

THE CONCENTRATION OF WEALTH WITHIN FAMILY LINEAGES
AND INTERGENERATIONAL TRANSFERS

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BACKGROUND AND CONTRIBUTION

Compared to income and earnings, wealth in the United States is substantially more unequally distributed (Budría Rodríguez et al. 2002; Scholz and Levine 2004). Access to wealth is in turn associated with a wide range of outcomes, including longevity, family formation, and the educational achievement and labor market outcomes of offspring (Attanasio and Emmerson 2003; Charles, Hurst, and Killewald 2013; Conley 1999, 2001; Pfeffer 2011; Bond Huie et al. 2003; Orr 2003; Schneider 2011). Furthermore, these associations are not fully explained by standard measures of socioeconomic advantage, such as income or education. The wealth distribution is thus an important measure of the concentration of social inequality and advantage. Unlike education and income, wealth can also be directly passed down to subsequent generations through bequests or *inter vivos* transfers. We analyze the role of these transfers in contributing to the concentration of wealth within family lineages.

To measure the intergenerational persistence of family wealth, we use *sibling correlations* that capture the total variance in wealth shared by offspring from the same family. These correlations provide an overall measure of inequality in the opportunity to attain wealth – tied to a variety of factors, including not only specific parental characteristics (such as mother’s education, parental income, or parental wealth) but also all other circumstances that individuals are born into (including, for instance, shared genetic material, cultural influences, neighborhood conditions, etc.). While sibling correlations provide little insight into the channels of intergenerational influences, they yield a meaningful overall measure of the type of inequality in opportunity to attain wealth based on the circumstances of birth that conflicts with common interpretations of justice (Roemer 1998, Dworkin 2000). Sibling correlations have frequently been used to assess inequality in the opportunity to attain education, earnings, and other markers of socio-economic success (e.g., Jencks 1972, Solon et al. 1991). To our knowledge, there is only

one study that estimates sibling correlations in wealth, finding them to be of similar size to those in earnings (Conley and Glauber 2005). We extend this research in two important ways.

First, we also estimate wealth correlations among siblings to extend this approach to the study the multigenerational persistence in wealth. Since cousins share common grandparents but not parents, cousin correlations allow us to assess the distinct contribution of grandparental circumstances net of the contribution of parental circumstances (Jaeger 2012; Hällsten 2014). Mare (2011) and Pfeffer (2014) have hypothesized that the multigenerational transmission of inequality should be particularly pronounced for wealth, more so than for other socio-economic characteristics, due to the role of monetary transfers, but this hypothesis has not been tested directly.

Second, while our estimates of sibling and cousin correlations in wealth are themselves important, we also use these estimates as a springboard to study the role of direct intergenerational monetary transfers in the persistence of wealth across generations. A large literature in economics has proposed and tested different behavioral models underlying intergenerational transfers (Becker and Tomes 1979, 1986; Becker 1974; Barro 1974; Bernheim et al. 1985; Cox 1987; Cox 1990; Cox and Jappelli 1990). This literature is primarily concerned with parental investment behavior as it relates to their children's earnings and income. Instead, here we study the relationship between transfers and the ultimate wealth attainment of children. As Conley and Glauber (1995: p. 9) note, parents are more likely to be able to equalize net worth than earnings. Thus, by examining the importance of parental transfers for siblings' wealth outcomes, we are able to test hypotheses of the effects of preferential parental investment on an outcome more directly susceptible to parental manipulation.

Empirical assessments of different behavioral models have examined differences in transfer receipt among siblings of different economic statuses and have mostly found compensatory

strategies of parents when making transfers (e.g. Schoeni 1997; McGarry and Schoeni 1995, 1997).

Here, we assess whether the occurrence of transfers contributes to sibling resemblance in wealth, indicating compensatory investment strategies by parents, or whether parental investments are further stratifying, increasing sibling resemblance once they are controlled for. We also study whether these effects propagate to subsequent generations by relating the size of cousin correlations to the transfer receipt of their parents (from their own parents). We analyze compensatory/stratifying effects of transfers from grandparents to parents that are still observable among grandchildren, elucidating a pathway that contributes to the multigenerational persistence in wealth and speaking to the long-term consequences of wealth inequality.

