Growing Wealth Gaps in Education

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Abstract

Prior research on trends in educational inequality has focused chiefly on changing gaps in educational attainment by family income or parental occupation. In contrast, this contribution provides the first assessment of trends in educational attainment by family wealth and suggests that we should be at least as much concerned about growing wealth gaps in education. Despite overall growth in educational attainment and some signs of decreasing wealth gaps in high school attainment and college access, I find a large and rapidly increasing wealth gap in college attainment between cohorts born in the 1970 and 1980s, respectively. This growing wealth gap in higher educational attainment co-occurred with a rise in inequality in children's wealth backgrounds, though the analyses also suggest that the latter does not fully account for the former. Nevertheless, the results reported here raise concerns about the distribution of educational opportunity among today's children who grow up in a context of particularly extreme wealth inequality.

INTRODUCTION

Family wealth – measured as the net value of all financial and real assets a family owns – is much more unequally distributed than other indicators of families' economic wellbeing (Keister and Moller 2000). Research has documented that this already large inequality in family wealth in the United States has been increasing substantially over the last decades (Wolff 1995; Keister 2000; Piketty 2014; Saez and Zucman 2014) and particularly strongly since the Great Recession (Pfeffer et al. 2013; Wolff 2016). One concern about growing wealth inequality is that it may also increase the rigidity of U.S. society, in particular by contributing to inequalities in educational opportunity. In fact, a growing body of research suggests that parental wealth plays an important role in the educational attainment of children in the United States and elsewhere (Conley 2001; Morgan and Kim 2006; Belley and Lochner 2007; Pfeffer 2011). However, to date, there is no empirical evidence on whether and to what extent wealth gaps in education have grown. This contribution provides the first empirical assessment of trends in wealth inequality in educational outcomes based on newly available data from the Panel Study of Income Dynamics (PSID). It also documents the extent to which these changes in wealth gaps in education can be accounted for solely by changes in the distribution of family wealth. Together, these analyses thus also speak to concerns about the potential long-term implications of the most recent and sharp increase in family wealth inequality in terms of the future distribution of educational outcomes.

I begin by reviewing prior research on cohort trends in educational inequality. In the next section, I argue that this prior evidence, which is restricted to other socio-economic indicators of family background, does not allow inferences about trends in wealth gaps: Family wealth is empirically and conceptually distinct from more commonly used socio-economic indicators and it contributes unique predictive power to assessments of children's educational outcomes. After describing the data, measures, and methods, I estimate the association between family wealth and children's educational attainment, unconditional and conditional on other socio-

economic characteristics of families, and document how wealth-education associations have changed over recent cohorts. Finally, I decompose these changes into those that can be accounted for by changes in wealth inequality, an exercise that gains particular importance at the backdrop of an assessment of the level of wealth inequality among today's children.

Background and Motivation

Prior research on trends in educational inequality

The study of cohort trends in socio-economic inequality in education has been an active area of empirical investigation for several decades (e.g. Treiman 1970; Mare 1981; Shavit and Blossfeld 1993; Harding et al. 2004). Research in this area investigates the changing relationship between educational attainment and a variety of indicators of socio-economic background. One set of contributions draws on occupation-based measures of parents' social class and documents remarkably stable class gaps in children's educational outcomes in the U.S. over much of the 20th and early 21st century (Hout et al. 1993; Roksa et al. 2007; Pfeffer and Hertel 2015). Other research tracks the association between children's and their parents' highest educational status and also finds largely stable levels of educational inequality tied to parental education (Mare 1981; Hout and Dohan 1996; Pfeffer 2008; Hout and Janus 2011; Bloome and Western 2011) as well as some signs of growing gaps for more recent cohorts (Buchmann and DiPrete 2006; Hertz et al. 2007; Roksa et al. 2007; Pfeffer and Hertel 2015). The most notable and widely discussed changes in educational inequality, however, have been found in relation to family income: Reardon (2011) documents that the gaps in educational achievement (i.e. test scores) between children from high-income and low-income families has been growing steadily for at least fifty years. Similarly, income gaps in higher education have also grown: Belley and Lochner (2007) observe substantial increases in income inequality in college attendance, comparing a cohort born in the early 1960s to a cohort born in the early 1980s. Bailey and Dynarski (2011) show that these trends extend to

growing income gaps in college graduation among the same cohorts. While income gaps in college attendance have held stable for more recent cohorts (Chetty et al. 2014; Ziol-Guest and Lee 2016), income gaps in college attainment have continued to increase (Duncan and Kalil 2015; Ziol-Guest and Lee 2016). The most recent estimates indicate that the difference in college graduation between children from the bottom and the top family income quintile approaches 50 percentage points (Ziol-Guest and Lee 2016).

Overall, then, cohort changes in the distribution of educational attainment are more pronounced in relation to parental income than in relation to parental education or parental occupations. It may thus be tempting to infer that rising income gaps in education should also manifest in rising gaps related to family wealth; after all both are monetary dimensions of families' socio-economic standing. However, as I will argue next, such direct inference is neither empirically nor conceptually valid – wealth is distinct from income, its association with education is distinct, and trends in that association may thus be distinct, too.

Wealth as an independent predictor of educational attainment

Some see conceptually few differences between wealth and income. In a strict model of neoclassical economics – that is, a world with perfect credit markets and in which wealth is accumulated from income rather than intergenerational transfers – wealth merely reflects different consumption patterns (see, e.g., the *Haig-Simons* income concept): Depending on their time preferences and levels of risk aversion, some individuals prefer to consume now while others do not and instead accumulate wealth. Over the entire life-course, income and wealth are thus seen as conceptually equivalent. This understanding of wealth does not correspond well to empirical findings: Brady et al. (2015) show that wealth is in fact a quite poor indicator of life-time income. They show that measures of wealth capture only a quarter to a third of fully observed life-time income in the United States. More generally, prior research on wealth has often pointed out that correlations between wealth and other background characteristics are far from perfect and that especially the correlation between

income and wealth is lower than one may expect (Oliver and Shapiro 1997; Keister 2000). In the analytic sample used for this analysis the correlation between family net worth ranks and 5-year average of family income ranks is .70, which is higher than the correlation of .50 discussed in the prior literature (Keister and Moller 2000). Still, this level of correlation suggests that these two measures do not correspond closely enough to discard one in favor of the other nor.

Prior wealth research shares this insight and has found that, conditional on income and other observable characteristics, family wealth is related to a range of important outcomes, including children's education. Researchers have documented independent associations between family net worth and children's early test scores (Orr 2003; Yeung and Conley 2008), their total years of schooling completed (Axinn et al. 1997; Conley 2001; Pfeffer 2011), as well as each level of educational attainment (Conley 1999, 2001; Morgan and Kim 2006; Belley and Lochner 2007; Haveman and Wilson 2007). A related strand of research has focused on housing wealth as the largest wealth component in most families' asset portfolios. For instance, home ownership has been shown to affect both early cognitive development of children and later college access (e.g. Haurin et al. 2002; Hauser 1993). Lovenheim (2011) found that exogenous shocks to home values substantially increase children's college going rates.[1] In this contribution, I therefore also separately document gaps in educational attainment as they relate to housing wealth as a select and important aspect of families' overall wealth position.

