Wealth, savings, and returns over the life cycle: the role of education*

Anastasia Girshina†

JOB MARKET PAPER

This draft: November, 2019.
The most recent version is available here.

Abstract

This paper studies the effect of education on wealth and wealth accumulation over the life cycle. The analysis relies on an administrative panel that reports educational attainment and detailed information on assets and liabilities of Swedish residents. To identify the causal effect of education, I employ three alternative identification strategies which rely on controlling for predetermined family background and ability, within-siblings variation in educational attainment, and a compulsory schooling reform. I find that education has a positive, large, and long-lasting effect on net worth. I further show that it affects all balance sheet components and that these effects vary over the life cycle. Finally, I document that the differences in wealth are driven by both higher savings and higher portfolio returns among the more educated, although their relative importance varies over time. My results have implications for theoretical work on optimal consumption-saving behavior and portfolio choice, as well as for fiscal and social security policy. Overall, the findings suggest that considering only wage returns to education greatly understates its economic implications.

JEL: G5, D1, D31, G11.
Keywords: Household finance, wealth accumulation, savings, returns, education.

*Previously circulated as "Education and Wealth Accumulation: Evidence from Sweden". I am indebted to Paolo Sodini for his continuous guidance and support. I am also grateful to Francisco Gomes and Christos Koulovatianos for their comments and precious advice. I further thank Anders Anderson, Laurent Bach, Giorgia Barboni, Bo Becker, Joao Cocco, Russell Cooper, Mariassunta Giannetti, Michael Halling, Alexander Ljungqvist, Alexander Michaelides, Olivia Mitchell, Monica Paiella, Kim Peijnenburg, David Robinson, Riccardo Sabbatucci, Kathrin Schlafmann, Ulf von Lilienfeld-Toal, Stephen Zeldes, and Irina Zviadadze as well as many seminar participants at Stockholm School of Economics, Luxembourg School of Finance, and ESSEC Business School for their valuable feedback and helpful discussions.

†Swedish House of Finance at Stockholm School of Economics. *E-mail:* anastasia.girshina@hhs.se.

1 Introduction

Education is often thought to be a major driver of social and economic mobility. Motivated by this consideration, many countries guarantee its minimum level and support its acquisition. In 2016, OECD countries spent an average of 5% of their GDP to finance educational institutions, although the extent of these investments varied considerably across the member states. In Europe, the education expenditures per student ranged from 20 thousand dollars in Southern and Eastern Europe to 35 thousand dollars in Scandinavian countries. In the US, these expenses were 12 thousand dollars for primary and secondary education and 30 thousand dollars for higher education, with the Federal government spending about 150 billion dollars on college student aid.[1] Despite the large variation in the amount of resources invested in education and the overall magnitude of the issue, the financial returns to schooling, beyond its effects on employment and earnings, are largely unexplored. As even small differences in financial decisions early in life can lead to large wealth disparities later in the life cycle and financial security in retirement is increasingly dependent on private savings, and in light of rising costs of education and soaring student debt, it is of utmost importance for policymakers and researchers alike to understand how education affects wealth and its accumulation.

The relationship between education and wealth is not straightforward, despite the well-established fact that education increases labor income.[2] In standard life-cycle models of consumption and portfolio choice, wealth accumulation depends not only on lifetime earnings profiles, but also on the rate of time preference, risk aversion, and the intertemporal elasticity of substitution, all of which could covary with education (e.g., Cagetti, 2003; Calvet et al., 2019). In the presence of labor income risk, the effect of schooling on wealth accumulation is also ambiguous, since it affects both ex-ante income uncertainty (Guvenen, 2007, 2009) and persistence and volatility of income shocks (Hubbard et al., 1994; Carroll and Samwick, 1997), with potentially opposing implications for precautionary savings and wealth. Besides, saving and investment decisions could vary with education due to its effect on life expectancy (e.g., Poterba et al., 2013), human capital (e.g., Viceira, 2001; Cocco et al., 2005) and habit (e.g., Polkovnichenko, 2006), as well as the ability to bear financial market participation costs (e.g., Vissing-Jorgensen, 2003) and to make sound financial decisions (e.g., Calvet et al., 2007; Lusardi et al., 2017).[3] Together, all these differences across education groups might lead to large dispersion in their lifetime wealth, the extent of which is theoretically ambiguous.

In this paper, I investigate the relationship between education and wealth accumulation empirically. Specifically, I answer the following questions. What is the causal effect of education on wealth over the life cycle? How does education affect household assets and liabilities? How does it affect savings and portfolio returns? Despite the evident importance of understanding the role of education for household wealth accumulation, there are few existing studies and their conclusions diverge. On the one hand, Bingley and Martinello (2017) find that the net worth, liquid assets, and housing equity of Danish households *decline* with education. On the other hand, education has

[1] See Education at a Glance, OECD indicators, 2019 and Trends in Student Aid, College Board, 2019. The values are reported in 2016 US dollars.

[2] The body of research studying wage returns to education is large. Seminal studies include Angrist and Krueger (1991), Ashenfelter and Krueger (1994), and Card (1999). For more recent evidence see Bhuller et al. (2017).

[3] Among other important works studying the determinants of portfolio decisions, which could in turn be affected by education, are: Carroll et al. (2000), Constantinides (1990), Campbell and Cochrane (1999), Chetty and Szeidl (2007) (habit); Cocco (2005), Alan (2006) (participation costs); Campbell (2006), and Calvet et al. (2009a) (financial sophistication).

been associated with larger savings (e.g., Dynan et al., 2004) and better financial decisions (e.g., Cole et al., 2014). Given the ambiguity of the existing evidence, understanding how education affects wealth and wealth accumulation remains an open empirical question.

Documenting a comprehensive picture of the relationship between education and wealth over the life cycle is challenging. First, such analysis requires a dataset containing detailed information on household assets and liabilities, as well as on their savings and investment returns. Second, factors correlated with both education and wealth, such as family background or innate ability, are typically not observed, resulting in a notoriously difficult identification problem due to an omitted variable bias. For example, if more educated individuals tend to be from more advantageous family backgrounds or more intelligent, then they are likely to be wealthier even without additional schooling. If this heterogeneity is not accounted for by control variables, it is difficult to ascertain the extent to which differences in wealth across education groups are *caused* by differences in education and the extent to which they a driven by unobserved factors that affect both education and wealth. I solve these issues as described below.

To overcome the data challenge, I construct a rich longitudinal dataset based on the entire Swedish population. This panel contains administrative records on the educational attainment of every Swedish resident and detailed information on each component of their balance sheets. On the assets side, I observe household non-pension wealth at the level of each bank account, financial security, and real estate property, as well as the flow of private pension contributions. This granularity of the data allows me to distinguish between *passive* savings due to changing asset prices and *active* savings, which exclude the effect of price fluctuations. I am therefore able to study not only how education affects household assets, but also returns on their investments as well as savings, including that in pension wealth.[4] On the liabilities side, I observe end-of-year outstanding debt at the level of each student and non-student loan, as well as interests paid during the year. To complete the picture, I complement this dataset with the information on household earnings, and on the taxes and transfers households pay and receive.

To identify the causal effect of education, I employ two alternative identification strategies. Both rely on the idea that omitted variable bias could be driven by unobserved family background and/or by unobserved ability. In the first approach, I exploit the richness of the historical information on intergenerational links and household characteristics dating back to as early as the 1960s to explicitly control for this typically unobserved heterogeneity. I capture *predetermined* differences in family background by using information on parental composition, education, and income in one's adolescence before educational choices were made. I account for potential differences in intergenerational transfers across education groups by controlling for whether any of the parents have died before I observe a person's wealth. I capture heterogeneity in innate ability by conditioning on the score in ability testing conducted as part of the compulsory military enlistment process.[5]

[4]In this paper, I follow the terminology adopted in Dynan et al. (2004) and Calvet et al. (2009a): I refer to capital gains as "passive savings" or "passive appreciation", and to change in wealth net of capital gains as "active savings". Other papers in the literature refer to total change in wealth, including capital gains, as "gross saving" and to change in wealth net of capital gains as "net saving" (e.g., Fagereng et al., 2019).

[5]Like the majority of the literature studying returns to schooling and following Lusardi et al. (2017), in the main empirical analysis I focus on the working male population. This is for two reasons: first, because military service was compulsory only for males, and second, because of low labor market participation rates among women in the early periods. In the robustness analysis, I show, first, the results estimated using the within-siblings specification for women, and second, the effect of education on wealth defined at household level. Both analyses result in qualitatively similar estimated effects and lead to the same conclusion.

In the second approach, I address the endogeneity of schooling by exploiting within-siblings variation in education. This identification strategy addresses selection bias to the extent family background and innate characteristics are correlated within siblings. I further include siblings-year fixed effects to account for the events that could happen to siblings jointly in a given year, such as receiving an inheritance.[6]

The key identification assumption underlying these empirical strategies is that conditional on predetermined family background and innate ability, or on siblings-year fixed effects, the educational attainment is uncorrelated with unobservables that affect wealth accumulation. Arguably, however, in the absence of a perfect experiment in which education is randomly assigned across individuals whose wealth is compared later in life, the estimated effect of education could still be biased if unobserved heterogeneity correlated with both education and wealth is not accounted for completely. To this end, I perform a robustness exercise that exploits a reform of compulsory schooling as a source of exogenous variation in educational attainment.[7] In Sweden, this reform was implemented over the period between 1950 and 1962. It raised compulsory schooling requirements from seven to nine years. Importantly, it was introduced gradually and came into force at different times in different municipalities. Given this staggered implementation, the duration of compulsory schooling at that time depended solely on an individual's birth year and municipality of residence. Thus, conditional on birth cohort- and municipality-fixed effects, exposure to the reform was "as good as random". The results of the analysis using exposure to the reform as an instrumental variable for educational attainment validate the results obtained by estimating the parental background and ability controls and within-siblings specifications, and support my conclusions.[8]

In the main analysis, I focus on individuals aged 30 to 49 years and compare net wealth, balance sheet composition, savings, and returns over time and across education groups.[9] I consider four levels of education: compulsory school, not completed high school, or *high school dropouts*, completed high school, and post high school education.[10] The results of my study can be summarized as follows.

[6]In the main analysis, I restrict the sample to individuals who have a brother. In the Internet Appendix, I report the results estimated on the sample without this restriction.

[7]Identification strategy exploiting compulsory schooling reform to instrument years of schooling is widely used to study wage returns on education (see for instance, Bhuller et al. (2017)). In Sweden, this reform has been used to study causal effects of education in alternative settings: see among others, Meghir and Palme (2005) (labor income); Hjalmarsson et al. (2015) (crime); Lundborg et al. (2018) (stock market participation).

[8]I use the reform identification strategy as a robustness exercise instead of main empirical approach for two reasons. First, it limits the sample to individuals aged 50-59, whereas one goal of this paper is to understand the life-cycle wealth dynamics. Second, to use this strategy, I have to impose the linearity assumption on the effects of education, since there is only one instrument, whereas different levels of education have different effects on financial behavior.

[9]In the main analysis, I restrict the sample to individuals aged 30-49 for two reasons. At the lower end, I consider those who are at least 30 years old, because I focus on the working population rather than students. At the upper end, the restriction is driven by the fact that ability scores are only available for cohorts born in 1950 or later. Given that I observe wealth between 1999 and 2007 and to ensure that I observe each age in each wealth year, the oldest individuals I include in the main sample are 49 years old. In the empirical analysis, I group individuals in age buckets consisting of five ages each (i.e., 30-34, 35-39, 40-44, 45-49). I report the life-cycle wealth profiles for individuals aged 20-84 as summary statistics.

[10]The majority of the literature typically considers three levels of education: high school dropouts, completed high school, and post high school. Thus, according to this classification, my compulsory school and not completed high school groups would both be part of the high school dropouts group. I analyze the effect of education at a finer level for lower levels of educational attainment, since it is allowed by the granularity of the data on educational attainment, which records each accomplished year of schooling, and by the fact that the statistical power is not limited by a small sample size.

First, education has a positive, large, and long-lasting effect on net worth. Conditional on predetermined family background and ability, the difference between the net worth of individuals with some college education compared to those with only compulsory educational attainment is about \$17,000 early in life and about \$45,000 later in the life cycle.[11] To put these numbers in perspective, having some post high school education as opposed to dropping out after compulsory school nearly doubles net worth at age 30-34 and increases it by about 75% at age 45-49. Relative to income, these differences represent about 50% and 100% of the annual earnings of college-educated individuals in the two age groups respectively.

The difference in net wealth between consecutive levels of education is about the same across education groups early in life and it is larger for higher levels of education later. At age 45-49, the effect of having attended college as opposed to stopping studies right after high school accounts for about 60% of the total difference in wealth between college-educated individuals and those with compulsory schooling. In contrast, having attended but not completed high school does not have any effect on wealth at that age.

The estimates show that, indeed, more educated individuals are better off financially in part because they come from better educated and richer families and because they have higher innate ability. Controlling for parental background and ability accounts for about half of the effect of education compared to the specification with birth year and municipality fixed effects. Including siblings-year fixed effects further decreases the coefficients, suggesting that they capture additional unobserved heterogeneity, such as differences in inter vivos transfers and risk and time preferences.

While education affects all balance sheet components rather than a particular asset class, the relative importance of these effects varies over the life cycle. At age 30-34, having obtained at least some college education as opposed to dropping out after compulsory school has an effect of about \$20,000 on both financial and real estate wealth. As individuals age, the difference in financial assets remains rather constant, while it is twice as large for real estate at age 45-49. On the liabilities side, education increases the amount of outstanding debt throughout the life cycle. This effect is at its greatest at the beginning of working life, when more educated individuals have larger student loans.

What leads to these differences in wealth? To answer this question, I exploit the richness of the data and study how education affects wealth accumulation. I find that it has a large positive effect on *total* savings, defined as a sum of *active* and *passive* change in wealth, but that the role of saving decisions and capital gains varies over time. Early in life, education affects wealth accumulation primarily through its effect on *active* savings in real estate, whereas later in life, it is its *passive* appreciation that matters most. Education also increases both *active* and *passive* savings in financial wealth, which together contribute about 10% to the total effect of education on *total* savings between 30 and 49 years old.

The decline in the effect of education on *active* change in real estate over time is accompanied by the increase in the effect on pension savings rather than on consumption. This implies that education has a positive effect on saving rate out of labor income, where the nominator is defined as a sum of *active* savings in real estate and in financial wealth and private pension contributions. More specifically, attending college increases a person's saving rate by about 5 percentage points, or 50%, compared to the compulsory level of education, and this effect is relatively constant over

[11] All monetary values are reported in real 2007 US dollars (\$), with the consumer price index used to deflate nominal values.

the working life.

Finally, I show that education has a strong positive effect on portfolio realized returns. Compared to the returns on investments made by individuals with compulsory educational attainment, having at least some college education increases realized returns by about 100 basis points on a yearly basis. Importantly, I show that this effect is not only a result of period-specific price fluctuations, but is also due to systematic differences in investment behavior across education groups. Specifically, more educated individuals take more risk in their financial portfolios, as measured by their risky share, which is consistent with the idea of them having larger and safer human capital. Education also increases *expected* excess return on risky portfolio and this effect is larger once fund fees are taken into account, suggesting that education does improve financial choices. Together, differences in risky share and risky portfolio allocation between college-educated individuals and those with compulsory schooling translate to about a 20% difference in the expected return on their financial assets over a 20-year period. I study the effect of education on portfolio returns in greater detail in a companion paper.

This study makes several contributions to the existing literature. First and foremost, to the best of my knowledge, it is the first to provide a comprehensive empirical account of the causal effect of education on wealth and wealth accumulation over the life cycle. In the study closest to mine, Bingley and Martinello (2017) use distance to schools in Denmark to instrument years of schooling and find that education *decreases* the wealth of men in their 50s. I, on the other hand, employ three alternative identification strategies, including a reform of compulsory schooling, and find that education has a large positive effect on wealth and that this effect increases as individuals age. In addition, I also show that these differences in wealth are driven by different saving and investment decisions and that savings in financial, real estate, and pension wealth depend on education differently at different stages of the life cycle.

Second, the richness of my empirical results provides a battery of novel stylized facts that inform theoretical work on optimal consumption-saving behavior and portfolio choice. In this respect, my contribution to the literature is threefold. First, I show that education affects not only financial wealth but also real estate and liabilities. This fact highlights the importance of considering both housing wealth and borrowing decisions (e.g., Calvet et al., 2019) and provides empirical support to macro models with assets with varying degrees of liquidity (e.g., Kaplan and Violante, 2014, Kaplan et al., 2018).

The empirical facts documented in this paper could also be used as moments to guide the calibration and/or estimation of life-cycle models. For instance, in addition to the well-known fact that education affects stock market participation and risky share (e.g., Cole et al., 2014 and Lundborg et al., 2018), I show that it also increases saving rates. Comparing to the previous work that documents a positive correlation between savings and education (Dynan et al., 2004), I provide causal estimates of its effect and quantify the importance of distinguishing between *active* and *passive* savings. My findings suggest that models of optimal wealth accumulation should feature elements consistent with these results. For example, together with introducing such realistic features as a minimum guaranteed consumption floor and decreasing with education retirement replacement ratios, they might allow for the heterogeneity in life expectancy, bequest motives, as well as in the rate of time preference and the elasticity of intertemporal subsitution (e.g., Cagetti, 2003, Cooper and Zhu, 2016, and Calvet et al., 2019).

My results also provide evidence on additional sources of heterogeneity that could be readily accommodated by life-cycle models of optimal portfolio choice. In particular, I show that education affects not only labor income profiles, commonly used to introduce ex-ante heterogeneity in these models, but also portfolio returns. The differences in returns could prove important to match wealth-to-income ratios observed in the data and would amplify the mechanism suggested by Lusardi et al. (2017) which generates wealth dispersion through heterogeneity in financial sophistication and, thus, the risky share. Exploiting differences in returns is especially important in light of recent evidence that they are crucial for explaining wealth inequality (for a review, see DeNardi and Fella, 2017; for the empirical evidence, see Bach et al., 2018 and Fagereng et al., 2016; for an example of recent theoretical work, see Hubmer et al., 2019).

Third, my findings indicate that education might affect the marginal propensity to consume (MPC) through its effect on balance sheet composition. This is because MPC has been shown to depend not only on household net worth but also on how it is allocated between liquid and illiquid assets, since both these factors define the so-called *hand-to-mouth* households (Kaplan et al., 2014). More specifically, early in life the most educated have relatively small wealth while having large outstanding debt balances. This means that the value of their assets is almost entirely offset by liabilities, translating to low levels of net worth (the so-called *poor hand-to-mouth*). As these individuals age, they repay their debt and accumulate more assets, thus increasing their net worth. However, their balance sheets get increasingly dominated by housing and retirement wealth, effectively increasing their exposure to illiquid assets (the so-called *wealthy hand-to-mouth*, or households who hold little liquid wealth compared to illiquid assets). Coupled with the fact that income increases as individuals age, and even more so for the most educated, this composition effect might generate substantial heterogeneity across households in their response to income shocks. Understanding how education affects balance sheet composition has therefore potentially large implications for analyzing and forecasting the effect of fiscal policy.

Finally, my study is relevant for policy makers. In particular, my results suggest that education might prove to be an effective tool for tackling wealth inequality and fostering social mobility as it affects wealth *conditional* on parental background. Also, they show that considering only wage returns to education greatly understates its economic consequences. Overall, they point to the importance of considering the costs of education along with the implications for tax revenues and the costs of providing social security during working life and in retirement.

The remainder of the paper is organized as follows. In Section 2, I discuss the literature to which this paper contributes. In Section 3, I provide detailed description of the data used in the analysis and of the empirical strategy. I present the results and discuss potential mechanisms in Sections 4 and 5. I report a number of robustness checks in Section 6. Section 7 concludes.

2 The Background and Literature Review

This paper speaks to several strands of literature. First, my findings contribute to the long-standing body of research that studies economic returns on education. The vast majority of this work investigates the relationship between education and labor income and find positive returns of wages to education (see among others: Angrist and Krueger, 1991; Ashenfelter and Krueger, 1994; Card, 2001; Oreopoulos, 2007; Bhuller et al., 2017). The studies that look at the effect of education on wealth or its components are few, mostly due to the lack of adequate data and the difficulty

to estimate the causal effect of education. Among such is Bingley and Martinello (2017), the study closest to mine, who look at the effect of education on wealth and find that more educated individuals are wealth-poorer because they fall behind on building home-equity due to greater job mobility. A handful of studies look at how education affects investment choices. Among such are Cole et al. (2014), who document that more educated individuals have higher capital income, are more likely to participate in stock markets and are less likely to be subject to foreclosure; and Lundborg et al. (2018) who find that education increases the probability of owning stocks, but has no effect on the probability of investing in mutual funds.

Second, this paper contributes to a discussion on the role of financial literacy and sophistication for financial decisions which extensively documents that more sophisticated individuals make better financial choices (see among others: Lusardi and Mitchell, 2007, 2014; van Rooij et al., 2011; Lusardi and Tufano, 2015; Calvet et al., 2007, 2009a,b; Behrman et al., 2012; Behrman et al., 2010). My paper contributes to this strand of literature by documenting how education affects wealth and wealth accumulation over the life-cycle.

Next, the results of this paper contribute to the debate on how income translates into wealth through consumption-savings decisions and whether there are systematic differences in how people with different levels of education invest their savings. More specifically, it has been documented that higher income does not necessarily imply higher wealth and that at higher deciles of income wealth inequality is still substantial: there are many people who do save a lot and there are many people who save very little (Venti and Wise, 2001; Venti and Wise, 1998). It is an open debate, however, as to what leads to such wealth dispersion. For instance, Cooper and Zhu (2016), the only work that explicitly models the effect of education on wealth accumulation in the life cycle framework, show that wealth increases with education primarily because more educated individuals have enough income to sustain fixed financial market participation costs and are, therefore, able to take greater financial risks and generate larger returns. At the same time, they find only weak evidence of the importance of savings channel. However, since education is also known to affect income risk, it could also affect wealth accumulation through precautionary savings. It, therefore, remains an open empirical question to study through which channels education can affect wealth accumulation. My study sheds light on this issue by providing empirical evidence on how savings and portfolio allocation decisions vary across individuals with different educational attainment.

Understanding the role of education for consumption-savings and investment decisions ultimately matters for the wealth inequality debate. It is well known that wealth distribution is more skewed than that of income (Krusell and Smith, 1998) and there is mounting evidence that ability to earn returns on the investments is an important factor contributing to the observed wealth inequality (Bach et al., 2018; Fagereng et al., 2016). Moreover, as shown in (Lusardi et al., 2017), financial knowledge appears to be one of the key determinants of wealth inequality. This paper contributes to this research by providing empirical evidence on the extent to which education matters for wealth accumulation beyond its direct effect on labor income level.

3 Data and Empirical Strategy

To conduct the empirical analysis, I construct a rich longitudinal dataset using several registry databases maintained by Statistics Sweden. This panel contains detailed information on individuals' balance sheets, years of schooling, as well as on income, a wide range of socio-demographic characteristics, family links, and ability and preferences measures. In Section 3.1, I describe the

data on wealth and education. I provide detailed description of how I construct measures to account for individuals' socio-economic background in Section 3.3. I explain how I compute savings and returns in Section 5.

3.1 Wealth and education: data description, sources, and definitions

Wealth

To construct individuals' wealth, I use information from the Swedish Wealth registry and tax records compiled from tax returns and the information provided by banks and other financial institutions. The data include detailed information on all financial and real estate holdings and all formal loans of every Swedish resident from 1999 to 2007 as of December 31 of each year. All tax returns are filed individually since the Swedish tax code does not allow joint filing.[12]

I define *gross wealth* as a sum of *financial wealth* and *real estate wealth*.

Financial wealth is defined as a total value of non-pension liquid assets and consists of bank account balances, mutual funds, stocks, bonds, derivatives, structured financial products, and capital insurance. Bank account balances are reported if the account yields more than 100 Swedish kronor during the year (1999 to 2005 period), or if the year-end bank account balance exceeds 10,000 Swedish kronor (2006 and 2007). I impute unreported cash balances following the method developed in Calvet et al. (2007). To construct financial holdings other than bank accounts, I use information on financial assets at the level of individual security held by an individual at each account referenced by its International Security Identification Number (ISIN) and the pricing data on Nordic stocks and mutual funds from FINBAS[13], Datastream and Morningstar.

Real estate wealth consists of residential and commercial properties, evaluated by Statistics Sweden based on the tax value of every real estate property in Sweden, detailed property characteristics and hedonic pricing, and local price indices based on the information from real estate transactions.

Importantly, the detailed nature of information on both financial and real estate wealth, as well as on their pricing at the level of individual security and real estate property, allows me to distinguish between *active savings* and *passive appreciation* of the value of assets, thus building a precise measure of yearly flow of savings and realized returns. I provide detailed explanation on how I construct components contributing to wealth accumulation in Section 5.

On the liabilities side, I define *debt* as a sum of outstanding student loans (henceforth, *student debt*) and mortgages and all other liabilities to financial institutions (henceforth, *non-student debt*).

Finally, I define *net wealth* as the difference between *gross wealth* and *debt*.

For any given age, wealth is measured by the real value in the corresponding *wealth-year* for each birth cohort. Throughout the paper, all monetary values are reported in Swedish krona (SEK) and are adjusted for inflation to 2007 levels.[14]

[12]For a detailed description of Swedish Wealth Registry and institutional background, see Calvet et al. (2007), Calvet et al. (2009a), Calvet and Sodini (2014). In the main analysis, I study the effect of education on wealth defined at individual year. In the Internet Appendix, I repeat the analysis for wealth defined at a household level (Table IA.XX).

[13]FINBAS is a financial database maintained by the Data Center at the Swedish House of Finance which provides monthly returns, market capitalization, and book value of each publicly traded company for the 1983 to 2009 period. For more details, please see datacenter.houseoffinance.se.

[14]As of 2007, the Swedish krona was traded at $ 0.1547.

The resulting wealth panel contains highly disaggregated data free of measurement error since the information comes directly from financial institutions and state agencies, and is based on administrative tax information checked by the taxpayer. Further, it does not suffer from the selection bias since the data covers the entire Swedish population. However, it is important to acknowledge two main weaknesses of the dataset. First, I do not observe pension wealth. I address this issue by including private pension contributions in the measure of yearly savings. Second, I do not observe value of private businesses. To address this issue, I repeat the analysis excluding business owners from the sample.

Education

The main independent variables of interest are levels of education. To construct them, I rely on the information from the Longitudinal Integrated Database for Health Insurance and Labour Market Studies (*Longitudinell integrationsdatabas för Sjukförsäkrings- och Arbetsmarknadsstudier, LISA*) which contains data on the highest attained level of education by calendar year based on the Education Register (*Utbildningsregistret, UREG*). More specifically, I use the Statistics Sweden classification of education SUN2000 to impute the number of completed years of schooling and assign educational levels. In the empirical analysis, I focus on the differences in wealth accumulation behavior between four education groups: those who stopped studies after compulsory school, which corresponds to 7-9 years of schooling (henceforth, *compulsory school*); those who started but did not finish high school, which corresponds to 10-11 years of schooling (henceforth, *high school dropout*); those who completed high school and, thus, accomplished 12 years of schooling (henceforth, *high school*); and those who attended some university education and therefore stayed in school for at least 13 years (henceforth, *post high school*).[15].

I further complement the analysis with a wide array of historical socio-demographic information, which I explain in details in Section 3.3.

3.2 Descriptive evidence

Wealth monotonically increases with education. In a life-cycle perspective, the difference in wealth across education groups is negligible early in life, grows over time, and is the largest at retirement. Figure 1 plots education-specific life-cycle profiles of total assets (a), debt (b), and net worth (b) for individuals aged 20-84 residing in Sweden between 1999 and 2007.[16] Early in life, the difference in the average value of assets, the amount of outstanding debt, and the resulting net wealth across education groups is virtually non-existent. By the early thirties, average gross wealth among individuals with compulsory schooling was about SEK305,000 (corresponding to approximately $47,000), whereas wealth of the university-educated individuals of the same age was about SEK710,000 (approximately $110,000), or 2.3 times as much. By the early sixties, the gross wealth of the least educated increased to about SEK970,000 (approximately $150,000), whereas that of the most educated went up to about SEK 1.8 million ($285,000).

[15]I report the distribution of years of schooling and corresponding levels of education for the selected sample in the Internet Appendix (Figure IA.I and Table IA.II)

[16]Each point on the graph on Figure 1 reports average level of wealth and debt measured at individual level for men of a given age in any year between 1999 and 2007 by education. In the main analysis, I follow labor literature and focus on men due to limited labor market participation among women especially in the early periods (see, for instanceBhuller et al., 2017). As a robustness exercise, I extend the analysis to women and households, as described below. The effect of education on wealth is stronger for women than for men and once households are considered as unit of observation compared to measuring wealth at individual level.

Life-cycle profiles of outstanding debt are hump-shaped, peaking in the mid-thirties and gradually decreasing thereafter. Similarly to the differences in assets, more educated individuals have larger liabilities. Between 35 and 39 years old, when the difference is the largest, the most educated have, on average, about SEK540,000 ($83,000) of outstanding loans, whereas loans of those with compulsory schooling are about a half, or SEK256,000 ($40,000).

From a balance sheet perspective, the average value of liabilities is substantially lower than the corresponding value of assets. This results into positive average net worth over the entire life cycle for all education groups. As for the differences by education, early in life, the most educated individuals have relatively lower net worth, it then steeply increases as they age and by the age of 35 becomes larger than the average net worth among individuals with less schooling. Over the working life, the net worth profiles of more educated are steeper, meaning that the difference in wealth across individuals with different levels of schooling steadily widens overtime and is the largest at retirement, when the profiles for all education groups flatten out.[17]

To summarize, both gross and net wealth are, on average, larger among individuals with more educational attainment and this gap increases over the life cycle and is the largest at retirement. However, the observed difference in the value of assets can be driven not only by differences in education *per se*, but also by the endogenous selection into education of individuals with greater capacity to accumulate wealth. In the next section, I describe the empirical strategy to address the endogeneity of education and to estimate its causal effect on wealth.

3.3 Empirical Strategy

To study the effect of education on wealth over the life cycle, I start by considering the following specification:

$$GW_{it,a} = \alpha_a + \beta_a^{HSD\ vs.\ CS}\, d_i^{>CS} + \beta_a^{HS\ vs.\ HSD}\, d_i^{>HSD} + \beta_a^{PHS\ vs.\ HS}\, d_i^{>HS} + \epsilon_{it,a}, \qquad (1)$$

where $GW_{it,a}$ is the value of total assets (i.e., gross wealth) of an individual i whose wealth I observe in year t. The combination of birth cohort and wealth-year t defines age group a to which individual belongs to. I construct age groups such that each group contains individuals with at most five years of age difference (that is, 30-34 years old, 35-39 years old, etc.).

Levels of education are captured by a set of dummies indicating an increment in schooling levels s, such that:

$$d^{>CS} = 1[s \in \{HSD,\ HS,\ PHS\}]$$

$$d^{>HSD} = 1[s \in \{HS,\ PHS\}]$$

$$d^{>HS} = 1[s \in \{PHS\}],$$

[17] I report the life-cycle profiles of net wealth components (financial wealth, real estate wealth, and student and non-student liabilities) in Internet Appendix Figure IA.II.

where *CS* stands for *compulsory school*, *HSD* for *high school dropout*, *HS* for *high school*, and *PHS* for *post high school* levels of education.

The coefficients $\beta_a^{HSD\ vs.\ CS}$, $\beta_a^{HS\ vs.\ HSD}$, and $\beta_a^{PHS\ vs.\ HS}$, therefore, capture age-specific average difference in wealth associated to an increase in the level of education with respect to the *previous* level, such that:

$$\beta_a^{HSD\ vs.\ CS} = \mathbb{E}[GW_{it,a}|s_i = HSD] - \mathbb{E}[GW_{it,a}|s_i = CS]$$
$$\beta_a^{HS\ vs.\ HSD} = \mathbb{E}[GW_{it,a}|s_i = HS] - \mathbb{E}[GW_{it,a}|s_i = HSD]$$
$$\beta_a^{PHS\ vs.\ HS} = \mathbb{E}[GW_{it,a}|s_i = PHS] - \mathbb{E}[GW_{it,a}|s_i = HS]$$

Note that, first, α_a =E[GW$_{ia}|s = CS$] is the average wealth among individuals in age group a whose highest level of education is compulsory school; and second, that the effect of finishing high school or attending some post high school education relative to compulsory schooling is given by the sum of the respective coefficients:

$$\mathbb{E}[GW_{it,a}|s_i = HS] - \mathbb{E}[GW_{it,a}|s_i = CS] = \beta_a^{HSD\ vs.\ CS} + \beta_a^{HS\ vs.\ HSD}$$
$$\mathbb{E}[GW_{it,a}|s_i = PHS] - \mathbb{E}[GW_{it,a}|s_i = CS] = \beta_a^{HSD\ vs.\ CS} + \beta_a^{HS\ vs.\ HSD} + \beta_a^{PHS\ vs.\ HS}$$

I denote the vector of age-specific coefficients capturing the effects of education $\beta_a^{HSD\ vs.\ CS}$, $\beta_a^{HS\ vs.\ HSD}$, and $\beta_a^{PHS\ vs.\ HS}$ as $\boldsymbol{\beta'_a}$.

The coefficients on education levels $\boldsymbol{\beta'_a}$ estimated by OLS from the estimating equation (1) are inconsistent estimates of the causal effect of education on wealth if schooling choices early in life and wealth observed later in the life cycle are driven by common unobserved heterogeneity. For example, if more educated individuals tend to be from more advantageous family backgrounds or more intelligent, then they will typically be wealthier even without additional schooling. Thus, in the absence of good measures of one's family characteristics and innate ability or, alternatively, exogenous variation in schooling, it is difficult to ascertain the extent to which differences in wealth across education groups are *causally* driven by differences in educational attainment and the extent to which they come from unobserved factors that affect both education and wealth. To address this concern, I adopt three alternative empirical strategies. The first two are based on the idea that it is unobserved family background and/or ability that could be correlated with both educational attainment and financial behavior. To this end, I explicitly control for *predetermined* parental characteristics and ability in the first approach and apply within-siblings estimation in the second. To validate the results of the analysis, I employ a third identification strategy which relies on the variation in years of education stemming from a compulsory schooling reform that took place in Sweden in the 1950s as a robustness check. Below I explain in detail the two main identification strategies, while the strategy exploiting the reform design is discussed in Section 6.1.

3.3.1 Identifying causal effect of education

To estimate the causal effect of education, the main approach in this paper is to partial out unobservable characteristics that could affect both educational choices early in life and wealth

accumulation later in the life cycle. Broadly speaking, these unobservable characteristics could be attributed either to one's upbringing or to one's innate abilities. For instance, a person raised in a family of highly educated parents is probably more likely to have a higher level of formal education and at the same time to be better in financial decision-making, as well as benefiting from larger intra-family transfers, than an individual from a more socially disadvantaged background. Similarly, a person who is more intellectually equipped to be doing better in school, thus, choosing to continue education to higher levels, is also likely to be better in managing his finances.[18] To account for such unobserved heterogeneity, the ideal experiment would to be to assign randomly ex-ante identical individuals into different levels of education and to compare their financial situations later in life. In the absence of such experiment, identifying causal effect of education poses two main challenges. First, factors correlated with both education and wealth, such as one's family background or innate ability, are typically not observed. Second, such characteristics should be measured early in life, i.e. before schooling choices have been made, since if measured later, they themselves could be affected by educational attainment and would be therefore, what is so-called, *bad controls*(Angrist and Pischke, 2009). I solve these issues in the following way.

Controlling for parental background and innate ability

In the first approach, I isolate the effect of schooling from confounding family background and innate characteristics by exploiting information on individuals' life-long socio-economic histories together with a measure of ability. Importantly, due to the richness of the historical data, this information is measured sufficiently early in life, that is before individuals had to take decisions about their education.

To capture individuals' family background, I control for parental composition, education, and income in adolescence. To do so, I first, construct family links by using information from the Swedish Multi-Generation Register (*Flergenerationsregistret*), which contains records on biological and adoptive parents for individuals who were born in 1932 or later and have been registered in Sweden since 1961. Next, I exploit the detailed information on the location of residence based on Census (*Folk- och bostadsräkningen, FoB*) which was administered every 5 years from 1960 to 1990. I then combine these two sources to construct parental composition in one's adolescence by defining as a family parents (native or adoptive) and their children living in the same house or apartment in the period when individuals whose wealth I observe in 1999-2007 were 11-15 years old.

I further compliment information on family composition by the data on parental educational attainment using the earliest existing records on education, which was collected in 1970 Census.

I summarize the information on parental socio-demographic background by three variables: $1(\textit{low education both parents})_i$: an indicator if both parents are present in the household at age 11-15 and their highest educational attainment is compulsory school; $1(\textit{no parent})_i$: indicator if one or both parents (native or adoptive) are missing from a household at age 11-15; $1(\textit{missing parental education})_i$: indicator if information on parental education is missing, which in my dataset proxies for low educational attainment since it captures information on parents born in earlier cohorts with lower compulsory schooling requirements. The *omitted group*, therefore, comprises individuals who grew up with two parents who completed high school or obtained some

[18]The direction of the bias caused by omitted unobserved ability is less clear in the context of the relationship between schooling and labor income. This is because individuals able to generate higher lifetime earnings could, on the one hand, choose to acquire more education because of lower costs of exerting effort required to study; but, on the other, they also face higher opportunity cost of schooling in terms of larger forgone income.

university education.[19]

To account for family economic background, which could matter for both educational choices and eventual wealth accumulation, ideally, one would have wanted to control for parental wealth measured in adolescence. However, historical information on individuals' wealth back to the 1960s is barely available. To overcome this issue, I instead control for parents' income in adolescence, which I can consistently build to as early as 1968 by using detailed records on earnings, social transfers, and capital income from the Income and Tax register (*Inkomst- och taxeringsregistret, IoT*). More specifically, I capture family economic conditions by controlling for log of parents' average income over the period when individuals whose wealth I observe between 1999 and 2007 were 14-18 years old.

To further address the issue that individuals with higher educational attainment might have more wealth because they belong to richer families and have received it as an inheritance, I control for whether any of the parents died any time before I measure one's wealth. More specifically, I use information from the annual Total Population Register (*Registret över totalbefolkningen, RTB*) available from the year 1968 to construct dummy variable *Parental death*$_{it}$, such that it is equal to one if parents' recorded date of death is earlier or in same year as the year t in which wealth is observed.

Explicitly controlling for parental composition, education, and income allows addressing omitted variable bias to the extent family socio-economic background affects both education choices in adolescence and wealth observed in adulthood. To the best of my knowledge, I am the first to measure these characteristics over the long period in the past, dating back to as early as 1960s, and to exploit them as *predetermined* controls in the analysis of the effect of education on economic outcomes.

To address the concern that differences in both educational choices and financial decisions could be driven by unobserved innate characteristics such as ability, I use information on ability test scores from the Swedish military records. This ability measure is a composite talent test score standardized into a 9-point scale with a mean of 5 and a standard deviation of 2, which analogues have been used by studies looking at the wage returns to education to capture differences in IQ (see, for instance, Bhuller et al., 2017 who use an analogous measure in Norway). Importantly, taking this test was compulsory for all able Swedish men aged 18 as a part of universe military recruitment process and, thus, there is no selection into participating in the test and the measured ability refers to the same early life period across all individuals.

Finally, I include year and cohort of birth fixed effects to capture economy-wide period-specific differences, as well as the municipality of residence in adolescence to capture systematic differences at regional level.[20] Similarly to household composition, I construct the latter by using information from quinquennial Census starting in 1960.

The specification to which I refer to as *parental background and ability controls* is, thus, as follows:

[19]For detailed description on how I construct controls for family background as well as how parental characteristics vary with one's own educational attainment, see Internet Appendix Section IA.A.

[20]Since the age buckets comprise individuals of five different ages, I can include both year and cohort of birth fixed effects.

$$
\begin{aligned}
GW_{it,a} =& \alpha_{m,a} + \alpha_{c,a} + \alpha_{t,a} + \\
&+ \beta_a^{HSD \text{ vs. } CS} d_i^{>CS} + \beta_a^{HS \text{ vs. } HSD} d_i^{>HSD} + \beta_a^{PHS \text{ vs. } HS} d_i^{>HS} + \\
&+ \gamma_{1,a} Parental\ composition_i + \gamma'_{2,a} Parental\ education_i + \gamma'_{3,a} Parental\ income_i + \\
&+ \gamma_{4,a} Parental\ death_{it} + \\
&+ \mu_a Ability\ score_i + \\
&+ \epsilon_{it,a},
\end{aligned} \tag{2}
$$

where index for parental death $Parental\ death_{it}$ might vary over time, whereas vector of controls indexed by i comprise time-invariant controls, such that:
$Parental\ composition_i$ includes dummy $1(no\ parent)_i$;
$Parental\ education_i$ includes dummies $1(low\ education\ both\ parents)_i$ and $1(missing\ parental\ education)_i$;
$Parental\ income_i = ln[\frac{1}{5}\sum_{age=14}^{18}(\max(Total\ income_{age,father}, 0) + \max(Total\ income_{age,mother}, 0))]$.
Finally, $\alpha_{c,a}$ and $\alpha_{t,a}$, $\alpha_{m,a}$ are year, cohort of birth and municipality of residence in adolescence fixed effects respectively.

Exploiting within siblings variation in educational attainment

To the best of my knowledge, this paper is the first to estimate the effect of education explicitly controlling for a rich set of predetermined family background characteristics and individuals' ability. Arguably, however, these controls do not capture the universe of unobserved characteristics that could affect both educational choices and wealth. To address this concern, I employ an alternative identification strategy based on within-siblings variation in educational attainment and wealth. I construct siblings links by using information from the Multi-Generation Register and estimate equation (1) including siblings-year fixed effects $\alpha_{t,\ siblings}$:

$$
\begin{aligned}
GW_{it,a} =& \alpha_{c,a} + \alpha_{t,siblings,a} + \\
&+ \beta_a^{HSD \text{ vs. } CS} d_i^{>CS} + \beta_a^{HS \text{ vs. } HSD} d_i^{>HSD} + \beta_a^{PHS \text{ vs. } HS} d_i^{>HS} + \\
&+ \epsilon_{it,a}
\end{aligned} \tag{3}
$$

This strategy captures unobserved heterogeneity in family environment and genetics to the extent they are correlated within siblings. Because I include year-specific siblings fixed effects, it further absorbs everything common that happened to siblings in a given year, such as, for example, receiving an inter vivos transfer or inheritance. To capture the fact that brothers could belong to different cohorts, I also include year of birth fixed effect $\alpha_{c,a}$. Given that the age groups comprise individuals with at most 5 years of difference in age, the variation in educational attainment in this specification is also coming from siblings whose age difference is at most 5 years.

