^{8})	7.5×10^{7}**	(4.1×10^{8})	4.6×10^{7}**	(2.5×10^{8})	2.5×10^{7}**	(1.3×10^{8})
Number of children	1045		1045		1045		1045		1045		1045	
Number of children X months	10880		10880		10880		10880		10880		10880	

Note: Estimation with sample design weights; Cluster-robust standard errors with correction for multiple imputations of wealth. (P) stands for parents; (C) stands for children; * p<.05, ** p<.01, *** p<.001.