

# Intergenerational Correlations in Wealth

FABIAN T. PFEFFER University of Michigan

ALEXANDRA KILLEWALD
Harvard University

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# Introduction

nequality in U.S. family wealth is high and increasing (Pfeffer, Danziger, and Schoeni 2013; Piketty 2014; Wolff 2014), which raises concerns about whether the greatly unequal distribution of wealth between families is also bound to be maintained across generations (Conley 1999; Oliver and Shapiro 1995). Of course, both sociologists and economists have long been interested in the transmission of socio-economic advantage across generations (Becker and Tomes 1979; Blau and Duncan 1967). However, wealth has rarely been considered in this perspective, although it is an important and distinct dimension of economic success (Spilerman 2000). Instead, the study of intergenerational persistence is still chiefly concentrated on income and occupations (Torche 2015).

Studies of intergenerational correlations (especially in occupational standing) have also long paid attention to the channels of intergenerational status transmission, with education a key mediator of interest. We hypothesize that education is likely to also be an important mediator of the intergenerational transmission of wealth, given the role of parental wealth in facilitating access to and attainment of higher education (Conley 2001a) and the advantage of those with higher education in accumulating assets (Conley 2001b; Keister 2003). However, in the case of wealth, unlike education or earnings, there is also an obvious direct mechanism for the propagation of inequality across generations: Wealth can be directly transferred across generations through bequests and inter-vivos transfers (Kotlikoff and Summers 1981; Kohli 2004). The direct transmissibility of wealth from one generation to the next may mean that we observe the same money as wealth in multiple generations. We document descriptively how the estimated intergenerational transmission of wealth changes when we account for these two channels of transmission: education and inheritance. We do not attempt to make causal claims about the role of each factor in mediating intergenerational wealth rigidity but identify these two characteristics as important correlates of both parental and child wealth to help direct the search for further explanations of rigidity in the wealth structure.

Our analyses substantially improve and expand the few prior estimates of intergenerational correlations in wealth. Existing evidence on intergenerational rigidity in the U.S. wealth distribution comes from a small number of studies, which, like ours, use data from the Panel Study of Income Dynamics (PSID) but, unlike ours, were only able to examine the wealth outcomes of younger adults (Charles and Hurst 2003; Conley and Glauber 2008; Mulligan 1997). This limitation was imposed by data restrictions at the time of analysis and already acknowledged in that research, suggesting that it would be more appropriate to measure wealth at later ages when adults have had more time to accumulate assets (Charles and Hurst 2003, fn.5; Conley and Glauber 2008, p. 10). We hypothesize that adults' wealth will more closely resemble that of their parents as both generations enter middle and late adulthood, aging out of the period of intensive investments in young adulthood and increasingly accumulating assets. Drawing on newly available data from the PSID, we update estimates of intergenerational wealth correlations and test whether intergenerational wealth transmission indeed strengthens from early through late adulthood.

Additionally, we examine the contours of the intergenerational reproduction of wealth. We hypothesize that wealth positions at the top and bottom of the distribution may be particularly sticky, with very wealthy parents able to secure a substantial wealth advantage for their children, and parents without assets especially likely to have adult children who also fail to accumulate any wealth. When the intergenerational transmission of wealth is measured with a single parameter, such as an intergenerational elasticity, this variability is lost. Evaluating the persistence of the highest levels of wealth across generations also speaks to concerns about a wealthy elite that wields dynastic financial power.

Together, our analyses offer a rich description of the intergenerational persistence of wealth across generations, how these patterns differ across the wealth distribution, and to what extent education and inheritance can account for these intergenerational associations. Our analyses mitigate the great imbalance of a large literature focused on the description of intergenerational correlations in other dimensions of socioeconomic standing, mostly occupational classes or income.

# Theoretical Motivation and Prior Work

Compared to income and earnings, wealth in the United States is substantially more unequally distributed (Keister and Moller 2000). Access to wealth is in turn associated with a wide range of outcomes, including longevity, family formation, and the educational achievement of offspring (Belley and Lochner 2007; Bond Huie et al. 2003; Charles, Hurst, and Killewald 2013; Conley 1999, 2001a; Haveman and Wilson 2007; Morgan and Kim 2006; Orr 2003; Pfeffer 2011; Schneider 2011). Furthermore, these associations are not fully

explained by standard measures of socioeconomic advantage, such as income, education, and occupation. The wealth distribution is thus an important and distinct measure of the concentration of social inequality and advantage.

Wealth can be passed directly to subsequent generations through bequests or inter-vivos transfers, such as assistance with the down payment on a first home (Charles and Hurst 2002). Family wealth can also be used to facilitate wealth-generating investments of the next generation, most notably postsecondary education (Conley 2001a; Pfeffer 2011).

# Prior Estimates of Intergenerational Wealth Correlations and Potential Life-Cycle Bias

While a large literature in economics and sociology has investigated intergenerational associations in income, occupations, and education (Blau and Duncan 1967; Hertz et al. 2007; Long and Ferrie 2013; Pfeffer 2008; Rosenfeld 1978; Solon 1999), our knowledge of how similar the wealth of parents is to the wealth of their offspring relies on very few studies. In part because of data limitations, the three most comprehensive evaluations of intergenerational wealth mobility have relied on wealth outcomes for the second generation at relatively young ages. Mulligan (1997) measures both parent and child wealth in 1984 and 1989, averaging if possible, for children at most age 38 in 1989. Charles and Hurst (2003) estimate the correlation between children's wealth in 1999 and parental wealth averaged between 1984 and 1989. In order to estimate pre-bequest and pre-retirement associations, parents are required to be not yet retired in 1984 and 1989 and surviving in 1999. As a result, the average adult offspring in their sample is just under 38 years old. Conley and Glauber (2008) measure the wealth of young adults ages 24 to 40 in 1999 to 2003, restricting their sample to young adults whose parents' wealth was measured in 1984, when the offspring generation was ages 6 to 21. All three studies estimate an intergenerational wealth elasticity based on the correlation in logged parent and child wealth. Charles and Hurst estimate an elasticity of 0.37, while Conley and Glauber estimate a substantially lower 0.28. Mulligan's OLS-estimated elasticity falls in between at 0.32, but an instrumental variables approach designed to correct for attenuation bias produces an estimate of 0.43.1

