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Marital Sorting and Parental Wealth

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Abstract The extent of marital sorting by socioeconomic background has implications for the intergenerational transmission of inequality, the role of marriage as a mechanism for social mobility, and the extent of cross-group interactions within a society. However, studies of assortative mating have disproportionately focused on spouses' education, rather than their social origins. Using data from the Panel Study of Income Dynamics (PSID), and exploiting the unique genealogical design of the data set, we study the degree to which spouses sort on the basis of parental wealth. We find that the estimated correlation in parental wealth among married spouses, after controlling for race and age, is about .4. Importantly, we show that controlling for spousal education explains only one-quarter of sorting based on parental wealth. We show that our results are robust to accounting for measurement error in spousal reports of parental wealth and for selection into and out of marriage.

Keywords Social mobility · Marriage · Inequality · Multigenerational · Wealth

Introduction

How much do spouses sort into marriage on the basis of the socioeconomic position of their parents? Systematic sorting in the marriage market is a key indicator of a society's extent of social segregation (Kalmijn 1991), and models of the marriage process (Becker 1973) predict that sorting should be an important feature of the

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marriage market. There has, consequently, been considerable attention devoted to measuring marriage market sorting, but almost all this work focuses on sorting by spouses' *own* traits, with little attention paid to sorting by spouses' parental traits. Yet, the extent to which there is sorting on the basis on parental socioeconomic status may have important implications for a number of questions that have long interested social scientists, including whether people marry out of poverty; the relative strength of ascribed and acquired traits in determining individuals' social outcomes; and how much of parents' socioeconomic conditions are transferred to their adult children. Various considerations, such as the fact that people from the same background may have similar tastes or greater opportunity for interaction because of similar neighborhoods of residence or places of employment or education, suggest that this type of sorting should be an important feature of the marriage market, but evidence about its empirical importance is quite thin.

In this article, we use data from the Panel Study of Income Dynamics (PSID) (2010) to study the extent to which individuals sort into marriages on the basis of parental wealth. Our use of the PSID and our focus on wealth overcome two key limitations of previous work on sorting by parental traits. One of these limitations is the paucity of data; very few data sources provide information on the parental traits of married adults. As we outline in this article, the PSID is a panel survey based on a genealogical design; children of PSID respondents often become PSID respondents themselves, which enables us to link information on adult spouses to their parents.

No previous work of which we are aware has studied sorting by parental wealth. Some work, dating from the 1940s, studied similarity in spouses' parents' occupational class or status (Burgess and Wallin 1943; Centers 1949; Rubin 1968; Kalmijn 1991; Uunk et al. 1996). The limitation of this previous work is that measures such as occupational affiliation or education are fuzzy indicators of people's command over financial resources. Wealth, which measures all that people own minus all they owe, better summarizes financial position and socioeconomic background. Furthermore, parental wealth, unlike categorical measures like parental occupational class, may be used to readily compute elasticities of the kind computed in analyses of the intergenerational correlations in income and wealth. The strength of assortative mating on the basis of parental wealth may thus be easily compared with other measures of the strength of social reproduction.

In the 1988 wave of the survey, the PSID elicited information about the wealth of the living parents of respondents and respondents' spouses. In principle, these reports permit a comparison of the parental wealth of a random sample of married adults. Unfortunately, this simple exercise is complicated by various features of the data. One problem is that a nontrivial fraction of the parental wealth reports are in broad wealth categories, such as "negative," "zero," and "positive." Another, more important problem is that when adult children report parental wealth, and especially when they give explicit numerical values of parental wealth, the reports are likely fraught with error, both classical and otherwise. Finally, given that marital status is a choice, those who choose to marry and remain married may do so for reasons correlated with parental wealth. We use various empirical methods to address all these potential data limitations.

Making as full use of the available data as possible, we present a variety of estimates of sorting by parental wealth. We first show a very strong positive

correlation between spousal parental wealth in reported categories—both in terms of reported categories (like negative, zero, and positive wealth) and when we sort the sample into wealth brackets based on the ranges used by the PSID. We also show that spouses are disproportionately likely to have parents who occupy similar quintiles in the continuous parental wealth distribution. This sorting tendency is particularly pronounced in the tails: the sons and daughters of parents in the highest and lowest quintiles of parental wealth are especially likely to marry people from similar backgrounds.

To produce summary estimates of sorting, we estimate the correlation in parental wealth among the subset of our sample for which explicit positive wealth levels are reported. In addition to simple ordinary least squares (OLS) estimates, we present two-stage least squares (TSLS) models meant to deal with biases arising from measurement error. Given the PSID's genealogical design, for a part of the overall sample, we know the respondents' reports about their parents' wealth and the parents' *own* reports of their wealth. This feature of the data allows us to estimate TSLS models where we instrument for one type of parental wealth report using another. These TSLS estimates are our preferred results. We estimate the correlation in parental wealth between U.S. husbands and wives to be between .38 and .42, after adjusting for age and race, and show that only about one-quarter of this correlation can be explained by sorting on the educational attainment of husbands and wives. All our results are robust to modifications in specification and sample construction and do not appear to be biased by selection into or out of marriage.

The results that we present not only provide what is, to our knowledge, the first estimate of the extent of assortative mating based on parental wealth, net of other ascribed and achieved characteristics, but should inform several related literatures. Our work extends the large literature on marital sorting along other dimensions, including spousal own occupation (Hout 1982); spousal ethnicity (Pagnini and Morgan 1990); and other spousal biological characteristics, such as age and height (Epstein and Guttman 1984). Educational sorting has been a particular focus in this literature, with many authors documenting strong positive assortative mating by education across spouses (Lam 1988; Mare 1991; Pencavel 1998; Schwartz and Mare 2005). In light of our findings, two points may be noted about this previous body of work. First, since spouses sort partly on the wealth of their parents, above and beyond sorting on the basis of own education, and since parental wealth is strongly correlated with a child's own education, traditional estimates of the extent of educational assortative mating may overstate the degree to which similar education, *per se*, matters in mate selection because part of the reason persons with similar schooling marry is their shared parental backgrounds (Uunk et al. 1996).

