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PARENTAL INVESTMENTS IN COLLEGE AND LATER CASH TRANSFERS

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ABSTRACT

The rising cost of college tuition and the accompanying investment parents often make have received considerable attention recently. While classic models in economics make important predictions about the magnitudes of these investments, their distribution across children, and their relationship with later cash transfers, there has been little empirical work examining these predictions, especially with regards to the differential treatment of siblings. Using unique data from a supplement to the Health and Retirement Study, we find that parents typically invest differentially in the schooling of siblings, but we find no evidence that these investments are offset by later cash transfers.

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Parents invest a great deal of time, money and energy in their children from the time the child is born until long after the child reaches adulthood. One dimension of this support that has recently received a great deal of attention both in academia and in the popular press is the cost of contributing to a child's college education.[1] In addition to these schooling transfers, parents also provide significant financial support through direct cash transfers after schooling has been completed and to those children who never attend college (Gale and Scholz, 1994). The relationship between these two types of cash investments, their respective magnitudes, their relationships with the characteristics of the child and of the family, and their distributions across siblings have important implications for our understanding of familial behavior and tie directly into some of the most important economic models of familial behavior.

The classic work of Gary Becker (Becker 1976; Becker and Tomes 1976) posits that parents invest in the schooling of their children until the rate of return for an additional year of schooling is equal to the market rate of return. Additional transfers, if desired, are made as direct cash transfers. Behrman, Pollak and Taubman (1982) develop two alternative specifications for the parental utility function within a transfer model, one in which the parent cares only about the total income of each and a second in which the parent values the earnings of each child separately from that child's transfer income. In the first case, cash transfers can be used to offset differences in earnings resulting from differential investment in human capital, corresponding to the investment model of Becker's work. In the second case, because parents value a child's earnings separately from transfer income, parents can make equal cash transfers across siblings regardless of differences in earnings levels.

Despite the centrality of these models to our understanding of educational attainment and family behavior, there has been little work testing their empirical implications. Instead, data

[1] See Ryman (2012) and Lieber (2011) for newspaper coverage and Sallie Mae and Ipsos (2011) for a recent report.

limitations have meant that previous research on human capital investment has focused on educational transfers to a particular child, ignoring both transfers to their siblings and subsequent cash transfers. Conversely, research on intergenerational transfers has examined patterns of cash transfers to children, typically focusing on a single point in time and ignoring schooling transfers. Almost no work has examined the relationship between parental investments in schooling and subsequent cash transfers or the differences across siblings in the types of investments.[2] This limited focus means that we have little understanding about how parents substitute between the two modes of giving or about the total value of financial transfers flowing from parents to children.

This paper makes several contributions aimed at filling these gaps. Using the classic models as a framework for understanding behavior, we first examine the extent to which parents invest differentially in the schooling of their children. We then compare the magnitude of schooling-related transfers to subsequent cash transfers measured at a point in time and over much of the child's young adult life. Finally we examine the relationship between schooling and post-schooling transfers to assess whether the latter offset differential investments in schooling.

Our analyses draw on the rich, longitudinal information in the Health and Retirement Study (HRS), as well as an unusual data supplement to the HRS, the Human Capital and Educational Expenses Mail Survey (HUMS). The HUMS supplement collects information for a subset of HRS respondents on their contributions to the college tuition and room and board costs of each of their children. When combined with information on transfers in the various core

[2] Brown, Mazzocco, Scholz, and Sheshardi (2006) is the only paper we know of that examines schooling investments and later cash transfers. Two recent papers have examined aspects of cash transfers over a longer time period. McGarry (2012) examines the relationship between parental transfers and the evolution of a child's income over time, and Hurd, Smith, and Zissimopoulos (2011) examines total giving from a parental perspective.

surveys, we are able to compare total schooling transfers made to a child with the value cash transfers made to that same child over a span of a decade or more.

Unsurprisingly given the rich anecdotal evidence on the subject, we find that parents make significant investments in the college education of their children, with a median amount of $7,597 (2008 dollars) for a college-going child and $14,332 (2008 dollars) for all children in families with at least one college-going child. However, such investments are far from uniform: the modal fraction of tuition covered by the parent is 100 percent and the next most common contribution is zero percent. We also we find that parents often treat siblings unequally with respect to these schooling investments. Although there does not appear to be a significant difference in contributions to education by the sex of the child, we find evidence that birth order matters, with older children receiving smaller amounts than their younger siblings. This result is consistent with a lifecycle model in which parents are more likely to be liquidity constrained when their older children reach college age than when their younger children do.

With respect to later cash transfers, we find no evidence to support the hypothesis that parents use these transfers to offset the differences in schooling investments (or to support the alternative hypothesis that certain children are favored): later cash transfers are unrelated to parental investments in the college of their children. We also find a strong negative relationship between a child's earnings and the amount of cash transfers, even after controlling for schooling investments. This finding provides support for a wealth model in which the total resources of a child influence parental giving rather than the amount of previous educational investments. Importantly, aggregating cash transfers over a period of years does not change our findings regarding the relationship between schooling transfers and cash transfers, nor does it change our assessment of the division of transfers within the family. Examining aggregate transfers does,

however, demonstrate that parental cash transfers that are made after a child has completed his schooling (or to children who obtain no post-secondary education) are at least as important in magnitude as parental investments in a college education.

The remainder of the paper is organized as follows. In section 1 we briefly outline the relevant models of giving and some of the empirical literature examining educational investments and other cash transfers. Section 2 describes the data and section 3 presents descriptive information on the distribution of educational transfers, results which represent an important contribution on their own and which we do not believe have been previously reported. In section 4 we expand on the patterns observed for educational transfers to examine the relationship between these investments and later cash transfers. These analyses address our central empirical questions: do parents use cash transfers to offset prior investments in schooling or differences in income and to what degree do parents treat children differently with respect to the alternative types of transfers? A final section concludes and discusses our results.

1. Background

The focus of our analysis is on educational investments and the extent to which cash transfers from parents to adult children are related to these prior investments in post-secondary education. This interest is motivated by Becker's educational investment model (e.g., Becker 1975; Becker and Tomes 1976), which has been central to the study of educational attainment, and by the work of Behrman, Pollak and Taubman on intergenerational transfers (e.g., Behrman, Pollak, Taubman 1982, 1989). We first highlight the main features of the models, referring the reader to the original papers for a complete development. We then provide a brief review of the empirical literature examining parental transfers for schooling and direct cash transfers. Because we are

interested primarily in how parents divide these transfer across siblings, our discussion of the literature focuses on the relatively few papers that study such differences.

1.1. The investment model

Parents can transfer resources to their children through human capital investments or through direct cash transfers. Although human capital investments begin at birth and involve time and other inputs, our focus is on parental transfers to adult children both in the form of financial contributions to post-secondary education and those made as direct cash transfers. Following Becker and Tomes (1976), the quality of a child depends on the child's endowment and parental inputs that come in the form of human capital investments and cash transfers. If parents are not liquidity constrained, they will invest in the schooling of children until the rate of return is equal to the market rate of return; any additional investments are made as cash transfers. If the return to schooling varies across siblings, perhaps because of differences in ability, then parents will invest differentially in the schooling of their children.