The difference in the estimates may be due to a number of factors, but one prominent difference is the treatment of those with nonpositive net worth. Previous evidence suggests that the association between parental wealth and the wealth of their young adult children is much weaker for offspring who are net debtors (Killewald 2013). Thus, the lower elasticity estimated by Conley and Glauber may be because they bottom-code wealth for offspring with nonpositive net worth, while both Mulligan and Charles and Hurst excluded this group. We return to this point in our analyses.

To put these estimates in context, Solon (1992) estimates that the intergenerational correlation in (quasi) permanent income between fathers and sons is 0.41, and subsequent studies have confirmed this estimate (Chetty et al. 2014; Solon 1999) or found even higher intergenerational income elasticities (Mazumder 2005; Mitnik et al. 2015). The intergenerational persistence in years of education in the United States is similar in size (Couch and Dunn 1997; Hertz et al. 2007), as is the intergenerational persistence of occupational status (Blau and Duncan 1967). Given that wealth is both more unequally distributed than income and education and easier to transmit directly between generations, it is surprising that prior estimates of the intergenerational transmission of wealth suggest comparable social reproduction as for other measures of socioeconomic advantage.

We hypothesize that these prior estimates, based on the accumulated wealth of the second generation at relatively young ages, may have underestimated the intergenerational persistence of wealth—a phenomenon referred to as life-cycle bias. Life-cycle bias has been shown to affect intergenerational earnings correlations, even with controls for parent and child age; correlations are much higher during middle adulthood than either younger or older adulthood (Mazumder 2015). For wealth, we expect rising intergenerational correlations through pre-retirement late adulthood, given the continued accumulation of assets, making it even more pressing to evaluate whether prior studies have underestimated the intergenerational reproduction of wealth by focusing on younger adults.

In support of the hypothesis of life-cycle bias, using Swedish data, Adermon, Lindahl, and Waldenström (2015) find that the rank-rank correlation in intergenerational wealth is 50 percent higher when second-generation wealth is measured at an average age of 47, rather than an average age of 32. Although previous research on intergenerational wealth transmission in the United States has recognized that later adulthood is preferable for measuring intergenerational wealth correlations (Charles and Hurst 2003; Conley and Glauber 2008), until recently the PSID had not been collecting wealth information for long enough to measure both parents' and offspring's wealth at midlife. Using data from the 1984-2013 waves of the PSID, we construct a sample of parent-child pairs that spans a larger age range in the second generation and test how the intergenerational transmission of wealth differs across the life course.

# Rigidity across the Wealth Distribution

Recent research focused on historical trends in persistence at the very top of wealth distribution has documented much higher intergenerational correlations than those based on the entire population (e.g., Piketty 2014).<sup>2</sup> Previous research documents that intergenerational wealth associations are stronger at higher positions in the parental wealth distribution (Adermon et al. 2015; Hansen 2014; Killewald 2013). We expect that the nonlinearity of this relationship will be even stronger later in adulthood and following bequests, which are highly skewed (Avery and Rendall 2002).

However, consistent with previous research on the intergenerational reproduction of poverty (see Corcoran 1995 for a review), we expect that children born to asset-poor parents may also be particularly likely to reproduce their parents' position in the wealth distribution. Research by Sharkey (2008) demonstrates that, for African Americans, the intergenerational transmission of neighborhood context is concentrated at the bottom of the distribution. Given the importance of assets for homeownership and neighborhood selection, spatial patterns suggest another mechanism by which the reproduction of wealth may be concentrated at the bottom of the distribution. This is consistent with the notion of an intergenerational "underclass," with children raised by extremely economically, spatially, and socially disadvantaged parents likely to experience the same deprivations as adults (Wilson 1987).

Using mobility tables, Charles and Hurst (2003) and Conley and Glauber (2008) both find greater intergenerational reproduction of wealth at the top and bottom of the wealth distribution, compared with the middle. Using our sample of older adults, we assess differences in the degree of wealth transmission across the full wealth distribution.

# Channels of Intergenerational Wealth Transmission

Finally, we describe how the intergenerational correlation in wealth changes when we adjust for possible mechanisms underlying this association. Prior research finds little role for genetic endowments in the intergenerational transmission of wealth (Black et al. 2015) and therefore ascribes it mostly to environmental factors. Those may either be direct monetary transfers from parents to offspring or indirect investments by parents in asset-generating attributes of offspring. We consider two channels in detail: bequests and education.

<sup>2</sup> Research based on historical register data often shows much higher intergenerational wealth correlations (Clark 2014; Kearl and Pope 1986; Menchik 1979), perhaps due to these studies' reliance on wealth measures derived from death records that include all bequests and transfers ever received. However, other factors may also account for the high correlation, such as the focus on the top of the wealth distribution (wealth measures in death records are available only for individuals who had significant wealth to bequest) or the restriction to a specific population (e.g., Mormons in Utah) or historical time (this research mostly studies the 18th and 19th centuries).