The second issue that our findings raise about previous work on assortative mating on own schooling is that education is an *acquired* trait; thus, sorting along this dimension tells us little about marital sorting on the basis of factors outside an agent's control, such as parental wealth. Our work draws attention to the direct role of social origins (an ascribed trait) in determining marital outcomes, beyond any indirect effect operating through education (an achieved trait).

This article's findings also have important implications for interpretations of the intergenerational transmission of status. A large empirical literature, seeking to measure the persistence of economic inequality across generations, measures

parent-child associations in economic variables, such as earnings, income, and wealth.[1] Estimated correlations in earnings and income from this literature are usually in the .4 to .5 range, suggesting a fair bit of economic persistence across generations. The fact that parents and their children share genetic endowments, social environments, or preferences is one possible explanation for these associations.

In recent theoretical work, Kremer (1997) and Fernández and Rogerson (2001) showed that the measured parent-child associations in economic outcomes depend not only on shared parent-child traits but also on the correlation in parental wealth between adult children and their spouses. Intuitively, because married individuals pool their economic resources, parents and adult children whose traits would lead to very similar income or wealth might yet end up living in households with vastly different economic resources because of differing economic resources of children's spouses. The greater the positive assortative marriage by parental wealth, the more similar will be parents' and children's economic circumstance. Our article's estimates of the correlation in spousal parental wealth are the first estimates of this key parameter from these recent models.

The remainder of this article is organized as follows. The second section describes and summarizes the data used in the analysis. The third section presents estimates of parental wealth sorting by wealth categories and by wealth quintiles. Then, we present estimates of parental wealth correlations, including various TSLS results. We follow that discussion with robustness evidence about the effect of parental wealth on marriage formation and dissolution. The final section concludes.

Data on Parental Wealth and PSID Sample

We take advantage of a series of questions on parental background asked of PSID respondents only in 1988. In each wave of the PSID, a single household member responds to survey questions for the entire household. Unmarried respondents answered these questions about their own parents; married respondents answered about their own parents *and* their spouse's parents. In addition to parental wealth, the parental background information included whether parents were alive at the time of the survey, the parents' age if alive, parental education, parents' marital status, and whether the parents had remarried.

Questions about parental wealth concerned current (as of 1988) level of wealth. If the parents of either spouse were not married to each other at the time of the survey, the questions were asked for both fathers (and the father's new family, if applicable) and mothers (and the mother's new family, if applicable). Two questions were asked about parental wealth: "Suppose your parents were to sell all of their major possessions (including their home), turn all their investments and other assets into cash, and pay off all their debts. Would they have something left over, break even, or be in debt?" Households reporting that their parents had positive wealth were subsequently asked, "How much would they have left over?" Respondents who did not know how much wealth their parents would have left over were asked to give an approximate

[1] See Solon (1992), Zimmerman (1992), Mulligan (1997), and Charles and Hurst (2003) for examples. See the review by Solon (1999) for a more extensive discussion.

range as to their parents' wealth.[2] An exactly analogous set of questions was asked about the respondent's parents-in-law.

Our analysis focuses on the 1988 PSID sample. Because parental wealth information was asked only about those parents alive as of the survey, we deleted couples for whom either spouse was an orphan at the time of the survey. Next, because of the difficulty in determining parental wealth for parents who were alive but had remarried, we exclude the 13 % of couples who would otherwise be in our sample that meet this condition. When both parents were divorced and not remarried, the reported wealth of the two households is summed.[3] These restrictions result in a sample of 1,837 cases. As we proceed through our analysis, we use different versions of this overall sample because of various features of the data. For example, our base TSLS analysis requires the use of explicit positive wealth reports, so this part of the analysis drops not only the categorical "negative" and "zero" parental wealth cases but also cases in which parental wealth was characterized as "positive" but no explicit numerical value was reported.

Panel A of Table 1 presents descriptive statistics for the 1988 sample of 1,837 married couples for which we have *any* information on parental wealth. All means in this table are weighted, using the PSID 1988 household-level weights; all dollar values are in 1988 dollars. About 90 % of the sample is white. Husbands are slightly better educated that their wives, with about 53 % of them having more than high school training compared with 47 % for wives. At age 38, husbands are, on average, about two years older than their wives. This age difference naturally manifests itself in the age of spouses' parents: husbands' fathers and mothers, at ages 67 and 65, respectively, are about two years older than wives' parents. Reported parental education is substantially lower than adults' own schooling, with a little more than 20 % of fathers having more than high school training.

The final three rows in Panel A report the share of spouses' parents for whom available reports of wealth are the categorical values "negative," "zero," or "positive with no explicit numerical value." One-half of the full married sample falls into these groups. In particular, 12 % of couples report parental wealth that is either "zero" or "negative." For 39 % of husbands' parents and 38 % of wives' parents, we do not have an actual numerical value of wealth but know only that it was "positive" and perhaps the unfolding bracket into which it falls. Panel B of Table 1 presents summary statistics for the subsample of 589 couples with explicit numerical positive wealth reports for both the husband's and wife's parents. This part of the sample shows a slightly higher incidence of whites than does the overall sample. Otherwise, the subsample is quite similar to the sample as a whole. The mean level of parental wealth for people with numerical wealth reports was about $170,000 in 1988 dollars,

[2] The PSID elicits responses via "unfolding brackets" for those who did not provide an exact response. Respondents were asked whether their parents' wealth was greater than or less than $25,000. If they responded greater than $25,000, they were subsequently asked whether it was greater than or less than $100,000. If they initially responded that it was less than $25,000, they were subsequently asked whether it was greater than or less than $1,000.

[3] An exception occurs when one divorced parent is reported to have negative wealth and one positive. Because total wealth is unknown, it is not possible to meaningfully combine reports in this case.