Why wealth gaps in education may be on the rise

Prior research has also offered a range of potential explanations for the independent role of wealth in the educational attainment process. Families may draw on their wealth to

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[1]Although it is not the aim of this contribution to assess whether the association between family wealth and children's education is causal, it is worth nothing that Lovenheim's evidence on the causal relationship between housing wealth and college entry is an important advance in the literature, especially in the context of continuing debates about the causal influences of family income (see e.g. Mayer 1997; Cameron and Taber 2004).

invest in their children, in particular through the purchase of educationally valuable goods (e.g. tutoring and test preparation, Buchmann et al. 2010). Moreover, family wealth may facilitate access to certain types of education: In the form of housing wealth (home values), it provides access to high-quality public schools that – thanks to the reliance of public school budgets on local property taxes – are equipped with more resources than those in less wealthy neighborhoods. Also, wealth may help reduce credit constraints for college access and persistence. Lastly, family wealth may serve an insurance function by providing important "real and psychological safety nets" (Shapiro 2004) against the risks inherent in human capital investment decisions (Pfeffer and Haellsten 2012).

Each of these pathways through which family wealth may translate into educational opportunity can be hypothesized to have increased in importance over recent decades. First, Kornrich and Furstenberg (2012) document a steep rise in the amount of money parents spend on their children, in particular for their education. Most of that increase occurred between the mid 1970s and mid 1990s, which corresponds to the time period in which the children analyzed here grow up. While prior research has shown these transfers to be related to families' income (McGarry and Schoeni 1995; Schoeni and Ross 2005; Kaushal et al. 2011), Rauscher (2016) reveals that parental transfers are also closely and increasingly linked to parental wealth: The size of transfers for children's schooling by parents in the upper half of the wealth distribution exceeds those by parents in the lower half more than sevenfold. Second, income segregation of neighborhoods has increased since the 1970s (Reardon and Bischoff 2011; Taylor and Fry 2012) and, alongside of it, so has the segregation of schools by family income (Owens et al. 2016). Similar trends may apply to wealth, linking widening wealth gaps among parents to widening gaps in the input available to local schools.[2] Third,

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[2]Though I am not aware of studies that have assessed changes in segregation by wealth rather than income and although I have argued above that inferring trends related to wealth from trends related to income is generally fraught with error, the hypothesis of increasing segregation by wealth may appeal based on the following observations: (a) Owens et al (2016) find that the increasing income segregation of schools is primarily driven by those in the top 10 percent of the income distribution, that is, those most likely to hold wealth (Keister 2000: p. 225ff; Oliver and Shapiro 2006: p. 76ff.); (b) Rising inequality in the income distribution accounts for much of the rise in residential income segregation (Watson 2009), especially among children (Owens 2016). A similar link between distributional and residential patterns may hold for wealth;

one may expect credit constraints for college to have increased as the cost to attend has risen dramatically over recent decades. The average, inflation-adjusted cost for in-state tuition and board at four-year colleges is more than 2.5 times higher today than what it was in 1980 (College Board 2015). Without a commensurate increase in financial aid,[3] these rising costs may have increased the importance of family wealth in alleviating students' credit constraints. Furthermore, this trend may have been compounded by changes in educational policy as the 1992 Higher Education Act excluded home ownership from the calculation of financial need and thereby increased the total amount of financing available to children from families with high home equity. Finally, with increasing costs of attendance come increasing costs of failure: The prospect of leaving college in student debt but without a degree to make up for it may have increased family wealth's insurance function. Family wealth may generally have become more consequential as job market insecurity and levels of life course risks (or the perception therefore) have increased while some public insurance schemes have deteriorated (Hacker 2007).

So far, I have offered reasons to expect a growing importance of family wealth in determining educational success in response to specific social and institutional changes, namely the increased economic segregation of neighborhood and schools, the rising costs of college attendance, and increasing insecurities facing children and young adults as they embark on their educational careers. However, in addition to family wealth becoming a more consequential resource for successful educational trajectories, increasing inequality in wealth *alone* may also translate into growing wealth gaps in education. That is, even if the way in which wealth is tied to educational success does not change, if children move further apart from each other in terms of their family wealth they may also do so in terms of their educational outcomes. As I will document below, the distribution of wealth has indeed become substan-

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(c) property-tax based school financing should generally provide a tighter link between school inputs and wealth as compared to income.

[3]The net cost to attend college (i.e. tuition/fees/board minus all financial aid and tax credits) has risen less steeply than sticker prices but still profoundly: In the last 25 years (between 1990 and 2015), the average net cost of attendance at a public four-year colleges rose by 83 percent (while the sticker price rose by 110 percent) and at private four-year colleges by 39 percent (sticker price by 78 percent) (College Board 2015).

tially more unequal among the children studied here. I will assess to what extent this growth in wealth inequality accounts for changing wealth gaps in educational outcomes.

DATA, MEASURES, METHOD

The Panel Study of Income Dynamics (PSID 2016) continually collects a rich set of longitudinally consistent indicators of the socio-economic position of families, which greatly facilitates the type of over-time comparisons reported here. It also collects information on the children born into a panel household and tracks them as they move out to establish their own households, making possible the assessment of their final educational outcomes. As the PSID has been collecting detailed wealth information since 1984, it is the only nationally representative survey that contains information on both family wealth and children's educational outcomes for a range of different birth cohorts.

The analytic sample for this study consists of children who lived in PSID households at age 10-14 in the first four waves in which family wealth was measured (1984, 1989, 1994, 1999), which amounts to birth cohorts 1970 through 1989. To track cohort changes in educational attainment, I compare children born in the 1970s to children born in the 1980s and assess whether, at age 20 (N=2,334 and N=2,691, respectively), they have graduated from high school and whether they have gained any college experience,[4] as well as whether, by age 25 (N=1,799 and N=2,308), they have completed a bachelor's degree.[5] That is, all trends in educational attainment assessed here occur over the span of the relatively brief time interval of just one decade. I will return to a discussion of potential longer-term trends in the final section of this paper. Information on children's educational attainment is provided

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[4]The indicators of educational attainment available here only record whether a year of college has been completed and therefore do not allow the separate identification of students who enter college but drop out within the first year (nor do they allow distinguishing between different types of colleges attended).

[5]Since 1997 the PSID is a bi-annual survey, so I assess educational attainment at ages 20/25 if surveyed in that year but at adjacent ages (older if available) if not. Children born in the last year of this analytic sample, 1989, are only 24 years old in the last available survey year of 2013. Stability analyses that restrict all analyses reported to a comparison of birth cohorts 1970-74 versus 1980-84 yield statistically similar and substantively equivalent findings.

either by the children themselves if they have already established their own households – very few of them have done so by age 20 – or by the household's respondent, typically a parent. The regression models described below control for the source of information on educational attainment.

The PSID collects wealth information based on a series of detailed questions on the ownership of assets and their value, covering home values, savings, stocks, many other financial assets, real estate, business assets, vehicles, mortgages, and other types of debt. As the main measure of wealth, this study uses total family net worth, which sums the value of all asset types minus debts. In addition, I draw on the value of respondents' owner-occupied homes as a much simpler proxy indicator. If home values, as one of the major components of most households' wealth portfolio, approximate the wealth-education associations studied here well, data limitations that so far have hamper the widespread inclusion of wealth in analyses of educational attainment would be greatly relaxed: Information on home values – without even considering remaining mortgage principals – is faster and easier to collect than full-fledged asset modules, feasibly even through linkage of existing surveys to external data, such as historical Censuses or commercial real-estate data. Wealth gaps based on other proxy measures, namely home equity and financial wealth, are also discussed briefly and reported in Appendix A.2.