Bequests and transfers are extremely unequally distributed and have been estimated to account for somewhere between 40 and 80 percent of aggregate net worth (Gale and Scholz 1994; Piketty 2014). Using Swedish data, Adermon et al. (2015) find that inheritance can (descriptively) explain the majority of the intergenerational correlation in wealth. Bequests are thus a likely mechanism by which rigidity in the wealth structure is maintained. They also occur relatively later in life. This implies a likely downward bias in prior estimates of the intergenerational wealth correlation because correlations are estimated before the occurrence of bequests from the parent, either simply because the second generation is young (Conley and Glauber 2008), or because of requirements about survivorship of the parental generation (Charles and Hurst 2003; Mulligan 1997). Assessing wealth in the child generation at a higher age is therefore valuable in part because it allows us to include more individuals who have received bequests. In fact, the average age of our child sample coincides with the expected average age of receiving bequests (~50 years; see Piketty 2014, p. 389). We also descriptively assess the degree to which bequest and transfer receipt account for the intergenerational wealth correlation.

Prior research has documented strong associations between parents' wealth and their children's educational outcomes (Conley 2001a; Morgan and Kim 2006; Belley and Lochner 2007; Haveman and Wilson 2007; Orr 2003; Pfeffer 2011) and paying for higher education is a likely moment for intervivos wealth transfers from parents to offspring (Conley 2001a; Schoeni and Ross 2005). Since income returns to educational attainment should translate into different patterns of asset accumulation, and education itself is associated with wealth net of income (Conley 2001b; Keister 2003), we expect that education is a mediator of intergenerational persistence in wealth. Furthermore, education and income are associated with not only higher wealth levels but also faster rates of wealth accumulation (Conley 2001b). Therefore, we also expect that the education mechanism leads to higher intergenerational wealth correlations as early adulthood investments increasingly pay off as offspring age.

The two channels selected, educational investments and bequests and transfers, are likely to be of different importance at different points in the offspring's life course. Parental bequests tend to occur during middle adulthood of those bequeathed. In contrast, the assessment of education's role will point to a mechanism of intergenerational wealth transmission much earlier in life.

Charles and Hurst (2003) also consider mechanisms of intergenerational wealth transmission, specifically (lifetime) income, education, prior transfers and anticipated bequests, and the types of assets held. To assess the role of each channel, they add controls for both the parent and child value to the regression model estimating the intergenerational association in wealth. For

example, by controlling for parent and child education, they estimate the extent of intergenerational reproduction in wealth that is independent of any intergenerational reproduction of education. They find, perhaps unsurprisingly, that the similarity between parents and children in their income-earning potential—lifetime income—is the largest contributor to the intergenerational wealth association, explaining about half of the association. The intergenerational reproduction of education explains about one-fourth of the association, 17 percent is explained by prior gifts received by the child and anticipated bequests of the parents, and a little over one third is explained by intergenerational similarity in asset types held. Net of similarities in income, education, and transfers have little additional explanatory power, nor do shared-risk preferences between parents and children.

We pursue a somewhat different approach. First, in our analysis of the mediation of two-generational correlations we adjust only for children's characteristics (education and gifts/bequests received) but not the characteristics of parents. Charles and Hurst aim to estimate the extent of intergenerational wealth reproduction independent of the intergenerational reproduction in other factors, essentially assuming that parental wealth is a spurious factor associated with both parental education and child education, rather than viewing the latter as a mediator of this association. We make the opposite assumption. Our assumption is in keeping with our descriptive focus on channels of wealth transmission: We seek to understand the potential role for parental investments in child outcomes. Because education is positively correlated between parents and children, our estimates will be more conservative in terms of the share of the wealth correlation explained by each factor.

Second, we consider a narrower range of mechanisms. As described previously, we do not consider asset types, including homeownership, out of concern that they are endogenous with children's own wealth. Charles and Hurst's finding that education explains little of the intergenerational transmission of wealth net of income is important, as it indicates that the importance of education as a channel of transmission is largely through education's effect on income, rather than other mechanisms, such as enhanced financial skills. However, interpreting the mediating role of income is challenging: We learn that much of the between-generation similarity in wealth is because generations are similar in their ability to bring in income that can be used for savings, but we still do not know why this is true. By focusing on education and inheritance, we identify channels that are more directly subject to parental manipulation—parental action that seeks to increase offspring wealth directly through transfers or indirectly through investments in their future income- and wealth-generating potential.

#### Data

The PSID's genealogical design makes it ideal for intergenerational analyses: Children born to PSID households eventually become PSID respondents themselves as they form their own households. The PSID is the only nationally representative panel study that has been in the field long enough to include both a second and a third generation of adult survey respondents (Pfeffer 2014). The PSID has collected information on housing wealth since its inception in 1968 (home values starting in the first wave and also mortgages starting in 1969). Since 1984, every five years until 1999 and every wave since then, PSID has collected detailed information on families' assets, which allows the calculation of a family's net worth.

We take advantage of the earliest (1984-89) and latest (2011-13) wealth data collected in the PSID, spanning almost three decades and including a decade more wealth data than prior contributions that assessed wealth correlations based on the PSID. The full analytic sample contains 4,567 individuals aged 25-64 in 2013 and their parents, aged 25-64 in 1984, when they reported their own wealth for the first time. We link children to their biological or adoptive parents using PSID's family identification mapping system. For parents who do not live in the same household in 1984, for instance because they are divorced, we sum the net worth of parents if they are both observed in separate households (5 percent of the weighted sample). Where only the mother (20 percent) or the father (3 percent) are observed, we take her/his household net worth as the sole indicator of parental wealth. One could instead impute the net worth of the missing parent, but we are not convinced that doing so is preferable, since the missing parent may be genuinely missing from the child's life (including due to death) and therefore should not count toward that child's wealth background as well as because imputations of a missing partner's wealth may have limited accuracy. Still, analyses that do use imputed wealth of the missing parent produce very similar results (available upon request).