Table 1 Descriptive statistics of sample of married couples

	Husbands	Wives
Panel A: All Couples (N = 1,837)		
Age	38.32	36.11
% white	0.91	0.90
Education = 12	0.33	0.41
Education > 12	0.53	0.47
Age of child's mother	65.02	63.20
Age of child's father	67.13	65.60
Child's father's education = 12	0.32	0.35
Child's father's education > 12	0.21	0.23
Parents have negative wealth	0.03	0.02
Parents have zero wealth	0.09	0.10
% with positive wealth, no explicit value	0.39	0.38
Panel B: Couples with Explicit Positive Wealth (N = 589)		
Age	38.39	36.26
% white	0.93	0.94
Education = 12	0.32	0.42
Education > 12	0.58	0.50
Age of child's mother	65.39	63.46
Age of child's father	67.27	65.79
Child's father's education = 12	0.32	0.36
Child's father's education > 12	0.22	0.25
Parent's wealth (mean)	167,687	173,757
Parent's wealth (SD)	215,008	225,892
Parent's wealth (median)	100,000	100,000
Ln(parent's wealth) (mean)	11.32	11.35
Ln(parent's wealth) (SD)	1.40	1.37

Notes: Sample includes all married couples in the 1988 wave of the PSID where at least one parent of each spouse was alive in 1988 and parental wealth was measurable. See text for full details of sample construction. All wealth variables are measured in 1988 and are in 1988 dollars. The top 1 % of wealth values for each set of parents were recoded to the 99th percentile. All entries were weighted using 1988 core PSID sample weights. In the top panel, the sample standard deviations of husbands' and wives' ages are 9.35 and 9.02, respectively. For the age of the child's mother, the corresponding numbers are 10.62 and 10.48; and for the age of the child's father, they are 10.83 and 10.58.

with a standard deviation of a little more than $200,000. The median value of parental wealth in this sample is $100,000.

Reports about parental wealth are likely fraught with error, and any such problems are probably more pronounced with explicit numerical wealth reports than for reports of parental wealth categories. If errors in reports about own and spouses' parents' wealth are random and uncorrelated, estimates of sorting by parental wealth would be biased toward zero. However, measurement error might not be of this classical form. In particular, because respondents who overstate (or understate) the wealth of their own parents might make the same sort of error in reporting the wealth of their

parents-in-law, errors for the two wealth reports could be positively correlated, leading to an overestimate of the degree of marital sorting. Naïve estimates of marital sorting by parental wealth that does not account for measurement error could thus be biased in *either* direction. We use a variety of methods to deal with these various types of measurement error in the analysis that follows.

Similarity in Parental Wealth Position Among Spouses

Sorting by Wealth Categories

We begin with an analysis of marital sorting using three categories of reported wealth: "negative," "zero," or "positive." This analysis is conducted on the full sample of 1,837 couples from Panel A of Table 1. Table 2 presents the unconditional joint distribution of husbands' and wives' parents' wealth by the three categories for the full sample and suggests a positive correlation in husbands' and wife's parental wealth. For example, among husbands whose parents' wealth is "negative," 15 % are married to wives whose parents' wealth is also "negative." This incidence is seven times larger than would be expected if people married at random and is much larger than the rates of marriage to these women by husbands from other backgrounds. Although not as dramatic everywhere, these coarse categories show evidence of unconditional assortative matching throughout the distribution.[4]

Although Table 2 uses the entire sample of married spouses, the results discard much information about those with reported "positive" parental wealth. For many of these persons, we have either an explicit parental wealth report or a PSID-defined range into which parental wealth falls. Dropping from the sample in Table 2 those couples who report positive parental wealth but do not provide information sufficient to categorize them in one of the PSID's four unfolding brackets, we can sort the 1,223 remaining couples into four reported parental wealth categories: less than $1,000; $1,000 to less than $25,000; $25,000 to less than $100,000; and $100,000 or more. These ranges do not split the sample into equally sized groups. However, families with "zero" and "negative" parental wealth can be placed in the lowest bin, and those with "positive" parental wealth in Table 2 can be more finely disaggregated.

Table 3 presents the unconditional transition matrix of husbands and wives by the range into which their reports of their parents' wealth falls. This table shows substantial evidence of marital sorting on parental wealth. For example, 16 % of all husbands have parents in the lowest wealth range of less than $1,000. Among these men, 36 % are married to wives with parents in the same wealth range. This is more than double the incidence that we would expect relative to random sorting (16 %). These husbands marry wives with parents from the top range at a rate of 19 %, or about one-half the rate that random matching would predict. At the other end of the distribution, 59 % of husbands with parents in the highest wealth range marry wives

[4] Some assortative mating on the basis of parental wealth may reflect assortative mating on the basis of race, coupled with racial differences in parental wealth (see Oliver and Shapiro 1995; Conley 1999 and Barsky et al. 2002). We perform the analysis in Table 2 separately by race and find strong parental wealth sorting patterns *within* racial groups (whites and nonwhites).

Table 2 Unconditional parental wealth transition matrix (N = 1,837)

Wife's Parents' Wealth (Share)	Husband's Parents' Wealth (Share)		
	Negative (0.03)	Zero (0.09)	Positive (0.88)
Negative (0.02)	0.15	0.04	0.01
Zero (0.10)	0.13	0.27	0.08
Positive (0.88)	0.73	0.69	0.91
Total	1.00	1.00	1.00

Notes: Sample includes all married couples in the 1988 wave of the PSID with at least one parent of each spouse alive in 1988 and for which there is any information on parental wealth. All entries were weighted using 1988 core PSID sample weights. The unweighted likelihood ratio χ^2 statistic that the categories of husbands' and wives' parental wealth are independent is $\chi^2(4) = 245.7$ (p value < .001).

from similar backgrounds, which is vastly higher than the 39 % rate that we would expect from random matching. These husbands marry wives with parents in the lowest range of parental wealth at less than one-half the rate random matching would predict (7 % vs. 16 %).

In Table 4, we report the results of a series of probit models that ask how a wife's parental wealth belonging to a given range affects the probability that her husband's parents are in the given range, after adjusting for the race and age of each spouse and the age of the parents of both spouses. For parents, we use the age of the father when it is available. Otherwise, we use the age of the mother. Here and whenever we control for age of either the individual or his parents, we include both linear and quadratic terms.