The advantage of using within-siblings estimation over explicitly controlling for family characteristics and ability is that it might be capturing unobserved characteristics correlated with both education and wealth accumulation, such as for instance risk preferences or within-family transfers, better. The disadvantage is that within-siblings estimates might be understating the causal effect of education on wealth for at least three reasons. First, siblings might have lower incentive for pre-

cautionary savings due to the existence of informal insurance that could be provided by a sibling. Second, there might be spillovers between siblings in both educational attainment and financial decision making, which would understate the role of education. Third, one key assumption of this identification strategy is that siblings receive similar support from their parents. If, however, parents tend to leave larger inheritance to a sibling with worse economic prospects, i.e. the one with lower educational attainment, the resulting effect of education on wealth would be downward biased.

To summarize, in the absence of a perfect experiment in which education is randomly assigned, there is no ideal way to identify its causal effect on wealth and wealth accumulation. The (non)availability of historical data on individuals' socio-economic background further limits possibilities to study its effects by controlling for *predetermined* family characteristics. I approach this challenge by building long time-series of family links and their socio-economic conditions to control for one's family background and exploit within-siblings variation. In addition, I construct a measure of IQ to capture potential differences in innate cognitive abilities. Arguably, these controls could fail to capture some unobserved heterogeneity which could bias the estimated effects of education. To this end and to validate the results of the analysis, I adopt an alternative approach, which relies on the exogenous variation in education stemming from a reform which increased duration of compulsory schooling. I discuss it in details in Section 6.[21]

3.4 Sample selection

In the main analysis of the paper, I apply several restrictions on the sample. First, I focus on individuals for whom I can identify the effect of education in both *parental background and ability controls* and *siblings-year fixed effects* identification strategies. This means that I restrict the sample to males born after 1950 and having a brother with an age gap of at most five years. The first restriction is driven by the availability of information on the ability scores, since the military tests were compulsory only for male population and the oldest cohort for which they were recorded is 1950.[22] Given that information on individuals' wealth is available between years 1999 and 2007 and to ensure I observe each age in each wealth-year, the oldest individuals in the main sample are 49 years old.[23] The restriction of the sample to brothers born at most five years apart is driven by the within-siblings identification strategy and the fact that I group individuals in five-year age buckets to estimate the effect of education over the life-cycle.[24]

[21] As a robustness check, I also employ a range of alternative specifications. More specifically, I control for ability in the specification with siblings-year fixed effects; exploit within-twins variation; control for business sector fixed effect; and control for a survey-elicited measure of risk aversion. I report the estimation results in the Internet Appendix.

[22] Restricting sample to males is standard in the labor literature because of low labor market participation rates among women in the early periods (see, for instance, Bhuller et al. (2017)). In the robustness analysis, I relax this restriction and show the effect of education on wealth in a sample of women by using within-siblings identification strategy and show that, first, women have lower average value of assets than men, and second, that the effect of education in the sample of women is larger (Internet Appendix Table IA.XVI).

[23] Ensuring that each age is observed in each year is important because the effect of education on wealth changes over the life cycle and is procyclical. I show the exact correspondence between age, birth cohort, and wealth-year in the Internet Appendix Table IA.I. I show year-specific effects of education on wealth in the Internet Appendix Tables IA.XXVII and IA.XXVIII. I further document the entire life-cycle profiles of net wealth components on Figure IA.II, whereas on Figure IA.IX I report cohort-specific evolution of real estate wealth, financial wealth and outstanding liabilities between 1999 and 2007. Finally, I estimate the causal effect of education on wealth over the life cycle up until retirement age of 64 years old using siblings-year fixed effects identification strategy (Figure IA.XVIII and Table IA.XVIII.

[24] As shown in the Internet Appendix Table IA.VI, probability to have a brother spaced five years apart is around 33%, whereas, conditional on having a brother within this age gap, there are on average 2.3 brothers born in a five-year interval. I address the consequences of this selection in the Internet Appendix by repeating the analysis for the full sample of males using *parental background and ability controls* identification strategy. The results show that

Second, I focus the analysis on the population during their working life. To this end, I restrict the sample to those whose age is at least 30 years old and further exclude individuals registered as students.

To construct the final sample, I exclude a small number of individuals with missing or inconsistent information on years of schooling or childhood municipality of residence, and those whose financial wealth and total income are less than SEK3,000 (approximately $450).[25]

Given these restrictions, the main sample consists of 1,176,583 individual-year observations corresponding to 338,942 brothers between 30 and 49 years old.

4 How does education affect wealth?

4.1 The effect of education on gross wealth

The causal effect of education on gross wealth over the life cycle is reported in Table 1 and on Figure 2. The main finding is that at every age and across all specifications education has a large positive effect on the value of assets. In absolute terms, the effect increases over the life cycle, whereas it slightly decreases as individuals age in comparison to the average level of wealth of the least educated.

Conditional on family background and ability, having obtained post high school education compared to interrupting studies after compulsory school increases gross wealth by SEK255,000 ($40,000) at age 30-34 and by SEK400,000 ($62,000) at age 45-49 (Table 1 Panel a). Relative to the mean level of assets among individuals with compulsory educational attainment, this effect represents 70% and 55% increase in wealth in the two age groups respectively. In comparison with the effect of education on annual earnings, reported in Table 8, the effect on assets is about five times larger early in life and is almost seven times larger later in the life cycle.

Comparing the effects across education levels, having post high school education as opposed to high school diploma has the largest effect on assets and makes up for about 60% of the difference in gross wealth between the most and the least educated during the period between 30 and 49 years old. Completing high school as opposed to dropping out from high school increases assets by SEK45,000 ($7,000) at age 30-34 and by SEK170,000 ($26,000) at age 45-49, which makes up for about 20% and 40% of the overall effect of education in the two age groups respectively. Finally, the effect of attending high school but not completing it is SEK60,000 ($10,000) early in life, it decreases as individuals age, and becomes negligible by mid-40s.

Parental background and ability also affect gross wealth in adulthood. Having come from a low educated family decreases wealth by SEK42,000 ($6,500) at age 30-34 and by as much as SEK190,000 ($29,000) at age 45-49 compared to individuals whose parents have high education.[26] The role of innate ability also increases over the life cycle: early in life, one standard deviation in the ability score leads to an increase in gross wealth by SEK70,000 ($11,000), whereas later in life this effect amounts to SEK160,000 ($25,000), corresponding to about 15% of the average gross wealth in the respective age groups.

---

the effect of education is in the same order of magnitude across the two samples, despite slightly lower average gross wealth in the sample of siblings (Table IA.XV).

[25] Information on education is missing for about 1.7% of adult population most of whom are immigrants.

[26] For more details on parental background controls specification, see Internet Appendix Table IA.IV.

The effect of parental income on person's assets is also large but, contrary to the effect of parental education, it decreases over the life cycle. At age 30-34, a 10% difference in family income causes a SEK621,000 ($96,000) difference in assets, which approximately corresponds to the average value of assets at that age; whereas at age 45-49, this effect is SEK511,000 ($80,000), or about 50% compared to the average level of assets in late 40s. Similarly, parental death has a positive effect on gross wealth early in life, whereas its effect becomes small and not statistically significant as individuals age.

Overall, this evidence show that family socio-economic background and ability play an important role in explaining person's wealth during working life and that this role varies over time. Specifically, the effect of economic background on person's wealth is large early in life and decays as individuals age. On the contrary, the role of characteristics that capture intellectual background and cognitive skills, such as parental education and innate ability, increases over the life cycle. This suggests that qualities affecting financial decisions and, thus, wealth accumulation are increasingly important over time and is in line with the conclusion of Venti and Wise (2001) that *choice* rather than *chance* events, such as inheritance, is what determines wealth dispersion at retirement.

Family background and ability affect wealth not only directly, but also indirectly through education. Controlling for parental characteristics reduces the effect of post high school education compared to compulsory schooling by 10-15% relative to the specification with cohort, year, and municipality fixed effects (Table 2 Panels a and b). Controlling for ability further reduces this effect by about 30-35%, thus having a larger impact on the education coefficients than controlling for family background (Table 2 Panels b and c). Together, parental background and ability characteristics account for about 40-45% of the effect of education on gross wealth and increase the adjusted R^2 by about 15% compared to the specification with a set of fixed effects. Interestingly, the impact of these controls on the estimated effects of education is larger at lower levels of educational attainment and increases as individuals age.

Compared to the specification with family background and ability controls, siblings-year fixed effects further reduce the estimated effect of education by about a half and increase the adjusted R^2 from 13% to 45%. This suggests that exploiting within siblings variation might additionally be capturing such unobserved heterogeneity as differences in inter vivos transfers and risk and time preferences. It could also be the case, however, that this specification understates the true effect of education if lower educated siblings receive larger support from their family or if there are spillovers between siblings in financial decisions and, thus, their wealth accumulation is less affected by formal education.

To summarize, education received early in life has a large and long lasting effect on gross wealth. Arguably, however, both *parental background and ability controls* and *within-siblings* specifications could fail to capture some relevant unobserved heterogeneity, while, on the other hand, *within-siblings* estimates could also understate the effect of education if for siblings it matters less to start with. Thus, one could think of these estimates as a lower and an upper bounds for the true effect of education on wealth. To provide further evidence on the causal effect of education, I employ an alternative identification strategy which exploits exogenous variation in schooling stemming from an education reform in Sweden as a robustness exercise, the results of which support this section conclusions (Section 6.1).

In the remainder of the paper, I first, show how education affects balance sheet components and net wealth (Section 4.2); and second, I provide a detailed account of what drives differences in

wealth across education groups by studying all components of wealth accumulation (Section **??**).

4.2 The effect of education on net wealth and its components

In the previous section, I showed that education affects gross wealth and that this effect increases over the life cycle. The next natural questions to ask are: how does education affect different asset classes and liabilities? Do these effects vary over time? What is the effect of education on net worth? In this section, I answer these questions.

To study how education affects balance sheet components and what is its effect on net wealth, I decompose the effect of education into its effects on assets and liabilities through an accounting identity. More specifically, for any individual i in year t, net wealth (NW) is defined as a difference between his gross wealth (GW) and liabilities:

$$NW_{it} = GW_{it} - Liabilities_{it} \tag{4}$$

Thus, the average net wealth in the age group a for the level of education s is given by the difference between the average gross wealth and average liabilities in that group:

$$NW_{as} = GW_{as} - Liabilities_{as} \tag{5}$$

To analyze the effect of education on balance sheet components, consider two assets classes, financial wealth (FW) and real estate wealth (RE), and two types of loans, student debt and non-student debt, consisting of mortgages and other liabilities towards financial institutions. The sum of assets is by definition equal to gross wealth, while the sum of loans is equal to total liabilities. The average net wealth in the age-education group as can, thus, be written as:

$$NW_{as} = \underbrace{FW_{as} + RE_{as}}_{Gross\ wealth_{as}} - \underbrace{Student\ debt_{as} - Non\text{-}student\ debt_{as}}_{Liabilities_{as}} \tag{6}$$

From 6, the effect of education on net wealth, can be decomposed as the sum of the effects of education on balance sheet components. That is, for any pair of school levels $s \in \{\overline{s}, \underline{s}\}$, the effect of being in education group $\overline{s}$ as opposed to education group $\underline{s}$ for the age group a, can be written as follows:

$$\begin{aligned}\mathbb{E}[NW_{it}|a_{it}=a,s_i=\overline{s}]-\mathbb{E}[NW_{it}|a_{it}=a,s_i=\underline{s}]= \\ =\mathbb{E}[FW_{it}|a_{it}=a,s_i=\overline{s}]-\mathbb{E}[FW_{it}|a_{it}=a,s_i=\underline{s}]+ \\ +\mathbb{E}[RE_{it}|a_{it}=a,s_i=\overline{s}]-\mathbb{E}[RE_{it}|a_{it}=a,s_i=\underline{s}]- \\ -(\mathbb{E}[\textit{Student debt}_{it}|a_{it}=a,s_i=\overline{s}]-\mathbb{E}[\textit{Student debt}_{it}|a_{it}=a,s_i=\underline{s}])- \\ -(\mathbb{E}[\textit{Non-student debt}_{it}|a_{it}=a,s_i=\overline{s}]-\mathbb{E}[\textit{Non-student debt}_{it}|a_{it}=a,s_i=\underline{s}])\end{aligned} \tag{7}$$

Hence,

$$\beta_{NW,a}^{\overline{s}\ vs.\ \underline{s}}=\beta_{FW,a}^{\overline{s}\ vs.\ \underline{s}}+\beta_{RE,a}^{\overline{s}\ vs.\ \underline{s}}-\beta_{\textit{Student debt, a}}^{\overline{s}\ vs.\ \underline{s}}-\beta_{\textit{Non-student debt, a}}^{\overline{s}\ vs.\ \underline{s}} \tag{8}$$

Note that, first, the vector of coefficients of the effects of education on gross wealth $\boldsymbol{\beta_a'}$ estimated by the equation 1, is given by the sum of coefficients on financial wealth and real estate, $\beta_{FW,a}^{\overline{s}\ vs.\ \underline{s}}$ and $\beta_{RE,a}^{\overline{s}\ vs.\ \underline{s}}$ respectively, for education level pairs $\{HSD, CS\}$, $\{HS, HSD\}$, and $\{PHS, HS\}$; and second, that this decomposition holds for any regression specification, including those given in equations 2 and 3.

The effects of education on net wealth components estimated by the specifications with parental background and ability controls and siblings-year fixed effects are reported in Figure 3 and Tables 3 (assets) and 4 (liabilities). The main findings are that, first, education affects all balance sheet components rather than a particular assets class or liability; second, that these effects vary over the life cycle; and third, that, overall, education has a large positive effect on net wealth and that this effect increases as individuals age.

Controlling for parental background and ability, the effect of post high school relative to compulsory school on financial and real estate wealth is in the same order of magnitude of about SEK120,000-135,000 ($18,000-21,000) at age 30-34. As individuals age, the effect on financial wealth remains rather constant, whereas it is twice as large for real estate, making up for about 70% of the effect on gross wealth at age 45-49.[27] Relative to the respective mean value of financial and real estate assets in the compulsory school group, these effects imply that the most educated have three times as much financial wealth early in life and twice as much later in the life cycle; while for the real estate wealth, the effect of education corresponds to an increase of about 50% during the entire period between 30 and 49 years old.

On the liabilities side, the effect of education is the largest early in life. Specifically, post high school education increases the total amount of outstanding loans by SEK150,000 ($22,000) at age 30-34 and by SEK105,000 ($16,000) at age 45-49 compared to compulsory schooling, which corresponds to about 60% and 35% increase relative to their average level of debt. Early in life, 60% of this effect is driven by the difference in student loans, primarily held by the most educated individuals; whereas later in life most of the difference (75%) comes from the effect of education on other liabilities, such as mortgages and consumer loans.

[27] In Table IA.XIII I show that education has a positive effect on real estate wealth at both extensive (higher probability to own a house) and intensive (larger houses among homeowners) margins.

Regarding the role of family background and ability, being from a family of low educated parents decreases not only gross wealth, but also the amount of outstanding loans. On the contrary, the effect of ability is positive on both assets and liabilities. This suggests that individuals from more advantageous social backgrounds or those with higher cognitive skills, tend to be also more financially included and less credit constrained.[28] Interestingly, parental death increases real estate assets only early in life, whereas it has a positive effect on financial assets and student loans and a negative effect on mortgages and consumer debt throughout the life cycle. This suggests, that, to the extent parental death captures inheritance, these transfers are made primarily in the form of liquid assets, thus also reducing the amount of non-student debt.

Similarly to the results on gross wealth, the siblings-year fixed effects reduce the effect of education on both financial and real estate assets by about a half compared to the specification with parental background and ability controls. On the liabilities side, however, they reduce the effect of education on non-student loans only slightly, by about 10%, whereas within-siblings estimates are larger for student loans for the age group 30-34 and are the same across the two specifications for the older population. The fact that the impact of siblings-year fixed effects is larger for assets than for liabilities, suggests that, first, they successfully capture such unobserved heterogeneity as differences in inheritance and inter vivos transfers, and, second, that the omitted variable bias is less severe when it comes to the effect of education on borrowing decisions.

The effects of different education levels on assets and liabilities are shown graphically on Figure 3. The height of each bar corresponds to the effect of an education level relative to the previous one on a given asset class or type of loan, while the sum of the four bars gives the effect of education on net wealth.[29] Considering the effects of education on the balance sheet components together, the resulting effect on net worth is positive, large, and increasing over the life cycle. At age 30-34, post high school education increases net wealth by SEK110,000 ($17,000). The magnitude of this effect implies that, conditional on parental background and ability, the most educated have almost twice as much equity compared to the least ones. At age 45-49, this effect is almost three times larger and amounts to a SEK300,000 ($45,000), or 75%, increase in net worth from compulsory school to post high school education. Compared to the size of the effect on gross wealth, the effect on net worth is about 20 percentage points higher throughout the life cycle when compared to the mean level among compulsory school, albeit being lower in absolute terms. To put these numbers in perspective, the effect of post high school education on net worth corresponds to about 50% of the annual earnings of the most educated at age 30-34, and about 110% of their annual earnings at age 45-49.

What leads to these differences in balance sheets and net worth across education groups? I provide the detailed account of the effect of education on wealth accumulation in the next section.

5 How does education affect wealth accumulation?

To understand what drives differences in wealth across education groups over the life cycle, I study how education affects wealth accumulation. The effect of education on *total savings*, defined as the difference in the value of assets from one year to another $\Delta GW_{i,t+1} = GW_{i,t+1} - GW_{i,t}$, is reported in the Table 5 and on the Figure 4. Panel a shows the estimates based on the regression

[28] Loan-to-income ratios are also lower for individuals whose parents are low educated, whereas they are higher among individuals with ability scores.

[29] I report the estimates of the effect of education on net wealth in Table IA.VII and Figure IA.IV.

with parental background and ability controls, specified in the equation 2, where the dependent variable is now $\Delta GW_{i,t+1}$ instead of $GW_{i,t+1}$. Conditional on family background and ability, gross wealth of individuals with post high school education increases by SEK40,000 ($6,000), or 70-80%, more a year compared to the yearly change in wealth of those with compulsory schooling. This effect stays rather constant over the period between 30 and 49 years old and, over twenty years, amounts to SEK765,000 ($120,000), or 15% of the total labor income earned by the most educated over the entire period.

Panel b reports within-sibling estimates corresponding to the regression specification given by the equation 3. Conditional on siblings-year fixed effects, the effect of education decreases by about 20% early in life and by 45% at age 45-49 compared to the specification with parental background and ability controls. The fact that the difference between the two specifications is greater in the late 40s is consistent with the idea that within-siblings estimates account for differences in bequests which are typically received later in the life cycle.

What leads to these differences in wealth accumulation by education? Are they driven by different savings decisions or by market fluctuations? I answer these questions below.

5.1 Active savings or passive appreciation?

Since gross wealth consists of real estate and financial wealth, then, by definition *total savings* of an individual i are equal to the sum of change in financial wealth $\Delta FW_{i,t+1}$ and in real estate $\Delta RE_{i,t+1}$. By adding and subtracting the return earned on each asset class, the *total savings* can be decomposed into *passive savings* due to changing asset prices and *active savings*, which exclude reevaluation effects:

$$
\begin{aligned}
GW_{i,t+1} - GW_{i,t} =& FW_{i,t+1} - FW_{i,t} + RE_{i,t+1} - RE_{i,t} = \\
=& \underbrace{(FW_{i,t+1} - R^{FW}_{i,t+1} FW_{i,t})}_{\textit{active savings in FW}} + \underbrace{r^{FW}_{i,t+1} FW_{i,t}}_{\textit{passive appreciation of FW}} + \\
&+ \underbrace{(RE_{i,t+1} - R^{RE}_{i,t+1} RE_{i,t})}_{\textit{active savings in RE}} + \underbrace{r^{RE}_{i,t+1} RE_{i,t}}_{\textit{passive appreciation of RE}} = \\
=& \Delta_{active} FW_{i,t+1} + \Delta_{passive} FW_{i,t+1} + \Delta_{active} RE_{i,t+1} + \Delta_{passive} RE_{i,t+1},
\end{aligned}
\tag{9}
$$

where $R^A_{i,t+1} = 1 + r^A_{i,t+1}$ is the average gross return on financial and real estate assets, $A \in \{FW, RE\}$.

To decompose *total savings* into *passive* and *active* components empirically, I exploit the granularity of the data on financial and real estate wealth and construct the returns for separate asset classes. For mutual funds and directly held stocks, I observe pricing information for each single security from FINBAS, Datastream, and Morningstar. I assume that bank accounts earn risk free rate, which I proxy by the one-month Swedish Treasury bill. For bonds, I use total return index for government debt from Datastream. I use Swedish bonds of all maturities, since I do not observe security-specific maturity in the data. For derivatives and structured products, which are only a small fraction of household financial portfolios, I use the SIX return index (SIXRX), which tracks the value of all the shares listed on the Stockholm Stock Exchange. Finally, for

capital insurance products, which combine return guarantees with risky asset holdings, I observe the year-end balance but not the asset mix. I, therefore, follow Sodini et al. (2016) and assume that the portfolio allocation of capital insurance accounts is a 50-50 mix of bonds and stocks, and calculate the returns using short term government bond and equity indexes.

For real estate wealth, I consider three types of property: apartments, residential houses, and non-residential real estate. For apartments, I observe the data on transactions and use it to build local price-indexes and evaluate each single property in each year. I define as *active* change the cash flow associated with apartment sale or purchase. I define as *passive* savings the difference in apartment value in the end of years $t+1$ and t net of *active* change. For houses and non-residential real estate, I use market value from Statistics Sweden. I define as *passive* savings the change in real estate value if the property address did not change between the two years, whereas in the opposite case I classify the change in the value as *active*. Thus, the return on real estate $R^{RE}_{i,t+1}$ is given by the ratio between total *passive* change during the year over the value of real estate assets in the end of year t.

To study how effects of education on *active* and *passive* savings contribute to the overall difference in *total* savings, first, note that the average *total* savings in the age group a among individuals with education level s is the sum of average *active* and *passive* savings in the same group:

$$\Delta GW_{as,t+1} = \Delta_{active} FW_{as,t+1} + \Delta_{passive} FW_{as,t+1} + \Delta_{active} RE_{as,t+1} + \Delta_{passive} RE_{as,t+1} \quad (10)$$

Therefore, the effect of education on *total savings* estimated by parental background and ability controls and within-siblings specifications can be decomposed into the effects on *active savings* and *passive appreciation* of financial and real estate wealth:

$$\beta^{\bar{s} \text{ vs. } \underline{s}}_{\Delta GW_{a,t+1}} = \beta^{\bar{s} \text{ vs. } \underline{s}}_{\Delta_{active} FW_{a,t+1}} + \beta^{\bar{s} \text{ vs. } \underline{s}}_{\Delta_{passive} FW_{a,t+1}} + \beta^{\bar{s} \text{ vs. } \underline{s}}_{\Delta_{active} RE_{a,t+1}} + \beta^{\bar{s} \text{ vs. } \underline{s}}_{\Delta_{passive} RE_{a,t+1}} \quad (11)$$

The results of the decomposition are reported in Tables 6 (*active* savings) and 7 (*passive* appreciation), and summarized in the Figure 5. The main findings can be summarized as follows.

The difference in *total savings* in real estate explains about 90% of the effect of education on the total change in gross wealth, while the difference in *total savings* in financial wealth explains the remaining 10%. Although the role of *total savings* in real estate and financial wealth is rather constant over the period between 30 and 49 years old, the role of *active* and *passive* savings changes over time.

At age 30-34, the effect of education on *active* savings explains about 65% of its effect on total change in gross wealth, whereas later in life it accounts for about 20% of the difference. Consequently, the role the effect on *passive* change increases over the life cycle from 35% to 80%.

Out of *active* savings, housing purchase explains 85% of the effect of education early in life and about 65% later, while the remainder is due to the *active* increase in financial wealth. This implies that, conditional on family background and ability, more educated individuals invest in housing about SEK20,500 ($3,000) more a year at age 30-34 and about SEK5,000 ($800) more at age 45-49, which comprises differences by education in both homeownership rates and the size of the house.

Relative to the effect on total change in assets, the effect of education on *active* savings in real estate makes up for about 55% early in life and about 15% later in the life cycle.

Contrary to the decreasing over time role of *active* investment in housing, the importance of the effect of education on its *passive* appreciation is what increasingly matters as individuals age. Early in life, the effect of education on *passive* savings makes up for about 35% of the effect of education on *total* savings, whereas later in life it accounts for about 75% of the difference.

Comparing the effects between the specifications with family background and ability controls and siblings-year fixed effects, the relative importance of savings components is rather similar, despite the fact the magnitude of the estimates in the within-siblings specification is lower. Interestingly, the impact of including siblings-year fixed effects is substantially lower on *active* savings in real estate, consistent with the evidence that intergenerational transfers are made primarily in the form of financial wealth.

To summarize, although the effect of education on total change in gross wealth is rather constant over the life cycle, the importance of *active* and *passive* savings vary over time. Early in life, the difference in *total savings* is driven mainly by *active* change in the value of real estate, whereas later in life it is its passive appreciation that matters the most. This dynamics is consistent with both life-cycle economic behavior and business cycle in Sweden during that period. Specifically, as more educated individuals are more likely to purchase a house and buy bigger houses, their active savings in real estate are also larger. Further, as house prices were steadily growing in Sweden between 1999 and 2007, homeowners and owners of bigger homes have also benefited more from house prices appreciation, resulting into higher *passive* savings in real estate wealth among more educated individuals later in life.[30] The latter is also consistent with Fagereng et al. (2019), who document the importance of capital gains in explaining differences in savings behavior over the wealth distribution.

Given that the effect of education on *active* savings decreases as individuals age, what does it imply for the overall savings and consumption behavior? Also, do the positive effect of education on *passive* savings imply higher returns? I answer these questions below.

5.2 The effect of education on savings

To study how education affects overall savings behavior and to understand to which extent it is driven by differences in labor income, borrowing decisions, and consumption, consider the standard wealth accumulation equation:

$$Wealth_{i,t+1} = \tilde{R}_{i,t+1} Wealth_{i,t} + \tilde{L}_{i,t+1} + \Delta Debt_{i,t+1} - \tilde{C}_{i,t+1} - i_{i,t+1} Debt_{i,t}, \tag{12}$$

where wealth in the end of the year $t+1$ is given by the sum of capitalized wealth transferred from the previous period, labor income $\tilde{L}_{t+1}$ earned during the year, and net change in debt, minus consumption $\tilde{C}_{t+1}$ and interests on outstanding loans paid during the year $i_{t+1} Debt_t$.

Using the accounting identity above, the total *active* savings can be written in terms of cash flows:

[30] See, for example real estate price index reported by Statistics Sweden here: https://www.scb.se/en/finding-statistics/statistics-by-subject-area/housing-construction-and-building/real-estate-prices-and-registrations-of-title/real-estate-prices-and-registrations-of-title/pong/tables-and-graphs/real-estate-price-index/.

$$\overbrace{\Delta_{active} Wealth_{i,t+1}}^{Wealth_{i,t+1} - \tilde{R}_{i,t+1} Wealth_{i,t}} = \tilde{L}_{i,t+1} + \Delta Debt_{i,t+1} - \tilde{C}_{i,t+1} - i_{i,t+1} Debt_{i,t} \quad (13)$$

The fundamental assumptions underlying this budget constraint is that $Wealth$ comprises all assets held by individuals and that earnings are the only source of income. In practice, however, pension assets are not observed in the data, while social security system provides with a range of transfers, such as unemployment benefits. I overcome these issues as follows. First, although I do not observe pension wealth, I observe the flow of private pension contributions. I, thus, adjust the equation above by subtracting this voluntary pension savings from the right hand side. I take into account mandatory pension contributions administered by employers by constructing labor income net of taxes, including the payroll tax. I further include in the measure of income all transfers received by an individual in a given year. Finally, I take into account taxes other than those levied on labor income, such as wealth tax, by including them explicitly into the budget constraint..[31]

To decompose the effect of education on *active* savings, I will, thus, consider the following equation:

$$\Delta_{active} GW_{i,t} = L_{i,t+1} + \Delta Debt_{i,t+1} - PPC_{i,t} - C_{i,t+1} - i_{i,t+1} Debt_{i,t} - \tau_{i,t+1}^{cap.income}, \quad (14)$$

where $\Delta_{active} GW_{i,t} = GW_{i,t+1} - R_{i,t+1} GW_{i,t}$ is the *active* change in gross wealth, which includes real estate and financial assets. $R_{i,t+1} = 1 + r_{i,t+1}$ is the total return on assets earned during the year $t+1$ and measured as the weighted average of returns on financial ($R_{i,t+1}^{FW}$) and real estate ($R_{i,t+1}^{RE}$) wealth.[32] $L_{i,t+1}$ is the after-tax labor income including transfers. $\Delta Debt_{i,t+1} = Debt_{i,t+1} - Debt_{i,t}$ is the total change in debt. $PPC_{i,t}$ is the value of private pension contributions. $C_{i,t+1}$ are consumption expenditures. $i_{i,t+1} Debt_{i,t}$ is the amount of interests paid on loans during the year and $\tau_{i,t+1}^{cap.income}$ are taxes other than those paid on labor income.

As before, because budget constraint is linear, the effect of education on active savings can be decomposed into the effects on the components of wealth accumulation equation:

$$\beta_{\Delta GW_{active},a}^{\overline{s} \text{ vs. } \underline{s}} = \beta_{L,a}^{\overline{s} \text{ vs. } \underline{s}} + \beta_{\Delta Debt,a}^{\overline{s} \text{ vs. } \underline{s}} - \beta_{PPC,a}^{\overline{s} \text{ vs. } \underline{s}} - \beta_{C,a}^{\overline{s} \text{ vs. } \underline{s}} - \beta_{iDebt+\tau^{cap.income},a}^{\overline{s} \text{ vs. } \underline{s}} \quad (15)$$

The results of the decomposition are reported in Tables 8 (labor income and change in debt) and 9 (private pension contributions, consumption, and costs of servicing the debt and taxes), and summarized by Figure 6.

The first finding is that education increases private pension contributions. This effect gets larger over time and compensates for the decreasing effect of education on *active* savings in real estate.

[31] In practice, I do not observe consumption and impute it as a residual from the accounting identity given by equation 14. Specifically, I follow the methodology developed in Koijen et al. (2014) and extended in Sodini et al. (2016), which I explain in further details in the Internet Appendix.

[32] I decompose the *active* change in gross wealth instead of net wealth for two reasons. First, the returns on negative or very small net wealth are ill-defined. Second, I observe interests paid on debt in SEK rather than in percentage terms, but I do not observe the number of months to which these payments correspond. This means that the implied interest rates on new loans or loans that are paid off during the year are overstated.

Controlling for parental background and ability, individuals with post high school education save SEK10,000 ($1,500) more a year for their retirement at age 30-34 and SEK20,000 ($3,000) more at age 45-49. These effects correspond to an 80%-increase in pension savings compared to the average level of contributions among individuals with compulsory educational attainment.

Together with the effect on *active* savings in real estate and financial wealth, the effect on pension contributions implies that the most educated individuals save about SEK33,000 ($5,200) more, or twice as much, a year at age 30-34 and SEK27,000 ($4,000), or 80%, more a year at age 45-49, compared to the least educated. This means that the decrease of the effect of education on *active* change in gross wealth from SEK25,000 ($3,800) early in life to SEK8,000 ($1,200) later in the life cycle, driven primarily by lower savings in housing, is almost entirely offset by the increasing difference in private pension contributions. Specifically, the effect on pension savings explains 30% of the effect on overall savings early in life and 70% later in the life cycle.

Along with savings, education also increases consumption. At age 30-34, yearly level of consumption of the most educated is about SEK30,000 ($4,500) higher than that of the least, while later in life this difference is about SEK35,000 ($5,500). In relative terms, this effect corresponds to a 20%-increase in consumption throughout the life cycle compared to average level of the least educated.

Overall, conditional on parental background and ability, consumption and savings of the most educated are about SEK60,000 ($9,500), or 30%, higher compared to individuals with compulsory schooling and this difference is rather constant during the period between 30-49 years old.

How does the effect of education on household expenses compare to the effect on labor income and borrowing decisions? At age 30-34, the estimated college wage premia is SEK50,000 ($8,000), while at age 45-49 it is SEK60,000 ($9,000). This means that the effect of education on consumption and savings combined early in life is about SEK15,000 ($2,000) larger than the effect on income, whereas it is approximately the same later in life.

The differences between the effects of education on income and on expenses is financed by debt: more educated take SEK15,000 ($2,000) larger loans at age 30-34, which decreases to a SEK4,000 ($600)-difference by age 45-49. Relative to the effect on *active* savings in real estate, the effect on change in debt makes up for about 75% throughout the life cycle. As individuals age, they also incur higher costs of servicing debt and capital related tax. Specifically, the effect of education on capital expenses is SEK2,000 ($300) early in life and is twice as much later in the life cycle.

To summarize, more educated consume and save more. Early in life, they invest more in housing. To finance housing purchase, they take larger loans. As individuals age, the investments in real estate get substituted by private pension savings, while the difference in non-retirement financial wealth stays rather constant over time. The effect on consumption tracks differences in income only until mid 40s and stays constant later in life. Finally, as more educated age, they also face higher capital expenditures, such as interest payments and taxes.

Comparing between the specifications with family background and ability controls and siblings-year fixed effects, the impact of the latter on the estimated effects of education on cash flows constituting wealth accumulation equation is smaller than on the effects on balance sheet components. Notably, the estimates of the effect of education on labor income are almost identical across the two specifications. This evidence is consistent with the idea that siblings-year fixed effects capture primarily differences related to wealth accumulation, such as intergenerational transfers,

or similarities in siblings financial decision making.

Finally, Table 10 and Figure 7 reports the effect of education on savings rate, where the nominator is defined as a sum of *active* savings in financial and real estate wealth and private pension contributions, while the denominator is the labor income after tax and transfers. Conditional on parental background and ability, the saving rate of individuals with post high school education is 6.2 percentage points, or 50%, higher at age 30-34 and 4.2 percentage points, or 30%, higher at age 45-49. To the best of my knowledge, this paper is the first to document that more educated not only earn higher wages, but also save larger portion of their income.

5.3 How does education affect returns

Does larger appreciation of gross wealth among the more educated imply higher saving rates? I report the estimated effect of education on realized returns in Table 11 and Figure 8. The results show that, conditional on parental background and ability, the yearly returns of individuals with college education are about 100 basis points, or 15% larger. This difference in yearly returns implies a difference of 45% over a 20-year period. I discuss to which extent this effect on returns is driven by systematic differences in financial behavior in Section 6.2 and in a companion paper.

5.4 Connecting the dots

The difference in wealth across education groups is virtually non-existent at the age of 20. At retirement the wealth of the most educated is more than twice as large as the wealth of the least. What explains this dynamics?

Consider a standard wealth accumulation equation, in which wealth at any point of time is given by the capitalized initial wealth and savings and returns accumulated over time:[33]

$$Wealth_{s,T} = R_s^T Wealth_{s,0} + Debt_{s,T} + \sum_{t=1}^{T} R_s^{T-t}(L_{s,t} - C_{s,t}) + \sum_{t=1}^{T-1} R_s^{T-t-1}(R_s - I_s)Debt_{s,t} \quad (16)$$

The difference in wealth between individuals with different levels of education at any given period could, therefore, be driven by the difference in their initial wealth $Wealth_{s,0}$ and their outstanding debt $Debt_{s,T}$ in terms of stock variables, and by differences consumption-savings decisions, affecting $L_{s,t} - C_{s,t}$, and in investment and borrowing decisions, affecting the returns on assets R_s and interests on debt I_s.

The results of this paper suggest that although initial economic conditions have a large impact on the differences in wealth later in life, consumption-savings, investment, and borrowing decisions, as well as differences in labor income also play an important role for wealth dispersion across education groups. Specifically, I show that more educated people save more and at a higher rate relative to their labor income and that their assets appreciated more and earned higher returns during the observed period. Although a part of the difference in gross wealth is accounted for by larger outstanding liabilities among more educated individuals, it is still the case that individuals with more schooling are also the ones with larger net worth.

[33]For simplicity, I assume constant return and interest rates, $R_{s,t} = R_s$ and $I_{s,t} = I_s$. Since I do not impose such assumptions in the empirical analysis, they do not affect neither of my results nor conclusions. To derive the budget constraint, I assume that there is no initial debt, i.e. $D_{s,0} = 0$, consistently with the empirical evidence.

6 Robustness

6.1 Robustness of the identified effect of education to alternative identification strategy

Alternative identification strategy: exploiting exogenous variation in education

The results of this paper are based on two identification strategies both hinging on the idea that it is unobserved *nature* and *nurture* that are behind the endogeneity of the observed educational attainment. Arguably, both parental background and ability controls and siblings-year fixed effects might fail to capture all relevant unobserved heterogeneity. To this end and to validate the main conclusion of the paper that education causally affects one's worth, I employ an alternative approach to identify the causal effect of education by relying on the exogenous variation in educational attainment stemming from a compulsory schooling reform in Sweden.[34]

The compulsory schooling reform in Sweden was implemented in stages between 1950 and 1962 and increased compulsory schooling requirements from 7 to 9 years. The duration of compulsory schooling during this period, thus, depended on the year in which an individual was born and on the municipality of residence at the time. Given this staged implementation, that is that the reform took place in different municipalities at different times, I can use the exposure to the reform as a natural experiment to identify the causal effect of education in the instrumental variable approach. In practice, I will define as the *control* group those individuals born before the first cohort affected by the reform in a given municipality, and as the *treated* those individuals born in the following years.

Nationwide, the first cohort affected by the reform was born in 1943 while all individuals born in 1955 and after were exposed to the new nine-year compulsory school system. To identify the year in which the reform was implemented at a municipality level, I rely on the methodology developed in Hjalmarsson et al. (2015). More specifically, I use two independent measures of the reform status: the first is based on Holmlund's (2007) coding of public documents describing schooling system at that time; the second relies on the observed discontinuities in the minimum level of education in municipality by cohort. In the second approach, I improve on Hjalmarsson et al.'s (2015) methodology by using discontinuity in levels of education implied by the data rather than a unique threshold for the jump in education (for more details on the reform assignment, see Internet Appendix). To minimize the measurement error in the variable capturing the reform exposure, I restrict the analysis to the municipalities for which the first cohort exposed to the reform is the same for both reform assignments. This approach allows me to successfully identify the year of the reform for 1030 out of 1058 municipalities. Individuals who were residing in a municipality to which I could not assign the reform exposure status are dropped from the sample.

To ensure the comparability of *treated* and *control* groups, I further restrict the sample in three ways. First, I address the concern that the reform spanned a period of over a decade by restricting the analysis to the cohorts born at most two years before and two years after the first cohort affected by the reform, as is shown in the Table IA.IX. To the best of my knowledge, this approach is different from other studies using compulsory schooling reforms to instrument years of education which compare individuals born before and after the reform cohort without restricting the sample to a narrower time window. In the context of the Swedish reform, this would mean that, at the

[34]Detailed description of the reform can be found in Hjalmarsson et al. (2015), Holmlund et al. (2011), and Holmlund (2007). Other studies that used this reform include Meghir and Palme (2005) and Lundborg et al. (2018).

extreme, one would compare a person born in the mid-1950s to someone born in early 1940s. Arguably, during this period, structural changes other than compulsory schooling requirements might have occurred in the municipalities which implemented the reform earlier, which suggests the need for such restriction. Second, to ensure the comparability of education quality and to limit the effects of the transition period which could have affected it, I drop individuals born during the very first year affected by the reform. Third, given that information on wealth is available between 1999 and 2007 and to ensure I observe each age group in all wealth-years, I focus on the sample of men aged between 50 and 59 years old during that period. The final sample consists of 873,838 observations.

Figure 9 and Table IA.X report the distribution and the average years of schooling by treatment status for the selected sample. Figure 9(a) shows that, on average, the years of education increased from about 11.4 years for those born just before the reform to about 11.9 for those born just after, which translates to the increase in the average years of education of about 6 months. Figure 9(b) further reveals that, although educational attainment among the *treated* is higher throughout the entire distribution of years of schooling, the main impact of the reform is concentrated on those directly affected by the reform, i.e. *compulsory school* level. More specifically, in the *control* group, about 19% observations dropped out of school after completing 7 years of education, while among the *treated* this share went down to 2%.[35] On the contrary, the share of those with 9 years of schooling more than doubles from about 9% among those born in the cohorts before the reform to about 20% among those born after.

To use the compulsory reform as a source of exogenous variation in educational attainment, I employ the instrumental variable approach and estimate the IV specification by two-stage least squares (2SLS) separately for each age group. Given that I focus on men aged between 50 and 59 years old and to stay consistent with the definition of age groups in main analysis, I group individuals into 50-54 and 55-59 age buckets. Further, since the reform provides only one exclusion restriction, I define the main explanatory variable as a continuous years of schooling variable S.

I, therefore, specify the first stage by the following equation:

$$S_{it,a} = \gamma_a Reform_{cm} + \alpha_{m,a} + \alpha_{c,a} + \alpha_{t,a} + u_{it,a}, \tag{17}$$

where $S_{it,a}$ denotes years of schooling of a man i born in the cohort c and residing in the municipality m during the period when he was attending compulsory school, whose wealth I measure in the year t and who, thus, belongs to the age group a.

The instrument $Reform_{cm}$ is an indicator variable equal to one if the individual was exposed to the new schooling law and zero otherwise. Since municipalities participation in this reform was voluntary, especially in the beginning of its implementation, those with better economic prospects and higher levels of education to start with might have chosen to adopt the reform earlier. To address this concern, I include municipality of residence at the time of compulsory school fixed effects $\alpha_{m,a}$ and cohort fixed effects $\alpha_{c,a}$, conditional on which the reform assignment is as good as random. I further include year of wealth fixed effect $\alpha_{t,a}$ to capture the economy-wide trends in

[35] The reason for why after the reform the share of those with 7 years of compulsory schooling does not go down to zero is because there might be some noise in the reform assignment since it is based on the municipality of residence and the year of birth.

assets valuation.

The results of the first stage by age group are reported in the Table 12 and Figure 10(a). After controlling for cohort, municipality, and year fixed effects, the reform caused the increase in years of schooling by about four months in both age groups. The first stage F-statistic takes values 23.06 for the age group 50-54 and 17.51 for the age group 55-59, which exceeds the conventional limits on the minimum requirements for the predictive power of the first stage.

To estimate the effect of education on gross wealth using reform exposure as instrumental variable, I specify the second stage as follows:

$$GW_{it,a} = \beta_a S_{it,a} + \alpha_{m,a} + \alpha_{c,a} + \alpha_{t,a} + \epsilon_{it,a}, \tag{18}$$

where, differently from the regression specification in the main analysis, the coefficient β_a captures the marginal effect of years of schooling.