The PSID is not the only nationally representative survey that collects information on net worth. The Survey of Consumer Finances (SCF), often considered the gold standard among wealth surveys, does not track offspring wealth and therefore does not contain the necessary data to estimate intergenerational wealth correlations. Recent research has shown that the PSID wealth measures compare very favorably to the SCF wealth measures, attesting to the high validity of the former (Pfeffer et al. 2014). Since 1985, the National Longitudinal Survey of Youth 1979 (NLSY79) has also collected information on respondents' net worth, but, like the SCF, does not measure parental wealth and therefore does not allow the estimation of intergenerational wealth correlations.

Our main wealth measure is family net worth, which is the sum of all financial assets, real assets, and home equity, minus any financial obligations.<sup>3</sup> To reduce measurement error, we average wealth measures across two adjacent survey years (2011 and 2013 for the offspring generation, 1984 and 1989 for the parents). All dollar values are adjusted for inflation and expressed in 2013 dollars. Our main results do not adjust wealth for family size, but models based on wealth measures adjusted by the square root of family size yielded numerically similar and substantively equivalent results (available upon request).

In our models that assess the mediating role of education in the intergenerational transmission of wealth, we use offspring's highest educational degree attained (less than high school, high school, some college, B.A., and postgraduate degree). For bequests, we draw on a direct survey question, asked in each wave of the PSID, on whether any large gift or inheritance of over \$10,000 has been received and, if so, the value. We cumulate this information across all waves to approximate the total value of gifts and bequests ever received by children.

# **Methods**

A large literature on intergenerational associations in economic status (Black and Devereux 2011; Solon 1999) and prior work on intergenerational wealth correlations (Mulligan 1997; Charles and Hurst 2003) apply an OLS regression approach to estimate intergenerational correlations as age-adjusted elasticities. For wealth, this model is

$$\ln W_c = \alpha + \beta_1 \ln W_p + \beta_2 Age_c + \beta_3 Age_c^2 + \beta_4 Age_p + \beta_5 Age_p^2 + \varepsilon c$$
 (1)

with  $\ln W_c$  the natural log of offspring net worth,  $\ln W_p$  the natural log of parental net worth, and with quadratic controls for child and parental age (average of maternal and paternal age if both are observed) Since both offspring and parental net worth are logged,  $\beta_1$  can be interpreted as an elasticity—i.e.,

The PSID asks a series of questions on different asset types, including home values, mortgages, checking accounts, savings, money market holdings, CDs, government saving bonds, Treasury bills, stocks, mutual funds, investment trusts, bond funds, life insurance cash, valuable collections, trust or estate rights, farm or business wealth, real estate, vehicle wealth, private annuities, IRAs, and various forms of debt. The net worth measure used here, which sums all of these components, does not include pension wealth, i.e. neither defined-benefit pensions (more prevalent in the parent generation) defined-contribution pensions (more prevalent in the child generation). Using pension-augmented wealth may yield higher estimates of intergenerational persistence if the intergenerational similarity in pension holdings is higher than in the other asset components.

as the predicted percent change in offspring wealth from a 1 percent change in parental wealth.

The log-log specification reduces the impact of high wealth outliers, which is important given the vastly unequal distribution of wealth, but it suffers from two important drawbacks. First, it cannot easily incorporate households with zero wealth or net debt: they are either dropped from the sample (Charles and Hurst 2003; Mulligan 1997) or set to a floor value (Conley and Glauber 2008). This is particularly important because nearly one in five individuals in our sample of the offspring generation has zero or negative net worth (i.e., net debt), and among younger cohorts (25-44 in 2013) the share rises to one in four. Second, comparing elasticities across groups or time is complicated by the fact that they are a product of both the intergenerational correlation (exchange mobility) and the variances in both generations (marginal distributions).

We therefore prefer a different specification to assess and compare exchange mobility in wealth:

$$\operatorname{rank} W_c = \alpha + \lambda_1 \operatorname{rank} Wp + \lambda_2 \operatorname{Age}_c + \lambda_3 \operatorname{Age}_c^2 + \lambda_4 \operatorname{Age}_n + \beta \lambda_5 \operatorname{Age}_n^2 + \varepsilon_c$$
 (2)

Instead of the logarithm of net worth (equation 1), we measure child wealth  $(rank W_n)$  and parental wealth  $(rank W_n)$  as the percentile rank in their respective weighted net worth distribution. This specification allows us to assess the full distribution of wealth, since it easily accommodates cases of zero wealth and net debt. Also, the rank slope coefficient ( $\lambda_1$ ) is insensitive to differences in the marginal distributions across groups (Chetty et al. 2014; Jäntti and Jenkins 2014) and therefore more easily compares groups. In addition, it has recently been shown by Mazumder (2015) that, at least in the context of income correlations, rank-rank slopes are much more robust to life-cycle bias and attenuation bias due to measurement error than are intergenerational elasticities.

After estimating the average intergenerational association in wealth, we document variation in this association across substantively important subgroups by estimating subgroup-specific models. In particular, we test our hypothesis that wealth transmission is more pronounced at older ages, dividing the sample into four age groups: 25-34, 35-44, 45-54, and 55-64. We also separately analyze wealth correlations by gender and race and compare wealth correlations before and after the Great Recession.