The PSID wealth measures have been shown to have high validity though they do not capture the very top (2-3 percent) of the wealth distribution well (Juster et al. 1999; Pfeffer et al. 2016). Since this study focuses on population associations between wealth and education rather than the educational pathways of children of a small wealth elite (for the latter see, e.g., Khan 2012), this shortcoming is less problematic and likely results in a conservative estimate of the educational advantages among the top wealth group assessed here. In fact, the main specification of wealth gaps reported here draws on wealth quintiles to capture non-linearities in intergenerational associations throughout the distribution but not

necessarily the very top.[6] Quintiles are drawn within each cohort and based on the weighted analytic sample; unweighted quintiles yield similar results.

This study also uses a comprehensive set of indicators of the socio-economic position of families besides family wealth. As a measure of permanent income, I use total household income averaged across five income years (in quintiles; alternative specifications again include log-transformed versions). The indicator of educational backgrounds are measured as the highest degree attained by either the household head or partner. Occupational background is measured as the highest socio-economic index score (SEI) of either head's or partner's main occupation. Further controls for demographic characteristics include the household size, the number of children in the household, whether the household head is married, mother's age, individuals' sex, and the source of information for their educational outcomes (self-reported or not). Each of these yearly measures is drawn from the same survey wave as the wealth measure (1984, 1989, 1994, 1999). The main predictor of college attainment studied here, family wealth (as well as family income), is provided in imputed form by the PSID; few missing values on all remaining predictors are multiply imputed using Stata's *mi* procedures. A small share of cases (less than 1 percent) with imputed dependent variables are dropped (von Hippel 2007). Descriptive statistics for all variables included in this analysis are reported in Appendix A.1. All dollar values are inflation adjusted to 2013.

Wealth gaps in high school attainment, college access, and bachelor's degree attainment are estimated via logistic regressions. I begin by describing observed rates of educational attainment by family wealth quintile. Next, I estimate adjusted rates based on models including the control variables mentioned above. I report predictive margins and, for the cohort comparison, discrete changes based on average marginal effects (see Hanmer and Ozan Kalkan 2013) using Stata's *margin* commands. The approach to estimate to which extent changes in the wealth distribution account for trends in wealth gaps in education is

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[6]Other specifications tested (available upon request) include the inverse hyperbolic sine transformation (see Burbidge et al. 1988), which – like the quintiles specification reported here – retains non-positive net worth values, and log-transformed specifications with and without a floor value for cases of zero or net debt and with top-coding to reduce the undue influence of outliers.

targeted to explain a specific trend revealed in the preceding analyses and therefore described later. The regression results reported here are unweighted but results are very stable to the use of individual and family weights provided by the PSID.

FINDINGS

Wealth gaps in educational attainment

I begin by reporting differences in educational attainment by family wealth. Figure 1 displays average rates of high school attainment, college access, and college completion across wealth quintiles (with 95% confidence intervals), where wealth is measured as (a) net worth or (b) home values (see also Table A.2). The wealth gradient in educational attainment is steep: Comparing the educational outcomes of children from the lowest net worth quintile to those from the highest quintile reveals a difference of 25.1 percentage points in high school graduation rates (66.1 versus 91.2 percent), of 34.0 percentage points for college access (18.0 versus 52.0 percent) and a 43.3 percentage point difference for college graduation (8.1 versus 51.4 percent). The increase in rates across net worth quintiles is relatively linear for all levels of educational attainment, though we can observe a somewhat steeper increase in high school graduation rates in the bottom half of the distribution and a steeper increase in college college graduation in the top half of the distribution. Furthermore, while wealth gaps between the highest and the second highest net worth quintile are relatively low for college access (52.0 versus 47.2 percent), they are more pronounced for college graduation (51.4 versus 34.8 percent). In fact, among children from the highest net worth quintile college access rates at age 20 and college graduation rates at age 25 are basically the same, suggesting an exceptionally high level of college persistence among the top quintile.

While the wealth gap in college graduation rates is enormous, it is of course not the case that every child from the wealthiest group assessed here graduates from college. As shown, overall, only about half of the children from the top wealth quintile get a bachelor's

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Figure 1: Educational Rates by Wealth Background

(a)

(b)
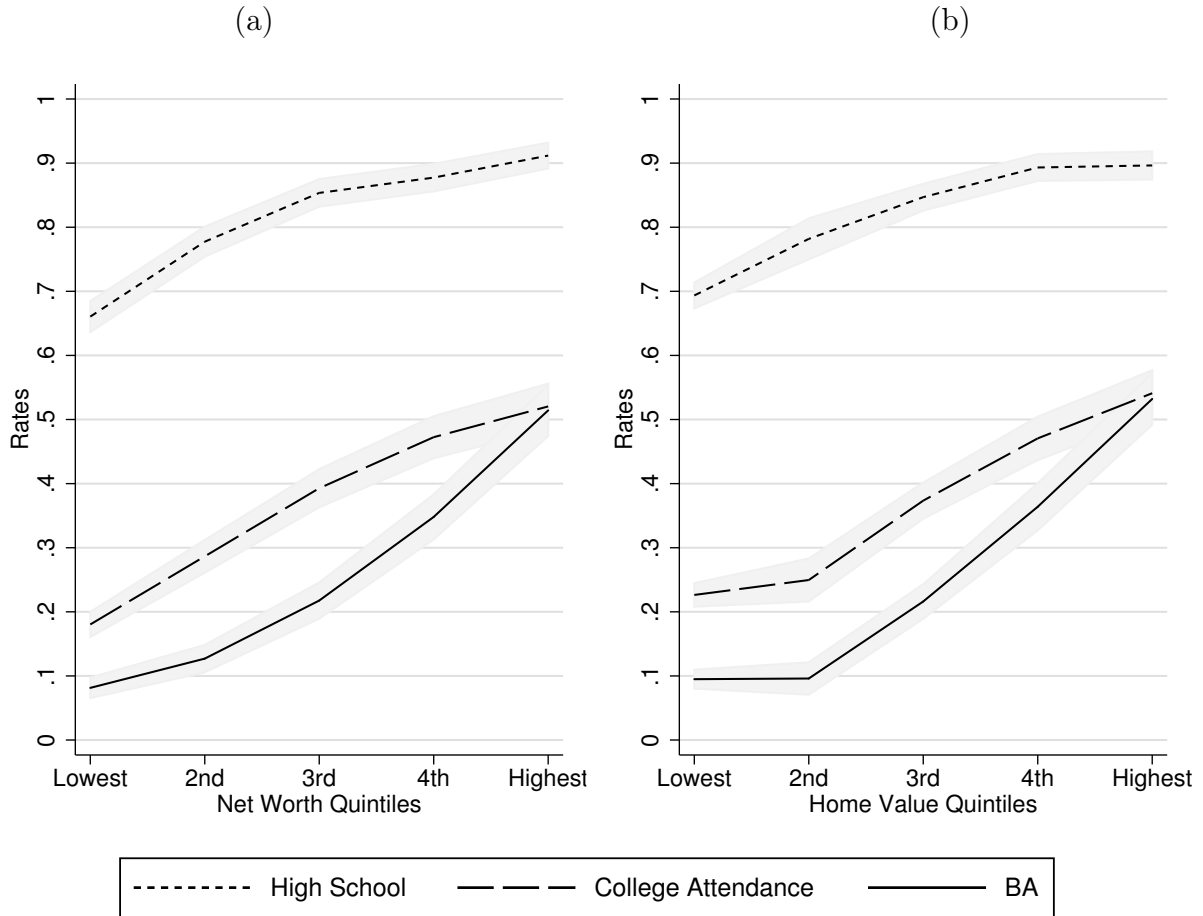
degree. That should not comes as a surprise to those familiar with estimates of college graduation rate among recent U.S. cohorts, which closely resemble those estimated here.[7] With overall graduation rates at age 25 below 30 percent, even if no child from the bottom half of the wealth distribution were to graduate from college, one would still expect college graduation rates of less than 60 percent in the top half of the distribution. While it is thus a misperception that a great majority of children from wealthy households graduate college, it is certainly the case that the modal college graduate comes from a household with significant net worth. In this analytic sample, half of all college graduates come from a household with

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[7]Based on the Current Population Survey March Supplement, I estimate a college graduation rate for comparable individuals – specifically, individuals who are heads of households and age 25 in survey years 1995 through 2009 – of 28 percent compared to 26 percent based on the analytic sample used here.

more than $180,000 in net worth and a full fifth of them come from a household with at least half a million dollar net worth.