Behrman, Pollak and Taubman (1982) expand on these notions by specifying two alternative utility functions corresponding to different sets of parental preferences: a "wealth model" in which parents care about the total resources available to each of their children (i.e., the sum of earnings and cash transfers) and a "separable earnings / bequest model" in which the earnings of a child and transfers received by that child enter as separate arguments in the parental utility function. Both models are predicated on the assumption of equal concern (i.e., parents do not prefer one child over another), so that the ordering of children in the utility function is unimportant.[3]

[3] Throughout the discussion we maintain the assumption of equal concern. Of course, parents may favor one child over another, perhaps favoring a child who exhibits a preferred behavior or favoring sons or daughters. While we

First consider the wealth model. Approximating the authors' notation, the utility function for a parent with *n* children can be written as

(1) $$U_p = U(C_p, V(E_1 + rT_1, E_2 + rT_2, ..., E_n + rT_n)),$$

where C_p is the consumption of the parents, E_i is the earnings of child *i*, T_i is the inter vivos (cash) transfers to child *i*, and *r* is the market rate of interest. In this specification, the utility of the parent is unaffected by the composition of the child's income; income from earnings and transfers enter as a single amount. Thus, when maximizing utility, parents provide more schooling to children with higher rates of return and use cash transfers to offset differences in earnings. The literature typically assumes that the educational production function is such that the returns to education are higher for more able children. Under such an assumption, the parents will make greater investments in the human capital of more able children and provide greater cash transfers to less able children. If there were a monotonic relationship between schooling investments and earnings, then schooling transfers would be negatively correlated with later cash transfers within family because children who received less investment in schooling (and who would thus have lower earnings) would subsequently receive greater cash transfers.

Turning to the second specification, the separable earnings/bequest model, the utility function can be written as:

(2) $$U_p = U(C_p, V_E(E_1, E_2, ..., E_n), V_T(T_1, T_2, ..., T_n; r)).$$

Contrary to (1), cash transfers in this specification enter separately from earnings, and thus transfers are *not* used to offset differences in earnings. Furthermore, assuming equal concern, parents will make equal cash transfers to each child, even in the face of potentially large differences in earnings. While Behrman, Pollak and Taubman (1982) use the term "earnings /

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can observe differences in transfers to sons and daughters or by birth order, we cannot observe whether a child is more well-liked than a sibling.

bequest" model but explicitly include both bequests and inter vivos transfers in their theoretical model. We refer to it here as the "earnings / transfer" model to emphasize that we are specifically focused on inter vivos cash transfers.[4]

One can readily see the appeal of each specification. The wealth model predicts that parents provide more cash assistance to lower-earning children because the marginal utility of a dollar transferred to that child is greater. Thus transfers help to equalize consumption across children. Alternatively, the separable earnings / transfers model allows parents to value earnings separately from direct cash transfers—obtaining utility directly from transfers themselves. Here, parents perhaps consider it "fair" to transfer the same dollar amount to each child, regardless of underlying differences in earnings. Direct questions regarding the reasons for a particular division of resources provide evidence for both rationales (Light and McGarry, 2004).

In both models, children's earnings are a function of their schooling, with schooling investments serving to increase earnings. Rewriting (1) and (2) to denote this relationship explicitly gives:

(1') $$U_p = U(C_p, V(E_1(s_1) + rT_1, E_2(s_2) + rT_2, ..., E_n(s_n) + rT_n)),$$

(2') $$U_p = U(C_p, V_E(E_1(s_1), E_2(s_2), ..., E_n(s_n)), V_T(T_1, T_2, ..., T_n; r)).$$

These specifications provide competing hypotheses for how parents allocate schooling investments in relation to cash transfers. The preferences in (1') suggest that schooling and transfers can separately be used by parents to increase equalize the total incomes of their

[4] In our empirical work we ignore bequests for several reasons. First, the majority of the parents in our data do not die over the sample period so there is no information on eventual bequests. Secondly, previous studies have repeatedly shown that bequests are overwhelming divided equally among children. For example, Wilhelm (1996) found that bequests were divided "approximately equally" in 88 percent of the cases. McGarry (1999) and Light and McGarry (2004) report similar rates of equal division based on reports of the provisions of existing wills. This prevalence of equal division suggests that the distribution of bequests is likely motivated by other factors. And finally, because the length of life is uncertain, the magnitude of bequests is partly due to chance rather than explicitly chosen by the parents as are inter vivos transfers and schooling investments.

children, and the preferences in (2') suggests that parents will equalize cash transfers across children regardless of earnings or the amount of schooling investments. We build on this second idea and propose a third specification that is similar that of model (2'), but considers schooling investments to be just another form of transfers by including their value in the transfer component. We formalize this alternative "earnings / *total transfers*" specification as follows:

$$(3) \qquad U_p = U(C_p, V_E(E_1(s_1), E_2(s_2), ..., E_n(s_n)), V_T(T_1 + s_1, T_2 + s_2, ..., T_n + s_n; r)).$$

Thus, schooling investments provide utility indirectly through their role in determining income as well as directly as a cash transfer. Each of the three scenarios seems to be a plausible explanation of parental behavior, and we appeal to the data to see which set of preferences is most common.

1.2. Empirical implications of the models

In the wealth model of (1'), parents are concerned with the total income of the child. If schooling is positively correlated with income and absent controls for the child's income, ceteris paribus schooling transfers and later cash transfers should be negatively correlated. However, when controlling for a child's income, there ought to be no relationship between schooling transfers and cash transfers and a negative relationship between the child's income and cash transfers.

In the separable earnings / transfers model of (2'), parents seek to equalize (non-schooling) transfers across children. Thus there will be no relationship between schooling investments (or income) and cash transfers, but given our assumption of equal concern, cash transfers will tend to be equal across children within a family. Although the model is written in terms of lifetime transfers, in data we typically see only a portion of lifetime cash transfers to each child. Our analysis improves on past work in that we can observe transfers over a period of

up to 17 years. If parents endeavor to equalize cash transfers over the lives of their children rather than in each specific period, then transfers observed over an extended period of time would appear more equal than those observed in a single period. In our empirical work, we compare the prevalence of equal giving both in the cross section and the panel.

Finally, in our expanded earnings / total transfers model of (3), parents seek to equalize the sum of schooling and cash transfers across children. We therefore expect a more equal division of transfers within families when looking at the sum of schooling and cash transfers than when examining each transfer individually. Moreover, cash transfers would be negatively related to schooling transfers.

1.3. The literature on parental transfers for educational expenses

Despite the elegance and seemingly tractable nature of these models, we know of little empirical work that has examined their implications directly. While there is a vast literature examining educational attainment (see Haveman and Wolfe (1995) for a summary of this literature) far fewer studies focus on parental investments in the schooling of their children, and still fewer examine differences in investments *within* families.

Although the focus of our study is on within family differences, we briefly note just one aspect of the schooling investment literature that focuses on differences across families—the role of liquidity constraints—because we find evidence that liquidity constraints may also affect intra-family allocations. If schooling investments depend on the interest rate a family faces, then families that face higher borrowing costs (families with lower income, lower wealth, or more children) would be expected to invest less in schooling. Numerous studies find that college attendance increases with family income (e.g., Ellwood and Kane 2000; Brown Mazzocco,

Scholz, and Seshardri 2006; Belley and Lochner 2007; Bailey and Dynarski 2011), and several studies show it falls respect to family size (e.g., Lindert 1977; Behrman, Pollak, and Taubman 1989). [5] Given the typical age-earnings profile and the financial effect of siblings at home, liquidity constraints may also operate within a family to reduce the investment in older children relative to their siblings.