To assess variation in intergenerational wealth rigidity across the wealth distribution of both parents and offspring, we formally test whether the correlation between parental and offspring wealth is nonlinear (see Mitnik et al. 2015). We then move to mobility tables (transition matrices) as a flexible approach to assess potential nonlinearities in the wealth association across generations. Sociologists studying intergenerational mobility by occupation or education have often used mobility tables to assess where immobility is particularly pronounced (see the

discussion in Erikson and Goldthorpe 2002). Like the rank-rank correlations, mobility tables easily incorporate the experiences of net debtors—a substantial share of our adult offspring sample. For these and all following analyses, we restrict the sample to parent-child pairs in which the offspring is ages 45-64 (N=1,975), to document patterns after offspring have had time to accumulate assets across a substantial portion of their adult lives. We divide both the parentand offspring-weighted wealth distributions into generation-specific quintiles and examine transition probabilities across cells, testing the possibility that rigidity is particularly pronounced at the top and bottom of the distribution.

To assess the contribution of the two channels of transmission that we hypothesized to underlie intergenerational wealth correlations, inheritances or transfers and education, we enter controls for these characteristics into equation (2) and observe the degree to which they mediate—separately and jointly intergenerational correlations. For the mediation of the parent-child correlation, we control for children's educational attainment and amount of gifts or inheritance received to date, cumulating across years.

All of our analyses are weighted by the family weight of the parents (averaged across the two measurement points), and standard errors are clustered by the original sample family. Neither of these two adjustments, however, substantively alters our findings. Since we draw on imputed wealth measures provided by the PSID there is no need for imputation of missing values, and we also have no missing values on education or inheritance.

In extended analyses, not reported here for reasons of space, we expand our assessment beyond parent-child correlations to the multigenerational transmission of wealth, drawing on a range of indicators of grandparental wealth (Pfeffer and Killewald 2015). There, we also provide an in-depth study of race differences in wealth correlations, which are facilitated by PSID's oversample of African American households.

### Results

## **Descriptives**

Descriptive statistics for our full analytic sample are displayed in table 1. As argued before, the latest PSID data allow us to capture the wealth of children and parents at more similar and higher ages than prior research: The mean age at which we observe parents (in 1984) is 43.4 years and 44.6 years for children (in 2013). Half of the offspring are observed during their peak time of wealth, between 45 and 64 years of age. The close similarity of mean ages across two generations protects our estimates of two-generational correlations from lifecycle bias.

Table 1. Descriptives (N=4,567)

DEMOGRAPHICS	MEAN OR %	(STD.DEV.)
AGE		
Offspring: Age in 2013	44.6	(10.8)
Parents: Average age in 1984	43.4	(11.0)
OFFSPRING AGE GROUPS (AGE IN 201	3)	
Age group 25–34	22.5%	
Age group 35-44	27.2%	
Age group 45–54	28.9%	
Age group 55-64	21.4%	
OFFSPRING RACE		
White	83.1%	
African American	12.5%	
Other	4.4%	
OFFSPRING SEX		
Male	48.1%	
Female	51.9%	

NET WORTH	MEAN OR %	(STD. DEV.)	
NET WORTH			
Offspring: Average 2011–13	289,311	(1,054,904)	
Offspring: Average 2005–07 (pre-recession)	322,609	(1,219,812)	
Parent: Average 1984-89	337,589	(985,775)	
SHARE OF CASES WITHOUT WEALTH	(ZERO OR NET D	EBT)	
Offspring: 2011–13	18.5%		
Offspring: 2005–07 (pre-recession)	14.0%		
Parent: 1984–89	5.6%		

Note: All dollar values are 2013 dollars.

NET WORTH	MEAN OR %	(STD. DEV.)				
NET WORTH QUINTILES OFFSPRING (AVERAGE 2011–13)						
Quintile 1 (lowest)	-32,597					
Quintile 2	11,349					
Quintile 3	62,170					
Quintile 4	196,615					
Quintile 5 (highest)	1,210,295					
NET WORTH QUINTILES: PAREN	TS (AVERAGE 1984–89)					
Quintile 1 (lowest)	3,677					
Quintile 2	54,593					
Quintile 3	135,922					
Quintile 4	283,126					
Quintile 5 (highest)	1,212,501					

MECHANISMS	MEAN OR %				
OFFSPRING: HIGHEST EDUCATIONAL	DEGREE ATTAINE	D (2011/2013)			
Less than high school	4.7%				
High school	25.0%				
Some college	32.7%				
BA	23.6%				
Post-graduate	13.9%				
OFFSPRING: LARGE INHERITANCE OF (THROUGH 2013)	R GIFT RECEIVED				
Whether received gift/inheritance	28.7%				
Value of gift/inheritance	51,260	(488,590)			
Value of gift/inheritance (among those receiving)	181,808	(907,546)			

Mean net worth decreased from the \$337,589 in the parent generation to \$289,311 in the child generation, in line with prior assessments of trends in the wealth distribution between those years (Pfeffer et al. 2014). More than two-thirds of the lower net worth in the child generation is accounted for by losses during the Great Recession. Offspring mean wealth was \$322,609 in 2005–07, before the large-scale asset destruction brought about by the collapse of the housing and stock markets. Similarly, the share of offspring with zero or negative net worth dramatically increased from 14 percent pre-recession to 18.5 percent after the recession, compared with less than 6 percent of parents in 1984-89.

Given that nearly one-fifth of the offspring sample held no wealth, it is unsurprising that the bottom 20 percent of the offspring hold \$32,597 in net debt, on average, compared with \$3,677 in net worth for the parent generation. The net worth of the middle wealth quintile of the offspring generation averages less than half the value in the parental generation (\$62,170 vs. \$135,922).