We would like to answer the question, How much does the probability of the outcome change, in the sample under study, for a marginal change in a particular explanatory variable? In a nonlinear model like the probit, the answer to this question

Table 3 Parental wealth transition matrix, by PSID four-category wealth bracket (N = 1,223)

Wife's Parents' Wealth Range (Share)	Husband's Parents' Wealth Range (Share)			
	<$1 K (0.16)	≥$1 K–<$25 K (0.13)	≥$25 K–<$100 K (0.32)	≥$100 K (0.39)
<$1 K (0.16)	0.36	0.21	0.13	0.07
≥$1 K–<$25 K (0.15)	0.20	0.26	0.11	0.07
≥$25 K–<$100 K (0.30)	0.25	0.31	0.44	0.26
≥$100 K (0.39)	0.19	0.22	0.31	0.59
Total	1.00	1.00	1.00	1.00

Notes: Sample includes married couples in the 1988 wave of the PSID with at least one parent of each spouse alive in 1988, for which parental wealth was either nonpositive or positive and explicit or reported in bracket form. The ranges are PSID-defined ranges from 1988 wealth survey. See the text for further details. All entries were weighted using 1988 core PSID sample weights. The unweighted likelihood ratio χ^2 statistic that the categories of husbands' and wives' parental wealth are independent is χ^2 (9) = 331.9 (p value < .001).

Table 4 Probit estimates of husband's parental wealth range as a function of wife's parental wealth categories (robust SEs in parentheses and marginal effects in brackets)

	Dependent Variable			
	Husband's Parents' Wealth < $1 K (mean = 0.16) (1)	Husband's Parents' Wealth $1 K–$25 K (mean = 0.13) (2)	Husband's Parents' Wealth $25 K–$100 K (mean = 0.32) (3)	Husband's Parents' Wealth ≥ $100 K (mean = 0.39) (4)
Wife's Parents' Wealth < $1 K (mean = 0.16)	0.98	0.54	−0.01	−0.97
	(0.16)	(0.17)	(0.15)	(0.15)
	[0.28]	[0.14]	[−0.00]	[−0.26]
Wife's Parents' Wealth $1 K–$25 K (mean = 0.15)	0.55	0.78	0.17	−0.92
	(0.18)	(0.16)	(0.14)	(0.15)
	[0.14]	[0.22]	[0.06]	[−0.25]
Wife's Parents' Wealth $25 K–$100 K (mean = 0.30)	0.28	0.23	0.50	−0.69
	(0.15)	(0.15)	(0.11)	(0.11)
	[0.06]	[0.05]	[0.19]	[−0.20]
Pseudo-R^2	.14	.08	.03	.15
N	1,223	1,223	1,201	1,223

Notes: Sample includes married couples in the 1988 PSID with at least one parent of each spouse alive in 1988 and parental wealth was nonpositive, or positive with range or explicit value given. See the text for further details. Regressions control for race, and spouses' and parents' age. Regressions weighted using 1988 core PSID weights. Coefficients are probit coefficients. In Specification 3, 22 observations with missing husband's parental wealth were dropped from the sample because none of the observations were from couples with husband's parental wealth $25,000–$100,000.

is *not* given by that variable's estimated coefficient but is instead a function of *all* estimated coefficients in the model and the distribution of all explanatory variables in the sample. In particular, the implied marginal effect of change of in a given variable across all persons in the sample is the sample average of

$$\hat{\beta}_j \phi\left(\sum_j \beta_j \mathbf{X}_{ij}\right), \tag{1}$$

where $\hat{\beta}_j$ is the estimated probit coefficient for the particular variable, $\mathbf{X}_{ij}$ is the vector of observables, and $\phi(.)$ is the probability distribution function (pdf) of the normal distribution. Table 4 reports this measure in brackets.

Most of the probit estimates are strongly statistically significant, and the implied marginal effects show dramatic sorting by wealth range, after accounting for observables. People are hugely likely to marry spouses from similar parental backgrounds, and the further a spouse's parental background is from his or her own, the sharply lower the incidence of marriage. For example, we estimate that wives with parents with reported wealth in the lowest range are 28 percentage points more likely to marry husbands from a similar background, compared with the excluded group of wives with the highest parental wealth range. Moreover, this implied marginal effect is larger than that for wives from the next wealthiest background (14 percentage

points), which is in turn larger than the marginal effect for wives from the next highest wealth range (6 percentage points). Similar patterns exist through the table, although they seem especially pronounced at the tails. For all the wealth ranges, the marginal effects are very large, especially compared with the relevant mean outcome.

Sorting by Wealth Quintiles

An alternative measure of sorting is the use of wealth quintiles. For this analysis (and henceforth), we focus on the part of the sample with explicit numerical reports about parental wealth for both husbands and wives (panel B of Table 1). Using this sample, we first adjust husbands' and wives' parental wealth for child race and parent and child age using regressions of the following form:

$$\ln(W_j^P) = \alpha_0 + \beta \mathbf{X}_j + \eta_j^P, \tag{2}$$

where W_j^P is the parental wealth of spouse j (where j denotes either husband or wife), and $\mathbf{X}_j$ is a vector of age and race controls pertaining to spouse j. The vector $\mathbf{X}$ includes a quadratic in j's own age, a quadratic in j's parent's age, and a dummy variable for whether j is nonwhite. We then sort the residuals from those regressions into quintiles and create transition matrices whose elements π_{ab} indicate the probability that the wife's parents belongs to the ath quintile of the wife's race- and age-adjusted parental wealth distribution, given that the husband's parents belong to the bth quintile of the husband's race- and age-adjusted parental wealth distribution. The more independent husbands' and wives' parental wealth, the greater the likelihood that the elements of the matrices should be close to one-fifth; large departures from 0.2 suggest strong systematic relationships between husbands' and wives' parental wealth.