The results of the second stage are reported in the Table 12 and show that an additional year of schooling causes an increase in the value of total assets by SEK 160,000 ($24,500) for the age group 50-54 and by SEK 340,000 ($53,500) for the age group 55-59. For comparison, I also report the results of the OLS regression estimated on the same sample and of the *within-siblings* specification estimated for the sample of brothers conditional on the same selection of the year-cohort-municipality combinations as the IV sample. In line with the previous analysis, the within-siblings estimates are about four times lower than that of the OLS. On the contrary, the effects estimated by the 2SLS are substantially larger. This is not surprising since by the nature of the instrumental variable approach, the estimated effect of years of schooling on wealth β_a is the local average treatment effect (LATE). This means that, if the effect of an additional year of education is heterogeneous across individuals, β_a captures the average effect of schooling for those who stayed in education longer because of the reform, i.e. *compliers*. As discussed above, the effect of the reform was concentrated primarily on the individuals who dropped out after 9 years rather than dropping out after completing 7 years of education, thus staying in school two years longer. The relatively large IV estimates suggest, therefore, an important role of education for the wealth accumulation of the school dropouts, who are also most probably coming from the socially disadvantaged backgrounds.

To summarize, the IV estimates are local in nature and are, thus, not comparable to the estimates from the *within-siblings* specification directly. The results, nevertheless, validate the main conclusion of the paper: more educations leads to larger total worth.

6.2 Financial wealth passive appreciation: how robust is the effect of education?

One of the findings documented in Section 5.1 is that financial assets of more educated individuals appreciate more, i.e. their $r^{FW}_{as,t+1} FW_{as,t}$ is larger. This passive appreciation consists of two components: the stock of accumulated financial wealth at the end of year t ($FW_{as,t}$) and the return earned during year $t+1$ ($r_{as,t+1}$). Since the observed appreciation is increasing in both components, the natural question to ask is whether the observed differences in $r^{FW}_{as,t+1} FW_{as,t}$ are uniquely due to the fact that more educated men have a larger accumulated stock of financial wealth due to different savings decisions or if there are also systematic differences in the rate of

return $r_{as,t+1}$ across education groups due to different investment behavior.

To answer this question, consider the expected return on financial assets earned by an individual i in the age group a with educational attainment s over the period $t+1$:

$$\mathbb{E}(R^{FW}_{ias,t+1}) = 1 + r^{f}_{t+1} + \omega_{ias,t+1}\mathbb{E}(r^{FW,e}_{ias,t+1}) \tag{19}$$

where r^{f}_{t+1} is the risk-free rate, $\omega_{ias,t+1}$ is the unconditional risky share of the individual i, and the $\mathbb{E}(r^{FW,e}_{ias,t+1})$ is the expected excess return on his risky financial assets.

Based on the equation 19, the differences in expected returns on financial wealth could be driven by differences in the composition of financial assets, described by the share of financial wealth invested in the risky assets $\omega_{ias,t+1}$, and by the composition of the risky portfolio resulting in different expected excess returns on the risky assets $\mathbb{E}(r^{FW,e}_{ias,t+1})$.

To study the later, I infer the mean portfolio returns from an asset pricing model. More specifically, I follow Calvet et al. (2007) and employ the global CAPM which captures the expected returns due to the covariance with the world index:

$$r^{e}_{j,t+1} = \beta_j r^{e}_{WI,t+1} + \epsilon_{j,t+1}, \tag{20}$$

where $r^{e}_{j,t+1}$ is the excess return of the asset j over the period $t+1$, β_j is the factor loading, and $r^{e}_{WI,t+1}$ is the U.S. dollar return of the world index in excess of the U.S. Treasury bill.

In practice, to estimate the expected returns, I model the return of each asset j in the period t as:

$$r^{e}_{j,t+1} = \alpha_j + \beta_j r^{e}_{WI,t+1} + u_{j,t+1}, \tag{21}$$

To obtain the vector of factor loadings, I estimate the equation 21 by OLS for every asset j using the historical return data available for this asset and the world index.[36]

The expected excess return of the individual i risky portfolio at time $t+1$ is, therefore, given by $\mathbb{E}(r^{e}_{i,t+1}) = \beta_{i,t+1}\mathbb{E}(r^{e}_{WI,t+1})$, where $\mathbb{E}(r^{e}_{WI,t+1})$ is estimated using the sample mean of the excess return of the world index; and $\beta_{i,t+1}$ is the weighted average of the factor loadings of the assets comprising individual $i's$ portfolio in time $t+1$: $\beta_{i,t+1} = \sum_{j=1}^{J} w_{i,j,t+1}\beta_j$, where β_j's are the factor loadings estimated from the equation 21 and $w_{i,j,t+1}$ is the asset j weight in individual i portfolio in time $t+1$.

To further capture potential differences in returns by education, I adjust the estimated expected returns by subtracting value weighted average fund fees. To compute fund portfolio returns net of fees, I construct funds' total expense ratios yearly using information manually collected from annual reports and fact-sheets.

The differences in unconditional risky share and expected excess returns on risky portfolio are reported in Tables 13 and 14 respectively. The results reveal that, first, risky share unambiguously increases with education: comparing to the average of 16% among *compulsory school* group, the risky share individuals with some post high school education is almost twice as much for the age

[36] I describe in details how I estimate portfolio expected excess returns in the Internet Appendix.

group 30-34 and about 50% higher to those between 45 and 49 years old.

Second, the results show that risky portfolio expected returns also increase with education and that this difference is higher once fees are taken into account. In particular, the excess returns earned by individuals with some university education on their risky assets are about 10 basis points, or 2%, larger than those of individuals with only compulsory schooling. Including fees in the calculation, reduces the average returns by about 100 basis points, but doubles the difference in expected excess returns across education groups.

Despite the fact that estimated effect of education on expected yearly returns are rather small, they translate to a more substantial difference in the expected returns earned over the life cycle. Given the average risk-free rate of approximately 3.155% over the period 1999 to 2007 and taking into account estimated differences in portfolio risky share and the expected excess returns, over twenty years (between age 30 and 49) the yearly age-specific differences in returns translate to a compounded difference of 20 percentage points, or a 20% difference in the total returns earned over this period by the least and the most educated individuals.

7 Concluding remarks

The difference in total assets across individuals with different levels of education is virtually non-existent in the beginning of the working life and is very large at retirement, with the most educated individuals holding twice as much assets as the least educated ones. Do these observed differences imply the causal effect of education on wealth or are they driven by unobserved heterogeneity? If it is the later, what wealth accumulation mechanisms are responsible for such dispersion at retirement?

To answer these questions, this paper studied the causal effect of education on wealth over the life cycle using Swedish registry panel data. This large longitudinal dataset provides detailed information on individuals' assets, debt, educational attainment, and income, which allows me to document the complete picture of the relationship between education and wealth accumulation.

To account for endogeneity of education, I employ two distinct identification strategies that rely on controlling for parental background and ability, and on within-siblings variation in educational attainment.

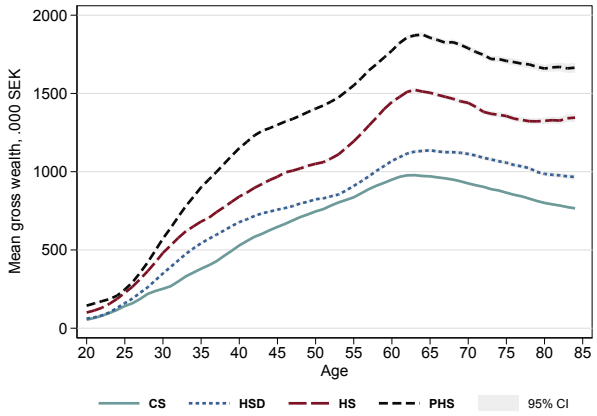
My empirical findings can be summarized as follows. First, education has a positive and economically significant effect on financial and real estate wealth, which can be attributed only partly to higher levels of debt among more educated people. Second, more educated individuals both save more and saw their assets to appreciate more during the period between 1999 and 2007. Third, these results are robust to the alternative identification strategy relying on the exogenous variation in the years of education and to a variety of robustness specifications. Overall, my results suggests that considering only labor income returns to education greatly understates its economic implications.

Figures and Tables

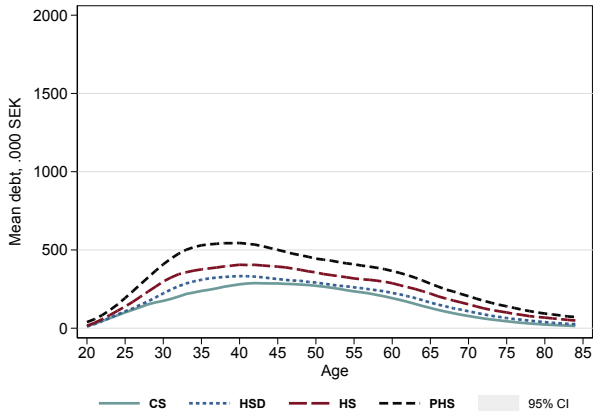
FIGURE 1: Life-cycle profiles of total assets, debt and net worth by education group

Note: The graphs depict the average total assets (consisting of financial and real estate wealth), total outstanding debt (including non-student, i.e. mortgages and consumer, and student loans), and net worth by age and education group. Education levels are defined as follows: individuals who completed compulsory education (*CS, compulsory school*), individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). The assets and liabilities are measured at individual level for men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Wealth and debt of the top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Shaded area shows 95% confidence intervals.

(a) Total assets



(b) Debt



(c) Net worth

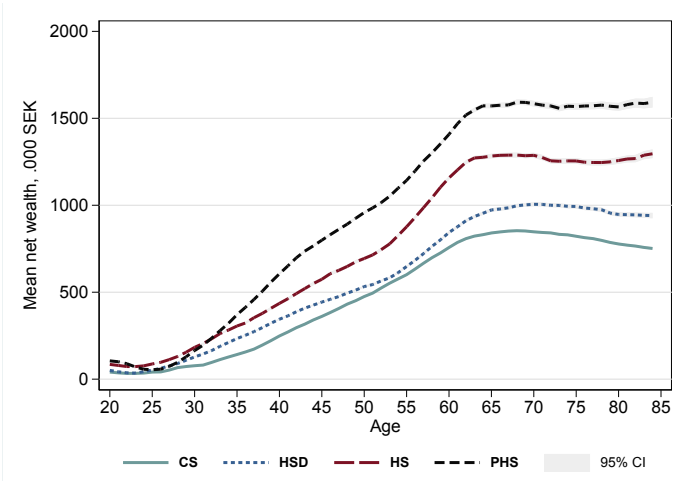
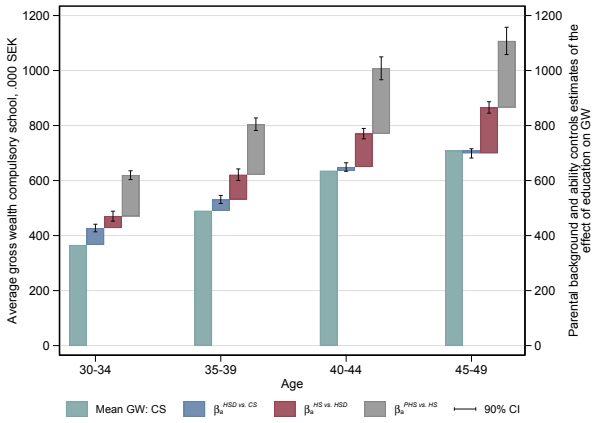


FIGURE 2: Estimates of age-specific effects of levels of education on gross wealth

Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on gross wealth estimated from equations 2 and 3 respectively. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Table 1. Mean is defined among individuals with compulsory school education. The plotted effects are normalized such that the minimum of each bar corresponds to the sum of the mean gross wealth among individuals with compulsory school education and the effects of the previous levels of education. For instance, the maximum of the bar *PHS vs. HS* represent the average gross wealth that individuals who only attended compulsory school would have accumulated had they attended some post high school education. The total effect of obtaining some post high school training as opposed to interrupting studies right after compulsory school is, therefore, given by the sum of the bars *HSD vs. CS*, *HS vs. HSD*, and *PHS vs. HS*. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

(a) Parental background and ability estimates



(b) Within-siblings estimates

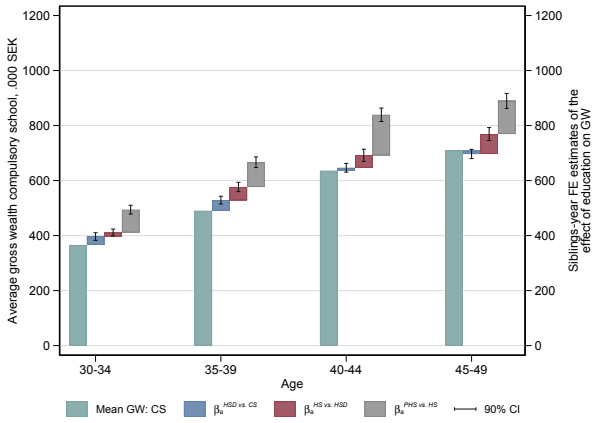
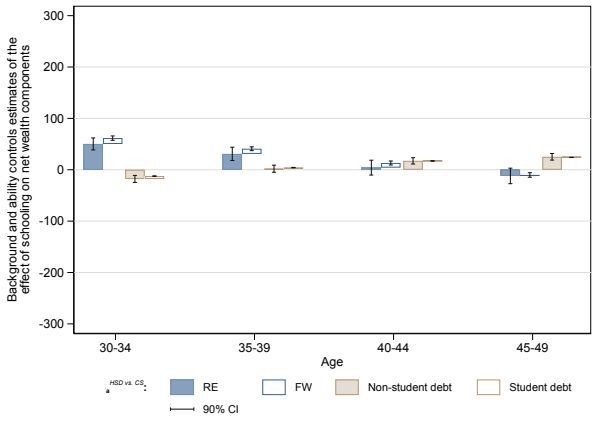


FIGURE 3: Estimates of age-specific effects of levels of education on net wealth components

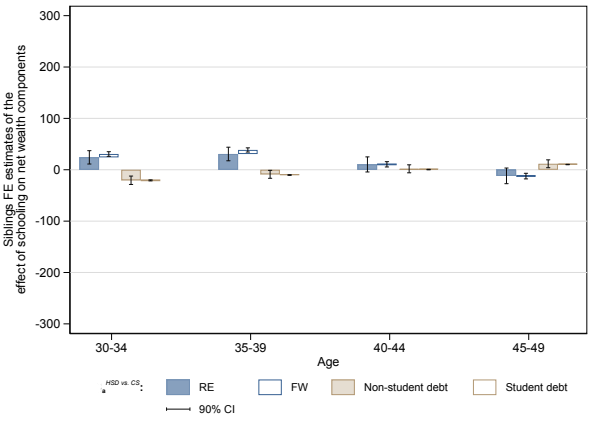
Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on net wealth components estimated from equations 2 and 3 respectively. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Tables 3 and 4. The plotted effects are normalized such the sum of the bars *RE* (effect on real estate wealth) and *FW* (effect on financial wealth) in each panel corresponds to the total effect of the respective level of education on gross wealth plotted on Figure 2 and reported in the Table 1. The sum of bars *non-student debt* and *student debt* in each panel is the average difference in debt between individuals with different education levels estimated from the respective specifications. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

Panel I. High school dropout vs. compulsory school

(a) Parental background and ability estimates

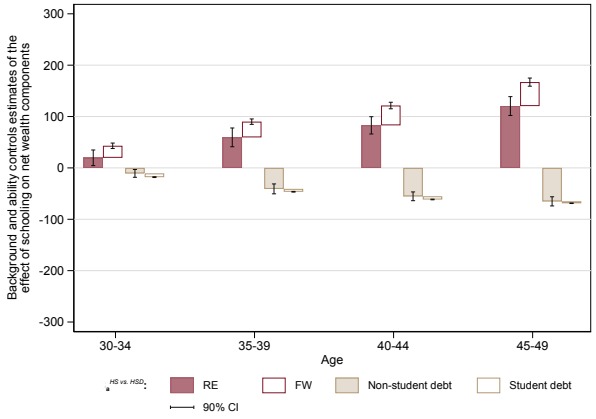


(b) Within-siblings estimates

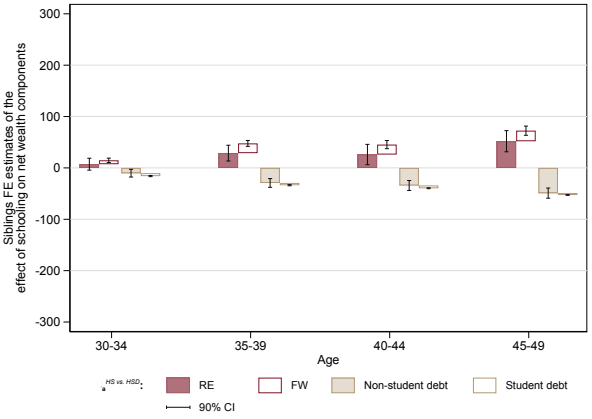


Panel II. High school vs. high school dropout

(a) Parental background and ability estimates

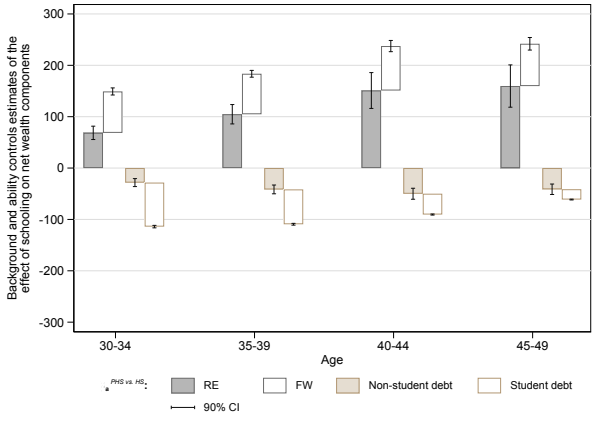


(b) Within-siblings estimates



Panel III. Post high school vs. high school

(a) Parental background and ability estimates



(b) Within-siblings estimates

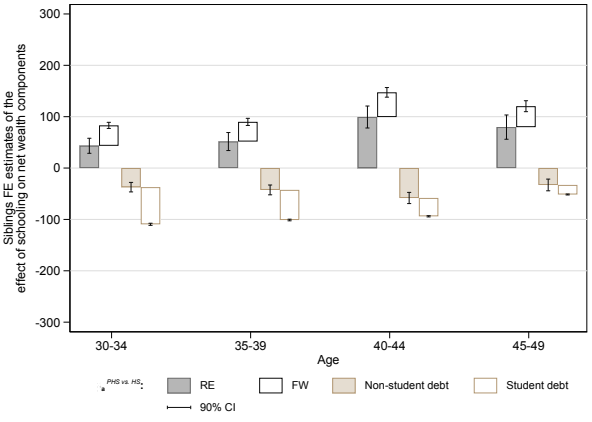
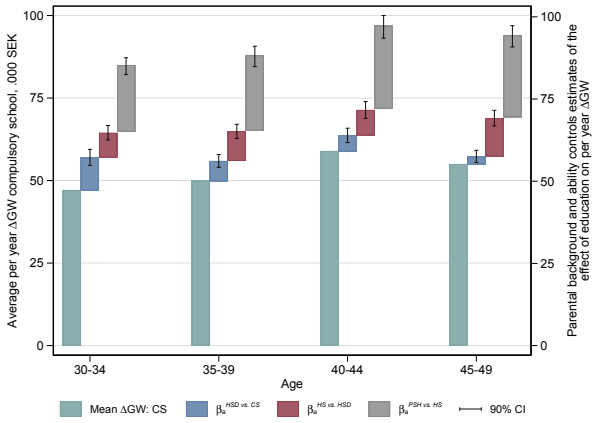


FIGURE 4: Estimates of age-specific effects of levels of education on per year change in gross wealth

Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on per year change in gross wealth ΔGW estimated from equations 2 and 3 respectively. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Table 5. Mean is defined among individuals with compulsory school education. The plotted effects are normalized such that the minimum of each bar corresponds to the sum of the mean gross wealth among individuals with compulsory school education and the effects of the previous levels of education. For instance, the maximum of the bar *PHS vs. HS* represent the average per year change in gross wealth that individuals who only attended compulsory school would have accumulated had they attended some post high school education. The total effect of obtaining some post high school training as opposed to interrupting studies right after compulsory school is, therefore, given by the sum of the bars *HSD vs. CS*, *HS vs. HSD*, and *PHS vs. HS*. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

(a) Parental background and ability estimates



(b) Within-siblings estimates

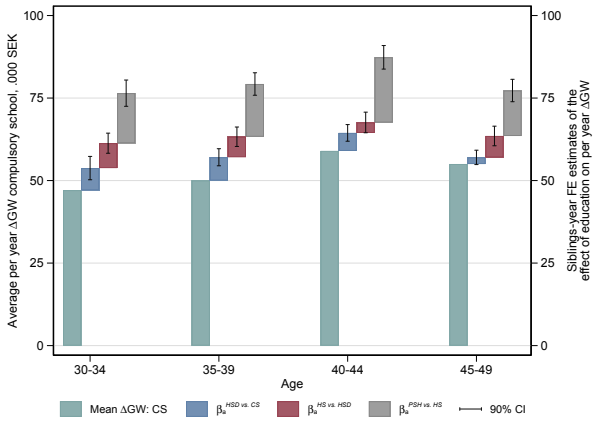
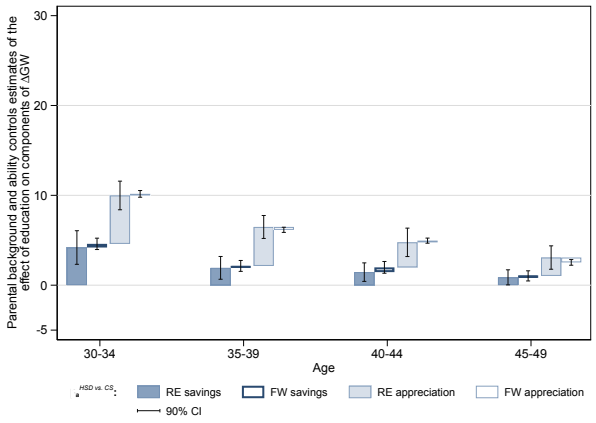


FIGURE 5: Estimates of age-specific effects of levels of education on yearly savings and assets appreciation

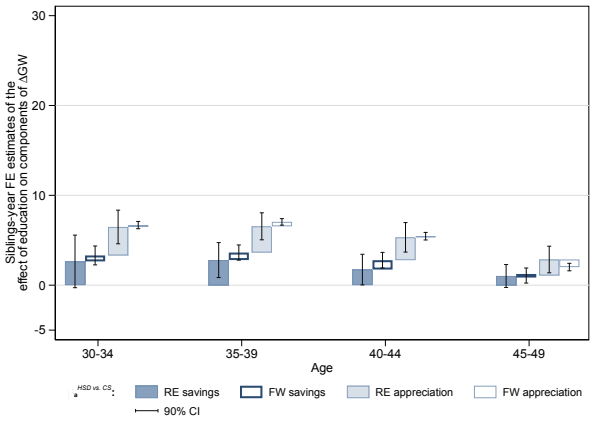
Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on ΔGW decomposed into active savings Δ_{active} and passive assets appreciation $\Delta_{passive}$ of gross wealth components (real estate wealth and financial wealth) estimated from the equations 2 and 3 respectively. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Tables 6 (active savings) and 7 (passive appreciation). The plotted effects are normalized such that the sum of the bars in each panel corresponds to the total effect of the respective level of education on the total per annum change in gross wealth ΔGW plotted on Figure 4 and reported in the Table 5. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

Panel I. High school dropout vs. compulsory school

(a) Parental background and ability estimates

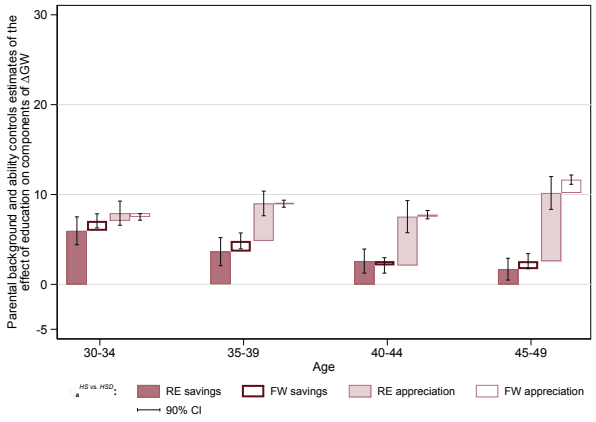


(b) Within-siblings estimates

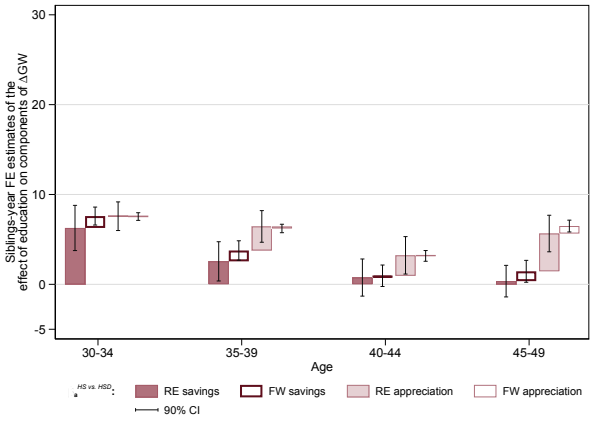


Panel II. High school vs. high school dropout

(a) Parental background and ability estimates

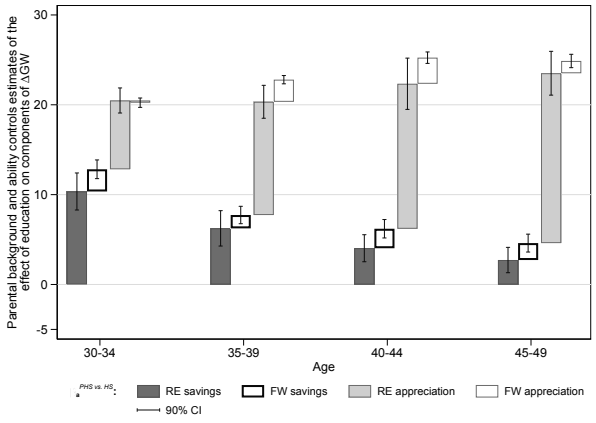


(b) Within-siblings estimates



Panel III. Post high school vs. high school

(a) Parental background and ability estimates



(b) Within-siblings estimates

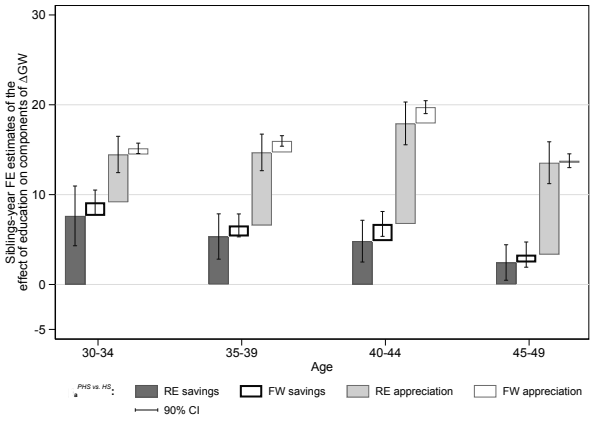
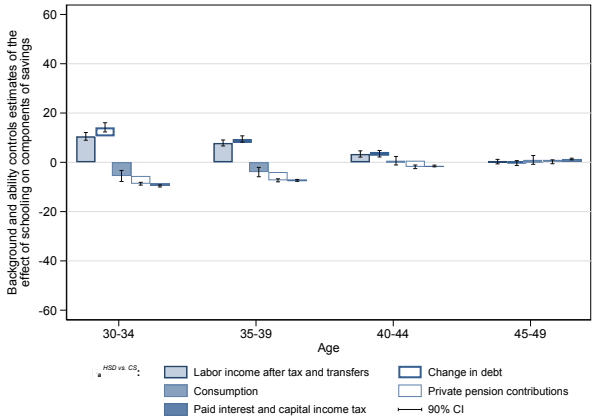


FIGURE 6: Estimates of age-specific coefficients of levels of education on the components of active change in gross wealth

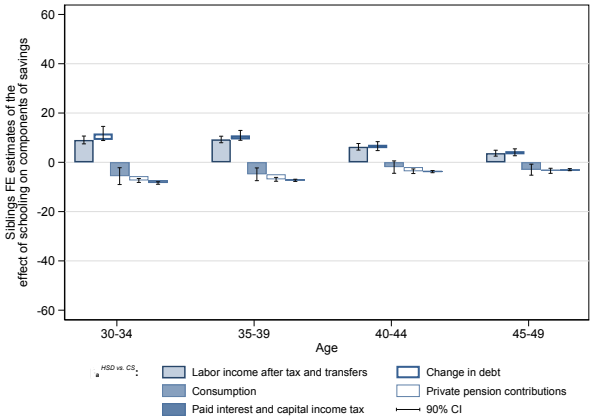
Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on savings components. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*High school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. All regressions include fixed effects for birth cohort and year. Regression (a) also includes fixed effect for childhood municipality. Standard errors are heteroscedasticity robust and two-way clustered at the cohort and municipality level. Capped spikes show 90 % confidence intervals (CIs).

Panel I. High school dropout vs. compulsory school

(a) Parental background and ability estimates

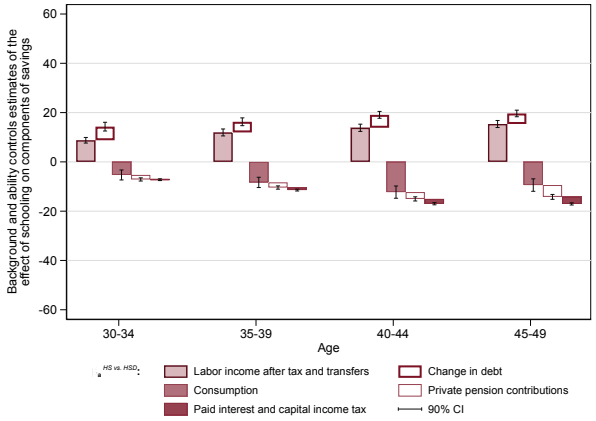


(b) Within-siblings estimates

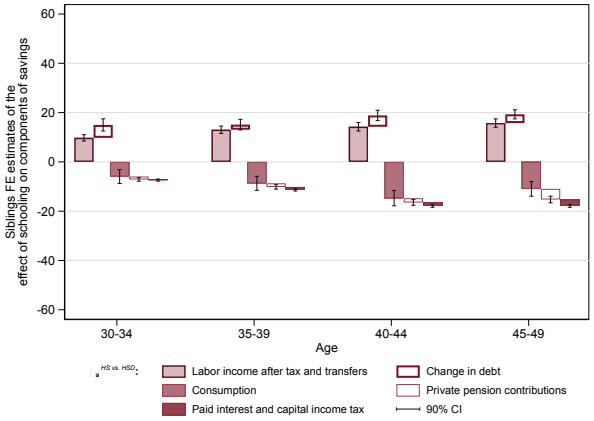


Panel II. High school vs. high school dropout

(a) Parental background and ability estimates

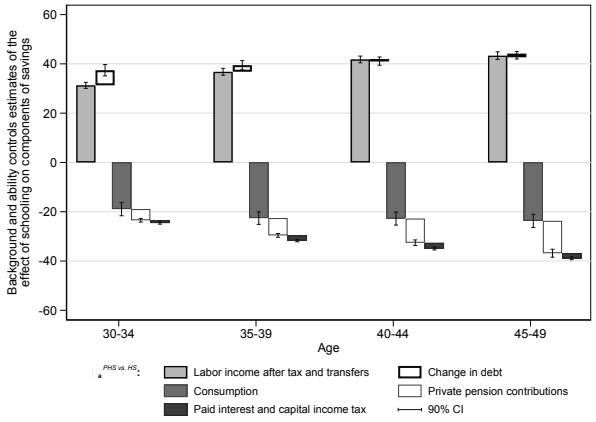


(b) Within-siblings estimates



Panel III. Post high school vs. high school

(a) Parental background and ability estimates



(b) Within-siblings estimates

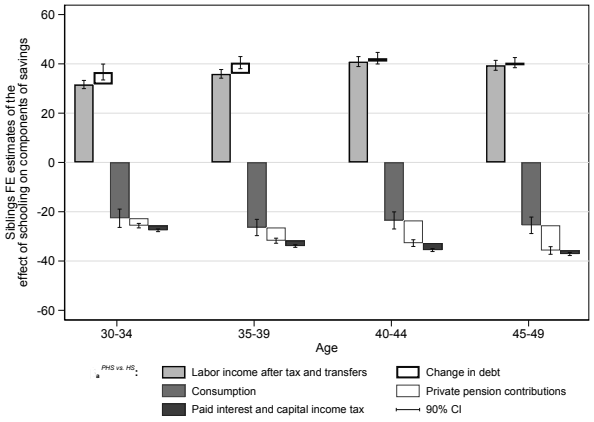
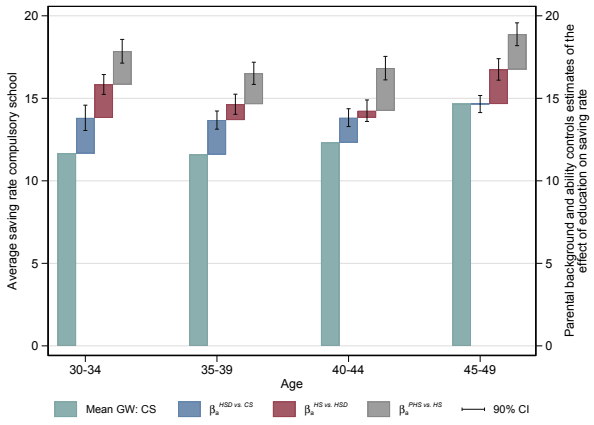


FIGURE 7: Estimates of age-specific effects of levels of education on saving rate

Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on saving rate estimated from equations 2 and 3 respectively. The saving rate is defined as a ratio between savings (active savings in financial weath and real estate wealth, and private pension contributions) and contemporaneous labor income (after tax and transfers). Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education (*CS*, *compulsory school*). The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Table 10. Mean is defined among individuals with compulsory school education. The plotted effects are normalized such that the minimum of each bar corresponds to the sum of the mean saving rate among individuals with compulsory school education and the effects of the previous levels of education. For instance, the maximum of the bar *PHS vs. HS* represent the average saving rate that individuals who only attended compulsory school would have had had they attended some post high school education. The total effect of obtaining some post high school training as opposed to interrupting studies right after compulsory school is, therefore, given by the sum of the bars *HSD vs. CS*, *HS vs. HSD*, and *PHS vs. HS*. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

(a) Parental background and ability estimates



(b) Within-siblings estimates

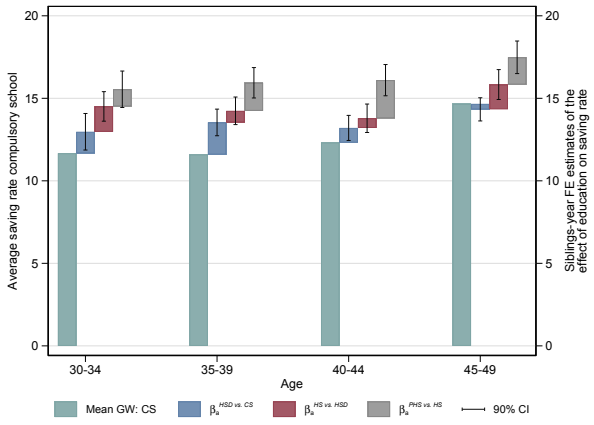


FIGURE 8: Estimates of age-specific effects of levels of education on return rate

Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on return rate estimated from equations 2 and 3 respectively. The return rate is defined as a ratio between passive appreciation of financial wealth and real estate over the value of assets in the previous year. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education (*CS*, *compulsory school*). The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Table 11. Mean is defined among individuals with compulsory school education. The plotted effects are normalized such that the minimum of each bar corresponds to the sum of the mean return rate among individuals with compulsory school education and the effects of the previous levels of education. For instance, the maximum of the bar *PHS vs. HS* represent the average return rate that individuals who only attended compulsory school would have had had they attended some post high school education. The total effect of obtaining some post high school training as opposed to interrupting studies right after compulsory school is, therefore, given by the sum of the bars *HSD vs. CS*, *HS vs. HSD*, and *PHS vs. HS*. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

(a) Parental background and ability estimates

(b) Within-siblings estimates

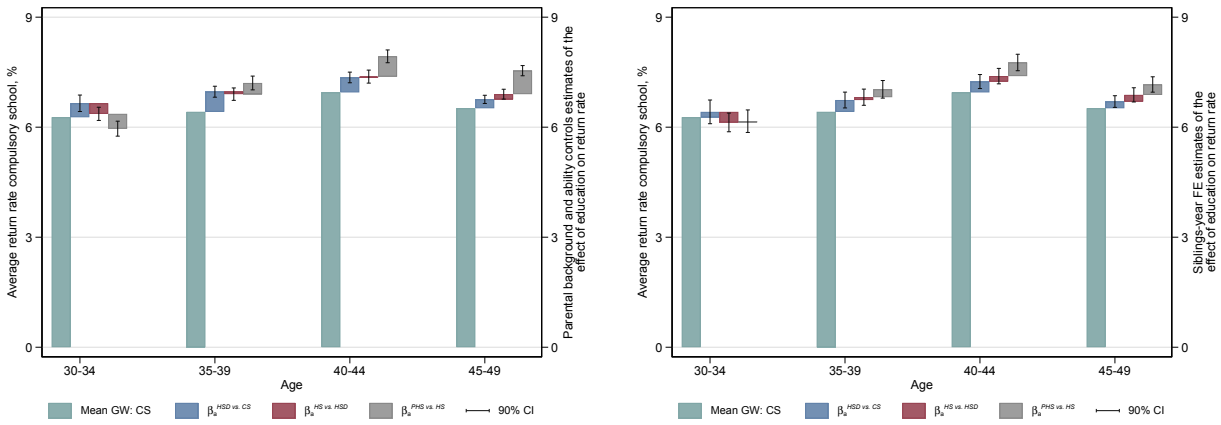


FIGURE 9: Average years of schooling before and after the reform

Note: The graphs depicts average years of schooling for the selected cohorts (a) and distribution of years of schooling for the selected sample (b) before and after the reform. For each municipality, I recenter the data such that time zero refers to the first cohort subject to the reform.

(a) Average years of schooling

(b) Distribution of years of schooling

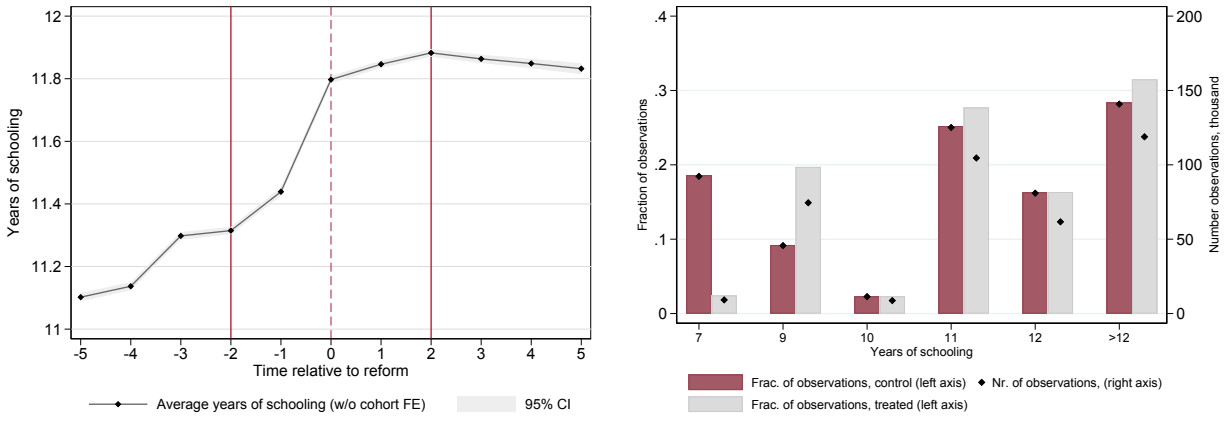
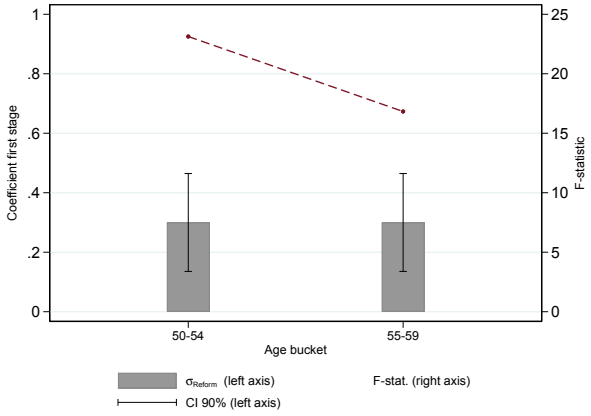


FIGURE 10: 2SLS results of the effect of years of schooling on gross wealth

Note: The graphs depict the first stage coefficients of the effect of compulsory schooling reform on years of education (a) and the effect of years of schooling on gross wealth using reform as an instrumental variable (b). The regressions include fixed effects for birth cohort, year, and childhood municipality. Standard errors are heteroschedasticity robust and clustered at municipaltiy level. Capped spikes show 90 % confidence intervals (CIs).