DATA AND MEASURES

The Panel Study of Income Dynamics (PSID) is ideal for intergenerational analyses due to its genealogical design, in which children born to PSID households become PSID respondents themselves. It is the only nationally representative panel study that has been in the field long enough to include both a second and third generation of adult survey respondents (Pfeffer 2014). We draw on the latest two available waves of the PSID (2011 and 2013) to measure family wealth and other indicators of socio-economic attainment among PSID sample members aged 25-64 who share the same parents for the assessment of sibling correlations (N=3,653) as well as sample members aged 25-64 who share the same grandparents for the assessment of cousin correlations (N=1,780).² We also draw on measures of monetary transfers from PSID's 2013 Rosters and Transfers module (N=1,743 and N=1,130, respectively).

² We report our main estimates restricted to full siblings (same mother and father), but stability analyses that include half-siblings yield substantively similar results (discussed in the text). Also, by virtue of the sample following rules of a prospective panel study, we typically only observe one family lineage. That is, for a given individual in our cousin sample we typically only observe cousins from *either* the paternal

Our wealth measure is household net worth, consisting of home equity, financial assets (savings, stocks, mutual funds, bonds, etc.), real assets (real estate, farm, business, vehicles, etc.), private retirement wealth (IRAs, annuities, etc.) minus any debt (credit card debt, student loans, medical bills, etc.). To reduce measurement error, we average wealth measures across the 2011 and 2013 survey waves. The main estimates reported here are based on a logarithmic transformation of positive net worth values, but we also draw on other specifications of this variable that reduce the impact of outliers while capturing the full wealth distribution, including zero and negative net worth (inverse hyperbolic sine, ranks and percentiles, cubic root).

We draw on the new Rosters and Transfers module of the 2013 PSID (Schoeni et al. 2015) to gain information on whether a PSID second (and third) generation sample member has received monetary transfers from his or her parents during adulthood, distinguishing among transfers for education (“help paying for school, including tuition, room and board, or books”), home ownership (“help buying a home, including a down payment”), and other purposes (“financial help for other expenses”). Information on the value of these long-term transfers is not available,³ nor is information on generation-skipping transfers, i.e. from grandparents directly to grandchildren.

[Table 1 about here]

or the maternal side. While this sample restriction should not bias our overall estimate of cousin correlations, we will (in the next iteration) compare the size of cousin correlations between the maternal and paternal lineage. For instance, if maternal grandparents were more effective in assisting their grandchildren than paternal grandparents, we would expect maternal cousin correlations to be higher than paternal cousin correlations.

³ The 2013 Rosters and Transfer Module does contain a separate set of questions on the value of short-term transfers within the last year. Since we study the attainment of wealth among adult offspring, it would not be meaningful to restrict our assessment of the role of transfers to those occurring in just the last year.

Descriptive statistics for the main variables and samples used in this analysis are reported in Table 1. Our sample of cousins is significantly younger than our sample of siblings, reflecting that the third-generation members of the PSID are still relatively young. As a consequence, we observe lower levels of accumulated wealth in the cousin sample than the sibling sample (mean of \$133,844 compared to \$272,561) as well as lower family income and earnings. About a third of our sample members are college graduates, which is in line with current population estimates of graduation rates (U.S. Census Bureau 2014).

About 30% of both samples receive some type of transfers. Twenty-four percent of individuals in our sibling sample (and 21% in the younger cousin sample) report having received a transfer from their parents for schooling purposes in the past, 8% (7% for cousins) for the a home purchase, and 13% (11% for cousins) have received monetary transfers from their parents for other purposes.

METHODS

Like prior research estimating sibling correlations (Jencks et al. 1972; Hauser and Mossel 1985; Björklund and Jäntti 2007; Solon 1999), we use a simple variance component model

$$y_{ij}^* = a_{ij} + b_j \quad (1)$$

where y^* is the wealth (residualized on individual's age and age squared) of individual i of parental family j , with a_{ij} as the individual component and b_j as the family component. The variance in wealth (σ_y^2) can then be expressed as the sum of the variances of the individual component (σ_a^2) and the parental family component (σ_b^2), that is,

$$\sigma_y^2 = \sigma_a^2 + \sigma_b^2. \quad (2)$$

The sibling correlation is equivalent to the share of variance in wealth attributable to the parental family relative to the overall variance, namely $\rho = \frac{\sigma_b^2}{\sigma_y^2}$.