Panel A of Table 5 shows this transition matrix result. The results are striking. Among husbands with parents in the lowest quintile of the adjusted parental wealth distribution, 38 % are married to women whose parents also fall into the lowest 20 % of the distribution of wives' adjusted parental wealth, while only 7 % are married to women with parents in the top quintile of the parental wealth distribution. Sixty-five percent of men with parents in the lowest wealth quintile marry women whose parents are in the lowest two parental wealth quintiles. Only 19 % of husbands with the poorest parents marry women whose parents are wealthy enough to place them in the top 40 % of the parental wealth distribution. The same sorting is evident at the top end of the wealth distribution. Sixty-four percent of husbands with parents in the top quintile of the adjusted parental wealth distribution are married to wives whose parents are in the upper 40 % of the parental wealth distribution. Only 10 % of husbands from the wealthiest parental backgrounds are married to wives drawn from families in the lowest quintile of the adjusted parental wealth distribution.

Although most pronounced in the tails, this tendency of people to marry spouses whose parents are drawn from the same approximate place in the parental wealth

Table 5 Parental wealth transition matrix among couples with explicit parental wealth reports

	Panel A: Adjusted for Parent Age and Child Age and Race ($N = 589$)					Panel B: Adjusted for Parent Age and Child Age, Race, and Education ($N = 589$)				
	Husband's Parents' Wealth Quintiles					Husband's Parents' Wealth Quintiles				
Wife's Parents' Wealth Quintile	First Quintile	Second Quintile	Third Quintile	Fourth Quintile	Fifth Quintile	First Quintile	Second Quintile	Third Quintile	Fourth Quintile	Fifth Quintile
First Quintile	0.38	0.22	0.20	0.11	0.10	0.40	0.25	0.14	0.12	0.09
Second Quintile	0.27	0.30	0.23	0.11	0.09	0.19	0.22	0.21	0.24	0.13
Third Quintile	0.17	0.17	0.19	0.29	0.18	0.19	0.17	0.27	0.20	0.17
Fourth Quintile	0.12	0.16	0.25	0.23	0.24	0.13	0.19	0.19	0.21	0.28
Fifth Quintile	0.07	0.15	0.14	0.25	0.40	0.08	0.16	0.18	0.23	0.34
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Notes: Sample includes all married couples in the 1988 wave of the PSID where at least one parent of each spouse was alive in 1988 and explicit positive parental wealth report for both spouses' parents. All entries weighted using 1988 core PSID sample weights. The unweighted likelihood ratio χ^2 statistic that the quintiles of husbands' and wives' parental wealth are independent is $\chi^2(16) = 111.1$ (p value < .001) in Panel A and $\chi^2(16) = 75.6$ (p value < .001) in Panel B.

distribution, conditional on age, can be seen throughout the distribution. The null hypothesis that husbands' and wives' reported parental wealth quintiles are independent can be rejected at any conventional level of significance (p value < .001).

The preceding results strongly suggest that people marry spouses who come from very similar wealth backgrounds. What explains this sorting? One possibility is that parental wealth may determine people's preferences, so that the traits one finds attractive among all the people one meets in the marriage market tend to be most prevalent in people from similar backgrounds. Alternatively, being from a particular wealth background may have no causal effect on preferences at all, but may instead merely delimit the set of people with whom one interacts and gets to know.

We do not attempt to identify the precise mechanism that generates parental wealth sorting in this article, but we do examine the role of the one obvious mechanism: the couple's own education. Individuals' schooling likely affects their preferences, and schooling affects the set of people with whom individuals interact during the ages when marriage decisions are made. Finally, it is well known that a person's wealth background determines his or her level of schooling (Conley 1999).

In Panel B of Table 5, we repeat the analysis in Panel A, but now regression-adjust reported parental wealth for the child's educational attainment as well. Specifically, we estimate the following regression:

$$\ln(W_j^P) = \alpha_0 + \beta \mathbf{X}_j + \Gamma \mathbf{Ed}_j + \eta_j^P, \tag{3}$$

where $\mathbf{Ed}_j$ is a vector of education dummy variables indicating the educational attainment of spouse j (where again, j indicates either the husband or wife). With this regression, we are seeking to assess whether the association in parental wealth

that we observe in Panel A of Table 5 is simply proxying for the well-documented association in spousal education. Both here, and in all subsequent tables that control for spousal own education, we specify education using three categories. Specifically, we include a dummy variable if the spouse completed exactly 12 grades and a separate dummy variable if the spouse completed more than 12 grades, with less than 12 grades being the omitted category.

A comparison of Panels A and B of Table 5 shows that although adjusting for education slightly reduces estimated sorting in the transition matrices, residual parental wealth levels remain highly associated ($\chi^2(16) = 75.6$, $p < .001$). For example, even after accounting for the spouses' education levels, 40 % of husbands from the bottom quintile of the parental wealth residuals marry wives from the bottom quintile—which is a rate twice as high as would be expected by random matching—and 34 % of husbands from the top quintile marry wives from the top quintile. Sorting on the basis of schooling contributes to assortative mating by parental wealth, but the transition matrix estimates suggest that that contribution is relatively small.

Like the earlier results, the transition matrix estimates show strong evidence of dynastic marriage: the offspring of wealthy (poorer) families marry the offspring of other wealthy (poorer) families. This sorting does not appear to be a function of sorting by age, race, or education. Nonetheless, a concern about all the results presented thus far is that they are based on children's reports of parental wealth and, as such, might be seriously affected by measurement error. Also, none of the estimates thus far shown is a single-number summary measure of sorting. That is, these estimates do not tell us how much larger, on average, a husband's parents' wealth is for each additional dollar of his wife's parents' wealth. As noted in the introduction, such a parameter is important for recent studies of the intergenerational transmission of well-being. We turn next to summary estimates of marital sorting in which we try to account formally for measurement error problems.