#### Wealth Correlations

Table 2 shows the estimated intergenerational elasticities and rank correlations in net worth. Our baseline estimate of the elasticity in net worth is 0.41, similar to the prior estimate of 0.37 from Charles and Hurst (2003).4 Applying a common interpretation that assumes constant elasticity, this implies that a 1 percent increase in parental net worth is associated with a predicted increase of 0.41 percent in offspring wealth. Or, a doubling of parental wealth is associated with a predicted increase of 32 percent ( $2^{0.405}$ =1.32) in offspring wealth.

We find sizable gender differences in wealth elasticities. Using the same interpretation, the estimates imply that a doubling of parents' net worth is associated with an increase in net worth by 38 percent (20.466=1.38) for sons but only 28 percent (20.358=1.32) for daughters. However, the direct comparison of these two estimates is challenged by two complications. First, since they are based on logarithmically transformed net worth variables, they exclude cases with zero wealth or net debt, excluding a somewhat higher share of daughters (20 percent) than sons (17 percent). Second, as discussed above, elasticities are sensitive to the marginal distribution, in this case, group differences in the variance of wealth. The wealth distribution for daughters is substantially more compressed than for sons (44 percent lower variance).

<sup>4</sup> Conley and Glauber (2008) found an appreciably lower elasticity of 0.28 based on a net worth measures that was bottom coded at \$1 before logarithmic transformation. Doing so reduces the elasticity in our sample to 0.33 and foreshadows some of the issues around nonlinearity in the elasticity that we discuss in more detail below.

Table 2. Intergenerational correlations in net worth

	ELASTICITY	SE	N	RANK SLOPE	(SE)	N	RANK SLOPE (AGE-STANDARDIZED)	(SE)	N
Overall	0.405***	(0.035)	3,202	0.371***	(0.019)	4,567			
BY SEX									
Male	0.466***	(0.046)	1,515	0.377***	(0.028)	2,040			
Female	0.358***	(0.046)	1,687	0.367***	(0.024)	2,527			
BY AGE (4 GROUPS)									
Age 25-34	0.361***	(0.056)	776	0.312***	(0.037)	1,313	0.312***	(0.037)	1,313
Age 35-44	0.400***	(0.055)	839	0.363***	(0.040)	1,257	0.360***	(0.039)	1,257
Age 45-54	0.368***	(0.060)	885	0.394***	(0.033)	1,171	0.428***	(0.034)	1,171
Age 55-64	0.509***	(0.068)	683	0.411***	(0.040)	804	0.421***	(0.042)	804
BY AGE (2 GROUPS)									
Age 25-44	0.390***	(0.038)	1,615	0.343***	(0.026)	2,570	0.337***	(0.026)	2,570
Age 45-64	0.418***	(0.052)	1,568	0.403***	(0.027)	1,975	0.427***	(0.027)	1,975
BY RACE									
White	0.388***	(0.043)	2,149	0.349***	(0.023)	2,716			
African American	0.087	(0.062)	921	0.114*	(0.054)	1,657			
BY PERIOD									
Pre-Recession (2005–07)	0.373***	(0.034)	2,959	0.351***	(0.020)	3,970			

Note: Statistical signifance levels at \* p<.05, \*\* p<.01, and \*\*\* p<.001 based on two-tailed tests.

Together, these factors contribute to deflate the elasticity for daughters compared to sons.

The rank correlations presented in table 1 address both issues and are therefore much more suitable for group comparisons of the size of intergenerational associations (see also Jäntti and Jenkins 2014). Here, the overall degree of association between parental wealth and children's wealth is 0.37 and virtually the same for sons and daughters. A rank slope of 0.37 means that an advantage of 10 percentiles (one decile) in the parent generation is associated with an advantage of 3.7 percentiles (about one-third of a decile) in the child generation.

We also focus on rank correlations to meaningfully compare the degree of intergenerational wealth correlation across age groups. The correlation rises greatly with increasing age, from 0.31 among offspring aged 25-34 to more than one-third higher, 0.41 for offspring aged 55-64 in 2013. These findings support the hypothesis that intergenerational wealth correlations rise with age. Since we also assess the two generations at similar ages within each age group (i.e., the average age of parents in our sample rises with children's age; r=0.88), one conclusion is that the similarity in wealth between parents and their children increases as both of them accumulate assets.

Because of the importance of mid- and later-life wealth for both retirement and investments in the next generation, we argue that estimates of rigidity in the wealth structure should ideally be based on measures of wealth attainment during older adulthood. Based on the rank slopes, we observe that intergenerational similarity is high and relatively stable among the older two age groups (45–54 and 55–64). In the following analyses, we therefore focus on the group of children aged 45 to 64.

We find a very similar age-gradient in the rank slope when the ranks are drawn within each age group rather than the entire sample (rightmost section of table 2). Consequently, the rising intergenerational wealth correlation with age not only means that children from wealthier households move up in the overall distribution of wealth, but that they also move up relative to their less wealthy but similarly aged peers.

We also find that the intergenerational correlation in wealth positions is less than one-third as strong for African Americans as for whites (0.11 versus 0.35). Vast and well-documented differences in the distribution of wealth between these two groups (Kochhar, Fry, and Taylor 2011; Oliver and Shapiro 1995) call for a more in-depth exploration of race differences in intergenerational wealth transmission, which we cannot include here for reasons of space (but see Pfeffer and Killewald 2015).

Finally, we note that the intergenerational correlation in wealth was virtually the same before and after the Great Recession (0.35 and 0.37, respectively). Although to different intensity, wealth losses hit American households across the wealth distribution, and it appears that these distributional shifts have not appreciably altered wealth positions of families when compared across generations.