In addition to the assessment of gaps by families' net worth, Figure 1b also displays educational rates by home value quintiles.[8] The degree and pattern of inequality in educational attainment by families' home values closely approximates those by families' net worth (Figure 1a). Though other wealth components, such as financial assets or home equity (home values minus mortgages), fare similarly well in approximating the reported net worth gaps (see Table A.2), home values provide in many ways the most attractive proxy measure. Substantively, home ownership constitutes the main asset component in most families' wealth portfolio. From a measurement perspective, home values are the easiest to collect among all asset components and, as such, appear to be a promising candidate to help remedy the data shortage that so far has hampered work on the relationship between family wealth and educational outcomes.

Wealth as an independent source of educational advantage

The large wealth gaps in educational outcomes described above can, of course, also arise from other correlated characteristics, not the least other socio-economic factors. Accordingly, the observed wealth gaps in education discussed above – and again displayed in Table 1, column "Unconditional" – are lower once controls for observable characteristics of parents and children are added (see list of controls discussed above). Still, wealth gaps in education adjusted for these controls (Table 1, column "Conditional") remain statistically and substantively significant: All else equal, the gap in educational attainment between children from the bottom quintile and children from the top quintile of the net worth distribution still (statistically significantly) differs by 10.5 percentage points for high school graduation, 8.2 percentage points for college access, and 8.0 percentage points for college graduation.

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[8]Here, the lowest group contains those whose parents do not own a home (home value of zero), about 30 percent of the sample, while the second lowest group (about 10 percent of the sample) consists of children from owned homes valued at most about $62,900 (see Table A.1). The remaining groups are standard

Table 1: Wealth and Income Gaps in Education

	Change in Probability Compared to lowest quintile (standard error)					
	Unconditional			Conditional		
High School Graduation						
Wealth Quintile						
2nd	0.1169	(0.0172)	***	0.0332	(0.0164)	*
3rd	0.1930	(0.0165)	***	0.0836	(0.0180)	***
4th	0.2168	(0.0165)	***	0.0794	(0.0210)	***
Highest	0.2512	(0.0161)	***	0.1049	(0.0242)	***
Income Quintile						
2nd	0.1452	(0.0174)	***	0.0617	(0.0170)	***
3rd	0.1994	(0.0168)	***	0.0746	(0.0203)	***
4th	0.2438	(0.0163)	***	0.1017	(0.0226)	***
Highest	0.2605	(0.0162)	***	0.0973	(0.0270)	***
College Access						
Wealth Quintile						
2nd	0.1063	(0.0164)	***	0.0473	(0.0192)	*
3rd	0.2126	(0.0182)	***	0.0971	(0.0211)	***
4th	0.2922	(0.0195)	***	0.1074	(0.0239)	***
Highest	0.3401	(0.0207)	***	0.0815	(0.0264)	**
Income Quintile						
2nd	0.1268	(0.0166)	***	0.0661	(0.0203)	**
3rd	0.2204	(0.0178)	***	0.1035	(0.0230)	***
4th	0.2786	(0.0191)	***	0.1028	(0.0260)	***
Highest	0.4204	(0.0198)	***	0.1832	(0.0312)	***
College Graduation						
Wealth Quintile						
2nd	0.0456	(0.0136)	***	-0.0056	(0.0205)	
3rd	0.1362	(0.0166)	***	0.0145	(0.0211)	
4th	0.2666	(0.0197)	***	0.0464	(0.0231)	*
Highest	0.4328	(0.0220)	***	0.0797	(0.0256)	**
Income Quintile						
2nd	0.0710	(0.0133)	***	0.0342	(0.0211)	
3rd	0.1557	(0.0158)	***	0.0703	(0.0224)	**
4th	0.2929	(0.0192)	***	0.1078	(0.0254)	***
Highest	0.4735	(0.0207)	***	0.1319	(0.0285)	***

Conditional = Average marginal effects with all controls listed in Table A.1

Note: + p<.10, * p<.05, ** p<.01, *** p<.001

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quintiles (20 percent each).

Table 1 also provides a comparison of wealth gaps in education to gaps by family income, here measured as five-year averages of total family income. For high school attainment, the observed (unconditional) gaps are of similar size with a 25-26 percentage point difference between the top and the bottom quintiles. This similarity in the size of income and wealth gaps extends to the conditional case. Everything else equal, a change in family wealth from the bottom to the top quintile is associated with an increase in the probability of high school graduation by 10.5 percentage and the same change in terms of family income, everything else equal, is associated with an additional increase by 9.7 percentage points. That is, family wealth and family income have independent and roughly equivalent predictive power for the attainment of a high school degree. In terms of college attainment, income gaps are larger than wealth gaps (both unconditionally and conditionally). In terms of independently predicting the likelihood of a student gaining some college experience, family income appears to be about twice as important as family wealth. Despite this dominating role of income in predicting college access, the overall difference in the relative importance of income and wealth is less pronounced for the attainment of a college degree. While a move from the bottom to the top of the family income quintile, everything else equal, entails an increase in bachelor's graduation rates by 13.2 percentage points, the same move for family wealth still entails an additional 8.0 percentage point advantage – large enough to conclude that neglecting family wealth as an independent factor in educational attainment and, in particular, college graduation severely understates the extent of educational inequality.

Trends in wealth gaps in educational attainment

The central question addressed here is whether the wealth gaps in education described so far (see Figure 1) have changed across an observation window of a decade. For this assessment, I compare the educational outcomes of children born in the 1970s (1970-1979) to children born in the 1980s (1980-1989). Figure 2 (see also Table A.3) displays their rates of high school graduation, college access, and college completion by family net worth quintiles. The