Estimated Correlation in the Level of Parental Wealth

For this analysis, following the specification used by authors such as Solon (1992), Mulligan (1997), and Charles and Hurst (2003) to assess the intergenerational correlations in economic well being, we estimate

$$\ln(W_f^P) = \alpha + \delta_1 \ln(W_h^P) + \beta \mathbf{X} + \varepsilon, \tag{4}$$

where subscripts h (husband) and f (wife) denote the person whose parental wealth is reported. The superscript P denotes parental measures, and W denotes household wealth. Thus, W_h^p is the reported wealth of the husband's parents, reported by the husband or another member of his household. The vector $\mathbf{X}$ contains covariates: both spouses' ages, the ages of their parents, and the race of the couple.[5] The inclusion of these covariates adjusts our estimates for possible life cycle considerations and for the

[5] There are too few interracial couples in the sample to control separately for each spouse's race. We use the race of the husband, when it is available. Otherwise, we use the race of the wife.

part of the correlation in parental wealth that is possibly due to the sorting of spouses based on their own age or race. This regression is estimated on the subsample with explicit numerical reports for both husbands' and wives' reported parental wealth.

Assuming that ε is normally distributed, the age- and race-adjusted wealth correlation between husbands' and wives' parents is the regression coefficient, δ_1, multiplied by the ratio of the standard deviation of wives' parental wealth to the standard deviation of husbands' parental wealth. Because Table 1 shows that these standard deviations are the same for spousal reports of parental wealth, we refer to the estimate of δ_1 as the estimated spousal parental wealth correlation in all that follows.

Unfortunately, potential measurement error in spouses' reports of their parents' wealth complicates interpretation of the OLS estimate of δ_1. When errors in the reported parental wealth of husbands and wives are uncorrelated, classical measurement error in reports of the parental wealth variable on the left side of Eq. (4) are irrelevant because the error is simply absorbed into the regression error term, ε. However, classical measurement error in reports of parental wealth variable on the right side of Eq. (4) will lead to an attenuated estimate of the correlation in spousal parental wealth, with the estimate of δ_1 biased toward zero. In this best-case scenario, the OLS estimate of δ_1 produces a lower bound on the true relationship between husbands' and wives' parental wealth.

If errors in the reports of husbands' and wives' parental wealth levels are correlated, determining the likely sign of any bias in the OLS estimates is more complicated. For example, if the errors are positively correlated, the estimate of δ_1 will be biased upward, all else being equal. Positively correlated errors could result if the spouse who reports the parental wealth measures provides overestimates or underestimates for both reports. In general, because we do not know how the errors are correlated between spouses, OLS estimates of δ_1 may be biased in either direction, rendering these estimates of limited value in assessing the true correlation between parental wealth of husbands and wives.

One way to deal with these measurement error problems is to employ an instrumental variables strategy. Specifically, if instruments could be found that are correlated with the report of one spouse's parents' wealth but uncorrelated with any error in the parental wealth report of the other spouse, this variation could be isolated using TSLS to estimate the relationship of interest.

We use two instruments. Both measures are available because of the PSID's genealogical design. Children of core sample members themselves become part of the PSID core sample as they leave their parents' household and form their own households. As a result, a subsample of married couples in our analysis has at least one spouse who is the child or grandchild of an original sample member. Recall that the parental wealth question in 1988 was asked only of persons whose parents were alive in that year, so the parents of the children are *themselves* PSID core sample members, provided that they have not attrited from the sample prior to 1988. For the TSLS estimates, we focus on these couples and their parents, provided that the parents reported positive wealth.[6]

The PSID core survey asked all sample members to report their own wealth in 1989. Thus, for children of original PSID sample members, we know both the child's

[6] More than 96 % of PSID parents reported positive wealth.

report of the parent's wealth *and* the parent's report of own wealth. One natural instrument for the child's report of parental wealth is the parent's report of own wealth. The validity of the parent's own wealth report as an instrument requires that it be strongly correlated with the child's report.

To assess the strength of this relationship, we estimate

$$\ln\left(W^{P}_{PSID-child}\right) = \omega_0 + \omega_1 \ln\left(W^{P}_{P}\right) + \nu. \tag{5}$$

In Eq. (5), W^{P}_{P} denotes the parent's self-reported wealth. The variable $W^{P}_{PSID-child}$ denotes the wealth of the parent, as reported by the person in the couple who is descended from the PSID original sample or his/her spouse. It is important to stress that this *PSID–child* could be either a husband or a wife in the sample of married couples.

To conserve space, we do not present the regression results for these first-stage results in a table, but regression estimates for Eq. (5) show that the parent's self-reported wealth and the child's report of parental wealth are very strongly and significantly related: the estimated coefficients for the parameters ω_0 and ω_1 are, respectively, 2.9 and 0.73 with robust standard errors of 0.53 and 0.05, respectively. Indeed, if we could be certain that parents reported their own wealth with perfect accuracy, it would be straightforward to adjust the estimate of δ_1 from regression Eq. (4) by the appropriately estimated signal-to-noise ratio. However, even if parents report their wealth with some error, the parental report is still a valid instrument for the child's report. Given the strength of the first-stage relationship, the only thing that would invalidate the use of the parent's own report is if, for some reason, a parent's estimate of own wealth were associated with the errors in the reported wealth of the child-in-law's parents. This possibly cannot be logically ruled out, but seems unlikely.

To implement the instrumental variables strategy, Eq. (4) must be modified in the following way:

$$\ln\left(W^{P}_{Other-child}\right) = \alpha + \delta_2 \ln\left(W^{P}_{PSID-child}\right) + \beta\mathbf{X} + \varepsilon. \tag{6}$$

In Eq. (6), unlike Eq. (4), we distinguish partners not by whether they are husband or wife, but by whether they are the person descended from the PSID original sample (*PSID–child*) or not (*Other–child*) because the *PSID–child* could be either male or female. For the TSLS exercise, we instrument for the *PSID–child*'s report of parent's wealth using the parent's report of own wealth, with the relevant first stage given by Eq. (5).

Table 6 presents the results of estimating the correlation in spousal parental wealth using the specifications given by Eqs. (6) and (4). Row 1 of Panel A shows the OLS estimate of the spousal parental wealth correlation for Eq. (4), estimated on the full sample of married households with positive parental wealth reports. This strongly statistically significant point estimate is 0.46.