## Rigidity across the Wealth Distribution

For the reasons previously discussed, we believe that the strength of the intergenerational transmission of wealth is likely to vary across the wealth distribution. We follow Mitnik et al. (2015) and test for nonlinearities in the intergenerational associations by assessing the fit of alternative model specifications that include nonlinear terms, either squared parental wealth or, more flexibly, a spline function with knots at the quintiles. Both specifications provide clear evidence against the constant association assumption (based on global F-tests; results not shown).

Therefore, to examine intergenerational associations in wealth across the wealth distribution, we use mobility tables that cross-tabulate parental and offspring's wealth quintiles, restricting the sample to 45–64-year-olds in 2013 and their parents and drawing the quintiles based on the weighted wealth distribution within this age group.

Table 3 shows the resulting mobility table and displays row or "outflow" percentages, which identify what percentage of the members from a given quintile of the parental wealth distribution are found in each quintile of the offspring wealth distribution. For each quintile, offspring are more likely to end up in the same quintile as their parents than expected by random chance (all on-diagonal cells have outflow percentages greater than 20). However, intergenerational persistence of wealth is much higher at the top than in any other quintile: 44 percent of children from the highest parental wealth quintile also end up in the highest wealth quintile themselves (corresponding to a total net worth of around \$331,000 or more), and about 70 percent end up in one of the top two quintiles (\$108,000 or more).<sup>5</sup> Furthermore, we observe a U-shaped pattern of immobility commonly found in mobility analyses. Immobility is lowest for children from the middle 20 percent of the wealth distribution (with parental net worth between \$89,000 and \$195,000). But, although these children appear to be about equally likely to move into any of the bottom four quintiles, a clear barrier to enter the top quintile is also apparent, with only 12 percent of these children accessing it. Finally, intergenerational persistence is again higher for children from the bottom quintile,

<sup>5</sup> Further adjustments for remaining age differences within this group, based on quintiles drawn from ageresidualized distributions, do not appreciably alter the picture of persistence at the top (44.4 percent instead of 44.1 percent attaining the top wealth guintile).

Table 3. Intergenerational wealth mobility

Net worth quintiles within ages 45-64 (N=1,975)

PARENTAL V	WEALTH QUINTILE	CHILD'S WEALTH QUINTILE					
		LOWEST [<\$800]	QUINTILE 2 [\$800-\$29K]	QUINTILE 3 [\$29K-\$108K]	QUINTILE 4 [\$108K-\$331K]	HIGHEST [≥\$331K]	TOTAL
Lowest	[≤\$24k]	35.0	29.9	17.9	10.8	6.4	100.0
Quintile 2	[\$24k-\$89k]	26.0	26.6	23.5	13.8	10.2	100.0
Quintile 3	[\$89k-\$195k]	22.2	20.7	22.2	22.8	12.2	100.0
Quintile 4	[\$195k-\$411k]	10.7	14.1	20.4	27.6	27.2	100.0
Highest	[≥\$412k]	6.3	8.4	16.0	25.2	44.1	100.0

Note: Quintile boundaries in 2013 dollars.

with 35 percent of them remaining there (and holding basically no net worth), although not as high as persistence as the top.

# Channels of Intergenerational Wealth Transmission

In this final section, we examine the importance of two channels of intergenerational wealth transmission underlying the intergenerational wealth associations: (1) inter-vivos transfers and bequests and (2) educational attainment. As before, we report results for the older age group (aged 45–64), which is particularly important for the assessment of the mediating channels: bequests are received later in life and the asset-building potential of higher education is also most adequately assessed once these individuals had enough time to accumulate assets. The results are descriptive rather than causal, continuing our demographic approach, but they provide suggestive evidence on the relative contributions of different pathways to the intergenerational transmission of advantage.

As shown in the first section of table 4, the amount of gifts (inter-vivos transfers) or inheritances (bequests) over \$10,000 received to date explains about one-eighth of the observed intergenerational wealth association (11.9 percent). Considering the overall size of these transfers among those who received them does not explain appreciably more of the association (not shown). The quite limited mediating role of transfers and bequests may raise concerns about limitations in their measurement. For instance, although the panel information used here allows us to track inter-vivos transfers and bequests across the life course, one limitation of the survey item used is that it asks only for transfers of \$10,000 or more. We therefore tested two additional

Table 4. Channels of intergenerational wealth transmission

Age 45-64, N=1,975

	PERCENT MEDIATED
Inheritance (total value, inverse hyperbolic sine transformed)	11.9%
Education (highest degree received)	25.9%
Joint consideration	34.4%

Note: Mediation of parent-child rank-rank slope in net worth through child characteristics.

measures of bequests, drawing on separate survey items of inheritances received<sup>6</sup> as well as on indicators of parental death as proxy measures of potential bequests.<sup>7</sup> Neither of these specifications suggested a greater role of intervivos transfers and bequests in the intergenerational transmission of wealth. One feasible explanation is that bequests are in fact concentrated at the top of the wealth distribution and the modal impact of parental death is not one of an increase in children's net worth.

Finally, we assess the mediating role of education. Accounting for the child's highest degree received accounts for more than one-fourth of the intergenerational wealth association. The attainment of a college degree alone mediates one-fifth of the association (not shown). Together, education and transfers explain a little more than one-third of the two-generation association in wealth (34.4 percent).

# Conclusion

The distribution of family wealth is highly unequal, yet wealth's concentration across generations of the same family lineage has received little scholarly attention. We fill this gap by documenting a substantial degree of rigidity in the wealth distribution. We draw on new data from the PSID (2015) to address the life-cycle bias present in the few existing estimates of intergenerational wealth mobility. We find that intergenerational correlations

This indicator separately identifies inheritances received in all PSID waves since 1988 and does so without imposing a lower limit. However, this survey item only captures bequests that occurred during the last year and therefore fails to capture a contiguous period of potential bequest receipt since PSID's switch to biennial interviewing in 1997.