The investment model also predicts that parents invest more in schooling when the returns are higher. If returns to education vary with a child's ability, then so too will educational investments. Unfortunately, our data do not contain a measure of ability. However, a large psychological literature has found that first-born children exhibit higher IQs than later-born children, and numerous papers in economics have examined whether birth order affects educational attainment and earnings (e.g., Behrman and Taubman 1986; Black, et al. 2005; Kantarevic and Mechoulan 2006; Booth et al. 2009). If returns to schooling are positively related to ability, this difference in ability would lead parents to invest more in the schooling of their older children, potentially offsetting some of the effect of liquidity constraints. Similarly, if the returns to schooling differ by the gender of the child, then parents would invest differently in the schooling of their sons and daughters (e.g., Jacob 2002; Barrow and Rouse 2005; Dougherty 2005).

The empirical literature examining these patterns is limited and the findings have been mixed. Behrman and Taubman (1986) and Black, Devereux, and Salvanes (2005) find higher levels of schooling for older siblings, consistent with an investment model with positive returns to ability and older children having greater ability. Powell and Steelman (1989) find that the probability of parental support for college is significantly *negatively* related to the number of

[5] For more general studies about the potential role of liquidity constraints and educational attainment, see Carneiro and Heckman (2002), Cameron and Tabor (2004), Keane and Wolpin (2001), and Lochner and Monge-Naranjo (forthcoming).

brothers but not significantly related to the number of sisters**.** Conversely, Butcher and Case (1994) find that additional brothers lead to a *greater* number of years of schooling for girls but not for boys, while additional sisters reduce a girl's level of education. Using data from Japan, Parish and Willis (1993) find important interactions between the sex of the child and birth order, particularly for older girls: older daughters appear to help their younger siblings attain more schooling, perhaps by working and providing support or by marrying early and freeing-up familial resources.

With respect to cash transfers, the literature has focused on the effect of the child's income on the probability and amount of a transfer. Early work found that higher income children received greater transfers (Cox 1987). However, more recent work based on better information on the financial resources of both parents and children has found a negative, but small, correlation: lower income children receive greater transfers, but the amounts transferred offset little of the income differential (e.g., Altonji et al. 1997; McGarry and Schoeni 1995). Other than income, the important determinants of transfers are variables that are correlated with financial well-being and access to resources such as marital status and age. Similarly, the financial status of the parent is strongly positively related to the probability of making transfers and the amount.

The paper that is most closely related to our work is Brown, Mazzocco, Scholz, and Seshadri (2006). Their focus is developing a theoretical model that distinguishes "tied transfers"—transfers that are related to a certain behavior, such as attending college—from cash transfers more generally. Using the HRS and the HUMS, they find that wealthier and more altruistic parents finance greater shares of their children's education; our findings echo these results. They then use the Wisconsin Longitudinal Study to examine the correlation between

educational transfers and direct cash transfers within families and find a negative relationship. As we show later, this result contrasts sharply with our within-family results using the HRS. We speculate that the difference that may be due to the different study populations.

2. Data

Our empirical work uses data from the Health and Retirement Study (HRS). The HRS is a panel survey of older Americans that began in 1992 with an initial cohort of approximately 7,600 households that contain at least one individual born between the years 1931 and 1941 for a total of 12,652 person-level interviews. This initial cohort has been interviewed biennially since 1992. A companion survey, the Asset and Health Dynamics Study (AHEAD), was administered in 1993 and a 1995 to a sample of individuals born in 1923 or earlier and their spouses or partners. This older cohort was merged with the HRS in 1998. At that time, two additional cohorts were added, one consisting of individuals born in the years 1924 to 1930 (and their spouses) and the other of individuals born in the years 1942 to 1947 (and their spouses). Taken together, the cohorts of the 1998 HRS provide a sample of nearly 14,400 households that is nationally representative of households with an individual aged 51 or older in that year. These respondents have been interviewed biennially since 1998. Additional cohorts were added in 2004 and 2010, but are excluded from this study because key data are not available for them.

The biennial core surveys collect detailed information on the income, assets, and health of the respondents. The surveys also collect a good deal of information on the respondents' children, including the child's family income, schooling level, employment and marital status, and important for this study, cash transfers from the parent to the child.

In 2001, the HRS mailed an off-year supplemental survey that focused on educational expenses of the children to a subsample of respondents. That survey, the Human Capital and

Educational Expenses Mail Survey (HUMS), asked respondents about the college attendance of each child and their past contributions to each child's educational expenses. These retrospective questions allow us to examine spending on all children in the family. Consistent with the focus of these supplemental questions on college, households receiving the HUMS appear to be a random sample of those that previously reported having a child who attended post-secondary school.[6] Table 1 compares the means of various household characteristics measured in the 2000 survey for the sub-sample of households that were sent the HUMS and for the full HRS sample. The sample receiving the HUMS (column 1) is better-off financially and more highly educated than the full HRS (column 2), consistent with a selection based on having at least one child with post-secondary schooling. The average income for the HUMS sample is somewhat higher than for the full sample ($70,500 compared to $65,000 in 2008 dollars) as is wealth.[7] HUMS families have more schooling than the full sample, 12.8 versus 12.3 years, and are more likely to be married. Finally, because respondents must have at least one child to be eligible for the HUMS survey, they have more children on average than does the population of households.

The appendix provides more details about how we process the HRS and the HUMS and basic descriptive information about our samples.

3. The magnitude of parental contributions to adult children

[6] Although the documentation reports that the sample was selection from those "who were likely to have had at least one child (ever) 18 years of age or older," our analysis of the data (not shown) suggests that the sample was selected from households with at least one child age 18 or older *who had obtained more than 12 years of schooling* as reported in the 2000 core survey. Ninety-four percent of our sample had at least one child with some college attendance, a figure far too high for a randomly drawn sample of all households with children.

[7] The table reports the means for all those sent the HUMS questionnaire. The response rate was quite high, particularly for a mail survey. Eighty percent of households provided at least some information, and of those who did, 90 percent provided information for all of their children. The values in this table are weighted in order to assess the degree to which they are population representative. Values in later tables do not use household weights. We have converted all dollar denominated values in the paper to 2008 dollars.

Because there have been almost no studies using the HUMS data and few analyzing parental investments in the education of their children more generally, we begin our analysis with some descriptive information on schooling-related transfers.[8] HUMS asked a number of questions about the child's educational background, including whether the child attended college, the number of years attended, whether the college was public or private, and whether the child attended as an in-state or out-of-state student. The survey also asked respondents about their contributions to tuition and to room and board. Because many of the respondents are elderly and their children likely attended college many years before the HUMS was fielded, the survey asked respondents to report the *fraction* of each child's tuition that they paid rather than the actual dollar amount. Similar questions were then asked about the fraction the parent contributed to room and board for those children who lived away from home while in school.

In addition to these measures of support, the HUMS also obtained the name and location of the school each child attended during the last year in which he was enrolled in college. The HRS then used this information to obtain the relevant tuition and room and board costs from the National Center for Educational Statistics (NCES) and added these costs to the public release file. With these annual measures of tuition, room and board, the years of college attendance, and the self-reported fractional contribution, we can readily calculate the dollar amount of parental schooling investments.