In the analyses in Panels B and C, we restrict the analysis sample to couples with valid data on the instrumental variable: the PSID parents' self-reported wealth. In the second row of Panel A, we again estimate Eq. (4) but restrict the sample to that used in Panels B and C. The estimate of the spousal parental wealth correlation in this subsample is again 0.46. This finding is immensely reassuring because it shows that

Table 6 OLS and TSLS estimates of marital sorting based upon parental wealth

Regression	Parental Wealth Coefficient	R^2	N
Panel A: Regression of Log of Husband's Parents' Wealth on Log Report of Wife's Parent's Wealth			
1. OLS estimate (full sample)	0.46 (0.06)	.28	589
2. OLS estimate (sample from Panels B and C)	0.46 (0.06)	.29	414
Panel B: Regression of Log of Non-PSID Child's Child-Reported Parental Wealth on the Log of PSID Child's Child-Reported Parental Wealth			
1. OLS estimation	0.45 (0.06)	.28	414
IV estimation			
Instrument: parent's own wealth report			
2. Without controls for own education	0.38 (0.07)	.27	414
3. With controls for own education	0.30 (0.07)	.29	414
Panel C: Regression of Log of Non-PSID Child's Child-Reported Parental Wealth on the Log of PSID Child's Parent-Reported Parental Wealth			
1. OLS estimation	0.28 (0.06)	.18	414
IV estimation			
Instrument: parent's education			
2. Without controls for own education	0.42 (0.13)	.16	414
3. With controls for own education	0.32 (0.20)	.21	414

Notes: Sample includes all married couples in the 1988 wave of the PSID where at least one parent of each spouse was alive in 1988 with explicit positive reports of parental wealth. See the text for full details of sample construction. In Panels B and C, the sample includes only husband-wife pairs where one spouse's parents gave report of own wealth in 1989. All regressions control for race and spouses' and parents' age. When it is included, child education is specified using three dummy variables for each spouse (exactly 12 years, more than 12 years, or missing; fewer than 12 years is the omitted group). The top 1 % of parental wealth values were recoded to the value at the 99th percentile. All regressions were weighted using 1988 core PSID weights. Robust standard errors are shown in parentheses.

the subset of the positive report subsample for which we also have the parents' own reports lines up remarkably well with the results for the positive numerical report sample overall.

Row 1 of Panel B presents the OLS estimates of Eq. (6) on the subsample for which we know both the child's and parent's own reports of the parent's wealth, but with the spouses distinguished by whether they are they are the *PSID–child*, rather

than whether they are the husband or wife. Again, the results are very reassuring. The results show that the estimated correlation in spousal parental wealth of .45 is quite similar to the OLS estimate from Eq. (4) and is just as strongly statistically significant. The reformulation from Eq. (4) to Eq. (6) and the use of a subset of the original sample thus has no effect on the estimated correlation in spousal parental wealth.

The second row of Panel B of Table 6 presents TSLS estimates of Eq. (6), in which we instrument for the PSID child's report of parent's wealth report using the parent's own report. The TSLS estimate of δ_2 of 0.38 is smaller than the corresponding OLS estimate. This suggests that, as suspected, there is in fact a positive correlation between the errors in spousal reports of parental wealth, which biases the OLS estimates in Eq. (4) and Eq. (6) upward. Classical measurement error would have tended to bias the simple OLS estimates downward.

Panel C of Table 6 again separates spouses by whether they were the PSID–child. The first regression in this panel regresses the non-PSID child's parental wealth directly on the wealth of the parent of the PSID child *as reported by the parent.* To repeat, rather than using the parent's own wealth report $\left(W_P^P\right)$ as an instrument for the child's report, we use the parent's own report directly as the regressor in Eq. (6). That is, we estimate

$$\ln\left(W_{Other-child}^{P}\right)=\alpha+\delta_3\ln\left(W_P^P\right)+\beta\mathbf{X}+\varepsilon. \tag{7}$$

Because parents probably make random errors when giving numerical values of their own wealth, the estimate of δ_3 should be downward biased. However, unlike the estimates of Eq. (4) and Eq. (6), there is no reason to believe that the reporting errors of the dependent variable and the independent variable in Eq. (7) are correlated. The bias from estimating Eq. (7) should, therefore, be standard attenuation bias. Row 1 of Panel C shows that the OLS estimate of δ_3 is 0.28.

To account for potential attenuation bias in the OLS estimate of Eq. (7), we use the parents' reports of their own education as an instrument for the parents' reports of their own wealth. As with parental age, we use information from the father when it is available. Education dummy variables strongly predict parents' reports of their own wealth. Moreover, parental education reports are likely uncorrelated with error in the report of the non-PSID child's parents' wealth. As in our measures of spouses' education, we use three categories to measure parental education: completed less than 12 grades, completed exactly 12 grades, and completed more than 12 grades. In a regression of PSID parents' reports of their own wealth on education, the estimated coefficients on the two dummy variables were 0.72 (exactly 12 years of education) and 1.40 (more than 12 years of education), with robust standard errors of 0.10 and 0.11, respectively. Row 2 of Panel C shows the estimated TSLS spousal parental correlation when we instrument for the parent's report using the parent's reported schooling. The estimate is 0.42.

Two things are noteworthy about the TSLS estimate of δ_3. First, the fact that the TSLS estimate of δ_3 is larger than the OLS estimate is consistent with our belief that there is some essentially random error in the parents' reports of their own wealth and that this error is not positively correlated with errors in the child's report of the wealth of non-PSID child's parents' wealth. Second, the IV estimate of Eq. (7) is very close

to the IV estimate from Eq. (6): 0.38 versus 0.42. We consider it immensely reassuring and persuasive that two different estimation approaches to accounting for measurement error in reports of parental wealth yield such similar point estimates, and therefore conclude relatively confidently that the correlation in spousal parental wealth is around .4, net of controls for race and the ages of spouses and their parents.

One of the main contributions of our article is its demonstration that spouses sort on parental background above and beyond the amount proxied by their own education. To assess the importance of education in explaining the level of marital sorting based on parental wealth, we estimate TSLS version of Eq. (6) and Eq. (7), adding controls for the level of schooling for both spouses. When estimating Eq. (6) with husband and wife educational controls, we instrument the PSID–child's report of parents' wealth with parents' self-reports. Similarly, when reestimating Eq. (7), we instrument the parents' reports of their own wealth with the parents' level of educational attainment.