The idea is that parental deaths are a necessary condition for a beguest to occur. The PSID confirms the death of its sample members through linkage to the National Death Index. We distinguish whether both parents are recorded to be alive in 2011 (the earliest time we observe offspring wealth), whether one parental death is recorded, or whether two parental deaths are recorded.

in wealth rise across the life course as wealth is accumulated, so that the full extent of intergenerational similarity in wealth comes to light only once we investigate those aged 45 and above, which has not been possible before. Estimates of intergenerational persistence rise by about 20 percent when this older age group is considered, compared to younger adults. Furthermore, unlike prior research, we incorporate the experiences of both parents and children who are net debtors—roughly one-fifth of our second generation. While we replicate a prior estimate of intergenerational wealth elasticity (Charles and Hurst 2003), both issues—the age gradient and the influence of debtors—can only be adequately captured through a different specification of intergenerational association based on rank-rank slopes (Chetty et al. 2014; Mazumder 2015). Our resulting main estimate of the correlation in wealth between parents and their children implies that, on average, a 10 percentile point advantage in parents' wealth position is associated with a 4 percentile point advantage in the child generation. The size of this correlation is quite similar to comparable estimates of intergenerational correlations in income (Mazumder 2015), revealing a similar degree of rigidity in different dimensions of economic well-being. Thus, as for other measures of economic wellbeing, stark inequality in wealth is not counterbalanced by great intergenerational fluidity in wealth.

Our results are robust across multiple specification checks. When we adjusted family wealth for family size, our results were very similar. Likewise, averaging wealth measures across years to reduce measurement error produced very little change in the estimated associations, reducing concerns that our main results are attenuated by remaining measurement error.

We also document that intergenerational wealth persistence is particularly high at the top of the wealth distribution: 44 percent of children from the highest parental wealth quintile end up in the highest wealth quintiles themselves, and only 30 percent fall into the bottom 60 percent of the wealth distribution.

Lastly, we identified two broad channels through which wealth is transmitted across generations: offspring's educational attainment and the receipt of bequests and large inter-vivos transfers. Our findings indicate that a larger part of the intergenerational transmission of wealth is established through the provision of educational advantage, which typically occurs in early adulthood. Inheritances explain a smaller part of intergenerational wealth correlations. Our results are consistent with Charles and Hurst's (2003) finding that the bulk of the intergenerational correlation in wealth is explained by income similarity rather than transfers.

We reiterate that our analyses of channels of transmission are descriptive. It is possible that, rather than parental wealth causally affecting children's

educational attainment, the prospect of their children going to college may induce parents to save up (a similar logic could be applied to inheritances). We also note that intergenerational wealth persistence cannot be interpreted as indicative of the total degree of inequality in opportunity to attain wealth. The determinants of wealth attainment are manifold. Although a considerable part of them are tied to the wealth of prior generations, there are a host of other characteristics of families and environments that shape wealth attainment. Future research may assess total inequality in wealth opportunities across families by estimating within-family correlations in wealth, e.g., among siblings or cousins (see e.g., Hällsten 2014 for Sweden).

Our description of the intergenerational persistence in wealth provides a comprehensive assessment of an understudied dimension of societal rigidity. Research has begun to identify wealth as an important dimension of particularly large and rapidly increasing inequality. Our results caution that this inequality is bound to be replicated across generations. Given recent increases in wealth inequality, our research leads us to be skeptical of the ability of future generations to share in economic prosperity by overcoming the disadvantages related to their wealth origins.

Still, in particular our analysis of the channels of intergenerational wealth transmission carry important policy implications. Bequest and inheritance taxation is one intuitive policy approach to limit the disequalizing impact of direct intergenerational wealth transfers. However, we find that bequests explain only a comparatively small part of the intergenerational wealth correlation. Bequests may provide advantage to those who have already profited from the wealth of their parents long before being bequeathed. To even the playing field for the next generation, policymakers therefore cannot exclusively rely on reforming the taxation of bequests and inheritances but need to pay at least as much attention to the way in which wealth supports early-life investments in the next generation. We have shown that the educational attainment of the following generation is an important pathway through which wealth is maintained across generations. Parental wealth may directly reduce credit constraints to college access (Lovenheim 2011), support a variety of educationally relevant investments in the next generation (Kornrich and Furstenberg 2013), including access to advantages neighborhoods, social, and cultural capital, and it may provide important safety nets for children's educational decisionmaking (Pfeffer and Hällsten 2012).

A number of policy proposals exist to support wealth accumulation among the general population as well as among the most disadvantaged, including increased regulation of the loan industry (e.g., pay-day lenders, student loan providers), publicly guaranteed interest rates on national savings bonds (Atkinson 2015), or incentivized savings, for instance through matched savings

accounts (Sherraden 1991). While even the most disadvantaged may indeed be induced to save (Schreiner and Sherraden 2007), it is questionable whether they will ever be able to accumulate a sufficient stock of wealth early on that will have lasting impacts on their children. More radical policy proposal have instead called for sizable and universal "stakeholder grants" as a public provision to all children (Ackerman, Alstott, and Van Parijs 2005; Allstot and Ackerman 2000; Atkinson 2015). A yet different approach would focus on increasing public rather than private wealth: Publicly provided high-quality education from early childhood through college may be one way to reduce the need for parental wealth to succeed. Of course, both the introduction of universal stakeholder grants and the strengthening of public education rely on substantive, additional public revenue. Perhaps the most controversial wealth policy that can yield such revenue is the taxation of wealth itself (Wolff 1995). ■

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