(a) First stage



(b) Second stage

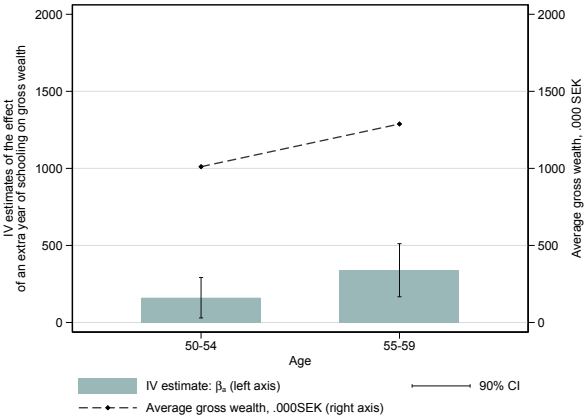


TABLE 1: The effect of education on gross wealth

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	61.6***	40.9***	13.2	-10.2
	(8.4)	(8.9)	(9.4)	(10.2)
High school vs. high school dropout	43.0***	90.0***	121.5***	167.0***
	(11.0)	(12.7)	(11.4)	(12.7)
Post high school vs. high school	149.1***	183.5***	237.5***	241.9***
	(9.7)	(13.8)	(25.3)	(30.2)
1(low education both parents)	-42.2***	-87.3***	-142.2***	-187.2***
	(7.5)	(7.9)	(8.8)	(10.9)
1(no parent)	-121.0***	-174.2***	-196.6***	-190.4***
	(13.4)	(17.7)	(20.3)	(18.3)
1(missing parental education)	-79.0***	-105.7***	-147.0***	-144.7***
	(14.2)	(14.4)	(19.2)	(20.3)
1(parent died)	40.7***	19.1**	15.9*	7.6
	(9.5)	(8.3)	(8.4)	(8.3)
Ln(parental income)	62.1***	50.1***	52.2***	51.1***
	(8.7)	(9.4)	(6.1)	(5.7)
Ability score	36.1***	62.1***	84.7***	81.4***
	(1.7)	(1.7)	(2.2)	(2.7)
Adjusted R^2	0.102	0.132	0.132	0.133
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	30.7***	38.5***	10.6	-12.3
	(8.4)	(8.6)	(9.7)	(10.2)
High school vs. high school dropout	14.7*	47.7***	45.4***	72.5***
	(7.6)	(10.2)	(13.5)	(14.3)
Post high school vs. high school	83.1***	89.9***	147.4***	120.4***
	(9.7)	(11.8)	(14.8)	(16.6)
Adjusted R^2	0.478	0.456	0.444	0.447
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 2: The effect of education on gross wealth with and without controls for parental background and ability

Age:	**30-34**	**35-39**	**40-44**	**45-49**
	DV = Gross wealth, .000SEK			
	Panel a: No controls for parental background or ability			
High school dropout vs. compulsory school	103.0***	107.6***	94.3***	68.6***
	(8.6)	(9.1)	(9.5)	(10.4)
High school vs. high school dropout	89.7***	183.3***	249.5***	290.2***
	(11.9)	(14.1)	(12.7)	(13.9)
Post high school vs. high school	218.1***	273.3***	344.6***	344.5***
	(10.4)	(14.4)	(25.2)	(31.5)
Parental background controls	NO	NO	NO	NO
Ability controls	NO	NO	NO	NO
Adjusted R^2	0.091	0.118	0.114	0.115
	Panel b: Controls for parental background			
High school dropout vs. compulsory school	90.3***	89.9***	69.9***	39.9***
	(8.5)	(8.8)	(9.4)	(10.4)
High school vs. high school dropout	76.0***	157.0***	209.2***	248.5***
	(11.2)	(13.3)	(12.2)	(13.3)
Post high school vs. high school	199.8***	251.0***	312.9***	304.7***
	(9.7)	(13.7)	(24.9)	(30.5)
1(low education both parents)	-58.2***	-115.6***	-182.1***	-228.3***
	(7.5)	(8.0)	(8.8)	(11.1)
1(no parent)	-131.5***	-200.0***	-231.9***	-229.0***
	(13.4)	(17.3)	(20.0)	(18.6)
1(missing parental education)	-99.4***	-145.5***	-193.3***	-188.0***
	(14.0)	(14.2)	(21.2)	(20.5)
1(parent died)	36.9***	11.5	5.0	-2.9
	(9.6)	(8.3)	(8.4)	(8.3)
Ln(parental income)	68.1***	59.2***	63.5***	59.6***
	(9.0)	(9.6)	(6.3)	(6.0)
Parental background controls	YES	YES	YES	YES
Ability controls	NO	NO	NO	NO
Adjusted R^2	0.097	0.124	0.121	0.124
	Panel c: Controls for ability			
High school dropout vs. compulsory school	68.1***	49.1***	25.6***	6.1
	(8.5)	(9.2)	(9.5)	(10.2)
High school vs. high school dropout	50.0***	103.4***	143.0***	189.9***
	(11.2)	(13.1)	(11.7)	(13.0)
Post high school vs. high school	157.9***	193.9***	253.9***	265.6***
	(10.0)	(14.1)	(25.7)	(30.9)
Ability score	40.6***	68.2***	93.5***	91.9***
	(1.8)	(1.8)	(2.2)	(2.9)
Parental background controls	NO	NO	NO	NO
Ability controls	YES	YES	YES	YES
Adjusted R^2	0.097	0.128	0.127	0.127
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated without controls for parental background and ability (Panel a), controlling for parental background (Panel b), and controlling for ability (Panel c). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort, childhood municipality of residence, and year in which wealth is observed. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 3: The effect of education on the gross wealth components: real estate wealth and financial wealth

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability; DV = real estate wealth, .000SEK				**DV = financial wealth, .000SEK**			
High school dropout vs. compulsory school	50.3***	31.0***	4.2	-12.0	11.3***	9.9***	9.0***	1.8
	(7.1)	(7.8)	(8.8)	(9.2)	(2.6)	(2.3)	(2.4)	(2.7)
High school vs. high school dropout	19.7**	59.4***	82.9***	120.4***	23.4***	30.6***	38.6***	46.6***
	(9.3)	(11.1)	(10.2)	(11.1)	(3.2)	(3.2)	(3.9)	(4.8)
Post high school vs. high school	68.5***	104.8***	151.0***	159.6***	80.6***	78.8***	86.5***	82.3***
	(7.9)	(11.5)	(21.2)	(25.0)	(4.2)	(4.0)	(6.6)	(7.4)
1(low education both parents)	-32.3***	-73.3***	-121.3***	-156.4***	-9.9***	-14.0***	-20.8***	-30.9***
	(6.4)	(7.1)	(7.8)	(9.5)	(2.3)	(2.1)	(2.6)	(3.5)
1(no parent)	-110.0***	-160.6***	-170.2***	-170.0***	-11.0**	-13.7**	-26.3***	-20.4***
	(11.8)	(15.4)	(16.6)	(14.8)	(4.3)	(5.3)	(6.6)	(6.5)
1(missing parental education)	-81.0***	-107.9***	-130.1***	-113.8***	2.0	2.1	-16.9***	-31.0***
	(13.8)	(12.7)	(17.5)	(18.3)	(6.2)	(6.6)	(5.8)	(6.3)
1(parent died)	25.5***	6.1	8.1	-2.8	15.2***	12.9***	7.8**	10.4***
	(8.1)	(7.0)	(7.1)	(7.1)	(3.2)	(3.0)	(3.1)	(3.3)
Ln(parental income)	37.3***	29.5***	35.4***	36.4***	24.8***	20.7***	16.8***	14.7***
	(6.6)	(8.0)	(5.2)	(4.4)	(3.0)	(2.2)	(2.4)	(1.7)
Ability score	28.1***	50.0***	67.8***	64.0***	8.0***	12.2***	16.9***	17.4***
	(1.5)	(1.5)	(1.9)	(2.2)	(0.6)	(0.6)	(0.9)	(0.9)
Adjusted R^2	0.086	0.115	0.118	0.121	0.050	0.053	0.048	0.050
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression; DV = real estate wealth, .000SEK				**DV = financial wealth, .000SEK**			
High school dropout vs. compulsory school	24.1***	30.7***	10.4	-11.9	6.5**	7.9***	0.2	-0.5
	(7.9)	(8.0)	(8.9)	(9.3)	(2.7)	(2.5)	(3.1)	(3.3)
High school vs. high school dropout	7.3	28.8***	26.0**	51.9***	7.5***	18.9***	19.3***	20.5***
	(7.1)	(9.3)	(12.0)	(12.5)	(2.6)	(3.5)	(4.8)	(5.4)
Post high school vs. high school	43.4***	51.6***	99.4***	79.7***	39.7***	38.3***	48.0***	40.7***
	(8.9)	(10.7)	(13.0)	(14.4)	(3.6)	(4.2)	(5.7)	(6.5)
Adjusted R^2	0.403	0.404	0.403	0.413	0.492	0.380	0.328	0.302
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	304.2	419.1	538.8	587.8	61.6	71.3	97.2	121.2

Note: The table reports age-specific effects of levels of education on real estate wealth and on financial wealth (both measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 4: The effect of education on non-student and student debt

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability; DV = non-student debt, .000SEK				**DV = student debt, .000SEK**			
High school dropout vs. compulsory school	17.8***	-2.0	-17.3***	-25.3***	-5.4***	-2.2***	0.2	1.2***
	(4.2)	(4.2)	(3.7)	(3.9)	(0.3)	(0.2)	(0.2)	(0.1)
High school vs. high school dropout	10.7**	40.8***	55.3***	65.1***	7.3***	5.6***	6.2***	3.7***
	(4.6)	(5.9)	(5.2)	(5.4)	(0.5)	(0.4)	(0.4)	(0.3)
Post high school vs. high school	28.3***	41.6***	50.0***	41.3***	85.7***	67.8***	40.5***	20.0***
	(4.7)	(5.2)	(6.5)	(6.2)	(1.5)	(1.1)	(0.6)	(0.5)
1(low education both parents)	-17.6***	-32.6***	-46.1***	-52.7***	-5.9***	-4.1***	-2.7***	-1.2***
	(2.9)	(3.0)	(3.2)	(3.4)	(0.5)	(0.3)	(0.3)	(0.2)
1(no parent)	-52.1***	-44.5***	-37.4***	-44.4***	6.6***	4.8***	2.8***	1.9***
	(6.6)	(8.4)	(8.4)	(7.1)	(1.4)	(1.1)	(0.7)	(0.6)
1(missing parental education)	-36.1***	-43.7***	-31.1***	-28.3***	4.5***	2.4**	1.1*	0.2
	(6.5)	(7.6)	(8.2)	(7.7)	(1.1)	(1.0)	(0.6)	(0.4)
1(parent died)	-10.3**	-14.4***	-12.8***	-12.6***	2.0**	1.2**	1.1***	0.7***
	(4.2)	(3.2)	(3.0)	(2.6)	(0.8)	(0.5)	(0.3)	(0.2)
Ln(parental income)	19.3***	18.5***	14.0***	10.7***	2.3***	2.0***	0.6***	-0.1
	(2.4)	(2.4)	(1.9)	(1.2)	(0.5)	(0.3)	(0.2)	(0.1)
Ability score	15.4***	21.7***	24.1***	21.6***	3.5***	2.4***	0.6***	-0.4***
	(0.9)	(0.8)	(0.8)	(0.8)	(0.2)	(0.1)	(0.1)	(0.1)
Adjusted R^2	0.073	0.082	0.077	0.066	0.305	0.258	0.202	0.106
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression; DV = non-student debt, .000SEK				**DV = student debt, .000SEK**			
High school dropout vs. compulsory school	20.5***	8.9*	-1.8	-11.6**	0.2	1.4***	1.4***	1.5***
	(5.0)	(4.7)	(4.7)	(4.6)	(0.6)	(0.4)	(0.3)	(0.2)
High school vs. high school dropout	10.3**	29.3***	34.2***	49.1***	5.7***	4.4***	5.4***	3.6***
	(4.6)	(5.2)	(5.9)	(6.0)	(0.7)	(0.7)	(0.5)	(0.4)
Post high school vs. high school	37.2***	42.5***	58.3***	32.9***	72.3***	58.6***	35.7***	18.5***
	(5.6)	(5.8)	(6.6)	(6.9)	(1.2)	(1.0)	(0.7)	(0.6)
Adjusted R^2	0.270	0.261	0.256	0.229	0.508	0.414	0.313	0.177
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	245.6	298.3	326.3	310.9	3.4	2.2	1.5	1.0

Note: The table reports age-specific effects of levels of education on non-student (mortgages and other liabilities to financial institutions) and student debt (both measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 5: The effect of education on per year change in gross wealth

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	10.2***	6.2***	5.0***	2.5**
	(1.5)	(1.2)	(1.3)	(1.1)
High school vs. high school dropout	7.5***	9.0***	7.8***	11.7***
	(1.3)	(1.3)	(1.6)	(1.4)
Post high school vs. high school	20.2***	22.8***	25.2***	24.9***
	(1.6)	(1.9)	(2.1)	(2.0)
1(low education both parents)	-3.7***	-8.2***	-9.9***	-12.9***
	(1.3)	(1.1)	(0.9)	(1.1)
1(no parent)	-9.8***	-17.3***	-21.6***	-12.0***
	(3.0)	(2.5)	(2.5)	(2.3)
1(missing parental education)	-8.2***	-7.4***	-11.9***	-13.8***
	(2.7)	(2.4)	(1.8)	(1.8)
1(parent died)	1.7	-1.7*	-0.1	-1.0
	(1.5)	(1.0)	(1.0)	(0.9)
Ln(parental income)	5.2***	2.7***	3.0***	3.5***
	(1.0)	(0.8)	(0.7)	(0.4)
Ability score	4.8***	5.7***	7.5***	6.0***
	(0.3)	(0.3)	(0.3)	(0.3)
Adjusted R^2	0.034	0.048	0.058	0.065
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	6.7***	7.0***	5.5***	2.0
	(2.2)	(1.6)	(1.5)	(1.3)
High school vs. high school dropout	7.5***	6.2***	3.2*	6.5***
	(1.9)	(1.8)	(1.9)	(1.8)
Post high school vs. high school	15.2***	16.0***	19.7***	13.8***
	(2.4)	(2.1)	(2.2)	(2.1)
Adjusted R^2	0.132	0.154	0.185	0.215
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	178,244	267,389	252,685	255,858
Mean DV compulsory school, .000 SEK	47.09	50.02	58.99	55.01

Note: The table reports age-specific effects of levels of education on the per year change in gross wealth ΔGW (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 6: The effect of education on active yearly savings in real estate wealth and financial wealth

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability; DV = $\Delta_{active}RE$, .000SEK				**DV = $\Delta_{active}FW$, .000SEK**			
High school dropout vs. compulsory school	4.2***	1.9**	1.5**	0.9*	0.4	0.2	0.5	0.2
	(1.1)	(0.8)	(0.6)	(0.5)	(0.4)	(0.4)	(0.4)	(0.3)
High school vs. high school dropout	6.0***	3.6***	2.6***	1.7**	1.1**	1.2**	-0.5	0.9*
	(0.9)	(0.9)	(0.8)	(0.7)	(0.5)	(0.5)	(0.5)	(0.5)
Post high school vs. high school	10.4***	6.2***	4.0***	2.7***	2.5***	1.5**	2.2***	1.9***
	(1.3)	(1.2)	(0.9)	(0.9)	(0.6)	(0.6)	(0.6)	(0.6)
1(low education both parents)	-0.9	-2.5***	-0.5	-1.0**	-0.3	0.1	0.5	-0.0
	(0.9)	(0.6)	(0.5)	(0.5)	(0.4)	(0.3)	(0.3)	(0.4)
1(no parent)	-2.5	-2.9	-3.1*	-1.4	0.7	-1.0	-2.6***	-0.3
	(2.4)	(1.9)	(1.6)	(1.3)	(1.0)	(0.8)	(0.7)	(0.7)
1(missing parental education)	-1.2	-0.5	-0.5	-1.1	1.2*	2.0**	0.1	-1.1*
	(1.6)	(1.6)	(1.3)	(0.9)	(0.7)	(1.0)	(0.7)	(0.7)
1(parent died)	-0.9	-1.2*	-0.6	-0.8	-0.1	0.2	0.3	0.4
	(1.2)	(0.6)	(0.6)	(0.5)	(0.5)	(0.3)	(0.3)	(0.4)
Ln(parental income)	1.1	0.4	0.4	0.3	0.1	-0.4**	-0.5***	0.3**
	(0.7)	(0.3)	(0.4)	(0.2)	(0.3)	(0.2)	(0.2)	(0.1)
Ability score	1.8***	1.0***	0.4***	0.4***	0.2	0.3***	0.6***	0.3***
	(0.2)	(0.2)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Adjusted R^2	0.051	0.046	0.048	0.065	0.115	0.090	0.095	0.098
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression; DV = $\Delta_{active}RE$, .000SEK				**DV = $\Delta_{active}FW$, .000SEK**			
High school dropout vs. compulsory school	2.6	2.8**	1.7*	1.0	0.7	0.8	1.0**	0.1
	(1.8)	(1.2)	(1.0)	(0.8)	(0.6)	(0.5)	(0.5)	(0.5)
High school vs. high school dropout	6.3***	2.6*	0.8	0.4	1.3**	1.2*	0.2	1.1
	(1.5)	(1.3)	(1.3)	(1.1)	(0.6)	(0.7)	(0.7)	(0.7)
Post high school vs. high school	7.6***	5.3***	4.8***	2.4**	1.5*	1.2	1.9**	0.9
	(2.0)	(1.5)	(1.4)	(1.2)	(0.8)	(0.8)	(0.8)	(0.9)
Adjusted R^2	0.051	0.046	0.048	0.065	0.115	0.090	0.095	0.098
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	178,244	267,389	252,685	255,858	178,244	267,389	252,685	255,858
Mean DV compulsory school, .000 SEK	16.07	11.19	8.17	4.37	3.80	4.20	4.95	5.24

Note: The table reports age-specific effects of levels of education on yearly active savings in in real estate wealth $\Delta_{active}RE$ and financial wealth $\Delta_{active}FW$ (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 7: The effect of education an passive yearly appreciation of real estate wealth and financial wealth

Age:	**30-34**	**35-39**	**40-44**	**45-49**	**30-34**	**35-39**	**40-44**	**45-49**
	Panel a: OLS regression with controls for parental background and ability; DV = $\Delta_{passive}RE$, .000SEK				**DV = $\Delta_{passive}FW$, .000SEK**			
High school dropout vs. compulsory school	5.4***	4.3***	2.8***	2.0**	0.2	-0.3*	0.2	-0.5***
	(1.0)	(0.8)	(1.0)	(0.8)	(0.2)	(0.2)	(0.2)	(0.2)
High school vs. high school dropout	0.9	4.2***	5.4***	7.6***	-0.4*	-0.0	0.2	1.5***
	(0.8)	(0.8)	(1.1)	(1.1)	(0.2)	(0.2)	(0.3)	(0.3)
Post high school vs. high school	7.7***	12.6***	16.1***	18.9***	-0.2	2.5***	2.9***	1.4***
	(0.8)	(1.1)	(1.7)	(1.5)	(0.3)	(0.3)	(0.4)	(0.5)
1(low education both parents)	-3.2***	-5.8***	-9.6***	-11.0***	0.7***	-0.1	-0.3	-0.9***
	(0.7)	(0.7)	(0.7)	(0.8)	(0.2)	(0.2)	(0.2)	(0.2)
1(no parent)	-8.1***	-13.0***	-14.4***	-10.0***	0.0	-0.4	-1.6***	-0.4
	(1.3)	(1.5)	(1.8)	(1.5)	(0.6)	(0.4)	(0.5)	(0.4)
1(missing parental education)	-6.8***	-8.8***	-11.2***	-10.4***	-1.5***	-0.2	-0.3	-1.2***
	(1.7)	(1.3)	(1.4)	(1.3)	(0.4)	(0.5)	(0.5)	(0.4)
1(parent died)	2.2***	-0.7	0.3	-0.7	0.4	0.0	-0.1	0.2
	(0.9)	(0.7)	(0.7)	(0.6)	(0.3)	(0.2)	(0.2)	(0.2)
Ln(parental income)	3.9***	2.5***	3.0***	2.8***	0.2	0.1	0.1	0.1**
	(0.5)	(0.6)	(0.5)	(0.4)	(0.2)	(0.2)	(0.1)	(0.1)
Ability score	2.6***	4.2***	5.8***	4.9***	0.2***	0.2***	0.7***	0.4***
	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)	(0.0)	(0.1)	(0.1)
Adjusted R^2	0.048	0.067	0.079	0.086	0.097	0.094	0.089	0.101
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression; DV = $\Delta_{passive}RE$, .000SEK				**DV = $\Delta_{passive}FW$, .000SEK**			
High school dropout vs. compulsory school	3.2***	2.9***	2.5**	1.8**	0.2	0.5**	0.1	-0.8***
	(1.1)	(0.9)	(1.0)	(0.9)	(0.2)	(0.2)	(0.3)	(0.3)
High school vs. high school dropout	-0.0	2.7**	2.3*	4.2***	-0.0	-0.2	-0.1	0.8**
	(1.0)	(1.1)	(1.3)	(1.2)	(0.3)	(0.3)	(0.4)	(0.4)
Post high school vs. high school	5.3***	8.1***	11.2***	10.2***	0.7*	1.3***	1.8***	0.2
	(1.2)	(1.2)	(1.4)	(1.4)	(0.4)	(0.4)	(0.4)	(0.5)
Adjusted R^2	0.228	0.245	0.269	0.299	0.410	0.350	0.288	0.283
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	178,244	267,389	252,685	255,858	178,244	267,389	252,685	255,858
Mean DV compulsory school, .000 SEK	26.27	33.74	43.69	43.29	0.95	0.89	2.18	2.11

Note: The table reports age-specific effects of levels of education on yearly passive appreciation of real estate wealth $\Delta_{passive}RE$ and financial wealth $\Delta_{passive}FW$ (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 8: The effect of education on labor income and change in debt

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability;							
	DV = Labor income incl. transfers, .000SEK				**DV = $\Delta Debt$, .000SEK**			
High school dropout vs. compulsory school	10.5***	7.9***	3.4***	0.3	3.7***	1.6**	0.1	-0.6
	(1.0)	(0.7)	(0.8)	(0.6)	(1.1)	(0.8)	(0.8)	(0.6)
High school vs. high school dropout	8.8***	11.9***	13.8***	15.4***	5.5***	4.3***	5.2***	4.3***
	(0.7)	(0.9)	(0.9)	(0.9)	(1.1)	(1.0)	(0.8)	(0.8)
Post high school vs. high school	31.3***	36.8***	41.8***	43.3***	6.1***	2.7**	-0.7	0.1
	(0.7)	(0.9)	(0.8)	(0.9)	(1.4)	(1.1)	(1.0)	(0.9)
1(low education both parents)	-2.4***	-3.3***	-4.1***	-4.1***	-3.8***	-3.8***	-2.1***	-2.4***
	(0.5)	(0.5)	(0.5)	(0.5)	(1.0)	(0.6)	(0.6)	(0.5)
1(no parent)	-5.1***	-4.9***	-8.8***	-6.7***	-10.0***	-2.8	-1.3	-0.9
	(1.4)	(1.4)	(1.5)	(1.3)	(2.2)	(1.8)	(1.5)	(1.2)
1(missing parental education)	-9.2***	-9.9***	-5.9***	-5.3***	-6.1***	-3.4**	-2.0	-3.0***
	(1.5)	(1.5)	(1.3)	(1.1)	(1.6)	(1.5)	(1.3)	(1.0)
1(parent died)	-2.2***	-3.2***	-2.7***	-3.9***	-1.5	-1.2**	-0.7	-0.7
	(0.7)	(0.5)	(0.4)	(0.4)	(1.0)	(0.6)	(0.6)	(0.5)
Ln(parental income)	6.2***	6.2***	5.4***	2.6***	1.3**	1.1***	0.4	0.5**
	(0.6)	(0.4)	(0.3)	(0.2)	(0.5)	(0.3)	(0.3)	(0.2)
Ability score	5.8***	7.4***	8.4***	8.1***	1.9***	0.7***	0.7***	0.6***
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.1)
Adjusted R^2	0.220	0.255	0.260	0.244	0.009	0.007	0.005	0.006
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;							
	DV = Labor income incl. transfers, .000SEK				**DV = $\Delta Debt$, .000SEK**			
High school dropout vs. compulsory school	9.1***	9.3***	6.3***	3.7***	2.6	1.7	0.3	0.4
	(1.0)	(0.8)	(0.8)	(0.7)	(1.7)	(1.2)	(1.1)	(0.9)
High school vs. high school dropout	9.7***	13.0***	14.2***	15.7***	5.3***	2.1	4.6***	3.6***
	(0.8)	(0.9)	(1.0)	(1.0)	(1.5)	(1.3)	(1.3)	(1.1)
Post high school vs. high school	31.6***	35.9***	40.9***	39.4***	5.1***	4.6***	1.4	1.1
	(1.0)	(1.1)	(1.2)	(1.2)	(2.0)	(1.5)	(1.4)	(1.3)
Adjusted R^2	0.342	0.364	0.353	0.334	0.046	0.033	0.036	0.038
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	178,244	267,389	252,685	255,858	178,244	267,389	252,685	255,858
Mean DV compulsory school, .000 SEK	174.90	182.90	192.70	189.40	28.83	21.88	18.82	13.30

Note: The table reports age-specific effects of levels of education on yearly labor income and change in debt $\Delta Debt$ (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 9: The effect of education on private pension contributions, consumption, and capital expenses

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49				
	Panel a: OLS regression with controls for parental background and ability;											
	DV = Private pension contributions, .000SEK				**DV =Consumption, .000SEK**				**DV =Paid interest and capital income tax, .000SEK**			
High school dropout vs. compulsory school	3.1***	3.4***	2.5***	0.8	5.5***	4.0***	-0.6	-1.0	0.9***	0.0	-0.3	-1.1***
	(0.3)	(0.4)	(0.4)	(0.5)	(1.4)	(1.2)	(1.1)	(1.1)	(0.3)	(0.2)	(0.2)	(0.2)
High school vs. high school dropout	1.8***	2.1***	2.7***	4.8***	5.3***	8.3***	12.3***	9.4***	0.1	1.0***	2.0***	2.9***
	(0.4)	(0.4)	(0.5)	(0.6)	(1.2)	(1.3)	(1.5)	(1.5)	(0.2)	(0.2)	(0.3)	(0.3)
Post high school vs. high school	4.5***	7.0***	9.8***	13.1***	18.9***	22.6***	22.8***	23.7***	1.1***	2.2***	2.4***	2.0***
	(0.4)	(0.5)	(0.7)	(1.0)	(1.6)	(1.5)	(1.6)	(1.6)	(0.3)	(0.3)	(0.3)	(0.4)
1(low education both parents)	-1.1***	-1.7***	-2.0***	-2.5***	-3.1**	-1.7*	-2.5***	-1.1	-0.9***	-1.4***	-1.7***	-2.0***
	(0.3)	(0.3)	(0.3)	(0.4)	(1.2)	(0.9)	(0.9)	(0.9)	(0.2)	(0.2)	(0.2)	(0.2)
1(no parent)	-3.2***	-5.4***	-5.6***	-5.6***	-7.6***	3.7*	3.2	1.9	-2.5***	-2.1***	-2.0***	-2.1***
	(0.7)	(0.6)	(0.9)	(0.7)	(2.8)	(2.1)	(2.1)	(1.8)	(0.4)	(0.4)	(0.4)	(0.4)
1(missing parental education)	-2.8***	-3.3***	-3.1***	-3.4***	-10.9***	-9.1***	-2.7	-0.5	-1.7***	-2.5***	-1.7***	-2.1***
	(0.5)	(0.6)	(0.8)	(0.8)	(2.2)	(2.8)	(2.0)	(1.7)	(0.4)	(0.4)	(0.4)	(0.3)
1(parent died)	-0.4	-1.3***	-1.5***	-1.8***	-2.2	-1.2	-1.0	-2.1**	-0.2	-0.8***	-0.5***	-0.3**
	(0.4)	(0.3)	(0.3)	(0.4)	(1.4)	(0.9)	(0.7)	(0.9)	(0.2)	(0.2)	(0.1)	(0.1)
Ln(parental income)	1.1***	1.3***	1.5***	1.2***	4.1***	4.9***	3.6***	0.7**	1.0***	1.0***	0.9***	0.5***
	(0.3)	(0.2)	(0.2)	(0.1)	(1.0)	(0.5)	(0.5)	(0.3)	(0.1)	(0.1)	(0.1)	(0.1)
Ability score	1.0***	1.4***	2.2***	2.8***	3.8***	4.1***	4.6***	4.0***	0.9***	1.2***	1.3***	1.2***
	(0.1)	(0.1)	(0.1)	(0.1)	(0.3)	(0.3)	(0.3)	(0.2)	(0.1)	(0.0)	(0.0)	(0.0)
Adjusted R^2	0.042	0.039	0.047	0.056	0.025	0.032	0.036	0.032	0.036	0.040	0.042	0.041
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;											
	DV = Private pension contributions, .000SEK				**DV =Consumption, .000SEK**				**DV =Paid interest and capital income tax, .000SEK**			
High school dropout vs. compulsory school	1.7***	2.0***	1.7***	0.4	5.6***	4.9***	1.9	3.0**	1.0***	0.4	0.2	-0.5*
	(0.5)	(0.5)	(0.6)	(0.6)	(2.1)	(1.6)	(1.5)	(1.4)	(0.3)	(0.3)	(0.3)	(0.3)
High school vs. high school dropout	1.2***	1.5***	1.7**	4.3***	5.9***	8.7***	14.7***	11.0***	0.3	1.2***	1.4***	2.6***
	(0.4)	(0.5)	(0.7)	(0.8)	(1.7)	(1.7)	(1.9)	(1.8)	(0.3)	(0.3)	(0.3)	(0.3)
Post high school vs. high school	3.0***	5.4***	9.2***	10.2***	22.6***	26.4***	23.5***	25.5***	1.9***	2.2***	2.8***	1.4***
	(0.6)	(0.6)	(0.8)	(0.9)	(2.3)	(2.0)	(2.1)	(2.0)	(0.3)	(0.3)	(0.4)	(0.4)
Adjusted R^2	0.193	0.153	0.143	0.153	0.092	0.098	0.112	0.109	0.217	0.234	0.173	0.168
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	178,244	267,389	252,685	255,858	178,244	267,389	252,685	255,858	178,244	267,389	252,685	255,858
Mean DV compulsory school, .000 SEK	11.49	14.92	18.11	23.50	157.70	156.60	161.40	150.50	14.67	17.93	18.88	19.08

Note: The table reports age-specific effects of levels of education on yearly private pension savings, consumption and paid interest and capital tax (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 10: The effect of education on saving rate

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	2.1***	2.1***	1.5***	-0.0
	(0.5)	(0.3)	(0.3)	(0.3)
High school vs . high school dropout	2.0***	1.0**	0.4	2.1***
	(0.4)	(0.4)	(0.4)	(0.4)
Post high school vs high school	2.0***	1.9***	2.6***	2.1***
	(0.4)	(0.4)	(0.4)	(0.4)
1(low education both parents)	-0.9**	-0.7***	-0.1	-0.7***
	(0.4)	(0.3)	(0.2)	(0.3)
1(no parent)	-2.2***	-3.7***	-2.7***	-2.9***
	(0.8)	(0.6)	(0.7)	(0.5)
1(missing parental education)	-0.6	-0.6	-1.5***	-1.4***
	(0.6)	(0.6)	(0.5)	(0.5)
1(parent died)	-0.8**	-1.0***	-1.1***	-1.0***
	(0.4)	(0.3)	(0.2)	(0.2)
Ln(parental income)	0.4	0.1	0.0	0.4***
	(0.2)	(0.2)	(0.2)	(0.1)
Ability score	0.6***	0.7***	0.8***	1.0***
	(0.1)	(0.1)	(0.1)	(0.1)
Adjusted R^2	0.012	0.009	0.009	0.011
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	1.3*	1.9***	0.9*	-0.3
	(0.7)	(0.5)	(0.5)	(0.4)
High school vs . high school dropout	1.5***	0.7	0.6	1.5***
	(0.5)	(0.5)	(0.5)	(0.6)
Post high school vs high school	1.0	1.7***	2.3***	1.7***
	(0.7)	(0.6)	(0.6)	(0.6)
Adjusted R^2	0.071	0.064	0.073	0.083
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	168,890	256,404	243,613	247,261
Mean DV compulsory school, %	11.67	11.59	12.32	14.66

Note: The table reports age-specific effects of levels of education on saving rate estimated from equations 2 (Panel a) and 3 (Panel b). The saving rate is defined as a ratio between savings (active savings in financial wealth and real estate wealth, and private pension contributions) and contemporaneous labor income (after tax and transfers). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population and the saving rate is below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 11: The effect of education on return rate

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	0.4***	0.5***	0.4***	0.2***
	(0.1)	(0.1)	(0.1)	(0.1)
High school vs . high school dropout	-0.3***	-0.1	0.0	0.1*
	(0.1)	(0.1)	(0.1)	(0.1)
Post high school vs high school	-0.4***	0.3***	0.6***	0.6***
	(0.1)	(0.1)	(0.1)	(0.1)
1(low education both parents)	-0.2**	-0.2**	-0.3***	-0.3***
	(0.1)	(0.1)	(0.1)	(0.1)
1(no parent)	-0.6**	-0.3	-0.7***	-0.1
	(0.2)	(0.2)	(0.2)	(0.1)
1(missing parental education)	-0.9***	-0.3	-0.5***	-0.5***
	(0.2)	(0.2)	(0.1)	(0.1)
1(parent died)	-0.0	-0.2***	-0.1***	-0.2***
	(0.1)	(0.1)	(0.1)	(0.0)
Ln(parental income)	0.3***	0.1**	0.1***	0.1***
	(0.1)	(0.0)	(0.0)	(0.0)
Ability score	0.1***	0.2***	0.2***	0.2***
	(0.0)	(0.0)	(0.0)	(0.0)
Adjusted R^2	0.055	0.044	0.040	0.048
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	0.1	0.3**	0.3**	0.2*
	(0.2)	(0.1)	(0.1)	(0.1)
High school vs . high school dropout	-0.3*	0.1	0.1	0.2
	(0.2)	(0.1)	(0.1)	(0.1)
Post high school vs high school	0.0	0.2	0.4***	0.3**
	(0.2)	(0.1)	(0.1)	(0.1)
Adjusted R^2	0.155	0.137	0.128	0.140
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	170,937	261,433	249,105	252,745
Mean DV compulsory school, %	6.270	6.420	6.948	6.516

Note: The table reports age-specific effects of levels of education on return rate estimated from equations 2 (Panel a) and 3 (Panel b). The return rate is defined as a ratio between passive appreciation of financial wealth and real estate over the value of assets in the previous year. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose savings are below or above 0.5 percent of the entire distribution in the Swedish population and the return rate is below or above 0.5 percent of the entire distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 12: The effect years of schooling on gross wealth

Age:	**50-54**	**55-59**	**50-54**	**55-59**	**50-54**	**55-59**
	OLS		**IV**		**Within-siblings**	
Years of schooling	102.7***	128.9***	160.9**	339.2***	23.7***	44.2***
	(6.4)	(9.6)	(79.8)	(104.7)	(5.6)	(7.5)
Adjusted R^2	0.114	0.130			0.446	0.429
			First stage			
1(Reform)			0.3***	0.3***		
			(0.1)	(0.1)		
Proportion treated			0.484	0.361		
R^2			0.1	0.1		
F-stat.			23.06	17.51		
Observations	503,198	370,640	503,198	370,640	30,507	23,056
Cohort FE	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	NO	NO
Year FE	YES	YES	YES	YES	NO	NO
Siblings-Year FE	NO	NO	NO	NO	YES	YES
Mean DV compulsory school, .000 SEK	1011	1288	1011	1288	871.8	1172
Mean years of education	11.57	11.60	11.57	11.60	11.38	11.45

Note: The table reports age-specific effects of an additional year of schooling on gross wealth (measured in thousand SEK). The sample consists of men aged 50-59 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD) born in municipalities and cohorts as shown in the Table IA.IX. Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (OLS and IV estimates) and siblings level (within-siblings estimates). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 13: The effect of education on portfolio risky share

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	0.069***	0.058***	0.047***	0.036***
	(0.004)	(0.003)	(0.002)	(0.002)
High school vs. high school dropout	0.057***	0.055***	0.050***	0.050***
	(0.003)	(0.003)	(0.003)	(0.003)
Post high school vs. high school	0.081***	0.059***	0.048***	0.045***
	(0.004)	(0.003)	(0.004)	(0.004)
1(low education both parents)	-0.026***	-0.020***	-0.012***	-0.010***
	(0.003)	(0.003)	(0.002)	(0.003)
1(no parent)	-0.065***	-0.056***	-0.051***	-0.034***
	(0.007)	(0.007)	(0.005)	(0.005)
1(missing parental education)	-0.022***	-0.024***	-0.026***	-0.023***
	(0.006)	(0.007)	(0.005)	(0.005)
1(parent died)	-0.006*	-0.010***	-0.010***	-0.001
	(0.004)	(0.002)	(0.002)	(0.002)
Ln(parental income)	0.021***	0.015***	0.014***	0.012***
	(0.002)	(0.002)	(0.001)	(0.001)
Ability score	0.017***	0.018***	0.020***	0.021***
	(0.001)	(0.001)	(0.001)	(0.001)
Adjusted R^2	0.106	0.090	0.078	0.081
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	0.038***	0.038***	0.028***	0.021***
	(0.004)	(0.003)	(0.003)	(0.003)
High school vs. high school dropout	0.032***	0.037***	0.035***	0.035***
	(0.004)	(0.004)	(0.004)	(0.004)
Post high school vs. high school	0.052***	0.042***	0.036***	0.035***
	(0.004)	(0.004)	(0.004)	(0.004)
Adjusted R^2	0.320	0.273	0.244	0.241
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school	0.16	0.17	0.20	0.22

Note: The table reports age-specific effects of levels of education on portfolio risky share estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE 14: The effect of education on risky portfolio expected excess returns

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability;							
	DV = expected excess return incl. fees				**DV = expected excess return net of fund fees**			
High school dropout vs. compulsory school	-0.039	-0.035	-0.031	0.011	-0.072*	-0.087**	-0.035	-0.013
	(0.031)	(0.024)	(0.020)	(0.019)	(0.043)	(0.034)	(0.027)	(0.027)
High school vs. high school dropout	0.087***	0.111***	0.092***	0.052***	0.142***	0.166***	0.122***	0.071***
	(0.020)	(0.020)	(0.021)	(0.020)	(0.026)	(0.027)	(0.027)	(0.027)
Post high school vs. high school	0.042**	-0.002	0.011	-0.007	0.081***	0.016	0.026	0.012
	(0.021)	(0.019)	(0.018)	(0.019)	(0.028)	(0.024)	(0.023)	(0.025)
1(low education both parents)	-0.031	-0.038***	-0.039***	-0.031*	-0.055**	-0.085***	-0.091***	-0.087***
	(0.020)	(0.014)	(0.014)	(0.016)	(0.027)	(0.020)	(0.019)	(0.023)
1(no parent)	-0.059	0.092*	0.000	-0.018	-0.044	0.111	-0.022	-0.029
	(0.066)	(0.056)	(0.044)	(0.036)	(0.084)	(0.081)	(0.063)	(0.048)
1(missing parental education)	0.300***	0.146***	0.083**	0.018	0.477***	0.277***	0.106*	0.018
	(0.049)	(0.053)	(0.038)	(0.027)	(0.077)	(0.075)	(0.056)	(0.042)
1(parent died)	-0.024	-0.002	-0.020	-0.046***	-0.013	0.024	0.002	-0.034*
	(0.021)	(0.016)	(0.012)	(0.013)	(0.029)	(0.022)	(0.017)	(0.018)
Ln(parental income)	-0.012	-0.006	0.002	-0.008	-0.012	-0.005	0.011	0.009
	(0.015)	(0.011)	(0.010)	(0.007)	(0.023)	(0.014)	(0.015)	(0.011)
Ability score	0.012***	0.008*	0.015***	0.019***	0.015**	0.010	0.023***	0.028***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)	(0.005)	(0.005)
Adjusted R^2	0.020	0.016	0.020	0.025	0.026	0.021	0.024	0.030
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;							
	DV = expected excess return incl. fees				**DV = expected excess return net of fund fees**			
High school dropout vs. compulsory school	0.072*	0.028	-0.000	0.018	0.091*	0.009	0.015	-0.004
	(0.040)	(0.033)	(0.029)	(0.026)	(0.055)	(0.044)	(0.040)	(0.036)
High school vs. high school dropout	0.055**	0.064***	0.109***	0.108***	0.076**	0.102***	0.140***	0.157***
	(0.024)	(0.024)	(0.026)	(0.026)	(0.033)	(0.033)	(0.035)	(0.036)
Post high school vs. high school	0.047*	0.030	0.020	-0.039	0.079**	0.033	0.035	-0.044
	(0.025)	(0.024)	(0.025)	(0.025)	(0.033)	(0.033)	(0.034)	(0.035)
Adjusted R^2	0.178	0.148	0.121	0.126	0.216	0.181	0.151	0.145
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	91,386	121,757	111,995	110,439	91,386	121,757	111,995	110,439
Mean DV compulsory school	3.812	3.846	3.825	3.803	2.713	2.816	2.775	2.784

Note: The table reports age-specific effects of levels of education on risky portfolio excess returns gross and net of fees estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD) owning risky assets. Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

References

Alan, S. (2006). Entry costs and stock market participation over the life cycle. *Review of Economic Dynamics*, 9(4):588–611.

Angrist, J. and Pischke, J.-S. (2009). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press, 1 edition.

Angrist, J. D. and Krueger, A. B. (1991). Does compulsory school attendance affect schooling and earnings? *The Quarterly Journal of Economics*, 106(4):979–1014.

Ashenfelter, O. and Krueger, A. B. (1994). Estimates of the Economic Returns to Schooling from a New Sample of Twins. *American Economic Review*, 84(5):1157–1173.

Bach, L., Calvet, L., and Sodini, P. (2018). Rich pickings? Risk, Return, and Skill in Household Wealth.

Behrman, J. R., Mitchell, O. S., Soo, C., and Bravo, D. (2010). Financial literacy, schooling, and wealth accumulation. NBER Working Paper 16452.

Behrman, J. R., Mitchell, O. S., Soo, C. K., and Bravo, D. (2012). The effects of financial education and financial literacy. How finanical literacy affects household wealth accumulation. *American Economic Review*, 102(3):300–304.

Bhuller, M., Mogstad, M., and Salvanes, K. G. (2017). Life-cycle earnings, education premiums, and internal rates of return. *Journal of Labor Economics*, 35(4):993–1030.

Bingley, P. and Martinello, A. (2017). The Effects of Schooling on Wealth Accumulation Approaching Retirement. Working Papers 2017 n.9, Department of Economics, Lund University.

Cagetti, M. (2003). Wealth accumulation over the life cycle and precautionary savings. *Journal of Business & Economic Statistics*, 21(3):339–353.

Calvet, L. E., Campbell, J. Y., Gomes, F. J., and Sodini, P. (2019). The cross-section of household preferences.

Calvet, L. E., Campbell, J. Y., and Sodini, P. (2007). Down or out: Assessing the welfare costs of household investment mistakes. *Journal of Political Economy*, 115(5):707–747.

Calvet, L. E., Campbell, J. Y., and Sodini, P. (2009a). Fight or flight? Portfolio rebalancing by individual investors. *The Quarterly Journal of Economics*, 124(1):301–348.

Calvet, L. E., Campbell, J. Y., and Sodini, P. (2009b). Measuring the financial sophistication of households. *American Economic Review*, 99(2):393–98.

Calvet, L. E. and Sodini, P. (2014). Twin picks: Disentangling the determinants of risk-taking in household portfolios. *The Journal of Finance*, 69(2):867–906.

Campbell, J. Y. (2006). Household Finance. *The Journal of Finance*, 61(4):1553–1604.

Campbell, J. Y. and Cochrane, J. H. (1999). By force of habit: A consumption-based explanation of aggregate stock market behavior. *Journal of political Economy*, 107(2):205–251.

Card, D. (1999). The causal effect of education on earnings. In Ashenfelter, O. and Card, D., editors, *Handbook of Labor Economics*, volume 3, pages 1801–1863. Elsevier.

Card, D. (2001). Estimating the return to schooling: Progress on some persistent econometric problems. *Econometrica*, 69(5):1127–1160.

Carroll, C. D., Overland, J., and Weil, D. N. (2000). Saving and growth with habit formation. *American Economic Review*, 90(3):341–355.

Carroll, C. D. and Samwick, A. A. (1997). The nature of precautionary wealth. *Journal of Monetary Economics*, 40(1):41–71.

Catherine, S. (2019). Countercyclical labor income risk and portfolio choices over the life-cycle.

Chetty, R. and Szeidl, A. (2007). Consumption commitments and risk preferences. *The Quarterly Journal of Economics*, 122(2):831–877.