Figure 2: Changing Wealth Gaps in Education
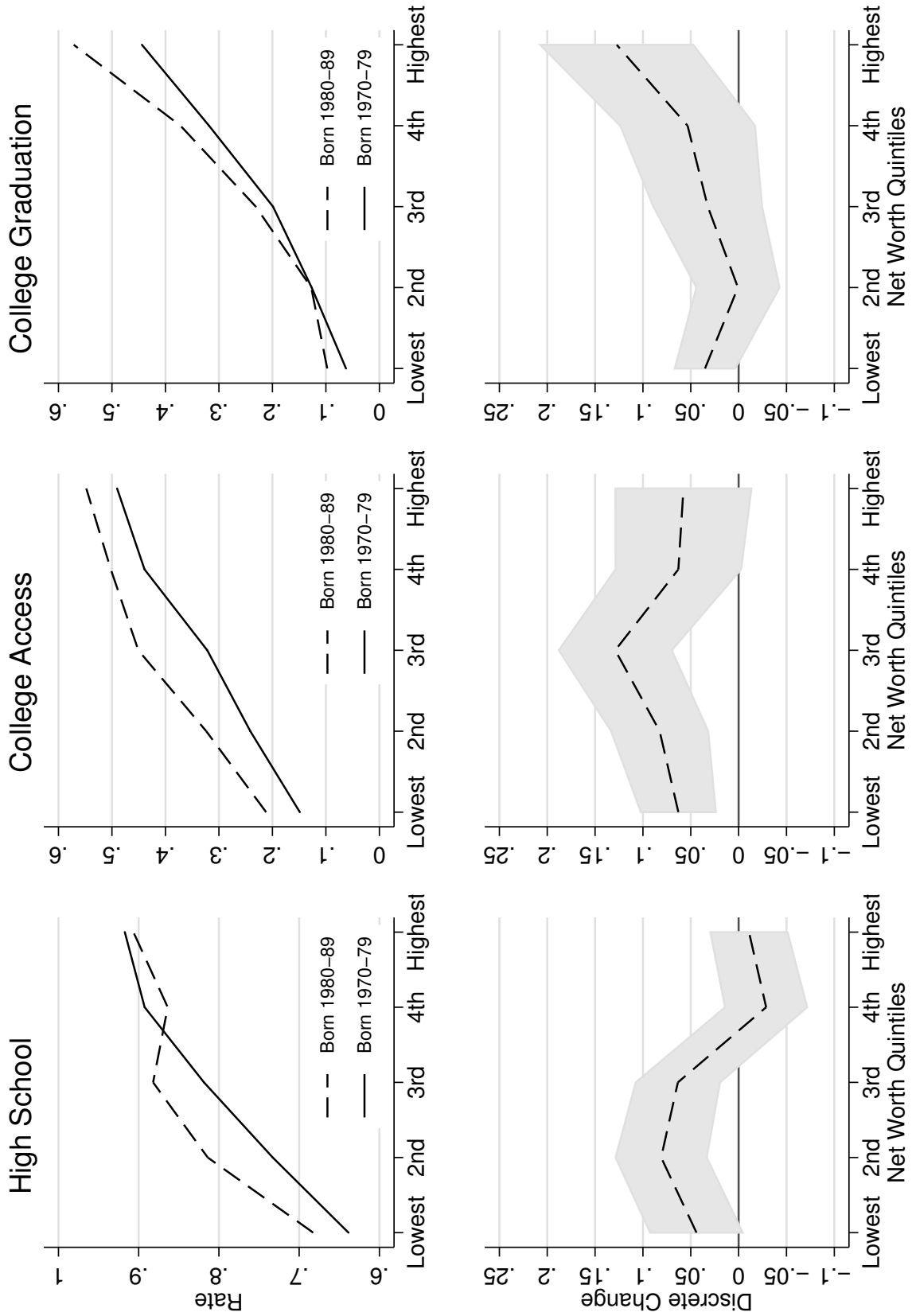
upper panel reports the graduation rates separately for these two cohorts while the lower panel displays the difference in graduation rates with the earlier born cohort as the reference and 95% confidence intervals to allow the assessment of statistical significance of cohort differences (see Long and Freese 2014: p. 297ff on why statistical significance tests should be based on estimates of discrete change).

Starting with high school attainment, we observe that average graduation rates have increased between these two cohorts for students from the bottom three wealth quintiles. For instance, children in the more recent cohort who grew up in the middle fifth of the wealth distribution have a graduation rate of 88.2 percent, which is 6.3 percentage points above that of students from the middle fifth of the wealth distribution born a decade earlier. The high school attainment of students from the top two wealth quintiles, in contrast, has not changed in this time frame, a potential sign of saturation of this educational level among wealthier households. Overall, then, with the bottom 60 percent increasing their high school graduation rate and the top 40 percent largely stable, wealth inequality in high school attainment has decreased.

We also observe some signs of equalization in terms of college access: College access rates have improved between these two cohorts for children from the bottom three quintiles – and most notably, with an increase of 12.9 percentage points (from 32.2 to 45.1 percent), for children from the middle quintile – while college access rates expanded at a less rapid rate – with a statistically insignificant increase of about 6 percentage points – for the top two quintiles.

Trends in college attainment are very different and stark. Children from the bottom 60 percent of the wealth distribution were not able to make much progress over the decade studied here (0 to 3.5 percentage point increase) and children from the next 20 percent of the wealth distribution increased their college completion rates by 5.3 percentage points. The most marked increase, however, was experienced by children from the top 20 percent of the distribution. With an increase in the college graduation rate of 12.7 percentage points in the

span of just a decade, the wealthiest children have pulled away from others in terms of college attainment. That is, despite some decreases in wealth gaps in high school attainment and college access, the clearest and largest change in the distribution of educational opportunity lies in the rising gap between those from the top 20 percent of the wealth distribution and everyone else. As a result, while college graduation rates between those from the top and the bottom quintile of the wealth distribution differed by 38.2 percentage points among children who born in the 1970s, it differed by a full 47.4 percentage points for children born a decade later; a growth of the wealth gap in college attainment by 9.2 percentage points in just a decade.

Growing wealth gaps in college graduation in the context of rising wealth inequality

In the remainder, I will focus on the growing wealth gap in college completion – as the most concerning finding yielded by the analyses provided above – and assess to what degree it is related to the growth in wealth inequality. As argued above, while wealth may have become a more influential factor in determining college success, the fact alone that those at the top of the distribution have increasingly more wealth at their disposal than everyone else may also account for some of the growth in wealth inequality in education. I begin by describing the growth of wealth inequality among the children of the two cohorts studied here and also report on levels of wealth inequality among today's children (aged 10-14 in the the latest available survey wave of 2013). I then describe the decomposition approach used to estimate the degree to which the observed rise in wealth inequality contributes to the documented increase in the wealth gap in college attainment.

Table 2 reports the median wealth among three groups of children: Those growing up in the bottom 80 percent of the family wealth distribution, the next ten percent, and the top ten percent. The differences in family wealth between these three groups are already high for the first cohort studied here: The typical family net worth of children in the bottom four

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Table 2: Trends in Wealth Inequality Among Children

| | Cohort | | |
| | Earlier | Later | Current |
	10-14 in 80s	10-14 in 90s	10-14 in 2013
Median net worth			
Top 10%	766,027	934,017	1,003,000
Next 10%	352,619	378,780	360,000
Bottom 80%	36,675	27,270	6,100
Ratios			
Top 10% / next 10%	2.2	2.5	2.8
Top 10% / bottom 80%	20.9	34.3	164.4
Next 10% / bottom 80%	9.6	13.9	59.0
Gini coefficient	0.756	0.823	0.957

quintiles is \$36,675 (in 2013-\$), nearly ten times higher among those in the next ten percent (\$352,619), and more than 20 times higher among those in the top ten percent (\$766,027). A decade later, the family wealth of children in the top quintile has increased further – more strongly among the top ten percent than the next ten percent – but decreased for the remaining 80 percent of children. As a result, in the second cohort, median wealth among children in the top ten percent is now 34 times higher than among those in the bottom 80 percent (and still 14 times higher among the next ten percent compared to those below). This rise in wealth inequality is also reflected in the gini coefficient which increases from 0.76 to 0.82 between these two cohorts. The decomposition analysis reported below seeks to relate this increase in wealth inequality to the documented growth in the wealth gap in college attainment (see Duncan and Kalil 2015 for a similar type of analysis for family income gaps). Perhaps the most concerning outcome of such analysis would be to find that all of the increase in the wealth gap in college attainment can be traced to the growth of wealth inequality – since, as also shown in Table 2, wealth inequality is even greater among today's

children. Among children observed in the latest available PSID wave of 2013, wealth is even more heavily concentrated at the top: Children in the top ten percent of the distribution now typically grow up with about $1 million in net worth, about 164 times the wealth of the remaining 80 percent of children whose typical family wealth is a meager $6,100. The gini coefficient has risen to 0.96, remarkably close to the scenario of complete inequality henceforth reserved to didactic examples of how to interpret a gini coefficient of one. At the backdrop of such extreme level of wealth inequality among today's children, the growth in wealth inequality among earlier cohorts appears relatively low. Still, knowing whether this growth can be traced to the college outcomes of these children may inform our expectations about the fate of today's children.