Figures 1 and 2 display the histograms for the percentage parents reported contributing to tuition and to room and board. These figures represent contributions for only those children who attended college (figure 1) or lived away from home while attending college (figure 2). In both figures, the modal response is 100 percent, with about one-third of parents paying the entire cost

[8] We know of just two papers that use the HUMS data, Henretta, Soldo, and Van Voorhis (no date) and Brown, Mazzocco, Scholz, and Seshadri (2006).

of tuition and a similar share paying the entire cost of room and board. The next most likely response is 0 percent, with 27 percent contributing nothing to tuition costs and 23 percent contributing nothing to room and board costs. Perhaps surprisingly, while 50 percent is also a common response, it accounts for only 10 percent of the reported tuition contributions and 9 percent of the room and board contributions.[9] Overall, we see a substantial amount of heterogeneity for both contribution distributions.

In table 2 we combine this information with data on the number of years each child attended school and school-specific costs to obtain the total parental contribution in dollar terms for tuition (panel A), for room and board (panel B), and for the sum of these two components (panel C). We again limit these descriptive statistics to children who attended college (and to those who lived away from home during college for the room and board tabulations) to distinguish between zero contributions for those who attended college (lived away) and those who did not attend college (lived at home). We also restrict our sample to those children who were born before 1976 and who were not enrolled in college at the time of the 2000 and 2002 surveys. Children born after 1976 or who are still in school in 2000 or 2002 may receive additional schooling transfers after the 2001 HUMS data were collected.[10] Finally, because one of our goals in this paper is to compare tuition transfers with cash transfers made over several years, we further limit our sample by excluding those families in which the parents (the HRS

[9] Studies examining subjective probability questions in the HRS which also ask for reports of percent between 0 and 100 have found most of the mass lying at 0, 50, and 100 percent (Hurd and McGarry, 1995; Haider and Stephens, 2007). The frequency of focal responses for the tuition expenditures is much lower than in those cases, although unsurprisingly, nearly all reports are multiples of 5.

[10] We experimented with excluding any child who returned to school at any point subsequent to the HUMS survey and the results are nearly identical. Because those children who are enrolled in college after the 2002 interview are 30 years old or older and have previously been out of school, we believe it unlikely that parents are contributing significant funds towards their educational expenses.

respondents) divorce during our window of observation. Attempting to assess how transfers change in response to divorce is well beyond the scope of this paper.[11]

Turning to the tuition results in panel A of table 2, the mean parental contribution is 51.7 percent and the mean and median of years of attendance are 3.5 and 4. With the mean annual tuition equaling $4,772 (in 2008 dollars), the average implied amount paid by parents over the college career of a child is $9,849.[12] Once again, there is substantial variation in the amount contributed by parents. The median dollar transfer of $3,522 is below the mean, indicating that the distribution is positively skewed. The overall variation is most apparent in the final row of panel A: the total tuition paid per child is $0 at the 25th percentile and almost $29,000 at the 90th.

The contributions to room and board, reported in panel B, are similarly varied. Although the total paid is somewhat larger than that paid for tuition through the 75th percentile, it is smaller at the upper tail, suggesting less skewness in the cost of room and board than in tuition. The difference in the mean contribution for tuition and for room and board is consistent with children in wealthier families being more likely both to live away from home while in school and to receive larger fractional contributions. When we restrict the sample to those children who lived away from home during college, the average tuition share paid by the parent increases to 53.01 percent, a value quite similar to the 53.3 reported in panel B.

Combining contributions for tuition and for room and board, the total amount invested over a child's college career is substantial. The mean parental contribution is $16,304 *per child* (panel C) and $31,795 when summed over all children within the family (panel D). Again, the

[11] In earlier work, we retained all households. Because we observe relatively few households experiencing a divorce the patterns observed in the HUMS data and conclusions regarding tuition transfers are unchanged.
[12] This amount differs from the simple calculation of (0.517 × 3.5 × $4724) because of missing values on various components for some observations.

heterogeneity in the amounts, particularly at the child-level, is dramatic; the 25th percentile for total contributions is $592 and the 75th percentile is $23,819, or about 40 times greater.

In table 3, we move from examining the magnitude of schooling transfers for those children who attend college to examining schooling and cash transfers to all children. Panel A restricts the sample to those children for whom we have information in each wave from 2000 to 2008, the years on which we focus in the next section. Each of these five waves collects information about transfers for the preceding two years, allowing us to consider transfers made over a total of 10 years. In panel B we take an even wider window of observation and examine transfers over the entire survey period, necessarily losing some observations. For each row, we report the unconditional mean and the mean and median conditional on the transfer amount being positive.

The first row of panel A reports results for schooling transfers. Forty percent of children received a positive schooling transfer, with an overall mean of $8,432 and a conditional mean of $21,133. The subsequent row shows the same statistics for cash transfers in the two years immediately preceding the 2000 interview. Just 17 percent of children received a cash transfer in these two years, with an unconditional mean transfer being $1,540 and the conditional mean being $9,222. When we expand our window of observation to the 2000-2008 surveys, which encompasses 10 years of cash transfers, we find that 35 percent of children received a cash transfer, with an unconditional mean of $6,843 and a conditional mean of $19,407. The final row in the panel reports total parental transfers summing together both types of gifts. These total amounts attest to the substantial investments parents make in their children: 56 percent of children receive a transfer of some sort and the conditional mean is $27,247. Finally, we also note that the aggregate transfers over a 10 year period fall far short of 5 times the 2-year transfers

reported at a single interview. This result indicates substantial variability in the amounts received over time, highlighting the importance to taking a longer-term view of transfers and indicating the likely biases resulting from simply scaling up transfers in a single year to approximately lifetime receipt.

Because of this variability in giving, in panel B we expand our window of observation to measure cash transfers for 17 years, from 1992 (or 1993) to 2008. We restrict our sample to those children observed throughout the time period.[13] To avoid double-counting schooling transfers as both cash transfers and investments in schooling, we exclude from our sample those children who attended school during any of the survey years prior to the HUMS. With this longer time frame (and smaller sample), we find even greater giving. Forty-six percent of the children in the sample received a cash transfer compared to 35 percent who received a schooling transfer. The mean amount for total cash transfers rises to $8,538, an amount now larger than the mean schooling transfer of $6,746. However, the conditional mean and median are higher for schooling transfers.

These descriptive results are important for several reasons. First, transfers measured over longer time periods are not simply multiples of transfers measured over shorter spells. Variability in receipt from one year to the next implies that transfers must be measured over multiple years to obtain an accurate picture of behavior. Second, when aggregated over 10 years, cash transfers are of similar magnitude to schooling transfers and are a significant component of parental giving. Thus, although parents often report feeling burdened by tuition payments, many continue to give generously long after the child has finished school.

[13] Importantly, we lose observations for those cohorts added in 1998 and are left with just those households in the original HRS and AHEAD cohorts.

4. Parental preferences regarding transfers

The preference models discussed in section 1 provide different predictions about the distribution of schooling and cash transfers across children and the relationship between the two types of transfers. We now examine these relationships directly with the goal of shedding light on the relative merits of the alternative models.

4.1. The prevalence of equal transfers

In table 4 we begin by analyzing the extent to which parents provide equal schooling transfers to those children who attend college. The number at the head of each of the columns corresponds to the number of children in the family who are reported to have attended at least some college, not necessarily the number of children in the family.[14] We then report the fraction of households in which parents make equal educational investments in their college-attending children for each of the various sized families. We examine several dimensions of equality, including the percent of annual tuition the parent contributed, the amount paid per year of attendance, and the total amount paid over all years of attendance. We also use alternative definitions of equality and vary how strictly we define "equal" giving.