Cocco, J. F. (2005). Portfolio choice in the presence of housing. *The Review of Financial Studies*, 18(2):535–567.

Cocco, J. F., Gomes, F. J., and Maenhout, P. J. (2005). Consumption and Portfolio Choice over the Life Cycle. *The Review of Financial Studies*, 18(2):491–533.

Cole, S., Paulson, A., and Shastry, G. K. (2014). Smart money? The effect of education on financial outcomes. *The Review of Financial Studies*, 27(7):2022–2051.

Constantinides, G. M. (1990). Habit formation: A resolution of the equity premium puzzle. *Journal of political Economy*, 98(3):519–543.

Cooper, R. and Zhu, G. (2016). Household finance over the life-cycle: What does education contribute? *Review of Economic Dynamics*, 20:63–89.

DeNardi, M. and Fella, G. (2017). Saving and wealth inequality. *Review of Economic Dynamics*, 26:280 – 300.

Dynan, K. E., Skinner, J., and Zeldes, S. P. (2004). Do the rich save more? *Journal of political economy*, 112(2):397–444.

Fagereng, A., Guiso, L., Malacrino, D., and Pistaferri, L. (2016). Heterogeneity and persistence in returns to wealth.

Fagereng, A., Holm, M. B., Moll, B., and Natvik, G. (2019). Saving behavior across the wealth distribution: The importance of capital gains. *Working Paper*.

Guvenen, F. (2007). Learning your earning: Are labor income shocks really very persistent? *American Economic Review*, 97(3):687–712.

Guvenen, F. (2009). An empirical investigation of labor income processes. *Review of Economic dynamics*, 12(1):58–79.

Hjalmarsson, R., Holmlund, H., and Lindquist, M. J. (2015). The Effect of Education on Criminal Convictions and Incarceration: Causal Evidence from Micro-data. *The Economic Journal*, 125(587):1290–1326.

Holmlund, H. (2007). A Researcher's Guide to the Swedish Compulsory School Reform. Swedish Institute for Social Research Working Paper 9/2007.

Holmlund, H., Lindahl, M., and Plug, E. (2011). The Causal Effect of Parents' Schooling on Children's Schooling: A Comparison of Estimation Methods. *Journal of Economic Literature*, 49(3):615–651.

Hubbard, R. G., Skinner, J., and Zeldes, S. P. (1994). The importance of precautionary motives in explaining individual and aggregate saving. In *Carnegie-Rochester Conference Series on Public Policy*, volume 40, pages 59–125. Elsevier.

Hubmer, J., Krusell, P., and Anthony Smith, J. (2019). Sources of us wealth inequality: Past, present, and future. In *Working Paper*.

Kaplan, G., Moll, B., and Violante, G. L. (2018). Monetary policy according to hank. *American Economic Review*, 108(3):697–743.

Kaplan, G. and Violante, G. L. (2014). A model of the consumption response to fiscal stimulus payments. *Econometrica*, 82(4):1199–1239.

Kaplan, G., Violante, G. L., and Weidner, J. (2014). The wealthy hand-to-mouth. Technical report, National Bureau of Economic Research.

Koijen, R., VanNieuwerburgh, S., and Vestman, R. (2014). Judging the quality of survey data by comparison with "truth" as measured by administrative records: Evidence from sweden. In *Improving the Measurement of Consumer Expenditures NBER Chapters, 308– 346. National Bureau of Economic Research, Inc.*

Krusell, P. and Smith, Jr, A. A. (1998). Income and wealth heterogeneity in the macroeconomy. *Journal of political Economy*, 106(5):867–896.

Lundborg, P., Majlesi, K., E Black, S., and Devereux, P. J. (2018). Learning to Take Risks?: The Effect of Education on Risk-Taking in Financial Markets. *Review of Finance*, pages 951–975.

Lusardi, A., Michaud, P.-C., and Mitchell, O. S. (2017). Optimal financial knowledge and wealth inequality. *Journal of Political Economy*, 125(2).

Lusardi, A. and Mitchell, O. S. (2007). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of Monetary Economics*, 54(1):205–244.

Lusardi, A. and Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1):5–44.

Lusardi, A. and Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. *Journal of Pension Economics and Finance*, 14(4):332–388.

Meghir, C. and Palme, M. (2005). Educational Reform, Ability, and Family Background. *The American Economic Review*, 95(1):414–424.

Oreopoulos, P. (2007). Do dropouts drop out too soon? Wealth, health and happiness from compulsory schooling. *Journal of public Economics*, 91(11-12):2213–2229.

Polkovnichenko, V. (2006). Life-Cycle Portfolio Choice with Additive Habit Formation Preferences and Uninsurable Labor Income Risk. *The Review of Financial Studies*, 20(1):83–124.

Poterba, J., Venti, S., and Wise, D. A. (2013). Health, education, and the postretirement evolution of household assets. *Journal of Human Capital*, 7(4):297–339.

Sodini, P., van Nieuwerburgh, S., Vestman, R., and von Lilienfeld-Toal, U. (2016). Identifying the Benefits from Home Ownership: A Swedish Experiment. Available at SSRN 2785741.

van Rooij, M., Lusardi, A., and Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2):449–472.

Venti, S. F. and Wise, D. A. (1998). The cause of wealth dispersion at retirement: Choice or chance? *The American Economic Review P&P*, 88(2):185–191.

Venti, S. F. and Wise, D. A. (2001). Choice, Chance, and Wealth Dispersion at Retirement. In Ogura, S., Tachibanaki, T., and Wise, D. A., editors, *Aging Issues in the United States and Japan*, pages 25–64. University of Chicago Press.

Viceira, L. M. (2001). Optimal portfolio choice for long-horizon investors with nontradable labor income. *The Journal of Finance*, 56(2):433–470.

Vissing-Jorgensen, A. (2003). Perspectives on behavioral finance: Does "irrationality" disappear with wealth? Evidence from expectations and actions. *NBER Macroeconomics Annual*, 18:139–194.

Internet Appendix to "Wealth, savings, and returns over the life cycle: the role of education"

Anastasia Girshina
anastasia.girshina@hhs.se

IA.A Data and variables definition

Educational attainment

The distribution of years of education for the selected sample is reported in the Figure IA.I and Table IA.II. The largest group, representing 43% of the sample, consists of individuals who attended some high school but didn't complete it (*high school dropout*), thus staying in education for a total of 10 or 11 years. Individuals who, on the other hand, completed 12 years of high school comprise 13% of the sample (*high school*), while individuals who stopped their education at the level of compulsory school, which depending on the cohort and municipality of birth varies between 7 and 9 years, represent 15 % of the sample (*compulsory school*). 29% of the sample continued studying after finishing high school (*post high school*), of whom 28% attended university for one to five years and 1% obtained some post-university training.

Net wealth components

Figure IA.II reports life-cycle profiles of net wealth components: financial wealth (a), real estate wealth (b), and non-student debt (c) and student debt (d). Similarly to the dynamics of total and net wealth, individuals with different levels of education start their adult life with very similar levels of assets and debt, which diverge overtime. The real estate wealth represents the largest component of individuals' wealth and grows faster in the middle age. Over the mid-thirties, the growth of real estate wealth is accompanied by the growth of debt levels. Later in life, the real estate wealth continues to grow, although slower, while debt profile follows a hump shape over the life cycle as its level goes down overtime. In terms of differences across education groups, the gap in real estate wealth continues to increase as individuals age, while, on the contrary, the difference in debt stays rather constant from mid-thirties up until retirement in absolute terms. Differently from the concave profile of real estate wealth, the growth of financial wealth increases over the life cycle as does the difference in financial assets across education groups.

Income

To construct individuals' income, I use information from the Income and Tax registry. The data include detailed information on all sources of income from 1968 to 2007 yearly. In each year, I measure labor earnings as a sum of wages and self-employment income. To study the differences in savings behavior across education groups, I use labor earnings after tax and transfers.

Consumption and savings

I construct a measure of consumption flows using the methodology developed in Koijen et al. (2014) and extended in Sodini et al. (2016). The consumption measures total spending and is defined as

the difference between labor income after tax and transfers plus total change in debt and savings in housing and financial wealth net of capital related expenditures:

$$Consumption = Income - Savings = Income + dDebt - dHousing - dFin - capital\ expenses$$

Predetermined controls for parental background and ability

Family characteristics and ability covary with education. Unsurprisingly, the proportion of men who were raised in a family in which both parents have low education dramatically decreases with their own level of educational attainment (Table IA.V). Among men who stopped studies after compulsory school, 54% are from the families of low educated parents, while among men who went to university this portion is only 17%. This pattern is similar for other two indicators which suggests that less educated men tend to be coming from more disadvantaged backgrounds, justifying these choice of controls. Further, more educated men grew up in more economically sound families: the average income parents of men with compulsory schooling is SEK 160,000 ($24,000), while that of those who went to university is SEK 240,000 ($ 36,000), or 50% as high. Finally, the difference in average ability scores across education levels is striking: men who did not finish high school on average scored 4 out of 9 in these standardized tests, while men with some university education got 7 out of 9.

IA.B Additional robustness analysis

IA.B.1 Does the sample selection matter?

Selected sample of brothers vs. full sample

The entire analysis to this point has been conducted on the homogeneous sample to ensure that the differences in results across the identification strategies are not driven by the differential sample selection. This comes at a cost however: since within-siblings analysis relies on the variation in education within siblings within year, it imposes the sample selection of men who have at least one brother who is at most five years younger or older than himself. Does this sample selection affect the conclusions? To address this question, I report the results of the effects of education on total assets for the sample of men for whom I observe ability scores not restricted by the presence of a male-sibling in Table IA.XV. Interestingly, the average assets are about 5% lower among siblings than in the full sample in the early thirties and about 10% lower later in life. This difference translates to the magnitude of estimated coefficients: albeit in absolute terms the effects of education estimated on the sample of men restricted only by the availability of information on ability scores are slightly higher than those estimated on the sample of brothers, in relative terms the effects are unaffected by the sample selection leading to the same conclusions on the role of education in wealth accumulation.

Do the conclusions hold for women?

The analysis of the paper has been conducted for the sample of men. There are two main reasons for this. First, the ability scores, use of which lies in the core of the identification strategy, were measured as a part of military enlistment process and are, thus, available only for men. Second, in the earlier years, the labor market participation among women were rather limited, which creates a series of additional identification issues: how is the decision to participate in labor markets affected

by education? Which sources of income do the non-working women rely on for their consumption and savings? How does this change across generations? It is however natural to ask whether estimated effect of education on wealth is a "male" phenomena or could also be generalized to women. Since the ability scores are only available for men, I answer this question by estimating the effect of education for the sample of sisters by including sisters-year fixed effects. The results are reported in the Table IA.XVI. Notably, the average wealth among women with compulsory school is about 40% lower over the life-cycle than that of men with the same education. Moreover, the estimated coefficients on education dummies are also much larger for women. Altogether, this means that, if anything, education plays a much larger role in assets accumulation process for women than it does for men. It, thus, opens an avenue for the future research: does education affect the wealth inequality between women and men?

Does business wealth matter?

The data used in this paper relies on highly disaggregated registry-based information on financial and real estate assets, which allows measuring individuals' real estate and financial wealth very precisely. One disadvantage of this data, however, is that I do not observe private business wealth which means that I potentially underestimate assets of such business owners. To address this issue and to ensure the consistency of the definition of total assets across individuals, I repeat the analysis on the sample of men who do not own assets related to private businesses. The results are reported in Table IA.XVII. The proportion of men not registered as students aged between 30 to 49 years old who own some assets in non publicly traded companies is around 12%. Consistently with previous studies (e.g., Bach et al., 2018), the average wealth of men who do not own any business wealth is between 8% and 13% lower comparing to the entire sample. As for the effect of education, the estimated coefficients are virtually unaffected by this sample selection.

Does education matter for the wealth accumulated at retirement?

One question of fundamental importance is how does education affect assets that individuals own at the time they retire. Unfortunately, the information on ability scores is limited to those born in 1950 and later. Thus, the main analysis of this paper is conducted for individuals whose age is between 30 and 49 years old. The information on the family ties is however available for individuals born as early as 1932. This allows studying the effect of education for the individuals up until the pre-retirement age of 64 years old using the *within-siblings* identification strategy.[1] The results are reported in the Table IA.XVIII and Figure IA.XVIII. They reveal that, first, the effect of completing high school comparing to *high school dropouts* increases over the life cycle and is the largest at retirement: in the early thirties completing high school increases average assets by 5% while in the early sixties - by 15% comparing to the wealth of *high school dropouts*. Second, the effect of attending university relative to completing high school is hump shaped over the working life: it peaks in the forties indicating the increase in assets of 23% comparing to the *high school* level of assets, and then decreases until retirement to about 7%. As for the effect of attending some high school as opposed to interrupting studies after compulsory school, this effect decreases in relative terms as individuals age from about 13% in the mid-thirties to about 2% at retirement.

[1]Since the information in the *Flergenerationsregistret*, which is the basis for identifying siblings links, is limited to the cohorts starting 1932, the oldest individuals I observe in all wealth-years, that is from 1999 to 2007, are 67 years old. This greatly limits the opportunity to study the differences in wealth accumulation decisions across education groups during retirement by relying on the identification strategies used in this paper.

IA.B.2 Robustness of the identified effect of education to alternative specifications

Defining wealth at household level

Table IA.XX reports estimated effects of education on wealth defined at household level. The results are stronger than those estimated at individual level due to assortative matching.

Controlling for business sector

One concern regarding the interpretation of my results could be the fact that older and younger individuals for whom I measure wealth in the same years (between 1999 and 2007) received their education and earned their labor income in structurally different economies. More specifically, 30-year-olds receiving their labor income in 2007 (youngest cohort 1977) are potentially making part of a more productive economy than those of the same age working in 1980 (oldest cohort 1950). Moreover, these differences could vary systematically with education across the cohorts. Despite the fact that I include cohort fixed effects in all the specification, it would not capture this effect fully since I do not observe all cohorts in each age group. To address this issue, I control for the business sector of employment. Differently from controlling for occupation, business sector fixed effect cannot be regarded as a *bad control* since it is not affected by the level of education *per se* and comprises individuals with various educational attainments, even if in different occupation status. I report the results in the Table IA.XIX, which shows that controlling for the sector of occupation does not affect the results qualitatively and, if anything, reinforces the main conclusions.

Controlling for ability in the within-siblings specification

Table reports the results estimated using within-siblings specification and additionally controlling for ability. The estimated effects of education are slightly lower compared to the case without ability controls, nevertheless they are positive, economically large, and statistically significant.

Controlling for risk aversion

Table IA.XXI reports estimated effects of education on wealth controlling for risk aversions. The results show that the risk averse individuals have lower wealth, but the effect of education is hardly affected by controlling for it.

Exploiting within-twins variation

In Table IA.XXIII, I compare within-siblings estimates to within-twins estimates. The coefficients are of the same order of magnitude but estimated less precisely due to smaller sample and variation in educational attainment.

IA.C Heterogeneity of the effect of education

Cyclicality of the effect of education

In tables IA.XXVII and IA.XXVIII I show the effect of education on total assets and on financial and real estate wealth respectively. The results suggest the it is procyclical.

Does living in a big city makes more educated richer?

In tables IA.XXIX and IA.XXX, I show that living in a big city increases the effect of education.

Does the effect of education on financial wealth depend on homeownership status?

In table IA.XXXI I show that the effect of education on financial wealth is lower for homeowners.

Does education matters more for those from the least advantageous socio-economic backgrounds?

In tables IA.XXIV and IA.XXV I show that the effect of education is larger from individuals from socially-disadvantageous backgrounds but does not change much with family income.

Can more education compensate for less innate ability?

In table IA.XXVI I show that the effect is larger for individuals with higher innate ability.

IA.D Extensive or intensive margin?

Real estate wealth

In table IA.XIII I show that the effect of education on real estate is driven both by higher probability to buy a house and by buying a larger house.

Risky share

In table IA.XIV I show that the effect of education on risky share is driven both by higher stock market participation rate among more educated and by higher conditional risky share.

IA.E Is the effect of education on wealth large?

Wealth rank

In table IA.XI I show that education increases a person position in wealth distribution.

Probability to be in the top

In table IA.XII I show that education increases the probability to be in 10%, 5% and 1% of the wealth distribution.

IA.F Budget constraint derivation

IA.F.1 Budget constraint

Consider standard wealth accumulation equation:

$$GW_{as,t+1} = R_{as,t+1} GW_{as,t} + L_{as,t+1} - C_{as,t+1} + \Delta Debt_{as,t+1} - i_{as,t+1} Debt_{as,t} \tag{IA.22}$$

Assuming, for simplicity, the constant return and interest rates, denoted by $R_{s,t} = R_s$ and $I_{s,t} = I_s$ respectively, and assuming the initial debt $D_{s,0} = 0$, the gross wealth in any period T can be written as:[2]

[2] I assume constant interest rates only for the simplicity and tractability of exposition. I do not impose such assumptions in the empirical analysis. Thus, it does not affect neither of my results or conclusions.

$$GW_{s,T} = R_s^T GW_{s,0} + Debt_{s,T} + \sum_{t=1}^{T} R_s^{T-t}(L_{s,t} - C_{s,t}) + \sum_{t=1}^{T-1} R_s^{T-t-1}(R_s - I_s)Debt_{s,t} \quad \text{(IA.23)}$$

The difference in total assets between individuals with different levels of education at any given period could, therefore, be driven by the difference in their initial wealth $GW_{s,0}$ and their outstanding debt $Debt_{s,T}$ in terms of stock variables, and by differences consumption-savings decisions, affecting $L_{s,t} - C_{s,t}$, and in investment and borrowing decisions, affecting the returns on assets R_s and interests on debt I_s.

IA.F.2 Wealth-to-income ratio

Case 1: Constant labor income, no borrowing, no endowment.

If it is assumed that there is no borrowing nor endowment, then from the value of total assets for an individual with school level s is given by:

$$GW_{s,T} = \sum_{t=1}^{T} R_s^{T-t}(L_{s,t} - C_{s,t}) = \sum_{t=1}^{T} R_s^{T-t}(s_{s,t}L_{s,t}), \quad \text{(IA.24)}$$

where $s_{s,t}$ is the saving rate out of labor income $L_{s,t}$.

If labor income is assumed to be constant, then IA.24 becomes:

$$GW_{s,T} = L_s \sum_{t=1}^{T} R_s^{T-t} s_{s,t} \quad \text{(IA.25)}$$

Thus, the wealth-to-income ratio is given by:

$$\frac{GW_{s,T}}{L_s} = \sum_{t=1}^{T} R_s^{T-t} s_{s,t} \quad \text{(IA.26)}$$

Therefore, if return on assets R_s and the saving rate out of labor income $s_{s,t}$ are the same across education groups , i.e. $R_{\bar{s}} = R_{\underline{s}} = R$ and $s_{\bar{s},t} = s_{\underline{s},t} = s_t$, then the wealth-to-income ratios across education groups should be the same:

$$\frac{GW_{\bar{s},T}}{L_{\bar{s}}} = \frac{GW_{\underline{s},T}}{L_{\underline{s}}} = \sum_{t=1}^{T} R^{T-t} s_t \quad \text{(IA.27)}$$

Similarly, the ratio between wealth profiles should be the same as the ratio of income profiles:

$$\frac{GW_{\bar{s},T}}{GW_{\underline{s},T}} = \frac{L_{\bar{s}} \sum_{t=1}^{T} R^{T-t} s_t}{L_{\underline{s}} \sum_{t=1}^{T} R^{T-t} s_t} = \frac{L_{\bar{s}}}{L_{\underline{s}}} \quad \text{(IA.28)}$$

Case 2: Constant labor income growth, no borrowing, no endowment.

Similarly to the *Case 1*, assume that there is no borrowing nor endowment, then from IA.F.2 the value of total assets for an individual with school level s is given by:

$$GW_{s,T} = \sum_{t=1}^{T} R_s^{T-t}(s_{s,t}L_{s,t}) \tag{IA.29}$$

If labor income grows at a constant rate G_s, such that $L_{t+1} = GL_t$, then IA.29 becomes:

$$GW_{s,T} = L_{s,1}\sum_{t=1}^{T} G_s^{t-1}R_s^{T-t}s_{s,t}, \tag{IA.30}$$

where $L_{s,1}$ is the first labor income earned ($t = 1$).

Thus, the wealth-to-income ratio is given by:

$$\frac{GW_{s,T}}{L_{s,T}} = \frac{L_{s,1}\sum\limits_{t=1}^{T} G_s^{t-1}R_s^{T-t}s_{s,t}}{G_s^{T-1}L_{s,1}} = \sum_{t=1}^{T}\left(\frac{R_s}{G_s}\right)^{T-t} s_{s,t} \tag{IA.31}$$

Therefore, even if the return on assets R_s and the saving rate out of labor income $s_{s,t}$ are the same across education groups, the wealth-to-income ratios might differ since labor income growth typically covaries with education. More specifically, everything else constant, wealth-to-income ratio of those with steeper labor income profiles, which are typically more educated ones, will be lower than that of those with lower labor income growth.

Similarly, if the return on assets R_s and the saving rate out of labor income $s_{s,t}$ are the same across education groups, the relation between the ratio of education-specific wealth profiles that of income profiles will depend on labor income growth:

$$\frac{GW_{\bar{s},T}}{GW_{\underline{s},T}} = \frac{L_{\bar{s},1}}{L_{\underline{s},1}}\frac{\sum\limits_{t=1}^{T} G_{\bar{s}}^{t-1}R^{T-t}s_t}{\sum\limits_{t=1}^{T} G_{\underline{s}}^{t-1}R^{T-t}s_t} \tag{IA.32}$$

Case 3: Constant labor income growth, borrowing, endowment.

Differently from *Case 1* and *Case 1*, assume that an individual can borrow during the working life and can receive an endowment, then the value of her assets at any time T are given by the equation IA.F.2. Assuming constant labor income growth G_s, equation IA.F.2 can be written as follows:

$$GW_{s,T} = L_{s,1}\sum_{t=1}^{T} G_s^{t-1}R_s^{T-t}s_{s,t} + R_s^T GW_{s,0} + Debt_{s,T} + \sum_{t=1}^{T-1} R_s^{T-t-1}(R_s - I_s)Debt_{s,t} \tag{IA.33}$$

Thus, the wealth-to-income ratio is given by:

$$\frac{GW_{s,T}}{L_{s,T}} = \sum_{t=1}^{T} \left(\frac{R_s}{G_s}\right)^{T-t} s_{s,t} + \frac{1}{G_s^{T-1} L_{s,1}} (R_s^T GW_{s,0} + Debt_{s,T} + \sum_{t=1}^{T-1} R_s^{T-t-1}(R_s - I_s) Debt_{s,t}) \quad \text{(IA.34)}$$

Therefore, the wealth-to-income ratio depends on a number of factors, such as: savings rate, rate of returns on assets, which in turn depends on assets composition, labor income growth, endowment, level of debt, and debt interest, which also depends on debt composition.

IA.G Additional figures

FIGURE IA.I: Distribution of years of schooling for selected sample

Note: The graphs depict the distribution of years of schooling for selected sample.

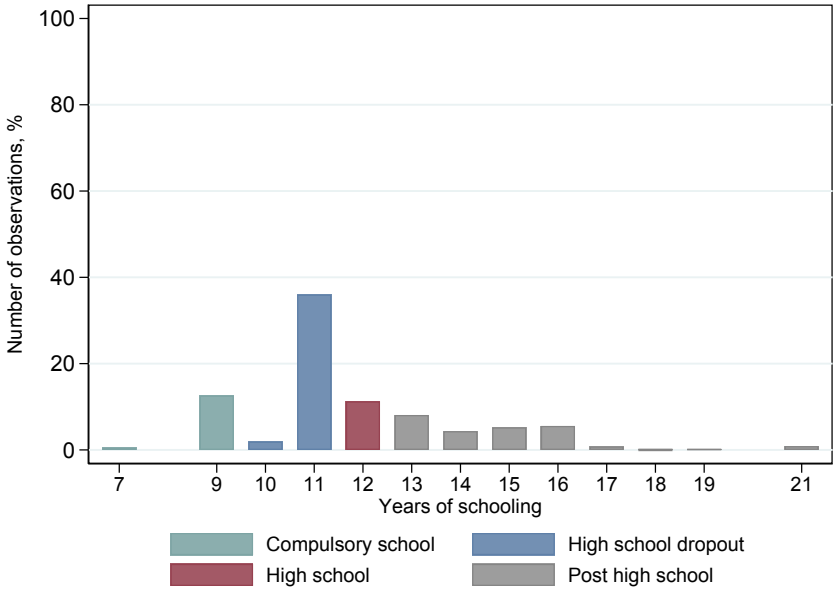
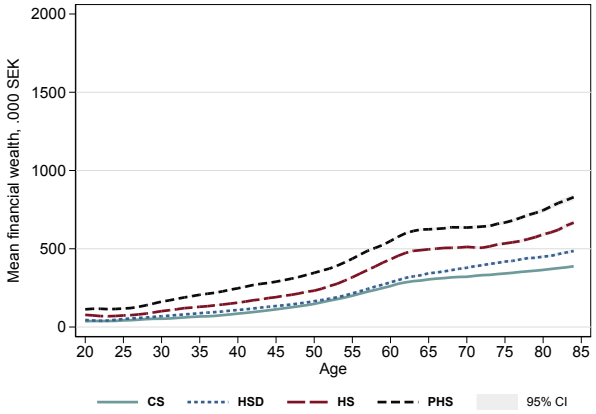


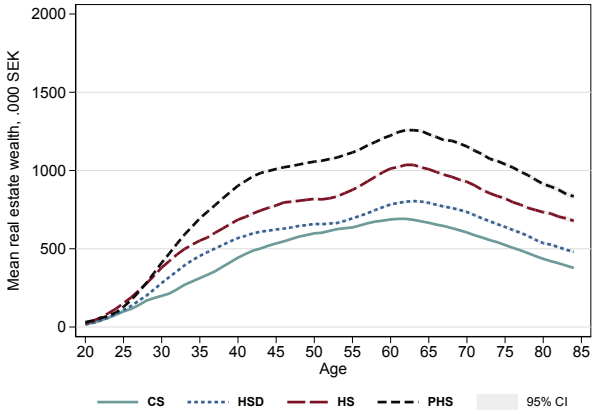
FIGURE IA.II: Life-cycle profiles of net wealth components by education group

Note: The graphs depict the average financial wealth, real estate wealth, non-student debt (consisting of mortgages and consumer loans), and student debt by age and education group. Education levels are defined as follows: individuals who completed compulsory education (*CS, compulsory school*), individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). The assets and liabilities are measured at individual level for men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Wealth and debt of the top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Shaded area shows 95% confidence intervals.

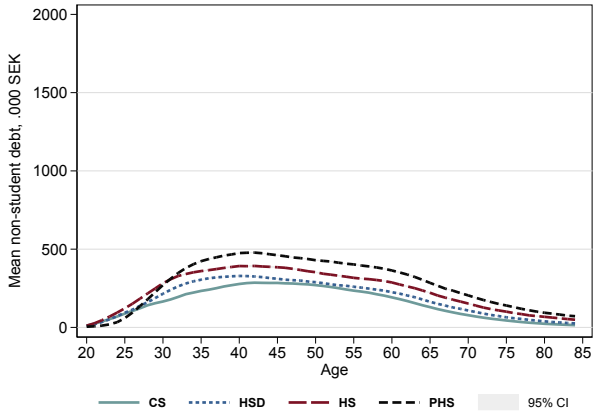
(a) Financial wealth



(b) Real estate wealth



(c) Non-student debt



(d) Student debt

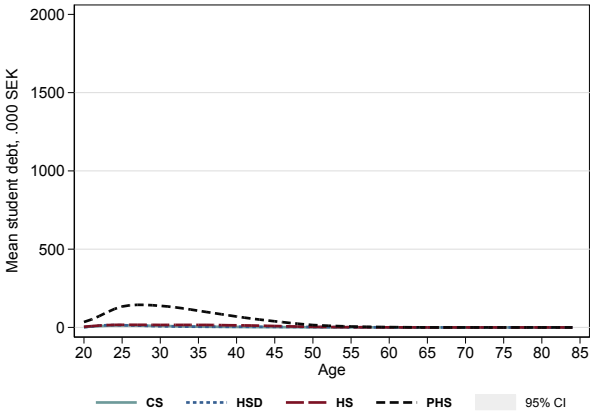
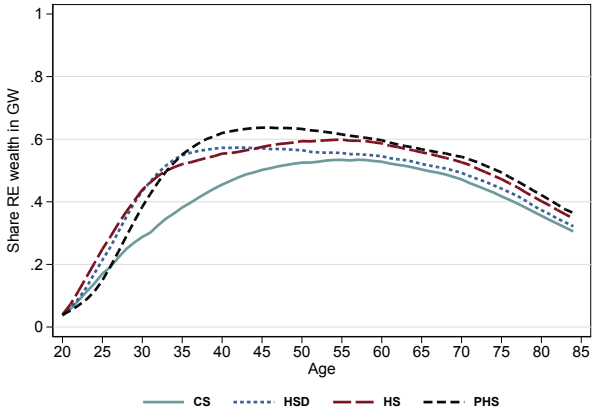


FIGURE IA.III: Life-cycle profiles of assets and savings composition by education group

Note: The graphs depict the share of illiquid asset (real estate) in non-pension gross wealth and the share of savings into illiquid assets (real estate and private pension contributions) out of total savings by age and education group. Education levels are defined as follows: individuals who completed compulsory education (*CS, compulsory school*), individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). The assets and liabilities are measured at individual level for men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The ratio are trimmed at 1 percent of the entire distribution in the Swedish population.

(a) Share of real estate in non-pension gross wealth



(b) Share of savings in real estate and pension wealth

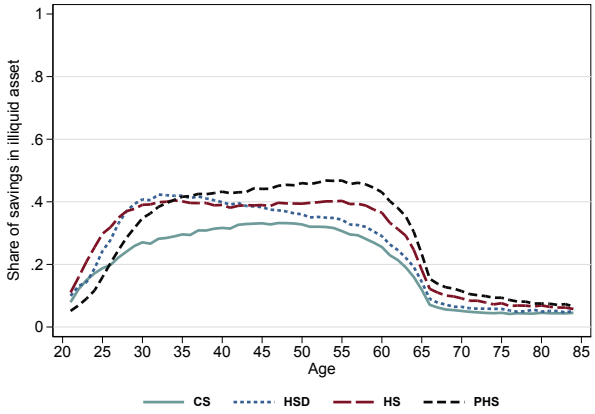
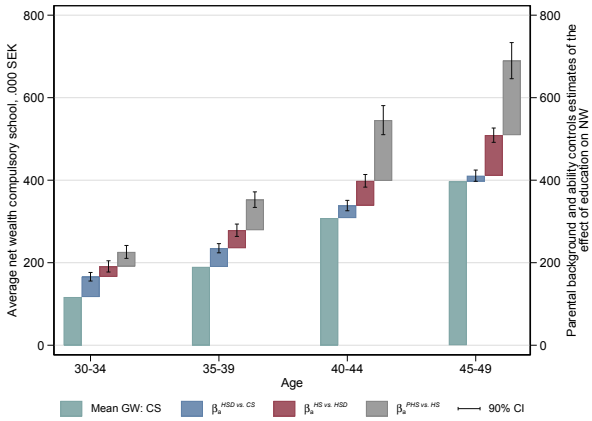


FIGURE IA.IV: Estimates of age-specific effects of levels of education on net wealth

Note: The figure graphs (a) parental background and ability controls and (b) siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on net wealth estimated from equations 2 and 3 respectively. The net wealth is defined the sum of financial and real estate assets net of the value of outstanding student and non-student loans. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education (*CS*, *compulsory school*). The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Table IA.VII. Mean is defined among individuals with compulsory school education. The plotted effects are normalized such that the minimum of each bar corresponds to the sum of the mean net wealth among individuals with compulsory school education and the effects of the previous levels of education. For instance, the maximum of the bar *PHS vs. HS* represent the average net wealth that individuals who only attended compulsory school would have had had they attended some post high school education. The total effect of obtaining some post high school training as opposed to interrupting studies right after compulsory school is, therefore, given by the sum of the bars *HSD vs. CS*, *HS vs. HSD*, and *PHS vs. HS*. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Capped spikes show 90 % confidence intervals (CIs).

(a) Parental background and ability estimates



(b) Within-siblings estimates

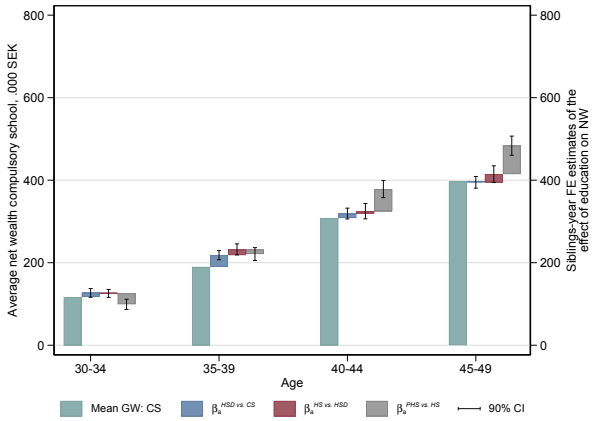
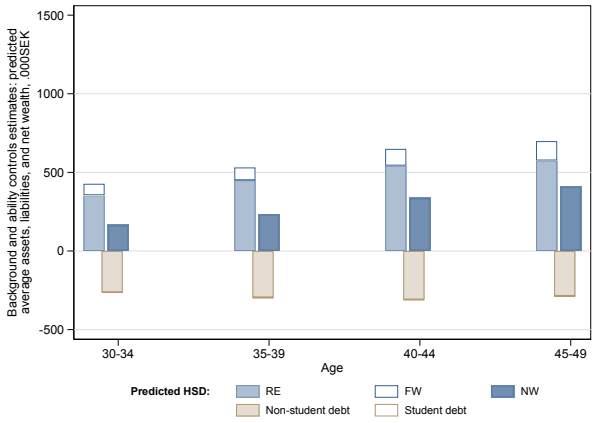


Figure IA.V: Predicted net wealth by education levels

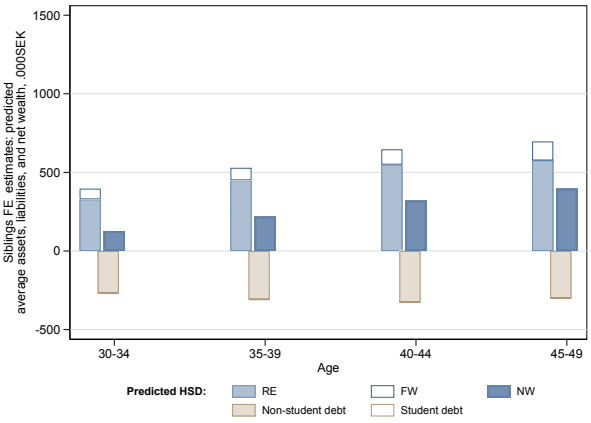
Note: The figure graphs predicted net wealth by age group and education using estimates from (a) parental background and ability controls and (b) siblings-year fixed effects (FE) specifications (equations 2 and 3 respectively). Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The components of net wealth are estimated as the mean asset class level for compulsory school, reported in Tables 3 and 4, plus the estimated effect of a given education level. The predicted net wealth is the sum of its estimated components.

Panel I. High school dropout

(a) Parental background and ability estimates

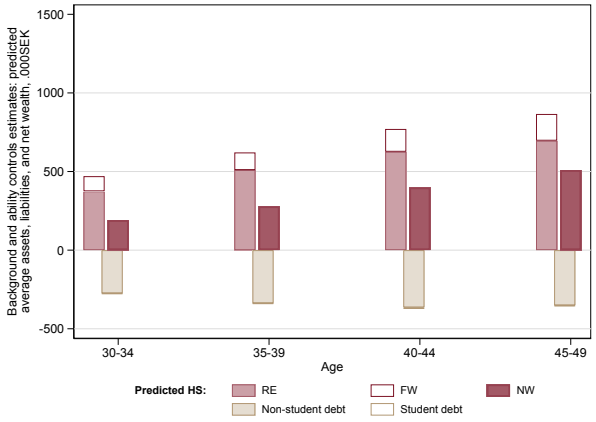


(b) Within-siblings estimates

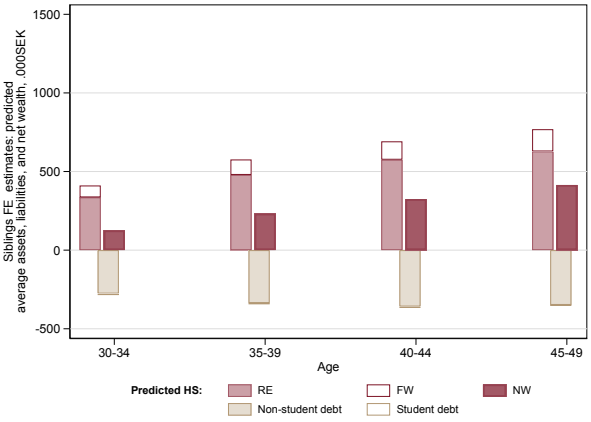


Panel II. High school

(a) Parental background and ability estimates

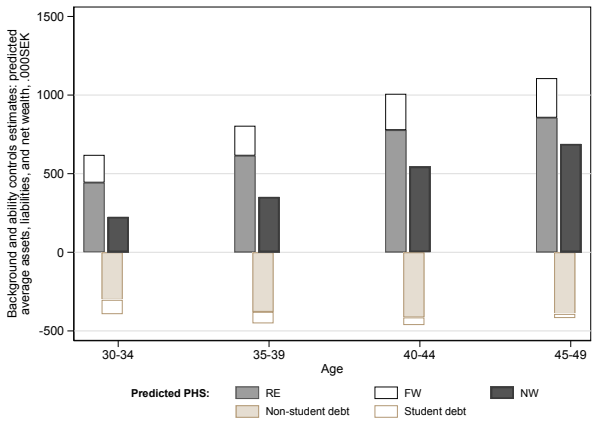


(b) Within-siblings estimates



Panel III. Post high school

(a) Parental background and ability estimates



(b) Within-siblings estimates

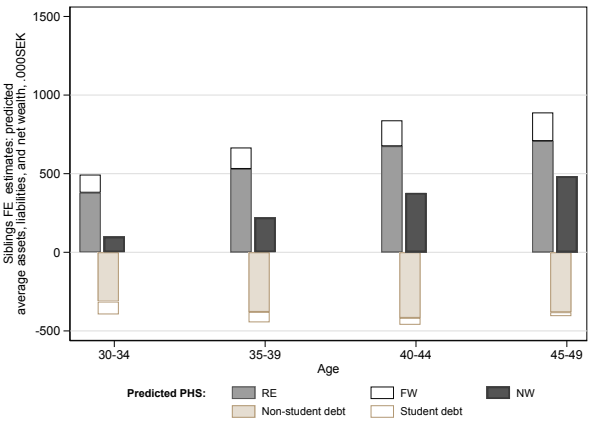
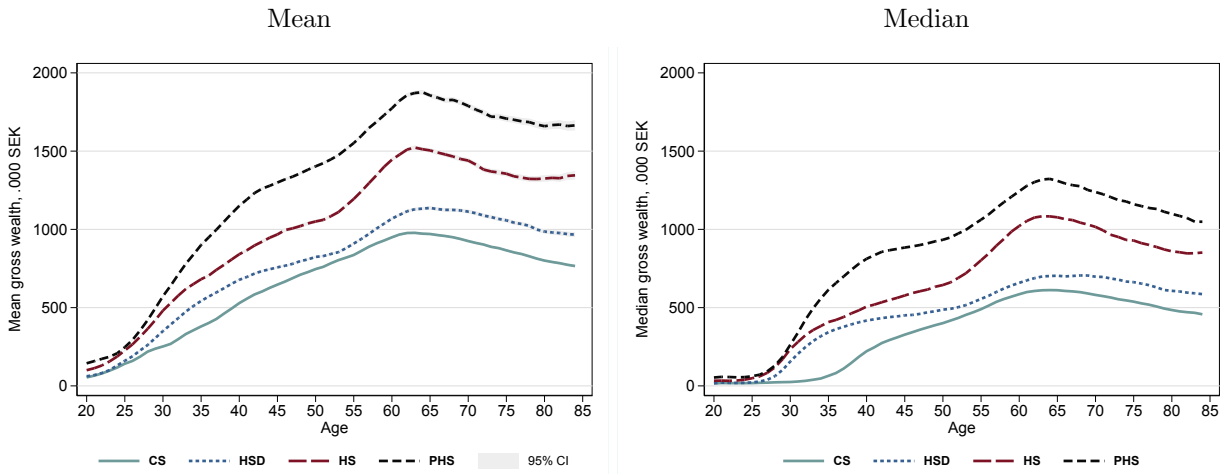


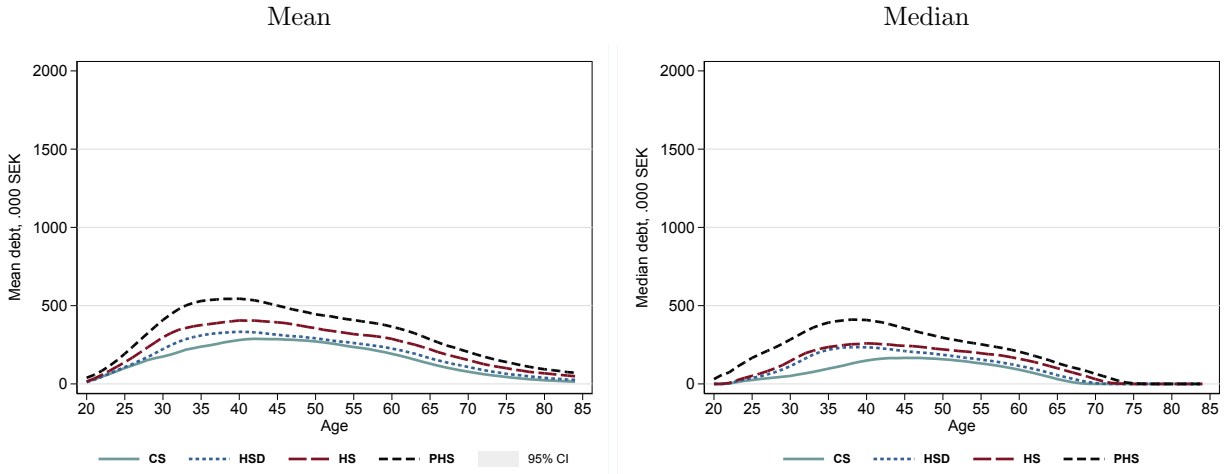
FIGURE IA.VI: Gross wealth, debt, and net wealth: means and medians

Note: The figure graphs the estimated real estate and financial assets and debt by education level and cohort.