The decomposition analysis relies on a piecewise spline regression model to predict the probability of college attainment, i.e.

$$
\begin{aligned}
ln\left(\frac{p_i}{1-p_i}\right) \quad &= \beta_0 + \beta_1 X_i & X_i \leq a \\
&= \beta_0 + \beta_1 X_i + \beta_2(X_i - a) & a < X_i \leq b \ , \\
&= \beta_0 + \beta_1 X_i + \beta_2(X_i - a) + \beta_3(X_i - b) & b < X_i \ ,
\end{aligned}
$$

where the spline knots are set at the 80th percentile (a) and the 90th percentile (b) of the distribution of net worth (X_i).[9] For this analysis, the net worth variable is transformed using the inverse hyperbolic sine function (see Burbidge et al. 1988), which approximates the logarithmic function but allows the inclusion of cases with zero or negative net worth. Importantly, this regression is first estimated based on the earlier cohort, that is, the spline knots are set based on the 80th and 90th percentiles of the distribution within that cohort and the parameters are estimated based on that cohort. I ascertain that this relatively parsimonious specification of the relationship between family wealth and college attainment provides an acceptable approximation to the observed, main outcome of interest, namely the higher college graduation rates of children from the top wealth quintile. The first panel of Table 3

---

[9]The specific model used here has been calibrated to provide the best empirical fit (reported below). Other models based on different spline knots (such as percentiles 20, 40, 60, 80, 90) as well as less flexible decomposition approaches, such as Blinder-Oaxaca type regressions for the non-linear case (Fairlie 2005; Sinning et al. 2008), have been tested and yield similar substantive conclusions (available upon request).

reports the probabilities of college attainment for children from the bottom four quintiles and children from the top quintile in the earlier birth cohort. The predicted probabilities are derived from the equation reported above and approximate the observed probabilities quite well: The predicted college graduation rate among children from the bottom four quintiles is 16.1 percent compared to the observed 16.0 percent. Similarly, 44.0 percent of children from the top quintile are predicted to attain a college degree compared to the observed college graduation rate of 44.4 percent. The predicted and observed graduation gaps between these two groups are thus very similar – 27.9 and 28.4 percentage points, respectively – validating the choice of parametric form of the model applied here.

Table 3: Decomposition Analysis

| | Probability of BA | |
	Observed	Predicted
(1) Cohort born in 1970s		
(1.1) Lowest four quintiles	16.0%	16.1%
(1.2) Highest quintile	44.4%	44.0%
(1.3) Gap [1.2-1.1]	28.4%	27.9%
(2) Cohort born in 1980s		
(2.1) Lowest four quintiles	19.0%	15.7%
(2.2) Highest quintile	57.1%	45.2%
(2.3) Gap [2.2-2.1]	38.1%	29.5%
(3) Cohort difference in gap [2.3-1.3]	9.7%	1.6%
(4) Growth in gap accounted for		16.5%

Next, the same model is applied to the later cohort of children while constraining the parameter estimates to equal those estimated for the first cohort. That is, I predict graduation rates for the later cohort using that cohort's distribution of wealth but the relationship be-

tween wealth and college outcomes as observed in the earlier cohort. If the changing wealth gap in college attainment was entirely driven by the change in wealth inequality between these two cohorts, this prediction should come close to the wealth gap in college observed for the second cohort. However, as shown in the second panel of Table 3, the predicted and observed wealth gaps in college graduation diverge from each other, mostly because applying the wealth effects estimated in the earlier cohort to the wealth distribution of the later cohort underestimates the college attainment of the top quintile (45.2 percent versus 57.1 percent), that is, it misses most of the surge in college attainment at the top established in the prior section. As a result, the predicted wealth gap in college attainment is much smaller than observed (29.5 vs. 38.1 percentage points). While the wealth gap in college attainment between the top quintile and everyone else rose by 9.7 percentage points between these two cohorts, the rise predicted by assuming a stable association between wealth and college attainment is only 1.6 percentage points.

Overall, then, the conclusion is that the rise in wealth inequality alone explains only a small share – about one sixth (16.5 percent) – of the growth in the gap in college attainment between the wealthiest 20 percent of students and the rest. Put differently, the increase in wealth gaps between these two cohorts is not fully reflected in the increase in wealth gaps in their later college attainment, which may qualify as good news at the backdrop of the extreme level of wealth inequality among today's children. Given this result, it does not seem reasonable to interpolate from the gaps in college attainment observed here to gaps in the future college attainment of today's children based on the level of wealth inequality they experience. Still, the possibility that the growing inequality in college attainment stems primarily from changes in the importance of wealth for college success (rather than from changes in the distribution of wealth), should encourage policy efforts geared at reducing the inequitable effects of wealth on educational attainment. Short of such changes, today's children can be expected to suffer at least as much inequality in their college opportunities as the children studied here.

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Conclusion

This paper describes gaps in educational attainment by family wealth and their change over two recent cohorts, born in the early 1970s and early 1980s, respectively. In line with prior research (e.g. Conley 2001), substantial gaps in educational attainment by family net worth can be observed across all educational levels – namely, high school attainment, college access, and college graduation – and the role of family wealth in predicting these educational outcomes goes above and beyond that of other socio-economic characteristics of families, including family income. Most pressingly, however, this paper provides the first evidence that wealth inequality in college graduation has been rising further over recent cohorts, with the college graduation rates of children from higher wealth backgrounds surging while children from lower wealth levels have been left behind. The extent of this surge in wealth inequality in college attainment is profound: Among children born between 1970 and 1979, the college graduation rate among those who grew up in the top 20 percent of the wealth distribution was 38.2 percentage points higher than among those who grew up in the bottom 20 percent. However, for children born only a decade later, that wealth gap in college attainment has grown to 47.4 percentage points. This rapid increase in wealth inequality in college attainment is especially concerning because the stakes of college completion have been raised, both at the individual and at the societal level: Not only do individuals' opportunities to attain comfortable earnings increasingly depend on the completion of a bachelor's degree but it is also widely acknowledged that the country's international competitiveness and economic growth depend heavily on a highly educated work-force (Goldin and Katz 2008).

The documented increase in wealth inequality in college attainment is also particularly notable as wealth gaps at lower levels of educational attainment show signs of decrease: In terms of high school attainment, the least wealthy students have made further inroads while this level of educational attainment had already been largely saturated among students from higher wealth backgrounds. Also, I document advances in college access among children from

the middle of the wealth distribution relative to others. In sum, then, the findings reported here suggest that efforts to equalize educational opportunities as they relate to family wealth need to go beyond the expansion of college access for children from lower wealth backgrounds and put particular emphasis on keeping these students in college until graduation (see Bailey and Dynarski 2011 for the equivalent argument related to parental income).