Panel A considers the percentage of tuition the parent pays. In families with two college-educated children, parents report paying an equal percent of the tuition for their children 59 percent of the time, with this figure falling to 28 percent in families with 5 or more children who attended college. In results not shown, if we exclude those families who did not provide

[14] Note that the fraction of children attending college for this sample is substantially higher than would be found for the general population because the fractions are conditional on having had at least one child attend college. In results not shown, we found that the fraction of children attending college declines monotonically with the number of children in the family (from 70 percent in two child families to 39 percent with five or more children) as does the fraction of tuition paid for by parents (from 59 percent in two child families to 35 percent with five or more children). This result is consistent with the existence of a quantity / quality trade-off for children and the existence of liquidity constraints.

assistance to any of their children (i.e., those with identical percentages of 0) and consider only equal giving conditional on some positive amount, the percent with equal shares paid across children falls, ranging from 42 for two child families to 20 for 5 child families, indicating that many of the equal cases are those in which parents do not make any transfers to any of their children.

We next relax the definition of equality and examine the fraction of households that contribute fractions within 10 percentage points of the mean. The fraction treating children "equally" under this definition climbs to 74 percent when two children attend college. Again, these fractions fall as the family size increases, with about 38 percent of the largest families treating all of their children similarly in percentage terms.

Panel B examines the equality of *annual dollar* investments in tuition, room and board. This measure ignores differences across children that would arise only because children attend college for a different number of years. We do not consider exact equality for this measure because tuition and room and board costs are rounded to the nearest $1000 to preserve confidentiality so exact equality could be due simply to this procedure. We instead define equality as amounts within 10 percent of the family mean computed over those children who attended college (including those with zero contributions). The fraction of households contributing equal amounts on an annual basis under this relatively generous definition ranges from 36 percent in two-child families to just 10 percent for those with five or more children, far lower than the fraction of families with equal percentage contributions. Again relaxing the notion of equality even further, this time to include treatment within 20 percent of the mean, these amounts increase to 49 percent and 12 percent.

Panel C examines the sum of tuition, room and board payments made over *all years* for which each child attends school. One could imagine that annual amounts provided to children vary with the number of years a child attends college so that parents equalize the total amount invested; parents may pay a larger amount for each year at a two year college than for each year at a four year college, for example. When aggregated over all years, the fraction of families with equal dollar contributions is similar to the fraction making equal transfers on an annual basis for most family sizes, although it is lower for two-child families. Panel D again repeats this comparison but uses nominal measures of tuition dollars rather than real 2008 dollars to allow for the possibility that parents agree to provide an identical amount, say $10,000 to each child, regardless of the year in which the child attended school. The fraction making similar transfers is somewhat lower in all cases.[15]

The results in table 4 show strong evidence that parents invest differentially in the schooling of their children, consistent with theoretical models that hypothesize differences in the returns to schooling.

In table 5 we expand our focus from examining the equality of schooling transfers among the subset of children who attended college to examining the equality of schooling and cash transfers among *all* children in the family. The first row reports the number of families of each family size. It is not clear how to treat cases in which no children receive a transfer. Certainly the zeros represent equal treatment in practice. However, parents might desire to treat children unequally by making negative transfers to some, but are unable to extract resources from those children. We thus report statistics for the subset of families who made at least one transfer and for whom equal treatment does not mean zero transfers to all children ("transfer families") and

[15] We find similar results for both panel C and panel D if we limit the sample to children who receive later cash transfers, for whom theory tells us educational investments are optimal.

for the entire sample ("all families"). The first row of each panel reports the fraction of families in the column who made at least one transfer of the relevant type. Given issues of timing and our inability to measure lifetime giving, exact equality in transfers of either type is extremely rare. We therefore again report tabulations using our relaxed definition of equal giving and report the fraction of families in which all children receive an amount within 10 percent of the family mean.

Panel A of table 5 examines equal giving with respect to schooling in 2008 dollars (the value used in panel C of table 4). The results differ from those in table 4 because we are now including all children in the family and not just those who attended college. This means that we have added children who necessarily had zero transfers for college. Among those families who made at least one educational transfer, these zeros serve to reduce the fraction equal relative to table 4; just 16 percent of two child families made equal schooling transfers, and this figure falls quickly to zero as the family sizes increases. In the next row we include those families in which no child received a schooling transfer, and the fraction making equal investments rises sharply to 46 percent in two child families due to the addition of "all zero" cases. Equal giving is actually now the greatest in the largest families where transfers of all zeros dominate.

Panel B reports analogous results for cash transfers made in the previous two years as reported in the 2000 survey. As has been demonstrated elsewhere (McGarry and Schoeni 1995, 1997), equal transfers in a single survey wave are not the norm. Even in two-child families, only 23 percent of parents who made a transfer to at least one child made "equal" transfers to both children, and this fraction falls to 10 percent for the largest families. Because so few families make any transfers in a given year (34 percent of two child families in 2000), the proportion of children treated equally rises dramatically when the zero-transfer families are included in the

calculation: 74 percent of 2-children households treat children equally when zero transfers are included, and the figure is again higher in larger transfers where a smaller fraction of parents made at least one transfer.

When parents consider making equal transfers, it is possible that they consider transfers throughout a child's adult life and not just those in a single wave. Panel C of table 5 shows the frequency with which parents made similar cash transfers when amounts are summed over the survey waves 2000-2008. While this measure still does not capture life-long giving, it does provide a 10-year window on behavior rather than the 2-year window in panel B.[16] Perhaps surprisingly, similar giving over this longer horizon is *less* common than in a particular year. Among those making at least one transfer at any point in these years (60 percent of two children families), 17 percent of two-children parents made similar transfers and the number falls to just 3 percent for families with 5 or more children. These results cast doubt on the separable earnings-transfers model of specification (2') wherein parents endeavor to equalize total lifetime transfers to children.

Finally, in panel D we consider the likelihood that parents equalize the sum of schooling transfers and later cash transfers—a pattern consistent with the utility function in (3) or with cash transfers used to offset unequal educational investments. The fraction making equal total transfers is even lower than that in panel C: 15 percent of two-child parents who made a transfer of some sort in the survey made equal total transfers, whereas 17 percent equalized 2000-2008 cash transfers. Not only does this result cast doubt on our specification (3), but it also suggests that cash transfers are not offsetting educational investments. It is also worth noting the relatively

[16] Parents are asked to report transfers made since the previous survey (or in the preceding a two year period). In 1992 and 1993 the question asked about transfers made over a 12 month period.

high fraction of parents who gave at least something to a non-coresident adult child and the sharp decline once we reach families of 5 or more children.

4.2. Explaining transfer receipt

When parents differentiate among their children for schooling and later cash transfers, which children receive more? Table 6 addresses this issue in a multivariate context, examining the correlation between transfer amounts and the characteristics of the child. We examine schooling transfers in the first pair of columns and total 2000-2008 cash transfers in the second pair. Because decisions regarding schooling investments were often made well before our sample period, we do not have measures of child characteristics at the time the decisions about schooling were made; we are limited to gender and age and the number of siblings. For the cash transfer regressions, we are able to examine a richer set of covariates that are measured coincident with the reporting of the transfer, including an indicator for whether the child is married, the number of children the child has (grandchildren for the respondent), the child's income, and education. Because we are aggregating transfers over an extended period of time, we use the average value of the regressors measured over the 2000-2008 surveys.[17] We use two specifications for our regressions: an OLS specification that includes controls for parental age, education, race / ethnicity, income and wealth (with time varying variables again measured as averages over the survey years), and a family fixed effect regression. The fixed effect regression allows us to examine differential giving to children that is net of fixed (and unobserved) family characteristics, such as generosity, beliefs about education, or unmeasured household resources.