The sibling model can readily be extended to the three-generational case (Jaeger 2012, Haellsten 2014, Piraino et al. 2014) to decompose the variance in wealth into the sum of the variances of the individual component (σ_a^2), the parental family component (σ_b^2), and the grandparental family component (σ_c^2). We can then estimate a cousin correlation, separate from the sibling correlation, of

$$\rho = \frac{\sigma_b^2 + \sigma_c^2}{\sigma_y^2} = \frac{\sigma_b^2}{\sigma_y^2} + \left[\frac{\sigma_c^2}{\sigma_y^2} \right]. \quad (3)$$

Following Mazumder (2008), we estimate these sibling and cousin correlations via Restricted Maximum Likelihood Estimation (REML) and use Stata's *mixed* command.

Next, we relate our sibling correlations and cousin correlations to the receipt of transfers. We compare the sibling correlations as estimated above to sibling correlations that adjust for the receipt of transfers (for education, housing, other purposes) and thereby observe whether these transfers contribute to the similarity in siblings' wealth holdings. For cousins, we investigate whether the transfer receipt of their parents from the latter's own parents help explain the cousin correlation. That is, we assess whether transfers given from one generation to the next (here from the grandparent to the parent generation) are still related to the wealth attainment of yet one more generation (here the child generation) to indicate the potential long-term reach of financial assistance within family lineages. Of course, an at least as interesting question is to what extent grandparents also make monetary transfers directly to their grandchildren (the cousins in our

analysis) rather than through their own children. Unfortunately, the 2013 Rosters and Transfer module did not collect that information.

The degree to which transfers from parents to children mediate the sibling correlation can be seen as an upper bound estimate of the potential influence of transfers since it also includes all observed and unobserved factors correlated with transfers (see also Mazumder 2008: 689). This is particularly important in the case of transfers for education: Offspring who received transfers from their parents for educational expenses are likely to be those who attended college. Therefore, if shared receipt of transfers for educational assistance explains a portion of the sibling correlation in wealth, this may simply reflect that siblings share other characteristics that make them likely to attend college, not the effect of the transfer itself.

To investigate this point further, we consider that transfers from parents for education can affect offspring wealth in at least two ways. First, it may affect the realized educational attainment of the offspring, which in turn has implications for offspring income and wealth accumulation. This possibility is consistent with evidence that parental wealth facilitates postsecondary education (Conley 2001). With our data, it is difficult to distinguish this effect from the previously described possibility of a spurious association between parental transfers for education and realized offspring wealth because parents are only “at risk” of transferring money to offspring for educational expenses when the offspring have other characteristics that lead them to pursue postsecondary education. In either case, we expect that parental transfers for education will mediate a portion of the sibling resemblance in wealth.

A second possible channel by which parental transfers for education may affect offspring wealth, however, is by reducing debt burden among those who pursue postsecondary education. In this case, parental transfer should be associated with offspring net worth net of educational attainment. To test this possibility, we examine whether parental transfers for education mediate

the sibling correlation in wealth over and above the mediating role of educational attainment.

While we are still unable to estimate the role of the first channel of transmission linking parental educational transfers to offspring wealth, we feel more confident about estimating the second.

RESULTS

Sibling Correlations

Table 2 reports the baseline sibling correlation in net worth. The estimate of .34 implies that about a third of individuals' wealth attainment is determined through factors shared among siblings. This estimate is close to the only prior estimate of a sibling correlation in net worth that we are aware of, which was .37 (Conley and Glauber 2005). Similar to this prior work, our analyses based on other transformations of the net worth variable provide lower estimates of the sibling correlation (see Appendix, Table A.1), suggesting that the similarity of siblings with positive net worth is larger than for cases where one or more siblings have zero or negative net worth. This is consistent with prior evidence that the determinants of net debt, including the role of social origins, differ from the determinants of levels of positive net worth (Killewald 2013). Our estimate is not substantially impacted by the inclusion of half-siblings (see Appendix, Table A.2).