Furthermore, I have described that the documented growth in wealth inequality in college attainment occurs in the context of rising inequality in the wealth origins of the children studied here. This widening distance in their wealth origins, however, is far from fully reflected in the rising wealth gap in their college graduation rates. That is, the growth in educational inequality between these two cohorts is not primarily driven by widening wealth inequality and may instead arise from the increasing importance of family wealth. The contrary finding – rising wealth inequality fully accounting for rising wealth gaps in education – would have made predictions about the fate of today's children particularly bleak since the level of wealth inequality they experience dwarfs that observed in the cohorts studied here and can only be described as extreme (e.g. with a gini coefficient of 0.96).

Independent of this take-off in wealth inequality, the results reported here raise concerns about the increasing association between family wealth and college attainment. Efforts to reduce this association should, as already mentioned, also focus on the ways in which family wealth facilitates college persistence. While this contribution does not seek to establish causality and much less the causal pathways through which family wealth affects educational outcomes, the theoretical arguments provided may guide future research in explaining the increasing role of wealth for college persistence: Increasing direct financial transfers from wealthy parents to their offspring (Rauscher 2016) may increasingly be geared at supporting college students in staying or getting back on track rather than transferring to other institutions or stopping out as they face academic challenges (Goldrick-Rab and Pfeffer 2009). Furthermore, wealth inequality in college persistence and attainment is likely also established in children's earlier educational experiences, for instance, as children from wealthier

households attend high schools that leave them academically better prepared for college and thereby also facilitate access to colleges with higher retention rates, such as highly competitive and prestigious four-year schools (Bastedo and Jaquette 2011).

This last observation also points to one of the limitations of this contribution and opportunities for future research: This study does not investigate "horizontal" differences in education, for instance, wealth gaps by institution type and selectivity (but see Jez 2014). Yet, as children from the wealthiest families have reached saturation of educational participation at the secondary level and more children from wealth backgrounds below the top are accessing higher education (as documented here), the wealthiest households may increasingly exploit these types of horizontal differences in the educational system to effectively maintain inequality (Lucas 2001; Gerber and Cheung 2008). In this sense, the growth of wealth inequality in college outcomes shown here may still provide a conservative estimate. Another way in which this analysis may underestimate the degree of wealth inequality in education is through its exclusive focus on the *immediate* family: Advantages arising from family wealth may extend beyond the parent-child dyad as the wealth of grandparents or even wealth in extended family networks may additionally facilitate educational success (Roksa and Potter 2011; Prix and Pfeffer 2017). Revealingly, many college campuses around the country have begun to complement their family visit day with a portion dedicated to grandparents (e.g. Feiler 2014).

Finally, the finding that home values serve as a powerful proxy measure of wealth gaps in education may be particularly important to help expand the research base and facilitate future research. Home value indicators are more easily collected than full-fledged asset survey modules to measure total family net worth and often readily accessible through administrative or linked external data. For instance, drawing on home values to approximate wealth gaps in education may allow historical assessments of wealth inequality in education (e.g. based on the housing values reported on the publicly available 1940 Census), longer-term assessments of additional cohorts (e.g. based on the housing information consistently ob-

served in the PSID since 1968), or detailed analysis of wealth gaps in college pathways based on administrative data held by colleges and states that also include the addresses of students' pre-college residence (for which external real estate data yield home value estimates). Of course, the documented role of home values in approximating wealth gaps in education goes beyond a measurement issue. It poses the question to what extent wealth effects on education are in fact asset effects, effects of housing quality (e.g., Lopoo and London 2016), and effects of the neighborhoods in which highly-valued houses are located (Sampson et al. 2002; Durlauf 2004). The broad but largely separate literatures that exist on each of these potential channels that link housing wealth to educational success urgently await integration.

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A Appendix

A.1 Descriptive Statistics

	Sample at age 20			Sample at age 25		
	All	Born 1970s	Born 1980s	All	Born 1970s	Born 1980s
Outcomes						
High School Graduation	0.835	0.826	0.843			
	(0.371)	(0.379)	(0.364)			
College Access	0.385	0.349	0.417			
	(0.487)	(0.477)	(0.493)			
College Graduation				0.268	0.242	0.291
				(0.443)	(0.429)	(0.454)
Wealth						
Net Worth (in 1,000)	231.002	220.837	239.797	238.476	215.567	258.89
	(888.577)	(758.981)	(987.122)	(1017.863)	(705.891)	(1230.761)
Home Value (in 1,000)	138.651	132.429	144.034	139.005	134.511	143.009
	(186.038)	(180.405)	(190.647)	(175.878)	(167.431)	(183.023)
Home Equity (in 1,000)	74.96	82.824	68.156	76.052	82.167	70.603
	(134.315)	(141.093)	(127.798)	(130.873)	(119.906)	(139.724)
Financial Assets (in 1,000)	67.973	50.053	83.476	73.616	55.207	90.019
	(550.392)	(522.559)	(573.028)	(604.583)	(569.723)	(633.714)
Median wealth (by quintiles)						
Net Worth (in 1,000)						
Lowest quintile	0	0	0	0	0	0
	[-1256.0 ; 6.7]	[-916.3 ; 6.7]	[-1256.0 ; 4.2]	[-1256.0 ; 8.3]	[-916.3 ; 8.3]	[-1256.0 ; 3.5]
2nd quintile	21	25.2	17.6	23.1	29.2	17.6
	[4.2 ; 47.1]	[6.8 ; 47.1]	[4.2 ; 40.9]	[3.8 ; 52.6]	[8.4 ; 52.6]	[3.8 ; 40.7]
3rd quintile	72.2	75.1	70.2	75.4	78.6	69.9
	[40.9 ; 110.0]	[47.2 ; 102.1]	[40.9 ; 110.0]	[40.9 ; 111.9]	[52.7 ; 108.8]	[40.9 ; 111.9]
4th quintile	161.9	153.9	173.4	170.5	162	176.8
	[103.2 ; 279.7]	[103.2 ; 241.8]	[110.3 ; 279.7]	[109.0 ; 282.5]	[109.0 ; 265.2]	[111.9 ; 282.5]
Highest quintile	492.9	490.1	496.7	503.4	511.4	499.3
	[242.4 ; 25680.4]	[242.4 ; 20455.1]	[282.3 ; 25680.4]	[265.8 ; 25680.4]	[265.8 ; 20455.1]	[282.9 ; 25680.4]
Overall	73.8	76.9	69.2	76.2	83.1	67.6
Home Value (in 1,000)						
Lowest quintile	0	0	0	0	0	0
	[0.0 ; 0.0]	[0.0 ; 0.0]	[0.0 ; 0.0]	[0.0 ; 0.0]	[0.0 ; 0.0]	[0.0 ; 0.0]