(a) Total assets



(b) Debt



(c) Net worth

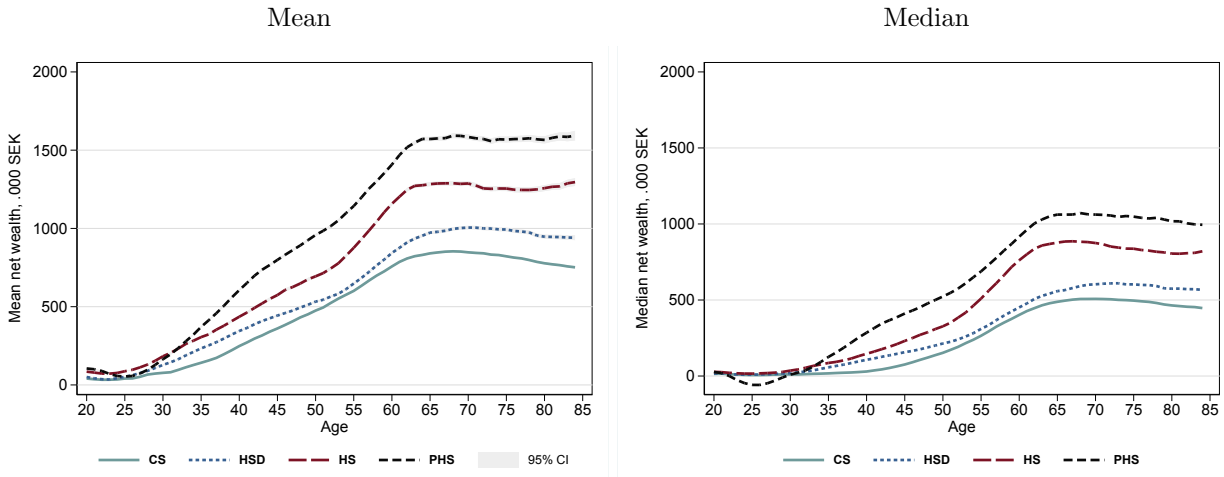
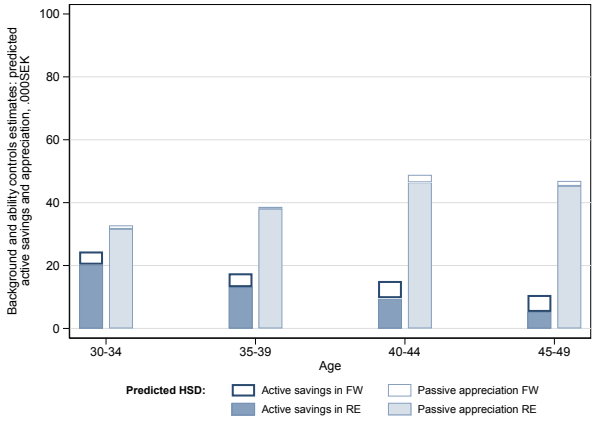


FIGURE IA.VII: Predicted active savings and passive appreciation by education levels

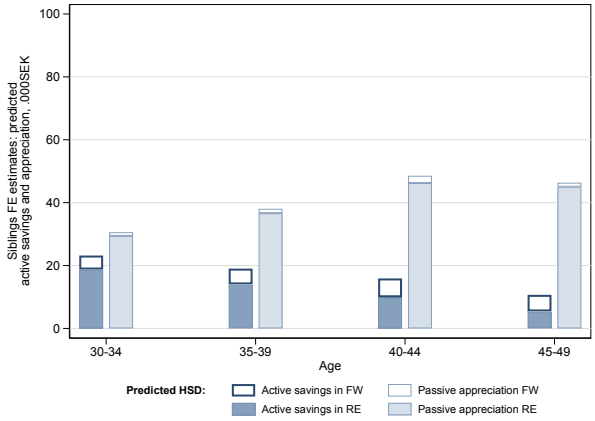
Note: The figure graphs predicted active savings and passive appreciation of real estate and financial wealth by age group and education using estimates from (a) parental background and ability controls and (b) siblings-year fixed effects (FE) specifications (equations 2 and 3 respectively). Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The active and passive changes are estimated as the mean of a change in the asset class for compulsory school, reported in Tables 6 and 7, plus the estimated effect of a given education level.

Panel I. High school dropout

(a) Parental background and ability estimates

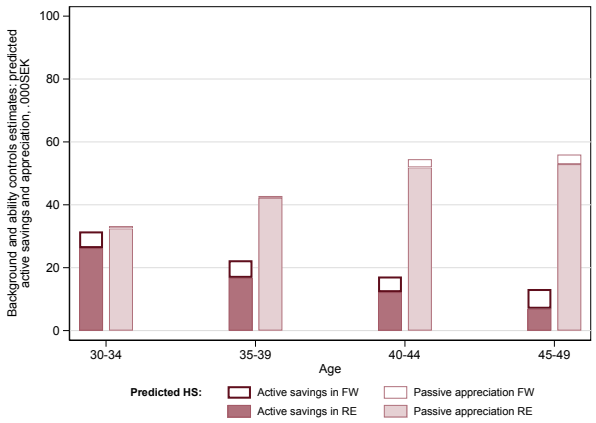


(b) Within-siblings estimates

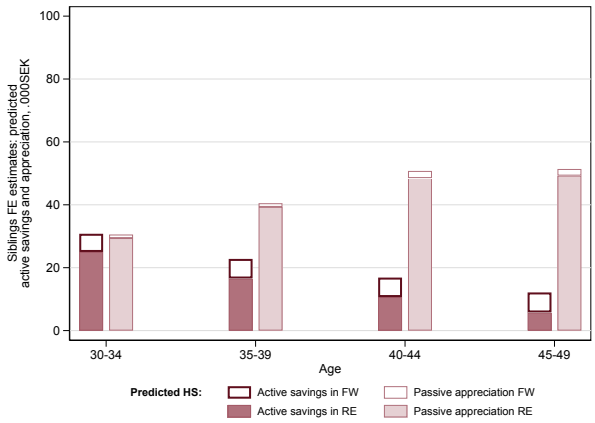


Panel II. High school

(a) Parental background and ability estimates

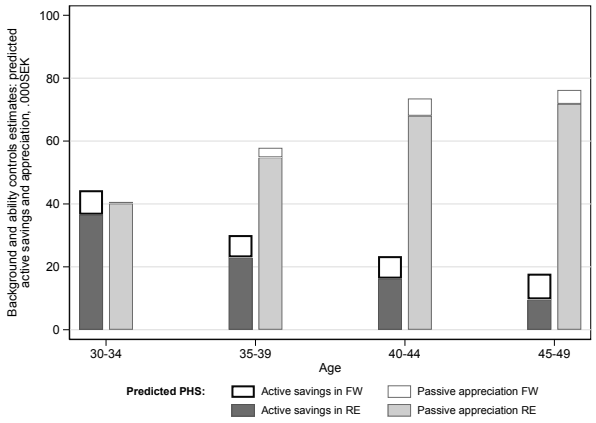


(b) Within-siblings estimates



Panel III. Post high school

(a) Parental background and ability estimates



(b) Within-siblings estimates

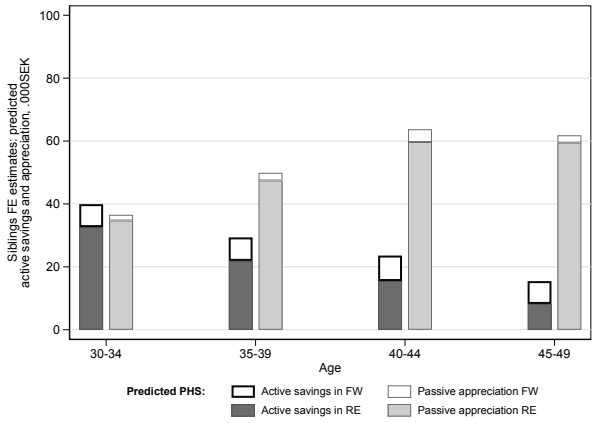
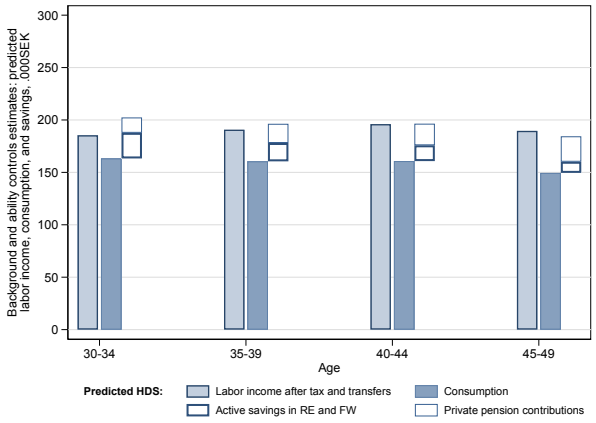


FIGURE IA.VIII: Predicted consumption and savings by education levels

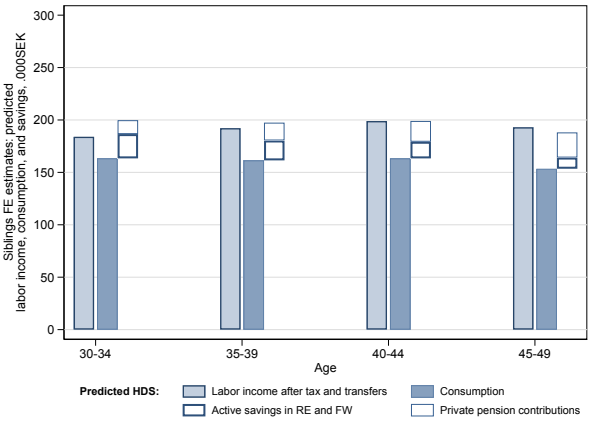
Note: The figure graphs predicted labor income (net of taxes incl. transfers), consumption, and savings (computed as active change in assets plus contributions to private pension plans) by age group and education using estimates from (a) parental background and ability controls and (b) siblings-year fixed effects (FE) specifications (equations 2 and 3 respectively). Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The predicted values are computed as the mean of the corresponding value for compulsory school, reported in Tables 8 and 9, plus the estimated effect of a given education level.

Panel I. High school dropout

(a) Parental background and ability estimates

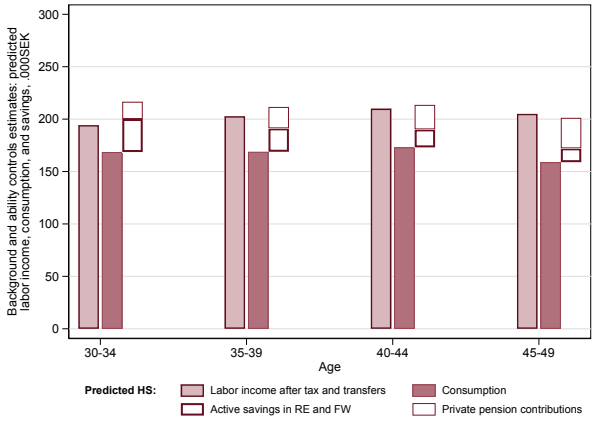


(b) Within-siblings estimates

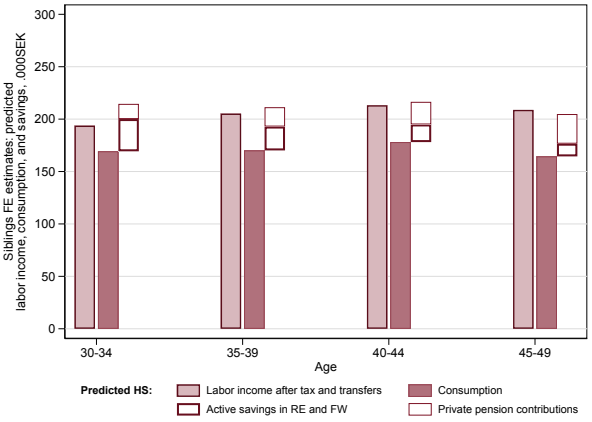


Panel II. High school

(a) Parental background and ability estimates

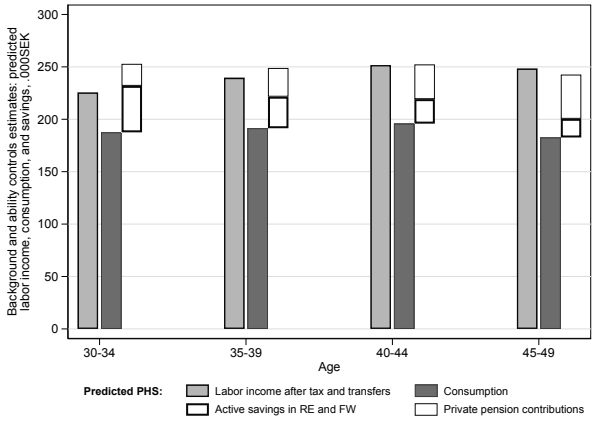


(b) Within-siblings estimates



Panel III. Post high school

(a) Parental background and ability estimates



(b) Within-siblings estimates

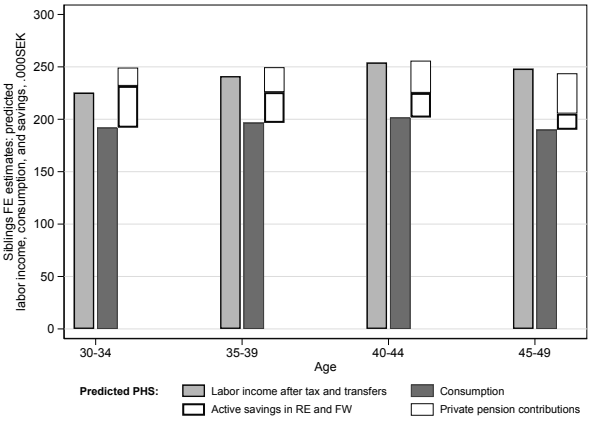
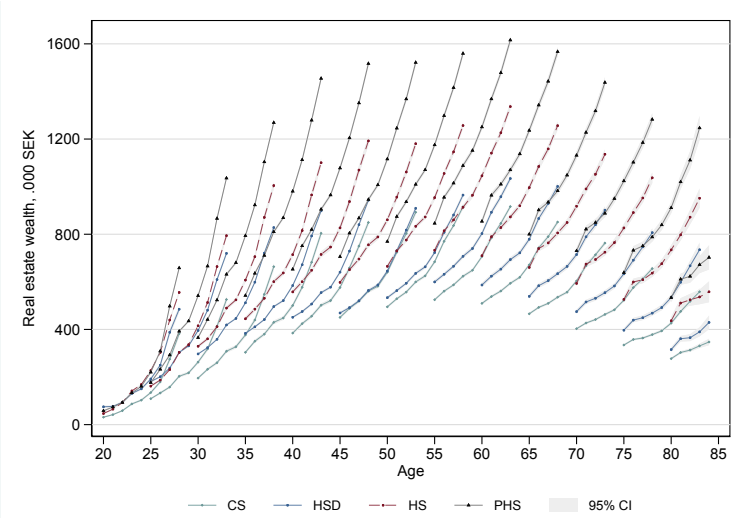


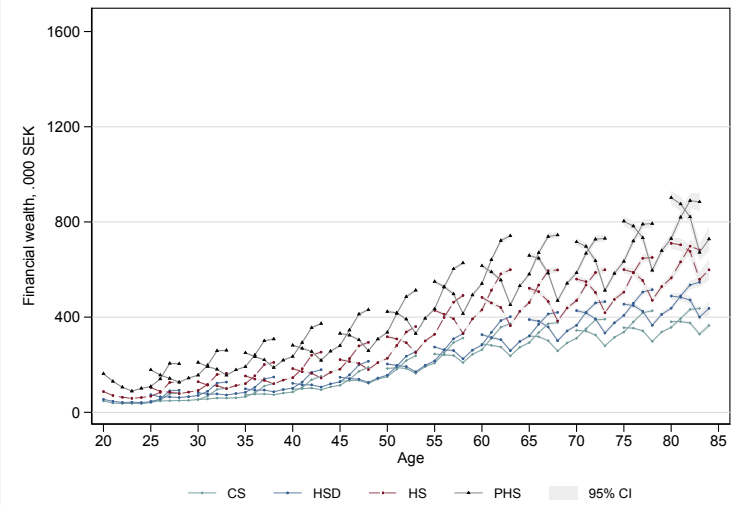
FIGURE IA.IX: Assets and debt by cohort

Note: The figure graphs the estimated real estate and financial assets and debt by education level and cohort.

(a) Real estate wealth



(b) Financial wealth



(c) Debt

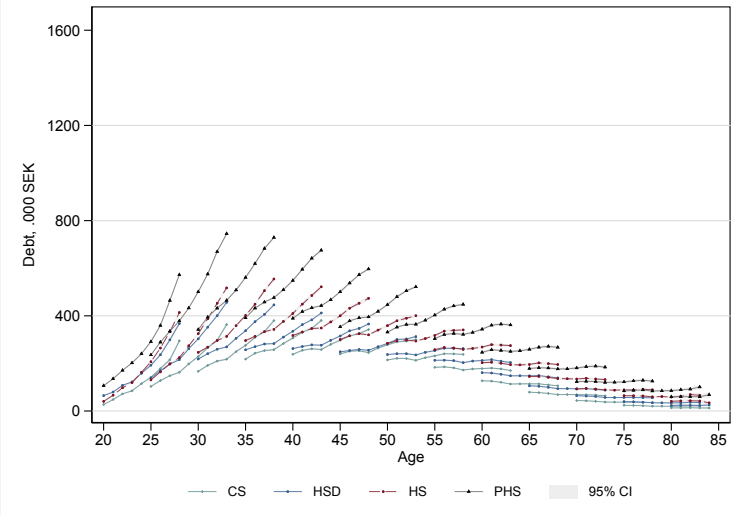
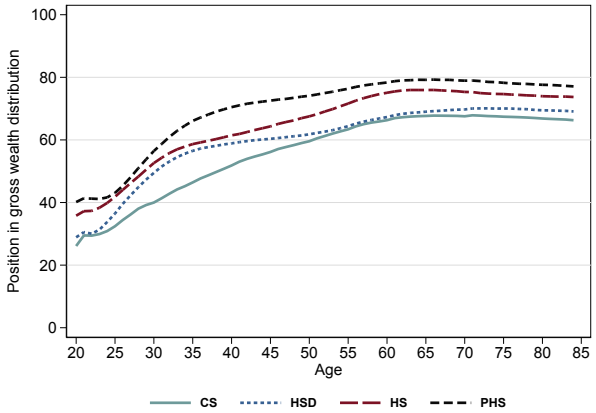


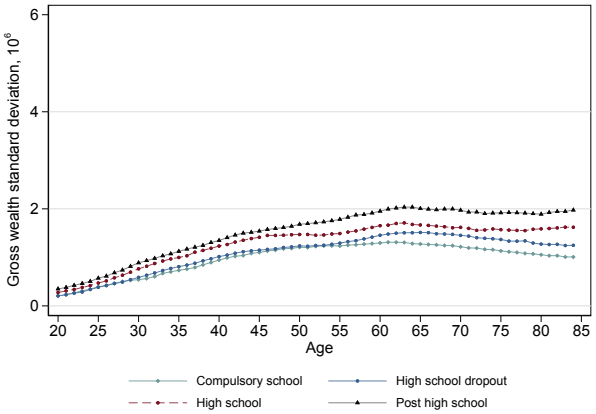
FIGURE IA.X: Life-cycle profiles of the wealth distribution position and variance by education group

Note: The graphs depict the average rank of individuals in the selected sample in the year-specific gross wealth distribution of the entire population (a), standard deviation of the gross wealth distribution of the selected sample (b), and interquartile range (c) and the difference between 95^{th} and 5^{th} percentiles (d) of gross wealth in the selected sample by age and education group. Gross wealth is measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The observations whose wealth or debt are above 0.1 percent of the wealth or debt distribution are trimmed.

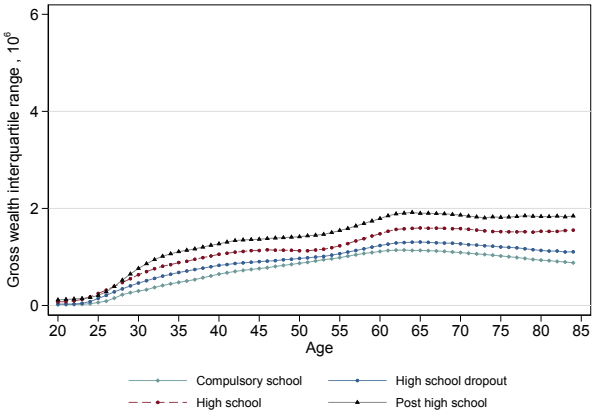
(a) Position in gross wealth distribution



(b) Gross wealth standard deviation



(c) Interquartile range



(d) 95^{th} - 5^{th} percentiles

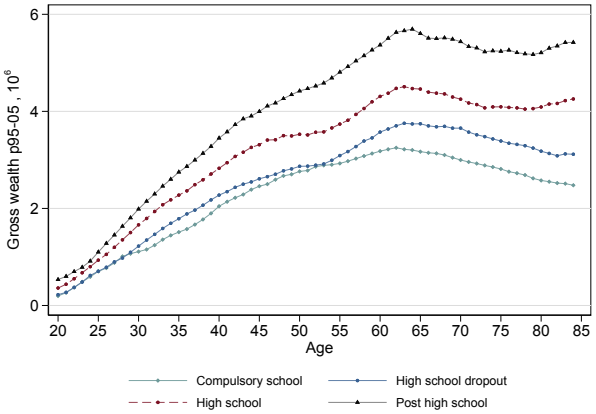
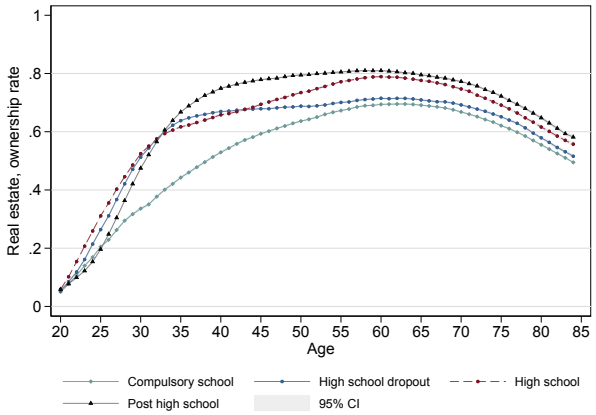


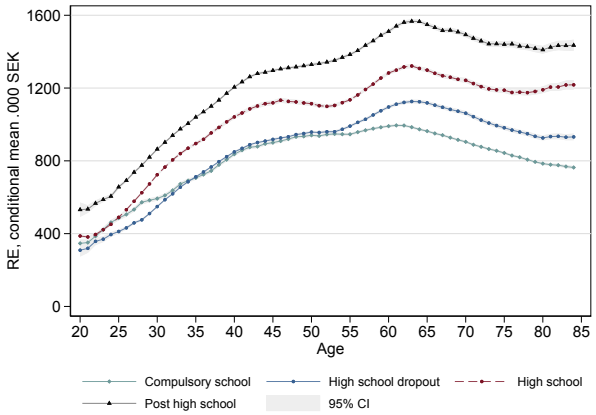
FIGURE IA.XI: Life-cycle profiles of real estate ownership rates and holdings by education group

Note: The graphs depict real estate ownership rate (a), conditional average real estate wealth (b), ownership rate of residential real estate other than main residence (c), and ownership rate of non-residential real estate (d) by age and education group. All variables are measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The observations whose wealth or debt are above 0.1 percent of the wealth or debt distribution are trimmed.

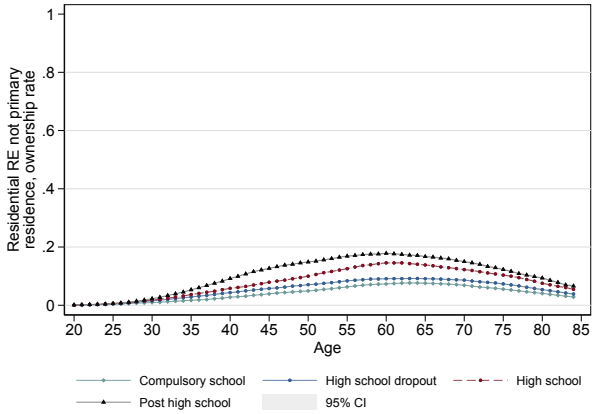
(a) Ownership rate of real estate



(b) Real estate wealth of owners



(c) Ownership rate of residential real estate other than main residence



(d) Ownership rate of non-residential real estate

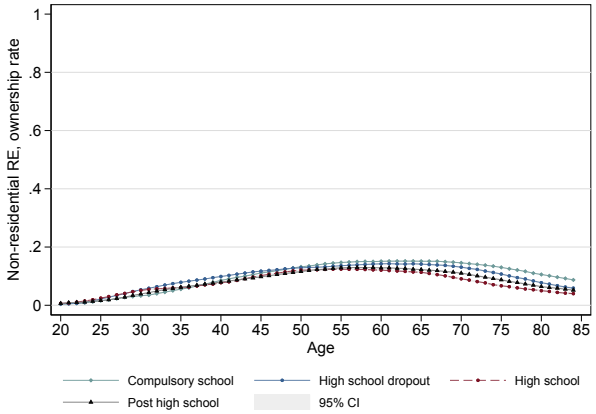


FIGURE IA.XII: Life-cycle profile of risky share by education group

Note: The graph depicts risky share in financial portfolio by age and education group measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The observations whose wealth or debt are above 0.1 percent of the wealth or debt distribution are trimmed.

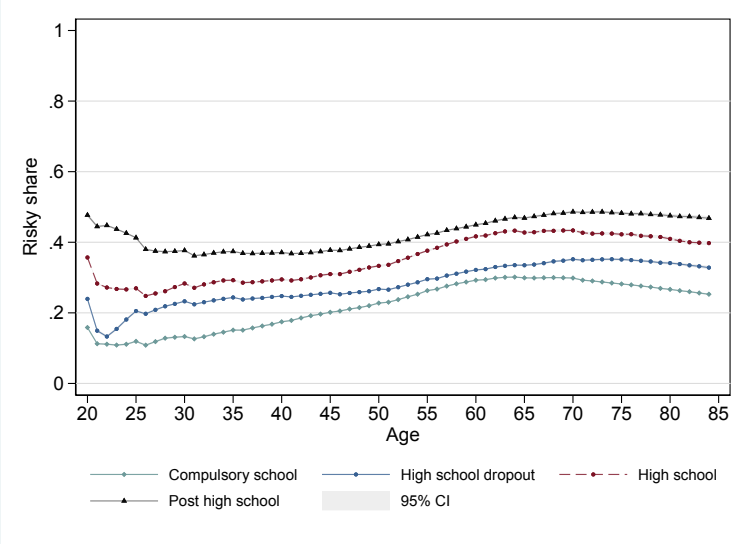
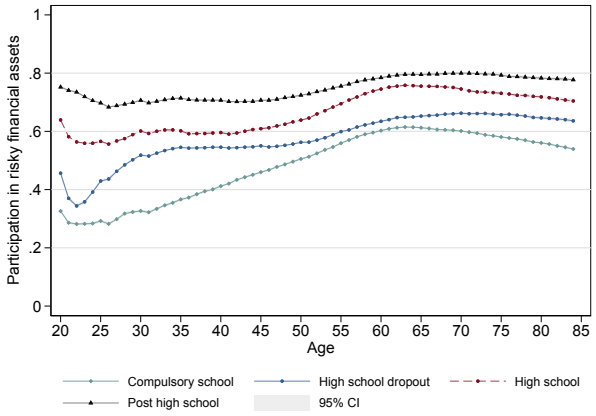


FIGURE IA.XIII: Life-cycle profiles of risky assets participation rate and conditional risky share by education group

Note: The graphs depict risky financial assets participation rate (a), conditional risky share (b) by age and education group. All variables are measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The observations whose wealth or debt are above 0.1 percent of the wealth or debt distribution are trimmed.

(a) Risky financial assets participation



(b) Conditional risky share

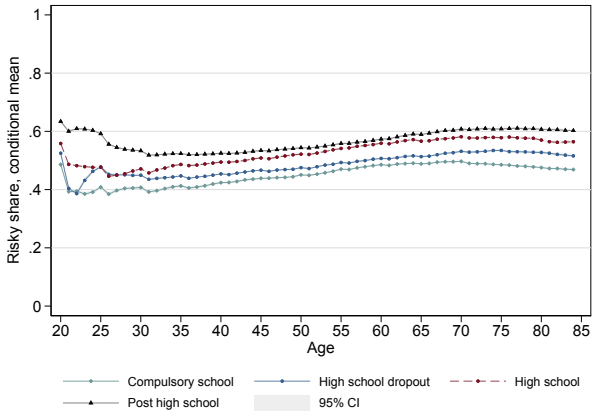
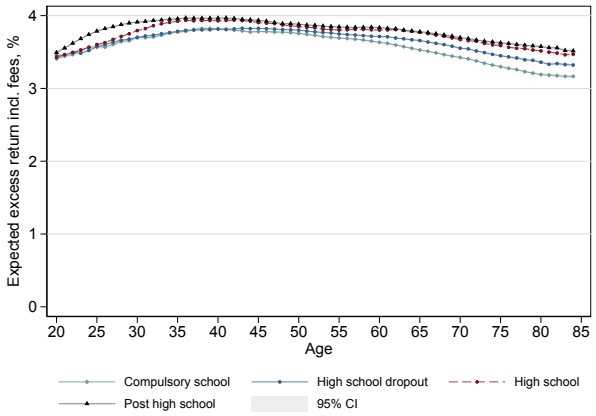


FIGURE IA.XIV: Life-cycle profile of risky portfolio expected excess returns by education group

Note: The graphs depict risky portfolio expected excess returns including fees (a) and risky portfolio expected excess returns net of fund fees (b) by age and education group. All variables are measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The observations whose wealth or debt are above 0.1 percent of the wealth or debt distribution are trimmed.

(a) Expected excess returns incl. fees



(b) Expected excess returns net of fund fees

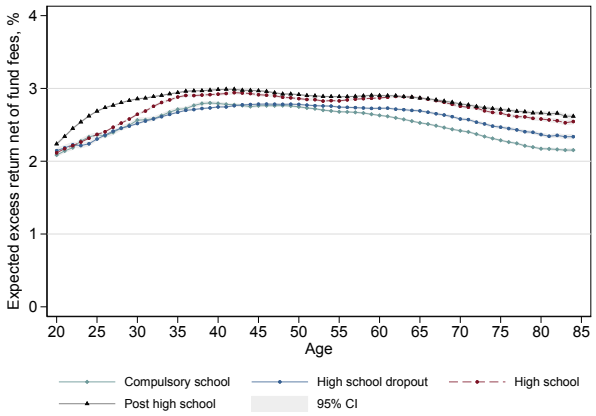
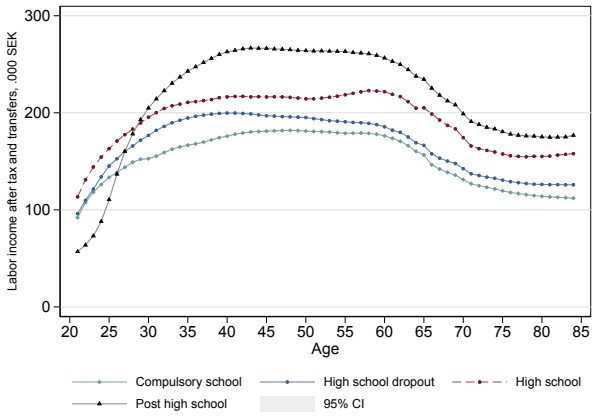


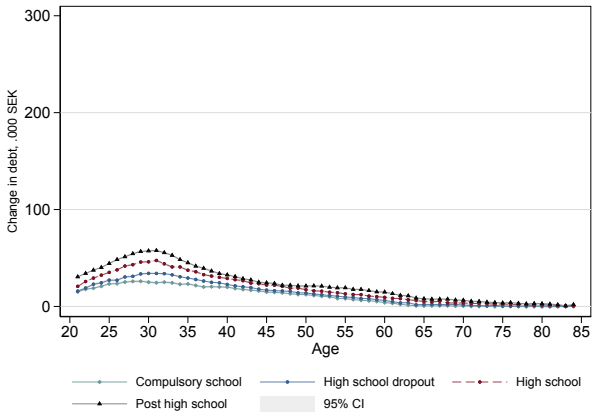
FIGURE IA.XV: Life-cycle profiles of labor income, consumption, and savings by education group

Note: The graphs depict the average labor income after tax and transfers, change in debt, consumption, savings in real estate and financial wealth, and private pension contributions by age and education group. All variables are measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The consumption and savings of the top and bottom 0.5 percent are trimmed.

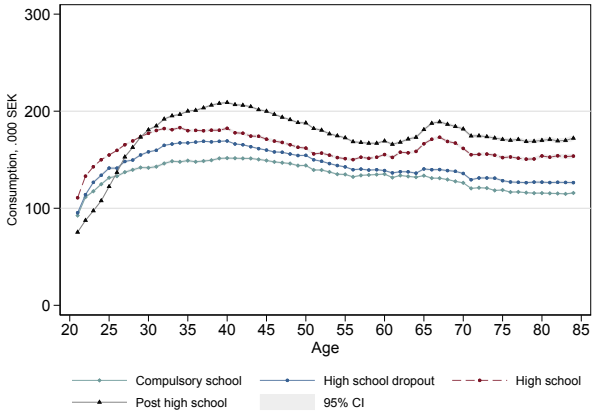
(a) Labor income after tax and transfers



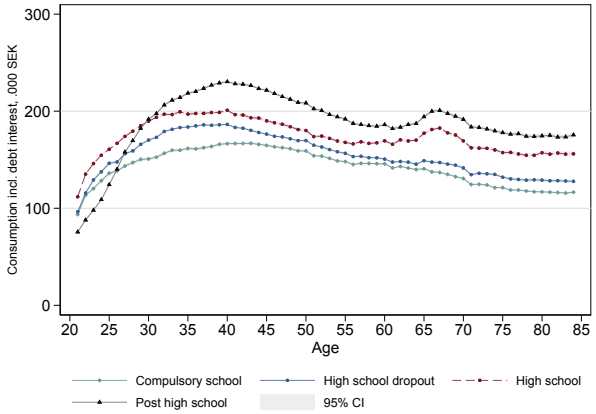
(b) Change in debt



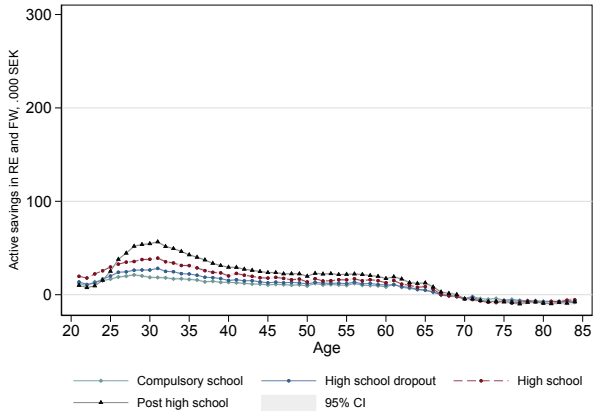
(c) Consumption



(d) Consumption incl. paid interest



(e) Active savings in real estate and financial wealth



(f) Private pension contributions

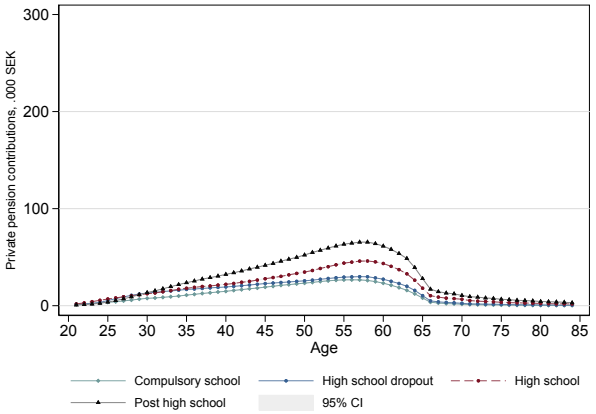
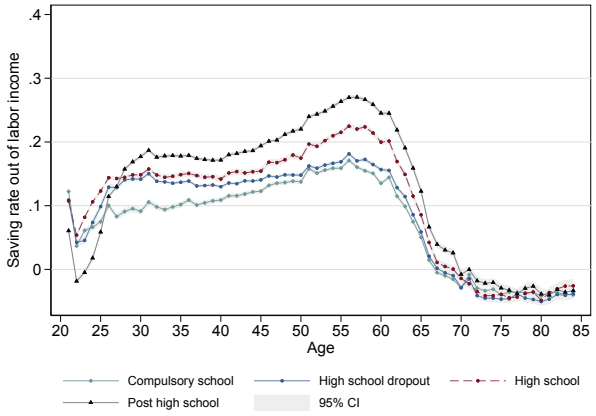


FIGURE IA.XVI: Life-cycle profiles of saving rates and realized returns by education group

Note: The graphs depict (a) *saving rate*, measured as active savings in real estate and financial wealth plus private pension contributions over the labor income after tax and transfers, and (b) *realized returns*, measured as real estate and financial assets appreciation over the total value of real and financial wealth in the previous period by age and education group. Variables are measured at individual level for all men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The observations whose savings are above top 0.5 percent or below 0.5 percent of the entire savings distribution are trimmed.

(a) Saving rate out of labor income



(b) Realized returns

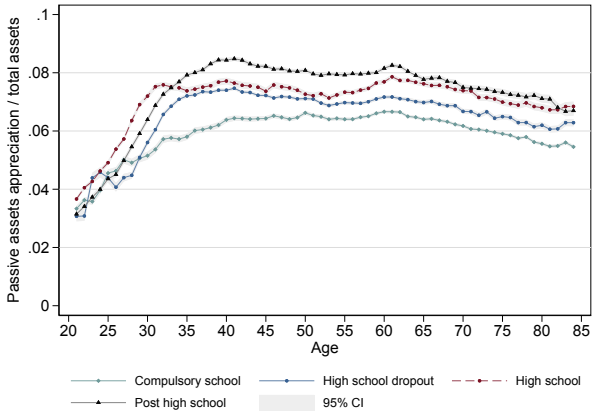
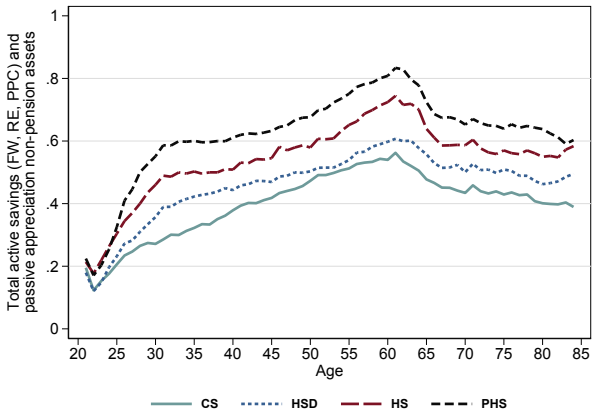


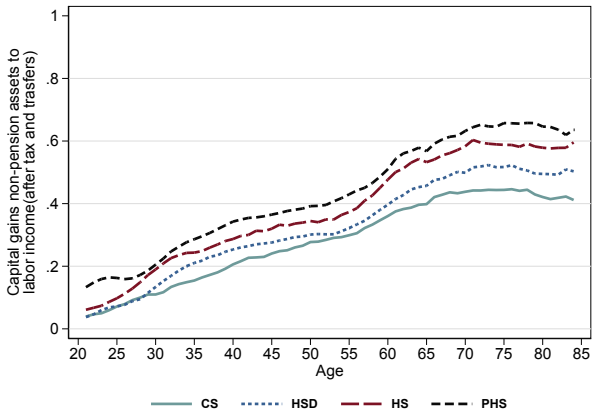
FIGURE IA.XVII: Life-cycle profiles of total savings (including capital gains) and active (or net) savings by education group

Note: The graphs depict (a) total savings (active savings in real estate, financial wealth, and private pension contributions) and passive appreciation of non-pension wealth (real estate wealth and financial wealth) out of labor income, (b) the ratio of capital gains on non-pension wealth out of labor income, (c) active savings into illiquid assets (real estate wealth and private pension contributions) over labor income, and (d) active savings into liquid wealth (non-pension financial wealth) out of labor income by age and education group. Education levels are defined as follows: individuals who completed compulsory education (*CS, compulsory school*), individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). The assets are measured at individual level for men aged 20-84 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). The ratios are trimmed at 1 percent of the entire distribution in the Swedish population.

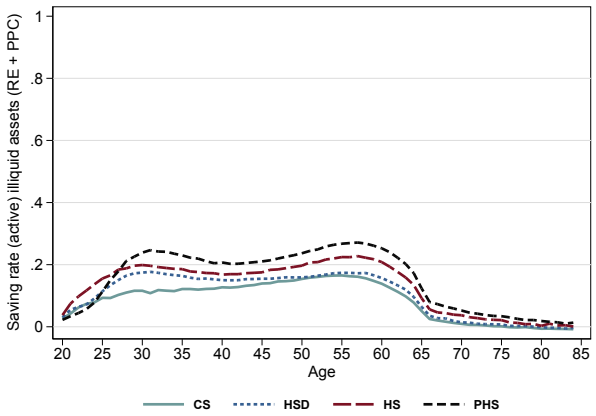
(a) Total savings out of labor income



(b) Capital gains over labor income



(c) Active savings to illiquid assets out of labor income



(d) Active savings to liquid assets out of labor income

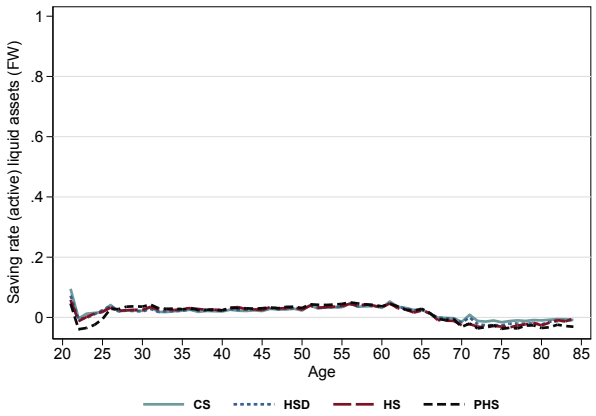


FIGURE IA.XVIII: Within-siblings estimates of age-specific effects of levels of education on gross wealth

Note: The figure graphs siblings-year fixed effects (FE) estimates of age-specific effects of levels of education on gross wealth estimated from equation 3. Education levels are defined as follows: individuals who dropped out of high school (*HSD*, *high school dropout*), individuals who finished high school (*HS*, *high school*), and individuals who attended or finished university (*PHS*, *post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level such that the height of each bar corresponds to the respective coefficient reported in Table IA.XVIII. Mean is defined among individuals with compulsory school education. The plotted effects are normalized such that the minimum of each bar corresponds to the sum of the mean gross wealth among individuals with compulsory school education and the effects of the previous levels of education. For instance, the maximum of the bar *PHS vs. HS* represent the average gross wealth that individuals who only attended compulsory school would have accumulated had they attended some post high school education. The total effect of obtaining some post high school training as opposed to interrupting studies right after compulsory school is, therefore, given by the sum of the bars *HSD vs. CS*, *HS vs. HSD*, and *PHS vs. HS*. All regressions include fixed effects for birth cohort and siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at siblings level. Capped spikes show 90 % confidence intervals (CIs).