Similar to prior research (reviewed by Jäntti and Jenkins 2015), these correlations differ substantially between males (i.e. brothers) and females (i.e. sisters): The brother correlation is .47; for brothers, nearly half of their wealth attainment is determined by shared parental origins. For sisters, it is only about a quarter (sister correlation of .26). We also report correlations among younger (age 24-44) and older siblings (age 45-64) and find no substantial difference, alleviating concern about potential life cycle bias when measuring wealth attainment at earlier ages. That

insight is important for our later analysis of cousin correlations, which relies on a sample of individuals that falls chiefly within the younger age group (24-44).

[Table 2 about here]

It is also informative to compare the sibling correlations in net worth to more commonly estimated sibling correlations in other dimensions of socio-economic standing. The lower panel of Table 2 reports sibling correlations in family income, earnings, years of education, and occupational standing. Our estimates of these associations are similar to those produced in a number of studies of sibling correlations, lending further credibility to the validity of our findings on wealth correlations.⁴ We find that sibling correlations in wealth are about the same size as those in family income (.34), larger than those in earnings and occupational standing (.25 and .30, respectively), and smaller than those in years of education (.46). Overall, then, the concentration of advantage within family lineages in terms of wealth is comparable to those in other dimensions of socio-economic standing (see also Pfeffer and Killewald 2015).

Cousin Correlations

Cousins share grandparents but not parents. Cousin correlations therefore capture the total influence of shared grandparental environments, that is, direct multigenerational influences beyond the influence of parental environments captured by sibling correlations. Prior research has estimated cousin correlations in educational outcomes, occupational prestige, and longevity (Jaeger 2013, Haellsten 2014, Piraino et al. 2014), but never before in wealth. Table 3 reports our

⁴ Many of these studies report exclusively brother correlations or only brother and sister correlations separately. Our estimate of the brother correlation in family income is .50 and in earnings is .42 (not shown in the table), which closely matches the estimates summarized by Schnitzlein (2014) and Jäntti and Jenkins (2015).

estimate of the cousin correlation in family net worth of .19, meaning that a fifth of the variance in individuals' wealth attainment is determined by factors two generations back, or, by the luck of birth of one's parents.

Unlike what we found for siblings, we detect less pronounced gender differences in cousin correlations – and in the other direction, with male cousins tending to be somewhat less similar to each other than female cousins (though that difference is not statistically significant).

[Table 3 about here]

Wealth Correlations and Intergenerational Transfers

Finally, we study one of the potential channels through which the concentration of wealth within family lineages may be accomplished: direct monetary transfers. To do so, we analyze the degree to which transfers from parents to their children contribute to the sibling correlation estimated above. If parents transfer money to ensure the wealth attainment of all of their children, we should observe that accounting for transfers explains (i.e. mediates) part of the sibling correlation. Furthermore, we may observe that this relationship persists for a longer time, namely beyond just two generations. If so, individuals' wealth attainment may be related to monetary transfers from their grandparents to their parents. Again, we note that another channel of great substantive interest is that of actual multigenerational transfers – i.e. transfers directly from grandparents to their grandchildren – which, unfortunately, are not included in the data used here. Instead, the data allow us to answer how transfers from one generation to the immediate following generation relates to the concentration of wealth in a third generation.

[Table 4 about here]

In Table 4, we re-estimate sibling and cousin correlations based on a sample for which we have information on monetary transfers, yielding a sibling correlation of .34 and cousin correlation of .14, which is close to those estimated based on the full sample (.34 and .19, respectively). Next, we estimate these correlations while adjusting for the receipt of transfers. When adjusting for all types of transfers, the sibling correlation in wealth drops to 0.27. That is, considering the occurrence of any intergenerational monetary transfer accounts for close to a quarter (23%) of the sibling correlation. When we consider each different type of transfer separately, we observe that it is transfers for education that drive this relationship, while transfers for home acquisition and other expenses contribute little to nothing. Substantively, this finding draws our attention to the potential importance of educational attainment in supporting the concentration of wealth within family lineages – a finding in line with prior research that has shown children’s education to also account for an important part of the intergenerational correlation in wealth (Pfeffer and Killewald 2013).