Table A.1 *(continued)*

	Sample at age 20			Sample at age 25		
	All	Born 1970s	Born 1980s	All	Born 1970s	Born 1980s
2nd quintile	35.7	33.8	37.7	39.3	44.9	36.1
	[0.0 ; 62.9]	[1.3 ; 62.8]	[0.0 ; 62.9]	[0.0 ; 71.4]	[1.3 ; 71.4]	[0.0 ; 62.9]
3rd quintile	97.4	94	102.2	100.9	96.8	102.2
	[62.9 ; 141.5]	[62.9 ; 122.2]	[62.9 ; 141.5]	[62.9 ; 141.5]	[71.8 ; 123.4]	[62.9 ; 141.5]
4th quintile	169.1	157	181.8	172.9	159.7	188.6
	[123.4 ; 235.8]	[123.4 ; 190.7]	[144.6 ; 235.8]	[125.6 ; 237.7]	[125.6 ; 195.1]	[144.6 ; 237.7]
Highest quintile	324.2	300.7	337.9	333.1	300.7	349.6
	[191.7 ; 1879.4]	[191.7 ; 1879.4]	[237.7 ; 1879.4]	[196.3 ; 1538.4]	[196.3 ; 1221.6]	[243.6 ; 1538.4]
Overall	94.3	94	97.9	97.9	96.8	97.9
Other SES						
Income (in 1,000)	90.547	82.056	97.893	90.805	84.041	96.832
	(90.548)	(63.532)	(108.105)	(87.892)	(65.183)	(103.676)
Occupational Status	482.459	466.179	496.544	484.036	476.411	490.83
	(234.572)	(235.700)	(232.718)	(236.149)	(233.316)	(238.494)
Parental Education, <HS	0.107	0.142	0.076	0.103	0.126	0.082
	(0.309)	(0.349)	(0.266)	(0.304)	(0.332)	(0.274)
Parental Education, HS	0.314	0.361	0.273	0.307	0.349	0.271
	(0.464)	(0.480)	(0.446)	(0.461)	(0.477)	(0.444)
Parental Education, Some College	0.297	0.258	0.331	0.296	0.263	0.326
	(0.457)	(0.438)	(0.471)	(0.457)	(0.440)	(0.469)
Parental Education, BA	0.282	0.239	0.32	0.294	0.262	0.322
	(0.450)	(0.426)	(0.466)	(0.456)	(0.440)	(0.467)
Demographics						
Female	0.491	0.482	0.499	0.489	0.475	0.502
	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)	(0.500)
Family Size	4.409	4.461	4.364	4.401	4.431	4.374
	(1.245)	(1.250)	(1.239)	(1.237)	(1.235)	(1.239)
Number of Children in Family	2.466	2.458	2.472	2.46	2.426	2.49
	(1.065)	(1.070)	(1.060)	(1.066)	(1.060)	(1.072)
Household Head Married	0.766	0.798	0.738	0.765	0.806	0.729
	(0.423)	(0.401)	(0.440)	(0.424)	(0.396)	(0.444)
Mother's Age	37.626	36.826	38.317	37.794	37.061	38.448
	(5.588)	(5.538)	(5.540)	(5.648)	(5.550)	(5.655)
Own Household (Age 20)	0.213	0.207	0.218			
	(0.409)	(0.405)	(0.413)			
Own Household (Age 25)				0.759	0.77	0.748
				(0.428)	(0.421)	(0.434)
N	5,025	2,334	2,691	4,107	1,799	2,308

Note: Weighted using individual weights at age 20/25; standard errors in parantheses; quintile boundaries in bracketed parantheses

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A.2 Wealth Gaps in Education

	High School Graduation			College Attendance			College Graduation		
	Rate	(95% C.I.)		Rate	(95% C.I.)		Rate	(95% C.I.)	
Net Worth Quintile									
Lowest	0.6605	(0.6363	0.6848)	0.1803	(0.1606	0.1999)	0.0814	(0.0654	0.0974)
2nd	0.7774	(0.7539	0.8009)	0.2865	(0.2610	0.3121)	0.1270	(0.1056	0.1484)
3rd	0.8535	(0.8320	0.8751)	0.3928	(0.3630	0.4226)	0.2176	(0.1893	0.2459)
4th	0.8774	(0.8558	0.8990)	0.4724	(0.4396	0.5053)	0.3480	(0.3128	0.3832)
Highest	0.9117	(0.8915	0.9319)	0.5204	(0.4849	0.5560)	0.5142	(0.4741	0.5543)
Home Value Quintile									
Lowest	0.6935	(0.6734	0.7137)	0.2264	(0.2081	0.2447)	0.0950	(0.0801	0.1098)
2nd	0.7818	(0.7497	0.8139)	0.2496	(0.2160	0.2832)	0.0960	(0.0707	0.1213)
3rd	0.8469	(0.8259	0.8679)	0.3735	(0.3452	0.4017)	0.2161	(0.1891	0.2431)
4th	0.8932	(0.8722	0.9141)	0.4706	(0.4367	0.5045)	0.3639	(0.3270	0.4008)
Highest	0.8964	(0.8744	0.9183)	0.5410	(0.5052	0.5769)	0.5321	(0.4919	0.5723)
Home Equity Quintile									
Lowest	0.7025	(0.6832	0.7217)	0.2355	(0.2176	0.2534)	0.1037	(0.0889	0.1186)
2nd	0.8009	(0.7644	0.8373)	0.2879	(0.2466	0.3292)	0.1447	(0.1094	0.1801)
3rd	0.8475	(0.8260	0.8691)	0.3630	(0.3341	0.3918)	0.2093	(0.1818	0.2368)
4th	0.8768	(0.8556	0.8979)	0.4541	(0.4220	0.4861)	0.3410	(0.3068	0.3753)
Highest	0.8886	(0.8659	0.9113)	0.5163	(0.4802	0.5524)	0.4966	(0.4559	0.5372)
Financial Assets Quintile									
Lowest	0.6679	(0.6449	0.6909)	0.1837	(0.1648	0.2025)	0.0772	(0.0625	0.0920)
2nd	0.7752	(0.7506	0.7997)	0.2968	(0.2699	0.3236)	0.1360	(0.1127	0.1593)
3rd	0.8448	(0.8215	0.8681)	0.3933	(0.3619	0.4248)	0.2364	(0.2060	0.2667)
4th	0.8993	(0.8795	0.9192)	0.4887	(0.4557	0.5216)	0.3672	(0.3312	0.4032)
Highest	0.9089	(0.8891	0.9287)	0.5000	(0.4656	0.5344)	0.4678	(0.4291	0.5066)

A.3 Cohort Changes in Wealth Gaps in Education

	High School Graduation			College Attendance			College Graduation		
	Rate	(95% C.I.)		Rate	(95% C.I.)		Rate	(95% C.I.)	
Net Worth Quintiles									
Cohort born 1970-79									
Lowest	0.6385	(0.6037	0.6733)	0.1487	(0.1229	0.1745)	0.0624	(0.0414	0.0833)
2nd	0.7330	(0.6957	0.7702)	0.2413	(0.2053	0.2772)	0.1266	(0.0935	0.1598)
3rd	0.8186	(0.7835	0.8537)	0.3218	(0.2793	0.3644)	0.1988	(0.1565	0.2411)
4th	0.8926	(0.8629	0.9223)	0.4391	(0.3916	0.4867)	0.3185	(0.2669	0.3700)
Highest	0.9174	(0.8890	0.9457)	0.4904	(0.4389	0.5418)	0.4440	(0.3845	0.5035)
Cohort born 1980-89									
Lowest	0.6825	(0.6489	0.7161)	0.2117	(0.1822	0.2412)	0.0975	(0.0739	0.1212)
2nd	0.8139	(0.7842	0.8436)	0.3238	(0.2881	0.3594)	0.1273	(0.0992	0.1554)
3rd	0.8820	(0.8555	0.9086)	0.4507	(0.4098	0.4916)	0.2311	(0.1932	0.2690)
4th	0.8638	(0.8328	0.8948)	0.5021	(0.4569	0.5473)	0.3718	(0.3238	0.4198)
Highest	0.9066	(0.8779	0.9352)	0.5480	(0.4990	0.5970)	0.5714	(0.5179	0.6249)