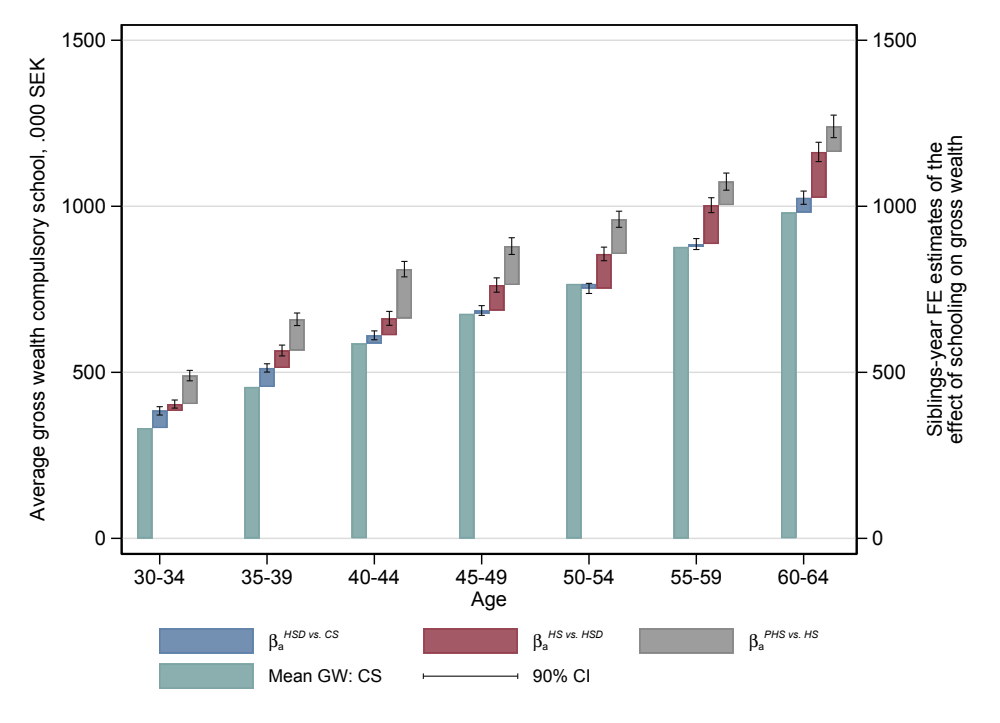
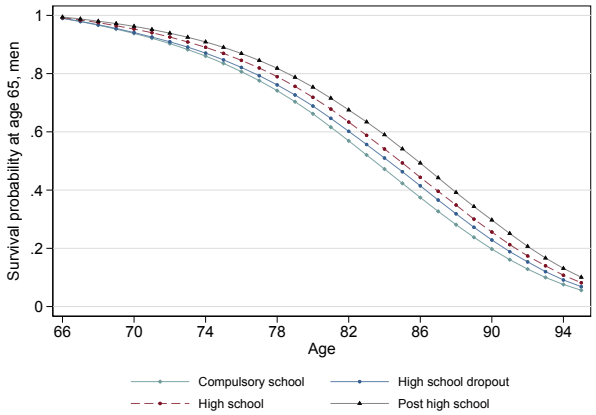


Figure IA.XIX: Estimated survival probability at age 65

Note: The figure graphs estimated survival probabilities at age 65 for cohorts 1904-1950 for (a) men and (b) women by education level controlling for cohort fixed effect.

(a) Survival probability at age 65 for men



(b) Survival probability at age 65 for women

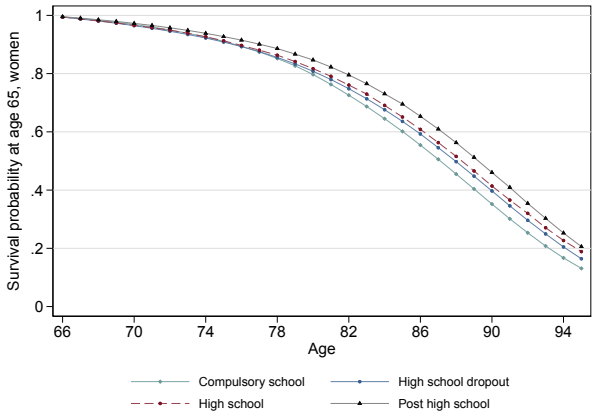
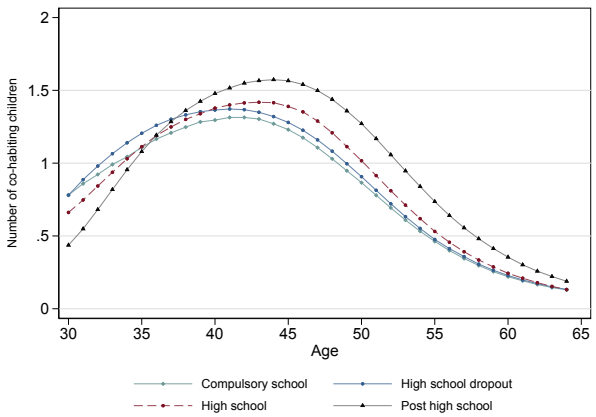


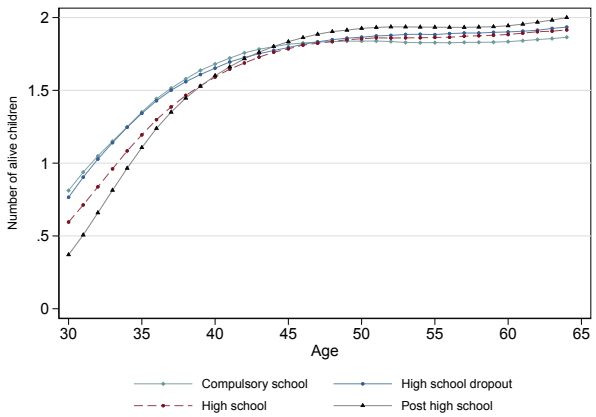
Figure IA.XX: Number of children

Note: The figure graphs number of co-habiting children (a) and number of children alive (b) for men aged 30-64 residing in Sweden in the years 1999-2007.

(a) Number of co-habiting children



(b) Number of alive children



IA.H Additional tables

TABLE IA.I: Cohort, age, and wealth-year distribution

	Year of observed wealth								
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Year of birth	**Age**								
1950	49								
1951	48	49							
1952	47	48	49						
1953	46	47	48	49					
1954	45	46	47	48	49				
1955	44	45	46	47	48	49			
1956	43	44	45	46	47	48	49		
1957	42	43	44	45	46	47	48	49	
1958	41	42	43	44	45	46	47	48	49
1959	40	41	42	43	44	45	46	47	48
1960	39	40	41	42	43	44	45	46	47
1961	38	39	40	41	42	43	44	45	46
1962	37	38	39	40	41	42	43	44	45
1963	36	37	38	39	40	41	42	43	44
1964	35	36	37	38	39	40	41	42	43
1965	34	35	36	37	38	39	40	41	42
1966	33	34	35	36	37	38	39	40	41
1967	32	33	34	35	36	37	38	39	40
1968	31	32	33	34	35	36	37	38	39
1969	30	31	32	33	34	35	36	37	38
1970		30	31	32	33	34	35	36	37
1971			30	31	32	33	34	35	36
1972				30	31	32	33	34	35
1973					30	31	32	33	34
1974						30	31	32	33
1975							30	31	32
1976								30	31
1977									30

Note: The table reports the distribution of cohort, age, and wealth-year in the analyzed sample.

TABLE IA.II: Education levels definition and distribution

Level of education	Level of education (SCB classification)	Years of education (SCB mapping)	Nr. obs.	Analysis level of education	% obs.
Compulsory school	10	7	6 792	**Compulsory school**	15%
	20	9	169 547		
High school	31	10	25 994	**High school dropout**	43%
	32	11	484 638		
	33	12	151 515	**High school**	13%
University	41	13	109 001	**Post high school**	29%
	52	14	58 579		
	53	15	70 365		
	54	16	74 824		
	55	17	10 802		
Post graduate	60	18	19		
	62	19	2 703		
	64	21	11 804		

Note: The table reports the classification of levels of education and distribution of observations in each education group. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed.

TABLE IA.III: Household composition

Year of birth	Year in which go to school	Year finishing compulsory school 7 grades	Year finishing compulsory school 9 grades	Main FoB, year	Age in which HH composition is taken
1950	1957	1964	1966		15
1951	1958	1965	1967		14
1952	1959	1966	1968	1965	13
1953	1960	1967	1969		12
1954	1961	1968	1970		11
1955	1962	1969	1971		15
1956	1963		1972		14
1957	1964		1973	1970	13
1958	1965		1974		12
1959	1966		1975		11
1960	1967		1976		15
1961	1968		1977		14
1962	1969		1978	1975	13
1963	1970		1979		12
1964	1971		1980		11
1965	1972		1981		15
1966	1973		1982		14
1967	1974		1983	1980	13
1968	1975		1984		12
1969	1976		1985		11
1970	1977		1986		15
1971	1978		1987		14
1972	1979		1988	1985	13
1973	1980		1989		12
1974	1981		1990		11
1975	1982		1991		15
1976	1983		1992	1990	14
1977	1984		1993		13

Note: The table reports the construction of household composition in adolescence.

TABLE IA.IV: Controls for parental composition in adolescence

	Levels of education	Father				
		Compulsory school	**High school**	**University**	**Missing education**	**Missing parent**
Mother	**Compulsory school**	Low edu. both parents			Missing parental edu.	No parent
	High school				Missing parental edu.	No parent
	University					
	Missing education	Missing parental edu.	Missing parental edu.		Missing parental edu.	No parent
	Missing parent	No parent	No parent		No parent	No parent

Note: The table reports the definition of the controls for parental background. The blank cells comprise the omitted group.

TABLE IA.V: Parental background and ability controls by education level

Level of education	Ability score	% both parents low education	% no parent in the household	% missing parental education	Parental income, .000 SEK
Compulsory school	3.7	53.9%	5.0%	6.9%	159.3
High school dropout	4.4	42.0%	3.6%	5.0%	170.3
High school	5.4	25.4%	2.7%	5.6%	204.2
Post high school	6.6	17.2%	1.6%	3.2%	239.0

Note: The table reports the average ability scores, the proportion of adult men whose both parents have stopped studies after compulsory school, who had one or no parents in the household in adolescence, and whose parents' education information is missing by education level, as well as average total parental income (labor income incl. transfers and capital income) measured in adolescence. The means are reported for a sample of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed.

TABLE IA.VI: Probability to have a brother and number of brothers by age group

Age	Probability of having a brother in the same age group	Number of brothers if more than one sibling in the same group
30-34	0.31	2.16
35-39	0.33	2.20
40-44	0.33	2.25
45-49	0.33	2.27
50-54	0.33	2.29
55-59	0.34	2.32
60-64	0.31	2.35

Note: The table reports probability to have a brother in the same age group, i.e. with at most 5 years of age difference, and number of brothers conditional on having a sibling in the same age group. The sample consists of men aged 30-64 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed.

TABLE IA.VII: The effect of education on net wealth

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	49.2***	45.1***	30.3***	13.9*
	(6.3)	(6.8)	(7.7)	(8.3)
High school vs . high school dropout	25.1***	43.6***	60.0***	98.2***
	(8.3)	(9.1)	(9.3)	(10.5)
Post high school vs high school	35.1***	74.1***	147.0***	180.6***
	(9.5)	(11.5)	(21.4)	(26.6)
1(low education both parents)	-18.7***	-50.6***	-93.3***	-133.4***
	(6.2)	(6.4)	(7.6)	(9.6)
1(no parent)	-75.5***	-134.6***	-162.0***	-147.9***
	(9.9)	(14.9)	(17.0)	(16.5)
1(missing parental education)	-47.3***	-64.4***	-117.0***	-116.6***
	(12.0)	(12.9)	(15.5)	(17.0)
1(parent died)	49.0***	32.3***	27.6***	19.5***
	(8.1)	(6.9)	(7.3)	(7.5)
Ln(parental income)	40.4***	29.6***	37.6***	40.5***
	(7.1)	(7.6)	(5.3)	(5.1)
Ability score	17.2***	38.1***	60.0***	60.2***
	(1.4)	(1.5)	(1.9)	(2.3)
Adjusted R^2	0.047	0.071	0.085	0.101
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	10.0	28.3***	11.0	-2.2
	(6.4)	(6.8)	(8.0)	(8.6)
High school vs . high school dropout	-1.2	14.0*	5.8	19.8
	(5.8)	(8.1)	(11.3)	(12.3)
Post high school vs high school	-26.4***	-11.2	53.4***	69.0***
	(7.5)	(9.5)	(12.5)	(14.1)
Adjusted R^2	0.493	0.445	0.432	0.439
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	116.8	190.0	308.2	397.1

Note: The table reports age-specific effects of levels of education on net wealth (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.VIII: Distribution of employed by business sector and education

Business sector	Education level			
	CS	**HSD**	**HS**	**PHS**
Agriculture, hunting, forestry, fishing	36.33%	39.39%	11.70%	12.58%
Mining and quarrying, electricity, gas and water supply	17.89%	36.02%	16.43%	29.66%
Manufacturing	24.46%	37.88%	15.18%	22.47%
Construction	25.41%	50.98%	14.12%	9.49%
Wholesale and retail trade	23.44%	37.86%	18.80%	19.90%
Hotels and restaurants	28.15%	37.90%	17.51%	16.44%
Transport, storage and communication	26.56%	40.46%	15.85%	17.12%
Financial intermediation	9.12%	18.51%	25.76%	46.62%
Real estate activities	11.80%	21.71%	16.84%	49.66%
Public administration and defense, compulsory social security	7.89%	16.89%	12.13%	63.09%
Education and social work	11.74%	22.38%	11.95%	53.93%
Health care and veterinary services	4.54%	15.79%	8.34%	71.32%
Other services and activities	20.89%	28.98%	15.66%	34.47%
Missing	38.86%	32.46%	12.90%	15.77%

Note: The table reports the distribution of employed by business sector and education level. Education levels are defined as follows: individuals with only compulsory school education individuals (*CS*), those who dropped out of high school (*HSD*), individuals who finished high school (*HS*), and individuals who attended or finished university (*PHS*). The sample consists of men aged 30-64 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed.

TABLE IA.IX: Reform assignment

Municipality first affected cohort	Cohort												
	1943	**1944**	**1945**	**1946**	**1947**	**1948**	**1949**	**1950**	**1951**	**1952**	**1953**	**1954**	**1955**
M1943	T	T	T	T	T	T	T	T	T	T	T	T	T
M1944	C	T	T	T	T	T	T	T	T	T	T	T	T
M1945	C	C	T	T	T	T	T	T	T	T	T	T	T
M1946	C	C	C	T	T	T	T	T	T	T	T	T	T
M1947	C	C	C	C	T	T	T	T	T	T	T	T	T
M1948	C	C	C	C	C	T	T	T	T	T	T	T	T
M1949	C	C	C	C	C	C	T	T	T	T	T	T	T
M1950	C	C	C	C	C	C	C	T	T	T	T	T	T
M1951	C	C	C	C	C	C	C	C	T	T	T	T	T
M1952	C	C	C	C	C	C	C	C	C	T	T	T	T
M1953	C	C	C	C	C	C	C	C	C	C	T	T	T
M1954	C	C	C	C	C	C	C	C	C	C	C	T	T
M1955	C	C	C	C	C	C	C	C	C	C	C	C	T

Municipalities and cohorts included in the sample

Note: The table reports the distribution of years of birth in municipalities by control and treated status.

TABLE IA.X: Distribution of years of schooling by reform status

Years of schooling	% observations		Nr. observations	
	Control	**Treated**	**Control**	**Treated**
7	19 %	2 %	92,280	9,172
9	9 %	20 %	45,723	74,478
10	2 %	2 %	11,405	8,714
11	25 %	28 %	125,120	104,594
12	16 %	16 %	80,960	61,679
12	28 %	31 %	140,846	118,867
Total	**1**	**1**	**496,334**	**377,504**

Note: The table reports the distribution of years of schooling by reform status for the selected sample. The sample consists of men aged 50-59 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD) born in municipalities and cohorts as shown in the Table IA.IX. Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed.

TABLE IA.XI: The effect of education on the position in the gross wealth distribution

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	5.0***	3.7***	2.0***	0.7**
	(0.3)	(0.3)	(0.3)	(0.3)
High school vs. high school dropout	1.6***	2.0***	2.6***	3.8***
	(0.3)	(0.3)	(0.2)	(0.2)
Post high school vs. high school	4.5***	5.0***	5.4***	5.0***
	(0.2)	(0.3)	(0.4)	(0.4)
1(low education both parents)	-1.2***	-1.6***	-1.7***	-1.7***
	(0.3)	(0.2)	(0.2)	(0.2)
1(no parent)	-8.0***	-7.1***	-6.1***	-4.9***
	(0.6)	(0.6)	(0.5)	(0.4)
1(missing parental education)	-3.9***	-4.3***	-3.3***	-2.7***
	(0.5)	(0.4)	(0.4)	(0.5)
1(parent died)	-0.0	-1.1***	-0.9***	-0.7***
	(0.3)	(0.2)	(0.2)	(0.1)
Ln(parental income)	1.8***	1.5***	1.3***	1.1***
	(0.2)	(0.2)	(0.1)	(0.1)
Ability score	1.8***	2.3***	2.4***	2.2***
	(0.1)	(0.1)	(0.1)	(0.0)
Adjusted R^2	0.116	0.140	0.146	0.140
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	2.7***	2.4***	1.3***	0.4
	(0.4)	(0.3)	(0.3)	(0.3)
High school vs. high school dropout	0.9***	1.5***	1.7***	2.6***
	(0.3)	(0.3)	(0.3)	(0.3)
Post high school vs. high school	3.4***	4.0***	4.9***	3.8***
	(0.3)	(0.3)	(0.3)	(0.3)
Adjusted R^2	0.346	0.348	0.342	0.334
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school	48.48	53.35	57.86	60.40

Note: The table reports age-specific effects of levels of education on the position in the year-specific gross wealth distribution of the entire Swedish population estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-64 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XII: The effect of education on the probability to be in the top the gross wealth distribution

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49				
	Panel a: OLS regression with controls for parental background and ability;											
	DV = probability top 10%				**DV = probability top 5%**				**DV =probability top 1%**			
High school dropout vs. compulsory school	0.004*	0.002	-0.001	-0.005*	0.003	0.001	-0.004**	-0.005**	0.001	0.000	-0.001	-0.002**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
High school vs. high school dropout	0.013***	0.022***	0.030***	0.036***	0.006***	0.010***	0.016***	0.022***	0.001	0.004***	0.006***	0.009***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)
Post high school vs. high school	0.045***	0.067***	0.086***	0.083***	0.018***	0.026***	0.040***	0.044***	0.003***	0.000	0.003	0.002
	(0.003)	(0.004)	(0.007)	(0.007)	(0.002)	(0.004)	(0.006)	(0.008)	(0.001)	(0.001)	(0.002)	(0.003)
1(low education both parents)	-0.011***	-0.026***	-0.040***	-0.052***	-0.006***	-0.016***	-0.027***	-0.035***	-0.002***	-0.005***	-0.009***	-0.013***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
1(no parent)	-0.016***	-0.033***	-0.042***	-0.049***	-0.010***	-0.020***	-0.023***	-0.027***	-0.001**	-0.006***	-0.007***	-0.011***
	(0.004)	(0.006)	(0.007)	(0.005)	(0.002)	(0.003)	(0.005)	(0.004)	(0.001)	(0.001)	(0.002)	(0.002)
1(missing parental education)	-0.010**	-0.024***	-0.038***	-0.032***	-0.004*	-0.011***	-0.020***	-0.023***	-0.001	-0.005***	-0.006**	-0.009***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)	(0.004)	(0.004)	(0.001)	(0.001)	(0.002)	(0.002)
1(parent died)	0.018***	0.011***	0.009***	0.005**	0.010***	0.009***	0.009***	0.005***	0.002**	0.002***	0.002**	0.001
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Ln(parental income)	0.017***	0.014***	0.015***	0.014***	0.008***	0.008***	0.010***	0.009***	0.003***	0.001**	0.002***	0.003***
	(0.003)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ability score	0.008***	0.015***	0.021***	0.021***	0.003***	0.007***	0.011***	0.012***	0.000**	0.001***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R^2	0.061	0.088	0.106	0.109	0.030	0.044	0.058	0.071	0.009	0.009	0.015	0.028
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;											
	DV = probability top 10%				**DV = probability top 5%**				**DV =probability top 1%**			
High school dropout vs. compulsory school	0.001	0.005*	0.003	-0.005*	0.000	0.001	-0.003	-0.005**	0.000	-0.000	-0.002**	-0.004***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
High school vs. high school dropout	0.003	0.006	0.004	0.017***	0.000	0.002	0.002	0.007**	-0.001	0.003***	0.000	0.003*
	(0.003)	(0.003)	(0.004)	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)
Post high school vs. high school	0.020***	0.036***	0.056***	0.044***	0.005**	0.006**	0.018***	0.019***	-0.001	-0.005***	-0.001	-0.004**
	(0.004)	(0.004)	(0.005)	(0.005)	(0.002)	(0.003)	(0.004)	(0.004)	(0.001)	(0.001)	(0.002)	(0.002)
Adjusted R^2	0.317	0.322	0.330	0.330	0.330	0.307	0.302	0.314	0.344	0.258	0.274	0.271
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	227,382	325,962	318,476	304,763	227,382	325,962	318,476	304,763
Mean DV compulsory school	0.042	0.067	0.093	0.116	0.017	0.031	0.049	0.062	0.003	0.006	0.010	0.015

Note: The table reports age-specific effects of levels of education on the probability to be in top 10%, top 5% and top 1% of the year-specific gross wealth distribution of the entire Swedish population estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-64 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XIII: The effect of education on real estate wealth at the extensive and intensive margins

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability;							
	DV = probability to own real estate				**DV = real estate wealth of owners, .000SEK**			
High school dropout vs. compulsory school	0.080***	0.063***	0.039***	0.019***	3.4	-25.9***	-40.9***	-40.0***
	(0.006)	(0.006)	(0.006)	(0.005)	(10.9)	(9.8)	(10.3)	(10.4)
High school vs. high school dropout	-0.013**	-0.006	0.007	0.029***	37.1***	85.1***	106.0***	125.3***
	(0.005)	(0.005)	(0.004)	(0.004)	(10.5)	(11.5)	(12.4)	(13.3)
Post high school vs. high school	-0.014***	0.025***	0.045***	0.043***	103.4***	84.2***	96.0***	106.8***
	(0.005)	(0.005)	(0.007)	(0.007)	(9.8)	(11.0)	(17.3)	(20.0)
1(low education both parents)	-0.007	-0.007**	-0.001	-0.002	-44.7***	-93.1***	-157.1***	-191.8***
	(0.005)	(0.004)	(0.003)	(0.004)	(8.6)	(9.3)	(9.8)	(11.1)
1(no parent)	-0.120***	-0.096***	-0.079***	-0.061***	-74.7***	-154.2***	-140.7***	-162.2***
	(0.011)	(0.009)	(0.009)	(0.007)	(17.9)	(18.5)	(21.2)	(18.8)
1(missing parental education)	-0.076***	-0.073***	-0.037***	-0.032***	-31.7*	-57.6***	-119.6***	-90.7***
	(0.010)	(0.008)	(0.008)	(0.008)	(16.2)	(22.0)	(29.5)	(29.0)
1(parent died)	-0.003	-0.022***	-0.016***	-0.013***	40.2***	30.8***	30.1***	14.0
	(0.005)	(0.003)	(0.003)	(0.003)	(11.3)	(8.7)	(8.4)	(8.5)
Ln(parental income)	0.023***	0.020***	0.016***	0.013***	39.2***	23.6**	37.6***	41.8***
	(0.003)	(0.003)	(0.002)	(0.002)	(10.1)	(10.8)	(7.1)	(5.8)
Ability score	0.024***	0.031***	0.032***	0.029***	21.5***	38.7***	52.5***	49.1***
	(0.001)	(0.001)	(0.001)	(0.001)	(2.1)	(1.8)	(2.3)	(2.4)
Adjusted R^2	0.040	0.049	0.057	0.062	0.134	0.144	0.137	0.140
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;							
	DV = probability to own real estate				**DV = real estate wealth of owners, .000SEK**			
High school dropout vs. compulsory school	0.045***	0.042***	0.036***	0.018***	-10.8	-10.4	-36.6***	-50.9***
	(0.008)	(0.006)	(0.005)	(0.005)	(14.4)	(13.5)	(14.1)	(14.2)
High school vs. high school dropout	0.002	0.007	0.012**	0.026***	3.9	39.7***	29.5*	42.2**
	(0.006)	(0.005)	(0.005)	(0.005)	(11.3)	(13.3)	(16.1)	(16.4)
Post high school vs. high school	0.001	0.029***	0.053***	0.037***	49.0***	26.2*	44.9***	37.0**
	(0.007)	(0.006)	(0.005)	(0.006)	(13.1)	(14.1)	(16.6)	(18.3)
Adjusted R^2	0.196	0.187	0.178	0.177	0.409	0.400	0.402	0.408
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	141,561	231,817	238,483	231,080
Mean DV compulsory school	0.508	0.591	0.652	0.685	598.7	709.2	826.4	858.5

Note: The table reports age-specific effects of levels of education on real estate wealth at the extensive margin (i.e., probability to own real estate) and at the intensive margin (i.e., real estate wealth of homeowners measured is thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XIV: The effect of education on the risky share at the extensive and intensive margins

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability;							
	DV = probability to own risky assets				**DV = risky share of owners**			
High school dropout vs. compulsory school	0.11***	0.10***	0.07***	0.04***	0.05***	0.04***	0.03***	0.03***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
High school vs. high school dropout	0.07***	0.07***	0.07***	0.07***	0.04***	0.04***	0.03***	0.03***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Post high school vs. high school	0.09***	0.07***	0.06***	0.05***	0.04***	0.02***	0.02***	0.02***
	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
1(low education both parents)	-0.03***	-0.03***	-0.02***	-0.01***	-0.02***	-0.01***	-0.01***	-0.01**
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
1(no parent)	-0.13***	-0.11***	-0.08***	-0.06***	-0.02**	-0.02*	-0.03***	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
1(missing parental education)	-0.06***	-0.06***	-0.04***	-0.03***	0.01*	0.01	-0.01*	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
1(parent died)	-0.02***	-0.02***	-0.02***	-0.01***	0.00	-0.00	-0.00	0.01***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ln(parental income)	0.03***	0.02***	0.02***	0.02***	0.02***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Ability score	0.03***	0.03***	0.03***	0.03***	0.01***	0.01***	0.01***	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Adjusted R^2	0.096	0.087	0.079	0.078	0.064	0.052	0.048	0.054
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;							
	DV = probability to own risky assets				**DV = risky share of owners**			
High school dropout vs. compulsory school	0.06***	0.06***	0.04***	0.02***	0.02**	0.03***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
High school vs. high school dropout	0.04***	0.05***	0.05***	0.05***	0.03***	0.03***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
Post high school vs. high school	0.07***	0.06***	0.05***	0.05***	0.02***	0.01***	0.01**	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Adjusted R^2	0.272	0.235	0.211	0.208	0.234	0.194	0.182	0.181
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	142,620	204,616	199,047	191,126
Mean DV compulsory school	0.409	0.439	0.478	0.518	0.389	0.396	0.423	0.431

Note: The table reports age-specific effects of levels of education on the risky share at the extensive margin (i.e., probability to own risky assets) and at the intensive margin (i.e., risky share of the owners) estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XV: Parental background and ability controls estimates of the effect of education on gross wealth for the selected sample of siblings and full sample

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Siblings sample				Full sample			
High school dropout vs. compulsory school	61.6***	40.9***	13.2	-10.2	72.3***	47.1***	16.0*	-15.9**
	(8.4)	(8.9)	(9.4)	(10.2)	(5.3)	(7.0)	(9.3)	(7.7)
High school vs. high school dropout	43.0***	90.0***	121.5***	167.0***	40.9***	99.7***	128.2***	175.1***
	(11.0)	(12.7)	(11.4)	(12.7)	(7.3)	(10.8)	(11.8)	(14.5)
Post high school vs. high school	149.1***	183.5***	237.5***	241.9***	165.5***	199.3***	235.6***	240.4***
	(9.7)	(13.8)	(25.3)	(30.2)	(8.4)	(10.1)	(17.2)	(21.9)
1(low education both parents)	-42.2***	-87.3***	-142.2***	-187.2***	-31.6***	-72.1***	-128.5***	-176.1***
	(7.5)	(7.9)	(8.8)	(10.9)	(4.1)	(5.0)	(6.1)	(6.8)
1(no parent)	-121.0***	-174.2***	-196.6***	-190.4***	-149.4***	-208.1***	-255.2***	-252.2***
	(13.4)	(17.7)	(20.3)	(18.3)	(5.4)	(6.3)	(8.3)	(8.0)
1(missing parental education)	-79.0***	-105.7***	-147.0***	-144.7***	-111.2***	-123.4***	-150.7***	-122.3***
	(14.2)	(14.4)	(19.2)	(20.3)	(7.0)	(9.2)	(9.5)	(9.9)
1(parent died)	40.7***	19.1**	15.9*	7.6	55.5***	44.2***	44.0***	38.3***
	(9.5)	(8.3)	(8.4)	(8.3)	(4.5)	(4.4)	(4.0)	(4.5)
Ln(parental income)	62.1***	50.1***	52.2***	51.1***	34.9***	28.9***	26.1***	29.2***
	(8.7)	(9.4)	(6.1)	(5.7)	(3.3)	(3.9)	(3.2)	(2.2)
Ability score	36.1***	62.1***	84.7***	81.4***	40.6***	63.5***	84.2***	83.1***
	(1.7)	(1.7)	(2.2)	(2.7)	(1.1)	(1.3)	(1.5)	(2.0)
Adjusted R^2	0.102	0.132	0.132	0.133	0.0978	0.114	0.112	0.114
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	1,775,695	2,124,813	2,045,938	1,989,720
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0	384.9	530.5	685.1	779.0

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equation 2 for the selected sample of siblings and for sample of men for whom I observe ability scores. For both samples, the observations are limited to men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XVI: Within siblings estimates of the effect of education on gross wealth for men and women

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Men				Women			
High school dropout vs. compulsory school	30.7***	38.5***	10.6	-12.3	47.5***	65.1***	58.1***	32.2***
	(8.4)	(8.6)	(9.7)	(10.2)	(8.6)	(7.6)	(7.2)	(6.8)
High school vs. high school dropout	14.7*	47.7***	45.4***	72.5***	37.2***	48.8***	43.6***	72.2***
	(7.6)	(10.2)	(13.5)	(14.3)	(6.8)	(7.2)	(8.9)	(10.2)
Post high school vs. high school	83.1***	89.9***	147.4***	120.4***	76.5***	105.1***	133.4***	104.7***
	(9.7)	(11.8)	(14.8)	(16.6)	(8.6)	(8.8)	(10.7)	(11.8)
Adjusted R^2	0.478	0.456	0.444	0.447	0.457	0.480	0.466	0.439
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	150,291	233,269	260,418	287,303
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0	237.1	301.9	356.6	395.4

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equation 3 for the selected sample of brothers and sisters. Both samples consist of individuals aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XVII: The effect of education on gross wealth for the subsample of non-business owners

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	64.1***	48.3***	25.9***	9.7
	(7.9)	(8.6)	(8.9)	(9.8)
High school vs. high school dropout	36.3***	71.4***	98.1***	140.1***
	(10.8)	(10.4)	(10.9)	(12.6)
Post high school vs. high school	152.6***	204.4***	253.5***	249.3***
	(9.6)	(14.0)	(24.2)	(27.9)
1(low education both parents)	-37.1***	-75.2***	-120.6***	-157.2***
	(6.7)	(7.3)	(8.8)	(10.4)
1(no parent)	-119.2***	-177.1***	-181.1***	-174.7***
	(13.0)	(16.8)	(18.4)	(16.9)
1(missing parental education)	-81.2***	-119.5***	-129.7***	-115.5***
	(12.8)	(14.5)	(17.9)	(20.0)
1(parent died)	37.2***	14.6*	19.9**	12.6
	(8.8)	(7.7)	(8.2)	(7.9)
Ln(parental income)	43.5***	32.2***	37.7***	38.9***
	(8.1)	(8.2)	(6.1)	(5.0)
Ability score	35.6***	59.8***	79.3***	72.2***
	(1.7)	(1.8)	(2.3)	(2.4)
Adjusted R^2	0.102	0.134	0.131	0.134
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	27.6***	38.7***	18.6**	-7.3
	(8.3)	(8.4)	(9.4)	(9.8)
High school vs. high school dropout	16.0**	38.4***	38.9***	60.2***
	(7.3)	(9.9)	(12.9)	(13.8)
Post high school vs. high school	79.3***	103.8***	154.8***	119.7***
	(9.6)	(11.6)	(14.5)	(16.4)
Adjusted R^2	0.458	0.460	0.454	0.457
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	209,614	289,646	276,790	260,863
Mean DV compulsory school, .000 SEK	339.5	438.5	567.3	630.2

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD) excluding business wealth owners. Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XVIII: Within siblings estimates of the effect of education on gross wealth

Age:	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**	**60-64**
High school dropout vs. compulsory school	51.9***	56.9***	24.6***	9.7	-13.8	8.2	44.6***
	(7.6)	(7.6)	(8.1)	(8.9)	(9.2)	(10.0)	(12.1)
High school vs. high school dropout	20.5***	52.5***	51.1***	76.7***	103.8***	117.0***	137.8***
	(7.4)	(9.9)	(12.7)	(13.1)	(12.4)	(13.7)	(17.7)
Post high school vs. high school	85.7***	94.0***	148.2***	117.2***	104.4***	71.0***	76.9***
	(9.6)	(11.5)	(14.2)	(15.3)	(14.7)	(15.7)	(20.6)
Adjusted R^2	0.476	0.459	0.449	0.447	0.416	0.364	0.353
Cohort FE	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES
Observations	241,430	350,589	363,748	355,491	382,553	408,208	322,405
Mean DV compulsory school, .000 SEK	332.1	456.3	586.8	676.5	766.4	878.1	981.2

Note: The table reports within-siblings estimates of age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equation 3. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort and siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. The number of observations for men aged between 30 and 49 years old is different comparing to that reported in Table 1, since I do not drop individuals for whom I do not observe ability scores. Standard errors are heteroscedasticity robust and clustered at siblings level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XIX: The effect of education on gross wealth controlling for business sector

Age:	30-34	35-39	40-44	45-49
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	55.4***	43.0***	21.8***	15.0
	(8.4)	(8.1)	(8.0)	(9.3)
High school vs. high school dropout	46.9***	84.1***	114.8***	160.7***
	(10.3)	(11.6)	(10.9)	(12.4)
Post high school vs. high school	169.5***	225.2***	300.0***	313.8***
	(9.4)	(12.8)	(22.8)	(27.4)
1(low education both parents)	-41.0***	-83.9***	-134.9***	-172.7***
	(7.2)	(7.3)	(8.3)	(10.0)
1(no parent)	-101.8***	-135.5***	-149.5***	-151.2***
	(13.0)	(16.1)	(20.2)	(16.1)
1(missing parental education)	-61.5***	-84.7***	-127.1***	-135.8***
	(14.5)	(14.3)	(18.3)	(19.2)
1(parent died)	44.7***	26.3***	23.0***	15.7**
	(9.2)	(8.2)	(8.1)	(7.6)
Ln(parental income)	63.5***	55.7***	53.4***	47.3***
	(8.2)	(8.4)	(5.3)	(5.3)
Ability score	32.9***	55.6***	73.7***	71.1***
	(1.6)	(1.7)	(2.0)	(2.3)
Adjusted R^2	0.124	0.175	0.191	0.199
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Business sector FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	24.4***	39.0***	18.5**	1.8
	(8.4)	(8.4)	(9.4)	(9.8)
High school vs. high school dropout	16.2**	42.1***	41.3***	72.2***
	(7.6)	(10.1)	(13.1)	(14.0)
Post high school vs. high school	90.8***	113.0***	183.4***	164.7***
	(9.8)	(11.6)	(14.5)	(16.3)
Adjusted R^2	0.485	0.474	0.471	0.475
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Business sector FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b), including fixed effects of business sector of employment. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XX: The effect of education on the gross wealth defined at household level

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: OLS regression with controls for parental background and ability;							
	DV =household total assets				**DV = household total assets per capita**			
High school dropout vs. compulsory school	79.9***	75.1***	37.6**	11.1	39.0***	27.6***	13.5**	5.0
	(11.3)	(12.1)	(14.9)	(21.8)	(6.1)	(4.9)	(5.9)	(8.2)
High school vs. high school dropout	67.0***	153.8***	205.2***	260.7***	32.3***	63.2***	74.0***	95.4***
	(15.6)	(19.2)	(17.9)	(27.8)	(8.8)	(7.3)	(7.4)	(10.4)
Post high school vs. high school	208.7***	379.2***	514.2***	521.1***	137.8***	126.7***	141.5***	134.3***
	(13.0)	(23.6)	(36.4)	(40.7)	(7.6)	(9.0)	(11.8)	(10.8)
1(low education both parents)	-63.0***	-134.2***	-210.9***	-265.2***	-28.4***	-44.6***	-71.6***	-89.0***
	(8.7)	(10.9)	(13.1)	(19.9)	(4.7)	(4.3)	(4.9)	(7.6)
1(no parent)	-160.2***	-229.0***	-290.6***	-312.0***	-58.0***	-68.0***	-89.8***	-93.6***
	(20.6)	(26.9)	(33.2)	(27.2)	(10.9)	(10.7)	(10.7)	(10.8)
1(missing parental education)	-90.0***	-148.5***	-175.8***	-191.4***	-60.7***	-72.5***	-76.9***	-54.3***
	(17.7)	(21.7)	(30.1)	(35.8)	(10.1)	(8.5)	(9.9)	(14.6)
1(parent died)	8.8	-8.5	-8.0	-45.7**	19.5***	11.9**	12.4**	7.4
	(11.4)	(17.0)	(15.4)	(20.4)	(6.5)	(6.0)	(5.7)	(7.1)
Ln(parental income)	93.3***	95.8***	92.1***	74.9***	51.0***	37.4***	30.2***	26.4***
	(10.8)	(11.7)	(8.9)	(7.5)	(6.4)	(4.8)	(3.0)	(3.1)
Ability score	54.3***	96.7***	135.9***	140.5***	26.6***	35.4***	42.8***	41.3***
	(2.5)	(3.6)	(4.0)	(4.8)	(1.4)	(1.3)	(1.4)	(1.8)
Adjusted R^2	0.116	0.114	0.124	0.079	0.103	0.110	0.100	0.066
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression;							
	DV =household total assets				**DV = household total assets per capita**			
High school dropout vs. compulsory school	49.9***	83.4***	39.8***	25.3	29.7***	28.5***	6.5	-1.6
	(14.1)	(13.9)	(15.3)	(21.8)	(7.1)	(5.9)	(6.3)	(8.2)
High school vs. high school dropout	39.8***	87.8***	94.7***	105.3***	12.9**	34.2***	34.1***	45.5***
	(12.5)	(16.9)	(22.9)	(33.9)	(6.2)	(7.3)	(9.2)	(12.8)
Post high school vs. high school	142.3***	242.3***	380.8***	289.5***	81.2***	70.5***	97.2***	58.0***
	(16.7)	(20.7)	(27.5)	(41.3)	(8.6)	(8.6)	(10.2)	(15.1)
Adjusted R^2	0.331	0.267	0.286	0.199	0.368	0.288	0.276	0.192
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	205,918	306,699	303,700	292,542	205,918	306,699	303,700	292,542
Mean DV compulsory school, .000 SEK	594.6	787.2	1001	1112	249.0	291.4	366.7	434.7
Years of schooling partner CS	11.48	11.40	11.31	11.09	11.32	11.24	11.14	10.97
Years of schooling partner HSD	11.91	11.87	11.80	11.66	11.93	11.89	11.77	11.62
Years of schooling partner HS	12.61	12.57	12.51	12.27	12.59	12.48	12.38	12.20
Years of schooling partner PHS	13.96	13.92	13.79	13.66	14.13	13.89	13.72	13.59
Single %, CS	0.73	0.65	0.58	0.50	0.73	0.65	0.58	0.50
Single %, HSD	0.72	0.62	0.56	0.50	0.72	0.62	0.56	0.50
Single %, HS	0.71	0.57	0.49	0.44	0.71	0.57	0.49	0.44
Single %, PHS	0.60	0.45	0.39	0.35	0.60	0.45	0.39	0.35
HH size, CS	2.54	2.87	2.95	2.74	2.54	2.87	2.95	2.74
HH size, HSD	2.59	2.99	3.03	2.81	2.59	2.99	3.03	2.81
HH size, HS	2.41	2.95	3.13	2.97	2.41	2.95	3.13	2.97
HH size, PHS	2.38	3.11	3.38	3.29	2.38	3.11	3.38	3.29

Note: The table reports age-specific effects of levels of education the household total assets and household total assets per capita estimated from equations 2 (Panel a) and 3 (Panel b). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The households are defined for men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Households of men whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXI: The effect of education on the gross wealth controlling for risk aversion in the specification with parental background and ability controls

	DV = Gross wealth, .000SEK				
High school dropout vs. compulsory school	-27.4	-10.0	-10.4	0.1	6.3
	(81.0)	(79.8)	(82.6)	(81.8)	(81.4)
High school vs . high school dropout	62.3	37.1	69.5	26.0	46.9
	(79.9)	(82.2)	(82.1)	(82.3)	(81.6)
Post high school vs high school	264.2**	257.3**	253.7**	259.9**	262.7**
	(116.2)	(117.6)	(115.5)	(119.6)	(116.6)
1(low education both parents)	-145.4**	-157.2**	-153.5**	-152.7**	-152.4**
	(66.4)	(68.0)	(66.8)	(65.3)	(67.9)
1(no parent)	-164.3	-148.2	-139.8	-143.5	-118.3
	(129.0)	(132.7)	(134.1)	(126.9)	(136.3)
1(missing parental education)	-176.2	-179.0	-167.8	-206.5	-162.5
	(139.8)	(143.9)	(143.2)	(139.8)	(143.7)
1(parent died)	117.0*	108.9	119.0*	114.6*	117.5*
	(67.3)	(67.1)	(68.8)	(67.3)	(67.8)
Ln(parental income)	58.1	55.7	59.8	61.0	57.3
	(40.1)	(41.2)	(41.0)	(39.5)	(39.8)
Ability score	83.8***	72.1***	83.6***	77.4***	86.4***
	(17.8)	(17.6)	(18.2)	(17.9)	(18.0)
Risk aversion		-133.2***			
		(32.9)			
Propensity to take risk			16.5		
			(18.1)		
Propensity to take financial risk				68.7***	
				(14.6)	
Impatience					-100.6**
					(43.3)
Adjusted R^2	0.310	0.323	0.311	0.318	0.314
Cohort FE	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Observations	19,506	18,953	19,058	19,139	19,062
Mean DV compulsory school, .000 SEK	877.1	877.1	877.1	877.1	877.1