[17] We do not report single year regressions because we are interested in the totals received over the decade rather than transfers in any single period. See McGarry (2012) for an analysis of year-to-year changes in transfers.

Turning to the results for schooling transfers, the simple OLS specification (column 1) shows that transfers to boys are lower than those to girls by about $720, but this effect disappears in the family fixed effects version (column 2). Taken together, these results imply that families with more boys transfer less for schooling—a result consistent with the results of Powell and Steelman (1989)—but that parents do not differentiate between sons and daughters *within* a family.

The significant coefficient on age is also noteworthy. Transfers decline with the age of a child at rate of $437 per year, and this decline decreases but remains significantly different from zero when we look within family. Because we are analyzing differences within family, the negative estimate indicates that older children within the family (children who reached college age when the parents were younger) receive smaller transfers. The likely explanation is that parents are more likely to be liquidity constrained when their older children attend college.

Although we can examine the association between the number of siblings and transfer values only in our OLS specification, we find a statistically significant and relatively large negative effect: the presence of another sibling is associated with almost $900 less in schooling transfers and in 10-year cash transfers. Siblings thus appear to be significant competition for a parent's finite resources.

We note only briefly the results for cash transfers because similar patterns are discussed elsewhere for the cross-section (McGarry 2012; McGarry and Schoeni 1995, 1997). Focusing again on the within-family results, we find that younger children, children with more children of their own, and lower income children tend to receive more transfers. For example, each grandchild adds $844 to the amount received and a $1,000 decline in income adds $50 to the amount received.

In table 7 we directly examine the correlation between 2000-2008 cash transfers and schooling transfers. For each specification, we again show a set of OLS results that include the same parental characteristics used in table 6 and family fixed effect results that focus on differences within families. The first two columns focus on the relationship between 2000-2008 cash transfers and schooling transfers with no additional control variables. In columns 3 through 6, we add various child and parent level characteristics.

The simple correlation between cash transfers and schooling investment shown in column (1) is strongly positive. Absent controls for parental characteristics, children who receive more schooling transfers also receive more cash transfers later. However, within families, there is no such correlation, implying that parents do not offset differential schooling investments with later cash transfers. This pair of simple correlations provides an important insight: there is a positive correlation across families between investment in schooling and later cash transfers; families that give generously for schooling continue to give generously. However, within families there is no relationship; cash transfers do not offset schooling investments. The coefficient estimates points to an increase in cash transfers of $8.54 per thousand dollars of schooling transfers, but the standard error is 21.7.

The next two sets of regressions include additional characteristics as control variables. In columns 3 and 4 we include the child's gender, age, marital status, and number of own children, but exclude variables that are correlated with schooling investments—income and schooling itself—to allow the entire effect of schooling investments to fall on schooling transfers. We also include parental age, education, race / ethnicity, income and wealth. With this limited set of covariates, we estimate a very small, positive relationship between schooling transfers and later cash transfers, which is statistically indistinguishable from zero (a $1000

increase in schooling transfers leads to a $9.16 increase in cash transfers over a decade).[18] These specifications do reveal that children who are younger, single and who have more of their own children receive greater transfers. All of these variables can be interpreted as reflecting that children with greater need receiving larger transfers: younger children are likely to have lower incomes and to have accumulated less wealth, single children cannot draw on the earnings of a spouse, and children with more children of their own may have greater needs.

The final two columns include measures of the child's income and schooling attainment. Here again, the results show no relationship between schooling transfers and other transfers—the point estimate is just $24 per $1000 of schooling transfers and the standard error is also 24—but do show that parents transfer more to younger children, lower income children, and children with more children of their own. Based on the within-family results, transfers increase by $85 for each year a child is younger, $734 for each additional grandchild in the family, and $47 for each $1,000 less in family income

These regression results and the general inequality of inter vivos giving in tables 4 and 5 for our various transfer measures—cash transfers in a single year, aggregated over time, jointly with schooling transfers, in real or nominal dollars—cast doubt on the separable earnings-transfers models formalized in model (2') and model (3). However, the differential investment in the schooling of children and the strong compensatory nature of later cash transfers provides some support for the wealth model (model 1').

We end with a cautionary point. Despite the relatively long panel available with the HRS and the detailed measures of cash transfers, we still fall far short of a measure of lifetime giving. Not only are we missing many years of potential cash transfers to adult children, but we are also

[18] We checked the robustness of these estimates to alternative sample selection criteria and continually found that there was no relationship between schooling investments and cash transfers when looking within family. The point estimates remain small and are statistically indistinguishable from zero.

are missing measures of in-kind transfers, including important methods of providing assistance such as providing care for grandchildren or coresidence for a child who needs financial support. Still, the patterns demonstrated here are striking and tell a consistent story with regard to parental giving.

5. Conclusion and discussion

While human capital theory is a cornerstone of labor economics and elegant models have been proposed to describe the motivation for parental transfers to children, our empirical understanding of such behaviors has been limited by the lack of available data. Most previous studies have necessarily focused on a single type of transfer, such as annual giving, and measured at a single point in time. Because of these data limitations, we have little insight into the overall magnitude of giving or the relationship among different types of transfers. Even simple descriptive information, such as the amount of variation in schooling transfers across children or the correlation between schooling and later cash transfers, has not been available. This paper begins to address these empirical questions and relates the findings back to the classic models.

We find that parents appear to distribute college-based transfers relatively unequally across their children, a result that is consistent with an investment model in which the returns to schooling differ across children. Despite these unequal schooling investments, we fail to find evidence that parents use cash transfers to offset the differences. Although a simple correlation suggests that there is a positive relationship between schooling investment and later cash transfers, there is no such correlation when looking within families or when controlling for observable characteristics of the child.

While parents do not appear to equalize transfers across children, we do find several consistent patterns in how parents differentiate among children. Younger children systematically receive greater schooling investments than their older siblings, indicating a potentially important role for liquidity constraints when the child enrolls in school. This result is particularly noteworthy given that several studies find that educational attainment is greater among older siblings (e.g, Behrman and Taubman 1986; Black, Devereux, and Salvanes 2005).[19] We also find a consistently strong negative relationship between the child's income and cash transfers, both in a single period and over a longer period of time, indicating that cash transfers are compensatory and can mitigate income differences of siblings.

Despite the richness of our results, we leave several questions unanswered. First, given the nature of our data, we are unable to explore many of the factors that may lead to unequal concern, such as parent rewarding a child for exhibiting desired behaviors (e.g., Bernheim, Shleifer and Summers, 1985). Second, we ignore strategic concerns related to giving, both those related to parents attempting to manipulate their children's behavior and those related to children attempting to manipulate their parent's behavior (e.g., Bergstrom 1989; Bruce and Waldman 1991). Third, while we have a much broader measure of transfers than do previous studies (17 years versus the typical two years), our measure still falls short of capturing lifetime cash transfers and omits in-kind transfers and bequests. Fourth, there may still be other dimensions in which parents are trying to equalize transfers. For example, our results show that children with more children of their own receive greater transfers. While such a correlation is consistent with parents providing more resources to families with greater need, it is also consistent with parents

[19] In results not shown, we also found in our data that the oldest child obtains more years of schooling.

equalizing transfers among a larger group of descendants, perhaps equalizing transfers among some combination of children and grandchildren.[20]

We end on a perhaps optimistic note. Despite the attention paid in the popular press to the high costs of a college degree and the burden these costs place on parents, we find that many parents make generous inter vivos transfers to their adult children throughout their lifetimes. Thus, for much of our sample, there is little evidence that the high costs of college forces parents to transfer more to their children than they might otherwise have wished, although they could well prefer to have targeted their transfers to other consumption goods.