The results are shown in the third rows of Table 6, Panel B, and Table 6, Panel C. The first row shows that reestimating the TSLS version of Eq. (6) with controls for the spouses' own schooling lowers the estimate of δ_2 from 0.38 to 0.30. In the second column of Table 6, we reestimate the TSLS version of Eq. (7) with controls for spouses' own schooling, and find a reduction in the estimate of δ_3 from 0.42 to 0.32.[7] These results suggest that the preferences and social interactions that operate through schooling are important mechanisms by which sorting by parental wealth is generated. However, as the earlier transition matrix results also show, this effect is not large; schooling appears to account for only about one-quarter of estimated parental wealth sorting.

Selection Into the Sample of Spouses

An analysis of patterns of assortative mating by parental wealth among married couples in a given year provides only a partial picture of the association between parental wealth and marital outcomes. A natural question is whether parental wealth also affects individuals' likelihood of getting and staying married. The relationship between parental wealth and entry into marriage will affect our results in the preceding sections by altering the wealth distribution of husbands and wives.

Likewise, an association between parental wealth and the likelihood of divorce could also affect our results. Our analyses described earlier in the article are based not on a marriage cohort but instead on a sample of existing marriages in 1988. If, for example, marriages in which husbands and wives have very different backgrounds are more likely to break up, then our estimates of assortative mating by parental wealth will be upwardly biased compared with the extent of assortative mating among all marriages because more stable couples will be overrepresented in our sample.

To address these concerns, we performed two supplemental analyses.[8] Using discrete-time hazard models and our sample of married couples in 1988 in which

[7] Allowing for full interactions of husbands' and wives' education levels does not diminish our TSLS estimates of parental wealth sorting, relative to the estimated coefficients in Panels B and C of Table 6.

[8] All the detailed results, including the specific sample descriptions, can be found in the Online Resource 1.

both spouses' parents were reported to have positive wealth, we tested whether the parental wealth of either spouse was associated with increased yearly risk of divorce during the first 10 years of marriage. We control for spouses' education, race, whether the marriage is a first for both spouses, whether either spouse was a parent prior to the marriage, whether the marriage began when the wife was a teenager, whether a child has been born to the spouses since the start of their marriage, the duration of the marriage to date, and parents' ages and education. In a second set of models, we further control for each spouses' work hours and hourly wage. There were no statistically significant relationships between spouses' parents' wealth and the spouses' risk of divorce. We also tested for an interactive effect of spouses' parents' wealth: whether the effect of parental wealth on divorce varies with the wealth of one's in-laws. Again, we found no significant associations. We conclude that selection out of marriage does not appreciably bias our results.

Second, using a different sample of PSID respondents, we matched young people's marital histories to the wealth of their parents, as reported by their parents in the years 1984–2007. Using discrete-time hazard models, we tested for an association between parental wealth and a young person's yearly risk of entering a first marriage between the ages of 15 and 40. We control for the age and education of the individual and his parents, as well as whether the individual is a parent, whether he is a student, for his race, and for the year. Again, we supplement this analysis with a second set of models that also controls for the individual's work hours and hourly wage. We find no evidence of an association between parental wealth and the hazard of marriage in any of the models, for either men or women.

Collectively, our results suggest that selection into or out of marriage is not a concern when it comes to estimating the correlation in parental wealth among spouses.

Conclusion

In this article, we use a variety of estimation strategies to study the degree to which spouses sort in the U.S. marriage market based on the wealth of their parents. We have been unable to find previous work studying this question in the large social science literature studying marriage and marital sorting. Our various estimates are striking and mutually supportive: men and women in the United States marry partners whose parents have wealth similar to that of their own parents and are very unlikely to marry persons from very different parental wealth backgrounds. Our preferred estimate is that the correlation between own and spouses' parents' log wealth is around .4, net of controls for race and the ages of spouses and their parents. This estimated effect is strikingly similar to estimates of intergenerational correlations in income (Solon 1992) and wealth (Charles and Hurst 2003), both of which are also about .4.

Many possible mechanisms might account for this sorting, but one channel that we believe we have convincingly ruled out is that having to do with education. Specifically, we show that the fact that the sons and daughters of the wealthy (poor) tend to be similarly educated explains no more than one-quarter of the strong assortative marriage by parental wealth that we document. In their influential work, Blau and Duncan (1967) documented that the majority of the association between fathers' and sons' occupational status was mediated by the son's education. Our results tell quite a

different story. Although parental attributes appear to affect their children's occupational outcomes primarily through their influence on the child's education, the same cannot be said for the effect of parental attributes on the child's mate choice. With respect to marriage, three-fourths of the influence of parental wealth on mate choice remains after controlling for the child's education. Although this result does not undermine the importance of considering the implications of assortative mating on the basis of education, it suggests that literature on homogamy should pay greater attention to the role of ascribed characteristics in constraining mate selection.

Beyond its contribution to the marriage sorting literature, our work is relevant to the literatures on social fluidity and the intergenerational transmission of economic outcomes. Kalmijn captures the connection between marriage sorting and social fluidity well: "Questions about how much someone can get ahead socially and economically in spite of a disadvantageous social background are similar to questions about whether two individuals who are attracted to each other will get married despite their coming from different social backgrounds" (1991:497). Our findings suggest that American society, especially in the tails of the distribution, departs very dramatically for perfect fluidity: to marry someone from a very different social background is rare, even after adjustments for educational attainment.

Work in the large literature on intergenerational correlations studies how *own* outcomes—such as earnings—are related between parents and their children, but there has also been interest in the transmission across generations of less transitory and more complete measures of economic resources such as asset ownership and wealth. Unlike income, a person's command over these other economic measures is determined at the level of the *household*. As a result, although this point has not been particularly emphasized in previous empirical work, the observed association between the wealth of a parent and the wealth of the child necessarily depends on the access to wealth of the people the parent and child marry—something to which our parental wealth sorting results directly speak. An interesting area for future work would be to formally assess how much the parental wealth marital sorting we have estimated affects measured intergenerational associations like those for wealth and income.

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