The limited role of transfers besides those for education could, of course, be related to the fact that the measures of transfers at our disposal are coarse – distinguishing only their occurrence but not their value – although we note that the additional information gained from the exact value of transfers would be limited to a minority of individuals who receive any such transfer (see Table 1). Conversely, we reiterate that our controls for transfers provide but an upper-bound estimate of the potential causal role of transfers. Again, the potential for endogeneity is particularly obvious in the case of education transfers: in our main analytic sample, 97% of those who do not go beyond high school did not receive any transfers for education. As shown in Table 4, adjusting for individuals’ educational attainment alone accounts

for a large share of the sibling correlation in wealth (46% based on years of education).

Knowledge about whether transfers for education occurred adds little to the explanation of sibling correlations once educational attainment is controlled (the total degree of mediation based on controls for both years of education and the occurrence of transfers for education is 49%).

This does not necessarily mean that transfers for education are unimportant for offspring wealth, but it suggests that, if they do matter, it is primarily by affecting educational attainment.

Turning to cousins, we observe similar patterns. Close to 20% of the cousin correlation is related to the receipt of transfers; cousins' wealth outcomes are similar in part because their *parents* received similar transfers. That association is again driven by transfers for education – although information on the occurrence of transfers for education adds little to what we can learn from accounting for the educational attainment of cousins themselves.

CONCLUSION

We investigated the degree of concentration of family wealth within family lineages by assessing the similarity in wealth holdings between siblings as well as between cousins using the Panel Study of Income Dynamics (PSID). Sibling and cousin correlations in wealth provide insight into the overall level of inequality in the opportunity to attain wealth by family origin. We find that about a third of wealth attainment can be traced to the common origins of siblings. Consistent with prior research on sibling correlations in other dimensions of economic wellbeing, we also observe a much higher correlation among brothers, for whom close to half of their wealth attainment is shared, than among sisters, for whom about a quarter of wealth attainment is shared. In addition, we observe that 19% of individuals' wealth attainment can be traced to the common origins of cousins (i.e. grandparental environments), reflecting concentration of family wealth within family lineages beyond just two generations.

We also investigated the relationship between sibling and cousin correlations and the occurrence of intergenerational money transfers using the PSID's new Rosters and Transfers module. Specifically, we assessed to what degree the concentration of wealth within family lineages is related to the receipt of monetary transfers – for schooling, home purchases, and other expenses – not just one but potentially two generations down. We find that about a fifth of the sibling and cousin correlations can be accounted for by transfers and, in particular, transfers for schooling. In fact, education emerges as the main avenue through which families maintain wealth across generation(s).

As a next step in this project, we plan to re-assess the question of the compensatory or stratifying role of parental transfers from another vantage point. Our existing analyses have investigated offspring attainment as the potential outcome of transfer behaviors. Most of the prior literature, in contrast, directly investigates parental transfer behavior as it differs across children. Since our finding of higher sibling similarity among those receiving transfers is in line with a compensatory story, we should also be able to directly observe differences in parental transfer behavior by children's characteristics (Schoeni 1995; McGarry and Schoeni 1995). The PSID Rosters and Transfers Module provides us with the opportunity to switch from an investigation of transfer receipts (by the children) to an analysis of transfer sending (by the parents) since many of the parents of our sibling sample are still PSID respondents themselves, reporting on the allocation of transfers to all of their children (in addition to reporting transfer receipt from their own parents, which we used for the analysis of the relationship between cousin correlations and transfers). Besides an analysis of heterogeneity in making transfers to children depending on their own economic outcomes (such as their earnings or family income), this

perspective also lends itself to a closer investigation of differences in transfers by offspring gender, which may contribute to the observed differences in brother and sister correlations.