	Risk aversion (0-3)	**Propensity to take risk (1-8)**	**Propensity to take financial risk (1-8)**	**Impatience (0-3)**
CS	2.19	4.26	3.24	0.39
HSD	1.98	4.60	3.59	0.37
HS	1.81	4.73	4.06	0.24
PHS	1.53	5.19	4.49	0.25

Note: The table reports the effects of levels of education on gross wealth estimated from equation 2 controlling for the survey-based self-reported measures of risk-tolerance and impatience. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout, HSD*), individuals who finished high school (*high school, HS*), and individuals who attended or finished university (*post high school, PHS*). Omitted group are individuals with only compulsory school education (*compulsory school, CS*). The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort, childhood municipality and year in which wealth is observed. The survey measures are available for twins born between 1943 and 1958, while the measure of ability is only available for birth cohorts starting in 1950. Thus, the sample consists of men aged 41-57 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD) and who participated in the survey. Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXII: Within-siblings estimates of the effect of education on gross wealth

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Not controlling for ability				Controlling for ability			
High school dropout vs. compulsory school	30.7***	38.5***	10.6	-12.3	17.5**	17.6**	-12.6	-29.9***
	(8.4)	(8.6)	(9.7)	(10.2)	(8.5)	(8.7)	(9.7)	(10.2)
High school vs. high school dropout	14.7*	47.7***	45.4***	72.5***	-1.4	18.4*	10.2	44.5***
	(7.6)	(10.2)	(13.5)	(14.3)	(7.7)	(10.4)	(13.5)	(14.4)
Post high school vs. high school	83.1***	89.9***	147.4***	120.4***	57.4***	59.1***	114.9***	98.0***
	(9.7)	(11.8)	(14.8)	(16.6)	(10.0)	(11.8)	(14.8)	(16.6)
Ability score					26.6***	41.4***	55.2***	47.9***
					(2.1)	(2.2)	(2.8)	(3.0)
Adjusted R^2	0.478	0.456	0.444	0.447	0.479	0.458	0.447	0.449
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0	365.8	490.4	636.0	709.0

Note: The table reports within-siblings age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equation 3 without and with controls for ability. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout, HSD*), individuals who finished high school (*high school, HS*), and individuals who attended or finished university (*post high school, PHS*). Omitted group are individuals with only compulsory school education (*compulsory school, CS*). The estimated effects are incremental with respect to the previous level of education. All regressions include fixed effects for birth cohort and siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXIII: Within-siblings and within-twins estimates of the effect of education on gross wealth

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	Panel a: Within-siblings regression				Panel b: Within-twins regression			
High school dropout vs. compulsory school	30.7***	38.5***	10.6	-12.3	14.9	29.7	27.7	-23.9
	(8.4)	(8.6)	(9.7)	(10.2)	(33.1)	(42.5)	(42.4)	(43.4)
High school vs. high school dropout	14.7*	47.7***	45.4***	72.5***	23.5	60.0	142.8***	119.2*
	(7.6)	(10.2)	(13.5)	(14.3)	(36.8)	(52.6)	(52.5)	(67.5)
Post high school vs. high school	83.1***	89.9***	147.4***	120.4***	68.2	83.6	48.9	2.0
	(9.7)	(11.8)	(14.8)	(16.6)	(46.3)	(60.6)	(62.1)	(82.8)
Adjusted R^2	0.478	0.456	0.444	0.447	0.585	0.521	0.514	0.539
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	NO	NO	NO	NO
Twins-Year FE	NO	NO	NO	NO	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	15,215	20,138	20,795	21,474
Mean DV compulsory school, .000 SEK	365.8	490.4	636.0	709.0	301.2	427.7	518.0	695.2
% siblings/twins with different levels of education, conditional on brother education:								
High school drop out	0.13	0.17	0.23	0.28	0.09	0.12	0.15	0.21
High school	0.29	0.30	0.30	0.31	0.20	0.22	0.23	0.24
Post high school	0.27	0.26	0.26	0.26	0.18	0.20	0.21	0.22

Note: The table reports within siblings-year and within twins-year age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equation 3. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes includes siblings-year fixed effects, regression (b) includes twins-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXIV: The heterogeneity of the effect of education on gross wealth by parental background

Age:	30-34				35-39				40-44				45-49			
Sample:	Low education	No parent	Missing education	High education	Low education	No parent	Missing education	High education	Low education	No parent	Missing education	High education	Low education	No parent	Missing education	High education
High school dropout vs. compulsory school	57.1***	58.0***	48.1***	87.9***	25.9***	65.1***	42.5**	75.4***	0.1	30.6***	29.8	57.1***	-14.6**	-28.1***	-18.8	23.3
	(7.0)	(7.9)	(11.2)	(6.8)	(6.4)	(10.5)	(21.5)	(8.9)	(7.9)	(10.8)	(35.0)	(13.3)	(7.3)	(10.0)	(24.3)	(15.4)
High school vs . high school dropout	9.4	49.9***	51.3***	41.5***	39.7***	105.1***	162.8***	112.2***	82.9***	142.3***	165.1***	143.1***	134.7***	199.1***	170.9***	191.4***
	(7.8)	(8.8)	(15.1)	(7.7)	(10.1)	(12.1)	(27.1)	(10.9)	(11.1)	(17.5)	(35.6)	(12.3)	(12.0)	(26.1)	(29.2)	(16.7)
Post high school vs high school	95.0***	173.9***	223.2***	157.4***	126.0***	238.8***	223.8***	192.3***	142.2***	291.4***	237.2***	236.8***	142.1***	229.9***	276.6***	252.3***
	(11.1)	(19.3)	(15.0)	(8.3)	(9.6)	(18.6)	(26.7)	(10.7)	(11.7)	(22.0)	(32.6)	(19.8)	(12.3)	(20.4)	(48.6)	(25.4)
1(parent died)	20.9***	48.5***	38.6***	75.2***	20.4***	13.6	19.2	63.5***	32.7***	25.9**	39.6**	58.0***	36.3***	23.9*	87.5***	54.0***
	(6.4)	(14.2)	(12.5)	(5.5)	(5.4)	(11.5)	(18.3)	(5.7)	(5.7)	(11.7)	(16.6)	(5.3)	(5.9)	(13.5)	(18.3)	(6.0)
Ln(parental income)	-16.8*	6.0***	37.9***	147.4***	-39.9***	3.8***	30.5***	158.3***	7.2	5.8***	28.9***	184.5***	85.8***	9.7***	43.8***	241.6***
	(8.6)	(1.3)	(5.4)	(12.3)	(10.2)	(1.3)	(7.3)	(15.0)	(10.2)	(1.2)	(7.6)	(16.1)	(7.5)	(1.0)	(10.4)	(19.6)
Ability score	39.1***	40.2***	47.0***	38.4***	59.3***	54.0***	69.2***	63.4***	73.4***	70.6***	87.5***	88.5***	72.2***	73.6***	86.6***	88.3***
	(1.5)	(2.6)	(3.3)	(1.2)	(1.5)	(2.9)	(3.6)	(1.5)	(1.6)	(4.0)	(4.4)	(1.7)	(1.6)	(4.4)	(4.7)	(2.2)
Adjusted R^2	0.063	0.111	0.105	0.097	0.074	0.128	0.133	0.108	0.076	0.119	0.117	0.105	0.086	0.116	0.111	0.111
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	346,797	120,092	117,631	1,191,174	616,629	136,291	76,623	1,295,270	748,250	136,216	85,930	1,075,538	816,505	179,335	138,051	855,828
Mean DV compulsory school, .000 SEK	372.1	250.7	358.8	429.3	523.8	330.8	455.4	595.8	677.1	449.4	607.5	777.9	772.5	553.7	777.9	901.0

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) for the subsamples individuals with different predetermined parental backgrounds: *low education* corresponds to dummy "low education both parents" from the baseline specification; *no parent* corresponds to dummy "no parent" from the baseline specification; *missing* corresponds to dummy "missing parental education" from the baseline specification; *high education* sample comprises the omitted group in the baseline specification and consists of individuals whose both parents were present in the household in his adolescence and have high school or university educational attainment. The detailed information on the sample characteristics are in Table IA.IV. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort, childhood municipality and year in which wealth is observed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXV: The heterogeneity of the effect of education on gross wealth by parental income

Age:	30-34		35-39		40-44		45-49	
Sample:	Low income	High income	Low income	High income	Low income	High income	Low income	High income
High school dropout vs. compulsory school	76.8***	78.6***	54.3***	60.1***	17.1*	36.5***	-13.1*	0.5
	(4.6)	(9.7)	(6.3)	(10.4)	(8.8)	(12.3)	(7.3)	(12.1)
High school vs . high school dropout	19.0***	37.9***	64.1***	96.0***	92.1***	122.6***	131.4***	168.4***
	(5.9)	(7.5)	(9.6)	(10.6)	(10.7)	(11.7)	(10.5)	(15.7)
Post high school vs high school	92.3***	148.7***	107.5***	190.0***	119.2***	237.8***	141.9***	229.1***
	(7.5)	(7.8)	(10.3)	(8.4)	(15.9)	(14.9)	(15.6)	(20.6)
1(low education both parents)	-13.7***	10.9*	-53.1***	-3.7	-113.5***	-25.5***	-140.3***	-41.0***
	(4.9)	(6.1)	(7.8)	(6.3)	(10.5)	(6.8)	(10.4)	(8.7)
1(no parent)	-155.4***	-94.0***	-233.2***	-137.3***	-299.3***	-172.1***	-259.9***	-176.4***
	(6.8)	(7.5)	(12.8)	(10.9)	(17.1)	(12.1)	(14.3)	(10.8)
1(missing parental education)	-92.3***	-64.7***	-122.9***	-66.6***	-159.1***	-74.2***	-120.9***	6.5
	(5.8)	(7.4)	(11.0)	(10.7)	(14.0)	(13.8)	(12.6)	(16.1)
1(parent died)	32.8***	70.8***	24.8***	54.2***	26.9***	56.6***	30.9***	54.6***
	(5.3)	(6.3)	(6.0)	(4.5)	(6.3)	(4.8)	(6.4)	(5.0)
Ln(parental income)	-8.0***	749.3***	-12.2***	823.4***	-8.1***	810.6***	2.0*	759.2***
	(1.6)	(30.5)	(1.3)	(31.9)	(1.3)	(28.1)	(1.1)	(33.7)
Ability score	38.0***	31.8***	60.5***	52.1***	78.3***	74.7***	72.5***	77.2***
	(1.2)	(1.1)	(1.4)	(1.3)	(1.7)	(1.4)	(1.7)	(1.9)
Adjusted R^2	0.064	0.131	0.076	0.155	0.082	0.140	0.092	0.129
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	847,698	927,997	940,471	1,184,342	881,949	1,163,988	858,868	1,130,852
Mean DV compulsory school, .000 SEK	338.5	463.7	510.9	558.4	662.0	716.6	717.9	859.4

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) for the subsamples individuals whose parents had income lower than the median income within given age group (*low income*) and for those whose parents had income higher or equal than the median income within given age group (*high income*). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort, childhood municipality and year in which wealth is observed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXVI: The heterogeneity of the effect of education on gross wealth by ability

Age:	30-34		35-39		40-44		45-49	
Sample:	Low ability	High ability	Low ability	High ability	Low ability	High ability	Low ability	High ability
High school dropout vs. compulsory school	67.2***	73.8***	38.1***	68.0***	3.3	54.5***	-15.1	15.1
	(5.0)	(9.2)	(5.9)	(12.4)	(10.0)	(12.5)	(9.3)	(10.6)
High school vs . high school dropout	33.8***	45.9***	91.7***	100.5***	121.2***	124.0***	175.5***	170.7***
	(8.3)	(7.1)	(11.7)	(10.6)	(13.0)	(12.3)	(16.7)	(14.7)
Post high school vs high school	125.9***	171.1***	132.2***	203.4***	139.8***	239.3***	114.0***	251.5***
	(11.8)	(8.0)	(13.5)	(9.7)	(17.5)	(17.9)	(22.0)	(22.8)
1(low education both parents)	-31.2***	-33.1***	-54.7***	-84.5***	-93.4***	-147.8***	-137.9***	-191.1***
	(4.3)	(5.6)	(5.4)	(6.3)	(7.3)	(7.3)	(9.6)	(7.7)
1(no parent)	-160.4***	-135.7***	-210.8***	-204.2***	-250.5***	-249.6***	-251.4***	-237.4***
	(5.7)	(7.4)	(7.3)	(8.7)	(9.0)	(10.5)	(10.3)	(10.1)
1(missing parental education)	-112.6***	-99.8***	-119.1***	-113.1***	-136.8***	-147.1***	-131.8***	-103.4***
	(7.2)	(8.6)	(9.8)	(12.6)	(11.1)	(12.9)	(13.3)	(15.1)
1(parent died)	18.0***	85.2***	-0.5	73.6***	10.9**	64.8***	19.2***	49.2***
	(5.3)	(5.7)	(5.1)	(5.3)	(5.2)	(5.1)	(6.3)	(5.1)
Ln(parental income)	13.6***	63.2***	2.8	56.5***	7.8***	46.2***	16.4***	43.2***
	(2.0)	(5.5)	(2.2)	(6.0)	(1.9)	(4.7)	(1.5)	(3.3)
Ability score	50.8***	28.9***	74.1***	54.5***	89.6***	83.2***	86.7***	84.6***
	(1.6)	(2.0)	(2.1)	(2.2)	(2.7)	(2.3)	(2.9)	(2.7)
Adjusted R^2	0.068	0.091	0.067	0.100	0.063	0.097	0.074	0.102
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	694,660	1,081,035	755,222	1,369,591	741,186	1,304,751	721,948	1,267,772
Mean DV compulsory school, .000 SEK	344.9	487.3	475.2	652.8	620.8	801.3	699.5	903.1

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) for the subsamples individuals whose ability is lower than the median ability within given age group (*low ability*) and for those whose ability is higher or equal than the median ability within given age group (*high ability*). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort, childhood municipality and year in which wealth is observed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXVII: The heterogeneity of the effect of education on gross wealth by year

Age:	30-34	35-39	40-44	45-49
	DV = GW, .000SEK			
High school dropout vs. compulsory school	71.7***	40.5***	22.1***	-21.5***
	(5.4)	(7.8)	(7.5)	(7.0)
*2000	-15.9***	-17.0***	-3.5	-13.4***
	(3.5)	(3.5)	(5.2)	(3.7)
*2001	-14.2***	-11.2**	-8.0	-9.5*
	(4.3)	(5.0)	(5.7)	(5.5)
*2002	-9.7*	-7.0	-15.9**	2.1
	(5.6)	(5.5)	(7.3)	(7.3)
*2003	-0.3	5.3	-1.3	8.8
	(5.7)	(6.9)	(8.7)	(8.3)
*2004	0.7	22.1***	2.7	36.1***
	(6.1)	(8.4)	(9.8)	(11.1)
*2005	6.3	58.1***	9.3	58.7***
	(7.5)	(10.4)	(10.8)	(14.6)
*2006	34.4***	71.2***	31.6***	69.6***
	(10.8)	(11.7)	(11.4)	(14.5)
*2007	16.0	71.3***	21.2*	52.1***
	(14.1)	(12.3)	(11.8)	(17.0)
High school vs . high school dropout	45.0***	63.5***	85.8***	99.7***
	(7.0)	(7.8)	(9.7)	(9.4)
*2000	-4.7	0.4	7.8	24.4***
	(4.5)	(6.2)	(6.2)	(9.4)
*2001	3.9	9.3	16.4*	40.4***
	(5.9)	(7.8)	(8.5)	(12.8)
*2002	2.8	13.7	18.7*	43.0***
	(7.3)	(10.9)	(10.0)	(15.3)
*2003	0.7	28.5**	27.6**	58.5***
	(7.5)	(11.2)	(11.2)	(16.3)
*2004	9.3	45.8***	36.3***	77.7***
	(7.7)	(12.3)	(13.1)	(16.2)
*2005	21.6**	65.2***	71.9***	116.4***
	(8.4)	(13.6)	(16.8)	(16.2)
*2006	24.7**	90.0***	82.9***	148.9***
	(11.9)	(15.6)	(18.4)	(21.4)
*2007	19.9*	102.6***	110.0***	153.1***
	(11.5)	(17.6)	(21.1)	(27.5)
Post high school vs high school	62.5***	109.3***	102.6***	141.0***
	(8.6)	(14.1)	(22.7)	(20.5)
*2000	35.3***	43.4***	58.7***	34.4***
	(5.2)	(5.8)	(8.7)	(7.3)
*2001	57.7***	40.7***	71.9***	36.1***
	(6.6)	(6.9)	(9.3)	(9.3)
*2002	75.1***	45.6***	78.5***	22.6**
	(7.5)	(10.1)	(11.4)	(10.7)
*2003	97.8***	66.3***	118.6***	78.6***
	(8.7)	(11.1)	(12.0)	(12.1)
*2004	141.0***	92.4***	165.3***	120.3***
	(10.4)	(12.3)	(15.6)	(16.5)
*2005	192.9***	141.7***	202.5***	157.6***
	(11.0)	(11.9)	(16.7)	(21.2)
*2006	227.4***	181.8***	222.6***	185.5***
	(13.2)	(13.4)	(17.8)	(19.3)
*2007	275.2***	223.8***	256.0***	261.3***
	(16.0)	(13.0)	(18.7)	(20.3)
1(low education both parents)	-35.1***	-75.0***	-129.3***	-173.2***
	(4.1)	(5.0)	(6.0)	(6.8)
1(no parent)	-148.9***	-208.5***	-255.1***	-251.7***
	(5.4)	(6.3)	(8.3)	(8.0)
1(missing parental education)	-108.7***	-124.4***	-152.9***	-121.1***
	(7.0)	(9.2)	(9.5)	(9.8)
1(parent died)	55.9***	44.6***	44.2***	38.6***
	(4.5)	(4.4)	(4.0)	(4.5)
Ln(parental income)	35.1***	29.2***	26.8***	29.8***
	(3.3)	(3.9)	(3.3)	(2.2)
Ability score	40.0***	62.7***	82.7***	83.1***
	(1.1)	(1.3)	(1.5)	(2.0)
1(year=2000)	49.8***	54.8***	32.9***	39.6***
	(3.6)	(3.9)	(4.0)	(6.4)
1(year=2001)	95.8***	95.9***	73.8***	69.4***
	(6.3)	(6.0)	(7.7)	(7.1)
1(year=2002)	162.6***	154.3***	130.3***	97.8***
	(7.5)	(8.8)	(9.7)	(8.7)
1(year=2003)	196.6***	183.7***	163.0***	136.7***
	(8.8)	(9.2)	(10.8)	(10.4)
1(year=2004)	278.9***	250.0***	237.5***	192.8***
	(10.3)	(11.4)	(13.8)	(11.1)
1(year=2005)	390.8***	335.6***	354.5***	300.9***
	(11.4)	(14.3)	(14.6)	(11.8)
1(year=2006)	525.1***	474.7***	497.5***	436.6***
	(14.1)	(16.9)	(16.6)	(14.3)
1(year=2007)	670.7***	594.8***	633.2***	569.7***
	(20.4)	(19.5)	(20.7)	(17.1)
Adjusted R^2	0.0996	0.116	0.114	0.116
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Observations	1,775,695	2,124,813	2,045,938	1,989,720
Mean DV CS in 1999, .000 SEK	303.3	439.4	556.4	647.4

Note: The table reports age and year-specific effects of levels of education on gross wealth (measured in thousand SEK). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort and childhood municipality. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXVIII: The heterogeneity of the effect of education on gross wealth by year

Age:	30-34	35-39	40-44	45-49	30-34	35-39	40-44	45-49
	DV = FW, .000SEK				DV = RE, .000SEK			
High school dropout vs. compulsory school	23.8***	17.7***	16.4***	9.0***	47.8***	22.8***	5.6	-30.5***
	(1.4)	(2.0)	(2.2)	(2.5)	(4.8)	(7.0)	(6.5)	(6.0)
*2000	-8.2***	-5.8***	-4.3***	-7.8***	-7.7**	-11.2***	0.8	-5.5*
	(1.1)	(1.7)	(1.6)	(1.8)	(3.1)	(2.7)	(4.7)	(3.3)
*2001	-10.8***	-5.8***	-8.6***	-9.2***	-3.4	-5.4	0.5	-0.3
	(1.6)	(1.8)	(1.9)	(2.2)	(3.9)	(4.5)	(5.2)	(4.9)
*2002	-14.5***	-11.3***	-12.7***	-9.0***	4.8	4.3	-3.3	11.2*
	(2.0)	(2.1)	(2.3)	(2.4)	(5.0)	(4.9)	(6.9)	(6.5)
*2003	-9.7***	-7.2***	-10.0***	-7.2**	9.4*	12.5**	8.7	16.0**
	(1.5)	(2.2)	(2.5)	(2.9)	(5.4)	(6.1)	(8.0)	(7.3)
*2004	-10.3***	-7.3***	-8.7***	-2.0	10.9*	29.4***	11.4	38.1***
	(1.5)	(2.5)	(2.8)	(3.2)	(5.8)	(7.7)	(8.5)	(10.0)
*2005	-11.8***	-0.7	-4.2	7.1*	18.1***	58.8***	13.5	51.6***
	(2.0)	(3.0)	(2.9)	(3.7)	(6.9)	(9.3)	(9.5)	(13.3)
*2006	-8.0***	7.1*	4.2	12.5***	42.4***	64.1***	27.4***	57.1***
	(3.1)	(3.7)	(3.2)	(3.7)	(9.7)	(10.3)	(10.0)	(12.9)
*2007	-7.3**	3.2	0.3	10.1***	23.3*	68.1***	20.9**	42.0***
	(2.9)	(4.1)	(3.1)	(3.6)	(13.2)	(11.0)	(10.4)	(15.8)
High school vs . high school dropout	44.2***	52.3***	50.8***	51.7***	0.8	11.2*	35.1***	48.0***
	(3.7)	(3.4)	(4.2)	(4.2)	(5.1)	(6.3)	(8.1)	(7.9)
*2000	-9.5***	-14.8***	-6.8**	-3.6	4.8	15.2***	14.5***	28.0***
	(2.3)	(2.8)	(3.2)	(3.0)	(3.9)	(5.8)	(5.4)	(7.8)
*2001	-17.4***	-20.7***	-11.7***	-11.4***	21.2***	30.0***	28.1***	51.8***
	(2.7)	(3.2)	(3.6)	(3.8)	(5.7)	(8.1)	(7.5)	(11.4)
*2002	-27.5***	-31.3***	-27.0***	-25.9***	30.2***	45.0***	45.7***	68.9***
	(3.4)	(3.1)	(4.1)	(4.1)	(7.2)	(11.1)	(9.6)	(13.8)
*2003	-23.5***	-21.9***	-20.9***	-13.9***	24.2***	50.4***	48.5***	72.4***
	(3.7)	(3.3)	(4.4)	(4.5)	(7.5)	(10.4)	(10.8)	(14.1)
*2004	-23.9***	-20.1***	-17.1***	-10.5**	33.3***	65.9***	53.3***	88.3***
	(3.8)	(3.2)	(4.3)	(5.2)	(7.9)	(11.3)	(12.6)	(13.7)
*2005	-17.7***	-7.2*	-2.5	8.2	39.4***	72.4***	74.4***	108.2***
	(3.8)	(3.7)	(4.7)	(6.1)	(8.7)	(12.5)	(15.4)	(13.5)
*2006	-13.2***	-2.4	5.1	27.0***	38.0***	92.4***	77.8***	121.9***
	(3.5)	(4.3)	(4.8)	(7.7)	(12.0)	(13.5)	(17.1)	(16.6)
*2007	-17.3***	-6.1	8.6*	21.3***	37.1***	108.7***	101.4***	131.8***
	(3.7)	(3.9)	(4.7)	(7.6)	(11.5)	(16.6)	(20.0)	(22.8)
Post high school vs high school	73.6***	84.8***	85.5***	98.3***	-11.2	24.5**	17.1	42.7***
	(3.9)	(3.9)	(6.9)	(8.1)	(6.8)	(11.6)	(17.3)	(14.0)
*2000	-2.3	1.0	0.7	-6.1	37.6***	42.4***	58.0***	40.4***
	(2.7)	(3.5)	(3.5)	(4.4)	(3.9)	(4.8)	(7.9)	(4.7)
*2001	-7.0**	-15.8***	-10.2**	-18.1***	64.8***	56.5***	82.1***	54.2***
	(3.3)	(3.5)	(4.5)	(5.8)	(5.5)	(6.3)	(8.2)	(6.9)
*2002	-20.4***	-34.1***	-29.5***	-40.3***	95.5***	79.6***	108.0***	62.8***
	(4.2)	(3.5)	(5.6)	(5.8)	(6.1)	(8.8)	(9.4)	(9.0)
*2003	-4.9	-24.0***	-11.6**	-24.1***	102.7***	90.3***	130.2***	102.7***
	(4.3)	(3.9)	(5.1)	(5.7)	(6.7)	(9.4)	(10.2)	(10.7)
*2004	5.6	-18.8***	-6.6	-12.7**	135.4***	111.2***	171.8***	133.0***
	(4.5)	(4.3)	(6.7)	(6.5)	(8.0)	(10.0)	(12.1)	(14.9)
*2005	32.5***	1.5	11.3	5.9	160.4***	140.2***	191.2***	151.7***
	(4.9)	(4.5)	(7.0)	(7.5)	(8.3)	(9.8)	(12.8)	(19.7)
*2006	47.5***	18.4***	20.8***	10.8	179.9***	163.4***	201.8***	174.7***
	(5.9)	(5.5)	(7.4)	(8.1)	(9.8)	(10.2)	(13.3)	(17.4)
*2007	50.4***	21.9***	16.5**	16.4*	224.8***	201.9***	239.5***	244.9***
	(6.5)	(4.6)	(7.2)	(8.4)	(12.1)	(11.1)	(14.1)	(16.5)
1(low education both parents)	4.2***	3.2**	-1.5	3.8***	-25.7***	-62.3***	-108.0***	-143.5***
	(1.0)	(1.5)	(1.4)	(1.2)	(3.4)	(4.3)	(5.3)	(5.9)
1(no parent)	8.9***	6.4***	2.5	5.1***	-124.1***	-181.1***	-225.2***	-219.2***
	(1.6)	(1.4)	(1.6)	(1.6)	(5.0)	(5.8)	(7.6)	(7.2)
1(missing parental education)	8.8***	6.6***	-1.3	-5.7***	-90.9***	-110.3***	-126.9***	-97.2***
	(1.8)	(1.6)	(2.1)	(2.0)	(7.0)	(7.8)	(8.1)	(8.5)
1(parent died)	9.1***	11.5***	9.6***	10.8***	34.0***	26.5***	24.9***	19.0***
	(1.4)	(1.9)	(2.1)	(2.2)	(3.8)	(3.9)	(3.6)	(4.7)
Ln(parental income)	15.6***	17.8***	15.3***	15.9***	21.9***	17.1***	15.8***	20.1***
	(1.6)	(2.2)	(2.4)	(2.7)	(3.1)	(3.4)	(2.8)	(2.0)
Ability score	36.0***	33.8***	38.8***	38.4***	31.4***	50.5***	66.1***	65.1***
	(2.0)	(2.5)	(2.6)	(3.1)	(0.9)	(1.0)	(1.2)	(1.7)
1(year=2000)	63.9***	60.3***	71.2***	72.1***	45.6***	51.6***	34.4***	35.8***
	(3.0)	(3.3)	(3.0)	(3.2)	(3.4)	(4.1)	(3.6)	(5.9)
1(year=2001)	67.9***	69.7***	86.1***	89.6***	86.9***	89.5***	71.3***	64.3***
	(2.7)	(3.4)	(3.0)	(3.3)	(5.7)	(6.0)	(7.1)	(6.8)
1(year=2002)	-9.4***	-12.7***	-21.3***	-29.7***	153.8***	147.7***	131.5***	103.5***
	(1.1)	(1.2)	(1.6)	(2.3)	(7.2)	(8.7)	(8.9)	(8.2)
1(year=2003)	-24.8***	-27.4***	-29.9***	-32.6***	187.5***	172.3***	153.4***	125.9***
	(1.1)	(1.4)	(1.9)	(2.6)	(8.4)	(9.0)	(9.9)	(9.8)
1(year=2004)	-17.8***	-14.1***	-25.9***	-24.0***	263.3***	232.2***	222.1***	176.9***
	(2.5)	(4.0)	(3.1)	(3.0)	(9.8)	(11.2)	(12.7)	(10.7)
1(year=2005)	22.0***	18.1***	19.3***	19.6***	354.8***	301.8***	315.7***	262.5***
	(1.3)	(1.2)	(1.4)	(1.6)	(11.0)	(13.6)	(13.4)	(10.8)
1(year=2006)	13.3***	12.1***	11.1***	9.7***	461.3***	414.4***	426.2***	364.5***
	(0.8)	(0.9)	(0.6)	(0.5)	(13.1)	(15.5)	(15.3)	(13.7)
1(year=2007)	8.7***	12.2***	16.6***	18.0***	602.9***	525.1***	547.1***	480.0***
	(0.3)	(0.4)	(0.4)	(0.5)	(19.8)	(19.1)	(19.6)	(16.3)
Adjusted R^2	0.0491	0.0485	0.0431	0.0429	0.0838	0.101	0.102	0.106
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,775,695	2,124,813	2,045,938	1,989,720	1,775,695	2,124,813	2,045,938	1,989,720
Mean DV CS in 1999, .000 SEK	53.80	75.39	103.3	134.4	249.5	364.1	453.2	512.9

Note: The table reports age and year-specific effects of levels of education on financial weatlh and real estate wealth (measured in thousand SEK). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort and childhood municipality. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXIX: The heterogeneity of the effect of education on gross wealth by geographical area

Age:	**30-34**	**35-39**	**40-44**	**45-49**
Panel a: OLS regression with controls for parental background and ability				
High school dropout vs. compulsory school	57.4***	32.7***	0.8	-21.6**
	(8.7)	(9.0)	(9.5)	(10.2)
*4 big cities	26.3	63.8***	112.8***	124.7***
	(23.9)	(19.1)	(25.0)	(19.0)
High school vs . high school dropout	26.0***	74.5***	114.4***	160.3***
	(9.3)	(11.7)	(13.1)	(14.2)
*4 big cities	141.7***	155.2***	105.7***	94.0***
	(17.8)	(27.3)	(30.2)	(26.9)
Post high school vs high school	111.9***	139.1***	167.3***	157.9***
	(10.2)	(12.5)	(18.9)	(21.5)
*4 big cities	123.5***	177.7***	317.0***	396.0***
	(24.3)	(24.4)	(42.3)	(44.4)
1(low education both parents)	-44.5***	-89.6***	-143.1***	-185.8***
	(7.5)	(7.8)	(9.0)	(11.2)
1(no parent)	-122.3***	-174.9***	-196.6***	-187.7***
	(13.0)	(17.6)	(20.3)	(18.4)
1(missing parental education)	-77.7***	-104.1***	-146.0***	-141.7***
	(13.7)	(14.6)	(19.5)	(20.4)
1(parent died)	40.9***	19.3**	15.1*	6.7
	(9.4)	(8.1)	(8.3)	(8.3)
Ln(parental income)	60.3***	48.7***	50.7***	50.4***
	(8.6)	(9.3)	(6.2)	(5.8)
Ability score	35.5***	61.5***	83.9***	80.9***
	(1.7)	(1.8)	(2.3)	(2.8)
1(=4 big cities)	-155.2***	-226.6***	-268.7***	-260.3***
	(35.1)	(34.1)	(36.3)	(31.3)
Adjusted R^2	0.105	0.135	0.135	0.137
Cohort FE	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Panel b: Within-siblings regression				
High school dropout vs. compulsory school	26.2***	33.4***	2.3	-19.2*
	(8.9)	(9.1)	(10.3)	(10.7)
*4 big cities	27.1	34.3	60.1**	50.3*
	(25.3)	(25.6)	(28.8)	(30.1)
High school vs . high school dropout	10.8	45.5***	52.5***	74.9***
	(7.9)	(11.0)	(14.5)	(15.3)
*4 big cities	48.9**	47.6*	4.0	36.8
	(21.1)	(28.7)	(36.4)	(42.5)
Post high school vs high school	63.3***	61.5***	92.2***	58.2***
	(10.2)	(12.7)	(16.1)	(17.8)
*4 big cities	89.8***	128.8***	274.8***	323.6***
	(22.9)	(30.0)	(38.4)	(45.0)
1(=4 big cities)	-134.0***	-121.0***	-167.0***	-152.0***
	(24.1)	(23.1)	(26.3)	(26.7)
Adjusted R^2	0.479	0.457	0.445	0.448
Cohort FE	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO
Year FE	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	371.1	500.6	648.4	722.9

Note: The table reports age-specific effects of levels of education on gross wealth (measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). *Big cities* is a dummy equal to one if an individual resided in Stockholm, Uppsala, Malmö, or Gothenburg (four largest Swedish cities) in any given year. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXX: The heterogeneity of the effect of education on financial wealth and real estate wealth by geographical area

Age:	**30-34**	**35-39**	**40-44**	**45-49**	**30-34**	**35-39**	**40-44**	**45-49**
	Panel a: OLS regression with controls for parental background and ability; DV = financial wealth, .000SEK				**DV = real estate wealth, .000SEK**			
High school dropout vs. compulsory school	9.7***	9.3***	7.4***	0.6	47.7***	23.4***	-6.6	-22.2**
	(2.8)	(2.3)	(2.7)	(2.9)	(7.5)	(7.9)	(8.6)	(9.1)
*4 big cities	12.6*	6.0	16.4***	14.7**	13.7	57.8***	96.4***	110.0***
	(7.1)	(6.8)	(5.5)	(6.6)	(19.1)	(15.4)	(22.6)	(16.2)
High school vs . high school dropout	21.1***	26.0***	35.0***	43.5***	4.9	48.5***	79.4***	116.8***
	(3.1)	(3.1)	(4.1)	(5.6)	(8.2)	(10.4)	(11.6)	(12.4)
*4 big cities	17.4**	32.4***	29.4***	25.2**	124.3***	122.8***	76.3***	68.8***
	(7.3)	(7.4)	(9.9)	(11.8)	(14.3)	(24.2)	(27.4)	(23.0)
Post high school vs high school	64.1***	66.4***	68.6***	66.1***	47.8***	72.6***	98.7***	91.8***
	(3.7)	(3.9)	(6.0)	(7.2)	(9.0)	(10.9)	(15.9)	(17.6)
*4 big cities	51.7***	41.7***	71.2***	68.0***	71.8***	136.0***	245.8***	328.0***
	(8.1)	(8.0)	(13.7)	(12.2)	(23.4)	(20.9)	(36.9)	(41.6)
1(low education both parents)	-9.9***	-13.6***	-20.0***	-29.7***	-34.6***	-75.9***	-123.1***	-156.0***
	(2.4)	(2.1)	(2.6)	(3.6)	(6.4)	(7.1)	(8.0)	(9.6)
1(no parent)	-11.8***	-14.4***	-26.8***	-20.3***	-110.4***	-160.6***	-169.8***	-167.4***
	(4.1)	(5.3)	(6.8)	(6.5)	(11.7)	(15.4)	(16.4)	(14.9)
1(missing parental education)	1.7	2.0	-16.3***	-30.0***	-79.4***	-106.0***	-129.8***	-111.7***
	(6.2)	(6.7)	(5.8)	(6.2)	(13.3)	(12.9)	(17.8)	(18.4)
1(parent died)	15.0***	12.8***	7.4**	10.1***	25.9***	6.5	7.7	-3.4
	(3.2)	(3.0)	(3.1)	(3.2)	(8.1)	(6.9)	(7.1)	(7.1)
Ln(parental income)	23.9***	20.0***	16.1***	14.4***	36.4***	28.7***	34.5***	35.9***
	(2.9)	(2.2)	(2.4)	(1.7)	(6.6)	(7.9)	(5.2)	(4.5)
Ability score	7.6***	11.8***	16.5***	17.3***	27.9***	49.7***	67.4***	63.6***
	(0.6)	(0.6)	(0.9)	(0.9)	(1.5)	(1.6)	(1.9)	(2.2)
1(=4 big cities)	-14.5**	-7.8	-16.3**	-12.4*	-140.7***	-218.9***	-252.4***	-247.9***
	(5.9)	(7.7)	(7.1)	(6.8)	(30.9)	(28.1)	(31.5)	(30.3)
Adjusted R^2	0.053	0.056	0.050	0.052	0.088	0.117	0.121	0.125
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
	Panel b: Within-siblings regression; DV = financial wealth, .000SEK				**DV = real estate wealth, .000SEK**			
High school dropout vs. compulsory school	4.0	7.6***	-2.2	-2.5	22.2***	25.8***	4.5	-16.7*
	(2.8)	(2.6)	(3.3)	(3.4)	(8.3)	(8.5)	(9.5)	(9.8)
*4 big cities	18.6**	-0.1	19.6*	17.8*	8.5	34.4	40.5	32.5
	(9.3)	(6.8)	(10.2)	(10.5)	(22.9)	(23.9)	(25.6)	(26.6)
High school vs . high school dropout	7.4***	15.5***	20.5***	22.1***	3.4	30.0***	32.0**	52.9***
	(2.7)	(3.7)	(5.1)	(5.7)	(7.4)	(10.0)	(13.0)	(13.4)
*4 big cities	1.2	22.6**	-5.6	-7.3	47.7**	25.1	9.6	44.0
	(7.4)	(10.2)	(13.4)	(16.5)	(19.7)	(25.3)	(32.2)	(36.8)
Post high school vs high school	34.2***	33.9***	37.5***	29.9***	29.0***	27.7**	54.7***	28.3*
	(3.7)	(4.6)	(6.2)	(6.8)	(9.4)	(11.4)	(14.2)	(15.5)
*4 big cities	19.0**	12.0	47.1***	53.0***	70.7***	116.8***	227.8***	270.6***
	(9.6)	(11.7)	(15.9)	(19.2)	(20.3)	(26.0)	(33.3)	(38.0)
1(=4 big cities)	-12.4	14.8**	1.5	1.6	-121.6***	-135.8***	-168.5***	-153.6***
	(9.1)	(6.2)	(9.6)	(9.7)	(21.7)	(21.6)	(23.1)	(23.1)
Adjusted R^2	0.492	0.381	0.329	0.303	0.404	0.405	0.404	0.415
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	NO	NO	NO	NO	NO	NO	NO	NO
Year FE	NO	NO	NO	NO	NO	NO	NO	NO
Siblings-Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	227,382	325,962	318,476	304,763	227,382	325,962	318,476	304,763
Mean DV compulsory school, .000 SEK	62.30	71.35	98.60	122.7	308.8	429.2	549.8	600.2

Note: The table reports age-specific effects of levels of education on real estate wealth and on financial wealth (both measured in thousand SEK) estimated from equations 2 (Panel a) and 3 (Panel b). *Big cities* is a dummy equal to one if an individual resided in Stockholm, Uppsala, Malmö, or Gothenburg (four largest Swedish cities) in any given year. Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort. Regression (a) also includes fixed effects for childhood municipality and year in which wealth is observed, while regression (b) includes siblings-year fixed effects. The sample consists of men aged 30-49 residing in Sweden in the period 1999-2007 whose financial wealth is above 3,000 SEK (approx. 450 USD). Observations whose wealth or debt are above top 0.1 percent of the entire wealth distribution in the Swedish population are trimmed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level (a) and siblings level (b). Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.

TABLE IA.XXXI: The heterogeneity of the effect of education on financial wealth by homeownership status

Age:	30-34		35-39		40-44		45-49	
Sample:	Homeowners	Not homeowners	Homeowners	Not homeowners	Homeowners	Not homeowners	Homeowners	Not homeowners
High school dropout vs. compulsory school	9.3***	19.5***	8.0***	14.3***	7.1***	11.3***	3.6**	2.6
	(1.5)	(1.1)	(1.7)	(1.3)	(1.8)	(1.7)	(1.8)	(1.7)
High school vs . high school dropout	24.2***	23.4***	39.4***	29.8***	44.1***	34.7***	48.4***	44.5***
	(1.8)	(1.7)	(2.3)	(3.4)	(2.9)	(3.3)	(2.7)	(3.4)
Post high school vs high school	75.5***	90.1***	67.8***	107.3***	74.6***	110.1***	83.5***	90.7***
	(3.1)	(2.6)	(3.1)	(3.5)	(3.7)	(3.7)	(5.4)	(5.2)
1(low education both parents)	-11.8***	-4.1***	-15.6***	-3.6**	-25.4***	-7.1***	-35.4***	-10.3***
	(1.4)	(1.5)	(1.5)	(1.6)	(1.8)	(2.2)	(2.6)	(2.4)
1(no parent)	-16.1***	-30.3***	-21.6***	-28.6***	-23.1***	-26.6***	-24.4***	-26.7***
	(1.9)	(1.4)	(2.0)	(2.0)	(2.5)	(3.3)	(3.3)	(2.5)
1(missing parental education)	-18.3***	-15.3***	-11.4**	-10.9**	-23.2***	-18.2***	-24.5***	-11.7***
	(2.8)	(2.8)	(4.7)	(4.4)	(4.4)	(4.0)	(4.1)	(3.6)
1(parent died)	31.1***	7.6***	26.7***	-0.9	26.5***	-0.1	27.3***	-2.4
	(1.8)	(1.5)	(1.5)	(1.4)	(1.7)	(1.9)	(2.0)	(1.7)
Ln(parental income)	21.6***	6.0***	17.9***	4.0***	15.2***	3.5***	12.2***	3.8***
	(1.3)	(0.7)	(1.2)	(0.6)	(0.9)	(0.6)	(0.7)	(0.3)
Ability score	8.1***	9.0***	11.3***	12.0***	16.0***	13.7***	17.2***	11.7***
	(0.4)	(0.3)	(0.5)	(0.4)	(0.6)	(0.6)	(0.6)	(0.5)
Adjusted R^2	0.0431	0.0612	0.0411	0.0680	0.0371	0.0557	0.0373	0.0494
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,092,761	682,934	1,507,007	617,804	1,527,603	518,330	1,510,902	478,818
Mean DV compulsory school, .000 SEK	75.85	45.45	94.89	51.45	127.0	62.48	160.8	75.97

Note: The table reports age-specific effects of levels of education on financial wealth (measured in thousand SEK) for the subsamples of individuals who have positive real estate wealth (*homeowners*) and for those who have zero real estate wealth (*not homeowners*). Education levels are defined as follows: individuals who dropped out of high school (*high school dropout*), individuals who finished high school (*high school*), and individuals who attended or finished university (*post high school*). Omitted group are individuals with only compulsory school education. The estimated effects are incremental with respect to the previous level. All regressions include fixed effects for birth cohort, childhood municipality and year in which wealth is observed. Standard errors are heteroscedasticity robust and clustered at the municipality of birth level. Significance levels are denoted as follows: *** p<0.01, ** p<0.05, * p<0.1.