[20] The HRS collects information about transfers to grandchildren of the respondents, which we include as transfers to the children Among all transfers received by children of the respondents in each wave from 2000 to 20008, 9.8 percent of these transfers included a payment that was targeted at (a) all grandchildren equally or (b) all grandchildren and children equally.

Data Appendix

We invested a great deal of care in assembling a data set with the children of the HRS respondents as the unit of analysis. Families can have numerous children (up to 18 in our sample) and each of these children must be linked across all waves of the study. Because the HRS data files are structured around the respondents and not their children, the linking of child identifiers is not always straightforward. Here we briefly lay out the details for how we construct the file used in this paper.

We first restrict ourselves to HRS households that do not separate or divorce ("split" in HRS terminology) during our survey period thus avoiding changes in transfer behavior that accompany a break-up of the household.[21] Doing so also allows us to ignore the difficulty of dealing with contemporaneous reports on child characteristics and transfers coming from two parental households. It also avoids the complications arising from the potential loss of step-children accompanying divorce. Respondents who divorced prior to the start of the survey are retained as are those who experience the death of a spouse. We also restrict our sample respondents who were interviewed in 2000 and for whom there were reports from both a family and financial respondent.

From this subsample, we build a household roster of child ID's and merge onto this roster several types of information for each survey year: (a) basic information on the respondent (i.e. parental household) including income, wealth, age, race / ethnicity and education, some of which is available in the RAND files and others which are not; (b) child-level information from the various HRS files, including the child's household income, age, gender, marital status, labor

[21] Households split whenever there is a separation or divorce; although the couple no longer lives together, the survey follows both respondents and each respondent is asked about transfers to children.

force status, and transfers, using HRS-provided imputations when available and (c) information from the HUMS.

We took great care with our coding of the child's income variable as the questions asked about income varied across waves. From 1998 onwards (and thus the majority of the waves used here), the HRS asked questions that placed a child's income into categories: less than $10,000, $10,000-$35,000, $35,000-$70,000 and $70,000 or more.[22] In earlier waves the brackets differed: 1992 used brackets defined by to two cut-offs (10 and 25 thousand dollars), and the 1996 survey used brackets defined by four cut-offs (10, 35, 50, and 100 thousand dollars). In three waves (1994, 1995, and 1996), respondents were first asked to report an exact dollar amount for each child's income and then presented with the income brackets only if they could not provide a continuous value.

To make the responses comparable across waves, we impute a value for income by calculating the median value of income within each bracketed sell using the year-specific Current Population Surveys (CPS) and assign all children with incomes in that bracket in that year, the specific value. We also experimented with other mechanisms for imputing income, such as using the midpoint of brackets, using exact amounts when available and the bracket median when not, and using dummy variables for each specific bracket. Our conclusions were similar.

The special HUMS mail out collected a wealth of information about each child's college attendance including the specific name of the college a child attended.[23] HRS staff then obtained tuition and room and board information for the years 1969-1999 for all colleges from two college databases (CASPAR and IPEDS, both maintained by the National Center for Education

[22] Specifically, respondents were asked a series of questions as to whether a child's income was greater or less than a particular cut-off point. These responses determine a specific bracket. Respondents could also respond "don't know" to one or more of the questions or refuse to answer, resulting in larger brackets when responses to one or more of the questions are missing.

[23] This information is omitted from the public release to preserve confidentially

Statistics) and merged it to the HUMS data. To maintain confidentiality, the publicly released data contains values of tuition and room and board rounded to the neared $1000. If the information on the cost of the college and/or room and board was not available, the HRS imputed the values based on household demographics, year of college attendance, and whether the student paid in-state tuition. There were 5,153 children in the HUMS sample who attended college during the years 1969-1999. For 4,252 (83 percent) of these children, the tuition information is based on a direct match to one of the two tuition databases. For 20 of the remaining 900 cases, the parent provided a school name that was not in the database and for the remaining 880 cases the parent did not provide information on the school's name. For these cases, we use the HRS-provided tuition and room and board imputed values.

In addition to the school tuition the HUMS contains information on the fraction of tuition paid, the number of years the child attended school, the last year for which the child was in attendance, whether the school was a public or private institution, whether the child attended as an in state or out of state student, and whether the school was a two year or four year college.

We make two adjustments to these data. First, for the few cases in which parents do not report the number of years of schooling the child obtained, we use the reports of years of schooling from the core HRS surveys. When both measures are available, they agree well. Second, when imputing total tuition payments from the reported annual contribution, we cap the numbers of years in school at six to minimize the potential effects of outliers. For example, one child in the sample is reported to have attended college for 26 years. This cap affects only a handful of cases. We then use the number of years of schooling along with annual tuition to determine the total amount contributed by parents over the child's college career. We are careful

in our analysis to exclude children who are still in school or who return immediately following the fielding of the HUMS.

Finally, our general strategy has been to use as much of our data as possible for each table. This strategy means that our sample sizes varied across tables and that we used children that were not in the data in every year. There is very little difference in any of the results when we vary the sample selection criteria.

Table A1: Means of Variables Used in Regression Analyses
(n=6,650)

Variable	Mean	Std err
Transfers to child		
Total schooling transfers	8,360	(236)
2000-2008 cash transfers	6,782	(578)
Child's characteristics (average 2000-2008 for time varying variables)		
Male	0.51	(0.006)
Age	40.5	(0.10)
Number of siblings	3.58	(0.029)
Married	0.67	(0.005)
Number of own kids	1.75	(0.016)
Income ($1000s)	58,320	(360)
Years of education	13.81	(0.027)
Parent's characteristics (average 2000-2008 for time-varying variables)		
Age in 2000	67.73	(0.10)
Education (male in couple)	12.25	(0.04)
Nonwhite	0.17	(0.005)
Hispanic	0.07	(0.003)
Household Income	59,446	(710)
Household Wealth	438,521	(10,912)

Notes: † Number of observations differs across variables due to missing values.
Dollar figures are denominated in 2008 dollars

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Table 1: Comparison of households receiving HUMS to HRS population in 2000 wave

	Means (Standard errors)	
	HUMS	HRS
Number of observations†	3,862	13,214
Household income	70,571	64,997
	(1,710)	(1,216)
Household wealth	450,806	401,747
	(19,759)	(10,029)
Married/partnered	0.56	0.50
	(0.01)	(<0.01)
Age*	65.8	66.7
	(0.16)	(0.09)
Education*	12.8	12.3
	(0.05)	(0.03)
Number children in 2000	3.37	3.02
	(0.03)	(0.02)
Nonwhite**	0.15	0.16
	(0.01)	(<0.01)

Notes: Dollar figures are reported in 2008 dollars. † The number of observations may differ across variables due to missing values. * For couples, age and education are the values for the male. **Nonwhite=1 if either spouse is non-white

Table 2: Parental contributions to the college expenses of their children

	Mean	10th	25th	50th	75th	90th
A. Tuition for those attending college (N=4,630)*						
Annual cost	4,724	1,012	1,728	2,660	6,400	11,614
Share paid	51.7	0	0	50	100	100
Years attending†	3.5	2	2	4	4	5
Total paid, all years	9,849	0	0	3,532	11,604	28,786
B. Room and board for those attending college away from home (N=2,630)*						
Annual cost	4,716	2,733	3,705	4,488	5,457	6,713
Share paid	53.3	0	5	50	100	100
Years attending†	3.4	2	2	4	4	5
Total paid, all years	8,740	0	834	5,952	14,670	21,011
C. Tuition, room and board for those attending college (N=4,630)						
Total paid, all years	16,304	0	592	7,597	23,819	44,582
D. Tuition, room and board for families with at least one child attending college (N=1,842)						
Total paid, all years	31,795	0	1,537	14,332	41,743	84,891

Note: Table is based on 4,630 of 9,358 HUMS children who were born before 1975 and who attended college, but who were not enrolled immediately during the 2000 and 2002 HRS survey. All monetary values are in 2008 dollars. *The number of observations differs across variables due to missing values. †Years attending college were capped at six.