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TABLES

Table 1. Descriptives

	Sibling sample		Cousin sample	
	Mean or %	(SD)	Mean or %	(SD)
Demographics				
Age	43.0	(11.8)	34.8	(8.1)
Female	52.6%		51.5%	
Socio-Economic Attainment				
Family Net Worth	272,561	(934,213)	133,844	(392,807)
Family Income	57,360	(60,495)	47,712	(39,353)
Earnings	49,988	(60,187)	43,286	(46,545)
Years of Education	14.0	(2.1)	14.1	(2.0)
College degree?	34.3%		34.2%	
Observations				
Individuals	3,635		1,780	
Parental Families	2,206		1,175	
Grandparental Families	--		933	
Transfer receipt				
Any transfers?	32.1%		29.0%	
Transfers for schooling?	24.0%		21.4%	
Transfers for housing?	8.4%		6.8%	
Transfers for other purposes?	13.3%		10.8%	
Observations				
Individuals	1,743		1,130	
Parental Families	1,017		758	
Grandparental Families	--		604	

Note: Sample restricted to full siblings and full cousins; all dollar values in 2013-\$

Table 2. Sibling Correlations

	Sibling Correlation	(SE)	Number of observations	
			individuals	parental families
Family Net Worth (log)	0.34	(0.02)	3,635	2,206
By Sibling Groups				
Brothers	0.47	(0.04)	1,724	1,316
Sisters	0.26	(0.04)	1,911	1,456
By Age				
Age 25-44	0.33	(0.04)	1,975	1,359
Age 45-64	0.34	(0.03)	1,660	956
Other Socio-Economic Attainment				
Family Income (started log)	0.35	(0.02)	4,799	2,653
Earnings (started log)	0.25	(0.02)	4,548	2,574
Years of Education	0.46	(0.02)	5,215	2,818
Occupational Standing (SEI)	0.30	(0.02)	4,256	2,490

Note: Sample restricted to full siblings (see Appendix for samples including half siblings);
Other SES measures are also averaged across two (education & SEI) or four measurement
points (family income & earnings)

Table 3. Cousin Correlations

	Cousin Correlation	(SE)	Number of observations		
			individuals	parental families	grandp. families
Family Net Worth	0.19	(0.05)	1,780	1,175	933
By cousin groups					
Male cousins	0.17	(0.10)	863	702	598
Female cousins	0.23	(0.10)	917	742	641

Table 4. Wealth Correlations and Transfers

	Sibling Correlation	% mediated	Cousin Correlation	% mediated
Baseline Correlation	0.34		0.14	
Adjusted for transfers				
All transfers	0.27	23%	0.12	18%
Transfers for education	0.27	22%	0.11	19%
Transfers for housing	0.32	6%	0.14	4%
Transfers for other purposes	0.35	-3%	0.14	-1%
Adjusted for individuals' education				
Years of Education	0.19	46%	0.02	89%
Highest Degree Attained	0.19	45%	0.06	61%
College Degree?	0.22	36%	0.06	60%
Adjusted for education & transfers				
Transfer for education & years of education	0.18	49%	0.02	87%
Number of observations				
Individuals	1,743		1,130	
Parental Families	1,017		758	
Grandparental Families	--		604	

Note: % mediated is based on unrounded estimates

APPENDIX

Table A.1. Alternative Specifications of Net Worth

	Sibling Correlation	(SE)	Cousin Correlation	(SE)
Main Estimate				
Log of positive values	0.34	(0.02)	0.19	(0.05)
Alternative Specifications				
Percentiles	0.30	(0.02)	0.13	(0.04)
Rank	0.30	(0.02)	0.13	(0.03)
Cubic root	0.29	(0.02)	0.10	(0.03)
Started log (floor value of $\ln[1]$)	0.22	(0.02)	0.07	(0.03)
Untransformed	0.17	(0.02)	0.05	(0.03)
Inverse hyperbolic sine	0.15	(0.02)	0.02	(0.03)
Number of Observations (alternative specifications)				
Individuals	2,645		2,578	
Parental Families	4,768		1,525	
Grandparental Families	--		1,155	

Note: Sample restricted to full siblings

Table A.2. Inclusion of Half Siblings

	Correlation	(SE)	Number of observations	
			individuals	parental families
Full siblings only	0.34	(0.02)	3,635	2,206
Including half siblings, assigned as				
(a) full siblings	0.34	(0.02)	4,756	3,039
(b) half siblings	0.35	(0.02)	4,756	3,304

Note: Siblings for which one parent is unobserved (i.e. we do not know whether they are full or half), are assigned as (a) full siblings and (b) as half siblings, respectively