Table 3: Transfers received by adult children

	Fraction Positive	Mean	Mean>0	Med.>0
A. Observed 2000-2008 (N=5,990)				
Schooling transfers	0.40	8,432	21,133	12,705
Cash transfers 2000	0.17	1,540	9,222	3,158
Cash transfers 2000-2008	0.35	6,843	19,407	5,961
Cash transfers 2000-2008 + schooling transfers	0.56	15,275	27,247	12,300
B. Observed 1992/3-2008 (N=4,032)				
Schooling transfers	0.35	6,746	19,008	11,873
Cash transfers 2000	0.15	1,249	8,585	3,644
Cash transfers 1992-2008	0.46	10,210	22,288	8,113
Cash transfers 2000-2008	0.33	5,885	18,002	5,864
Cash transfers 1992-2008 + schooling transfers	0.60	16,956	28,368	12,873

Notes: Schooling transfers include all tuition, room and board payments. The sample for the table consists of all HUMS children who were not enrolled in school in 2000 or 2002. For the top panel, we also required that they be in the sample in each wave from 2000-2008. In the bottom panel we restrict the sample to those observed from 1992(3)-2008 and not in school prior to HUMS in order to avoid double-counting schooling transfers. Dollar figures are reported in 2008 dollars.

Table 4: Equality of schooling transfers by the number of children in the family attending college

	Children attending college			
Measure of parental transfer	2	3	4	5+
Number of families	568	313	121	60
A. Annual tuition percent contribution				
Equal percent	0.59	0.49	0.39	0.28
Amounts within 10 percentage points	0.74	0.60	0.45	0.38
Amounts within 20 percentage points	0.83	0.77	0.68	0.69
B. Annual tuition, room, and board payments (2008 dollars)				
Amounts within 10 percent	0.36	0.19	0.11	0.10
Amounts within 20 percent	0.49	0.27	0.17	0.12
C. Total tuition, room, and board payments (2008 dollars)				
Amounts within 10 percent	0.30	0.19	0.11	0.10
Amounts within 20 percent	0.42	0.24	0.13	0.10
D. Total tuition, room, and board payments (nominal dollars)				
Amounts within 10 percent	0.28	0.16	0.12	0.10
Amounts within 20 percent	0.37	0.19	0.13	0.10

Notes: Families are grouped by the number of children attending college who are born in 1974 or earlier and who are not enrolled in college in the surveys immediately preceding or following HUMS.

Table 5: Equality of transfers by the number of children in the family

	Children in sample			
Measure of Parental Transfer	2	3	4	5 +
Number of families	764	567	328	390
A. Total tuition, room, and board payments				
Fraction of families with at least one positive transfer	0.63	0.63	0.58	0.46
Amounts within 10 percent, at least one college transfer	0.16	0.05	0.0	0.01
Amounts within 10 percent, all families	0.46	0.40	0.42	0.55
B. Cash transfers 2000				
Fraction of families with at least one positive transfer	0.34	0.34	0.27	0.28
Amounts within 10 percent, at least one transfer in 2000	0.23	0.19	0.10	0.10
Amounts within 10 percent, all families	0.74	0.73	0.76	0.75
C. Cash transfers 2000-2008				
Fraction of families with at least one positive transfer	0.60	0.58	0.53	0.52
Amounts within 10 percent, at least one transfer 2000-08	0.17	0.08	0.06	0.03
Amounts within 10 percent, all families	0.50	0.47	0.51	0.50
D. Cash 2000-2008 + schooling transfers (A + C)				
Fraction of families with at least one positive transfer	0.71	0.70	0.64	0.26
Amounts within 10 percent, at least one transfer any type	0.15	0.05	0.0	0.01
Amounts within 10 percent, all families	0.40	0.33	0.37	0.45

Notes: Families are grouped by the number of children in the sample, not necessarily the number in the family. Children are missing from the sample if they are too young to have finished college (born after 1974) or if they are reported to be enrolled in college in the 2000 or 2002 HRS surveys.

Table 6: Regressions of Schooling and 2000-2008 Cash Transfers

Child characteristics	Schooling transfers		Cash transfers 2000-2008	
	OLS	Family FE	OLS	Family FE
	(1)	(2)	(3)	(4)
Male	-717 **	-288	-1677	356
	(360)	(319)	(1155)	(524)
Age	-437 ***	-272 ***	-129	-152 ***
	(42)	(33)	(90)	(56)
Number of siblings	-886***		-870***	
	(99.5)		(197)	
Married			-2693 ***	-30
			(1023)	(901)
Number of own kids			489 **	844 ***
			(343)	(238)
Income ($1000s)			-46 **	-50 ***
			(20)	(15)
Education			-15	-110
			(237)	(155)
Mean of dep. variable	7947	7947	6981	6981
Number of observations	7315	7315	6371	6371
R2	0.23	0.75	0.05	0.92

Notes: The sample for the regressions consists of all children in the HUMS data not enrolled in school in 2000 or 2002. Standard errors allow for clustering at the family level. Parental variables (not shown) include age, education, race and Hispanic ethnicity of head, income and wealth. Significance levels are denoted as follows: *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

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Table 7: Regressions of 2000-2008 Cash Transfers

Child characteristics	OLS (1)	Family FE (2)	OLS (3)	Family FE (4)	OLS (5)	Family FE (6)
Schooling transfers ($1000s)	469 ***	8.54	293	9.16	345	24
	(220)	(21.7)	(219)	(22)	(260)	(24)
Male			-1273	126	-1528	171
			(1024)	(501)	(1154)	(521)
Age			-43	-110 **	-30	-85 **
			(47)	(56)	(51)	(58)
Number of siblings			-595**		-790***	
			(267)		(199)	
Married			-4701 ***	-2580 ***	-2333 ***	-1259
			(1759)	(763)	(985)	(908)
Number of own kids			871 ***	766 ***	651 **	734 ***
			(271)	(227)	(276)	(237)
Income ($1000s)					-53 **	-47 ***
					(23)	(15)
Education					-922	-133
					(904)	(185)
Mean of dep. Variable	6,793	6,793	6,811	6,811	6,972	6,972
Number of observations	5,915	5,915	5,857	5,857	5,676	5,676
R2	0.04	0.94	0.08	0.94	0.09	0.94

Notes: The sample for the regressions consists of all children in the HUMS data not enrolled in school in 2000 or 2002. Time varying variables are the average values over the period. Standard errors allow for clustering at the family level. Parental variables (not shown) include age, education, race and Hispanic ethnicity of head, income and wealth. Significance levels are denoted as follows: *** for 1 percent level, ** for 5 percent level, and * for 10 percent level.

Figure 1. Histogram for Parental Contribution to Tuition Expenses

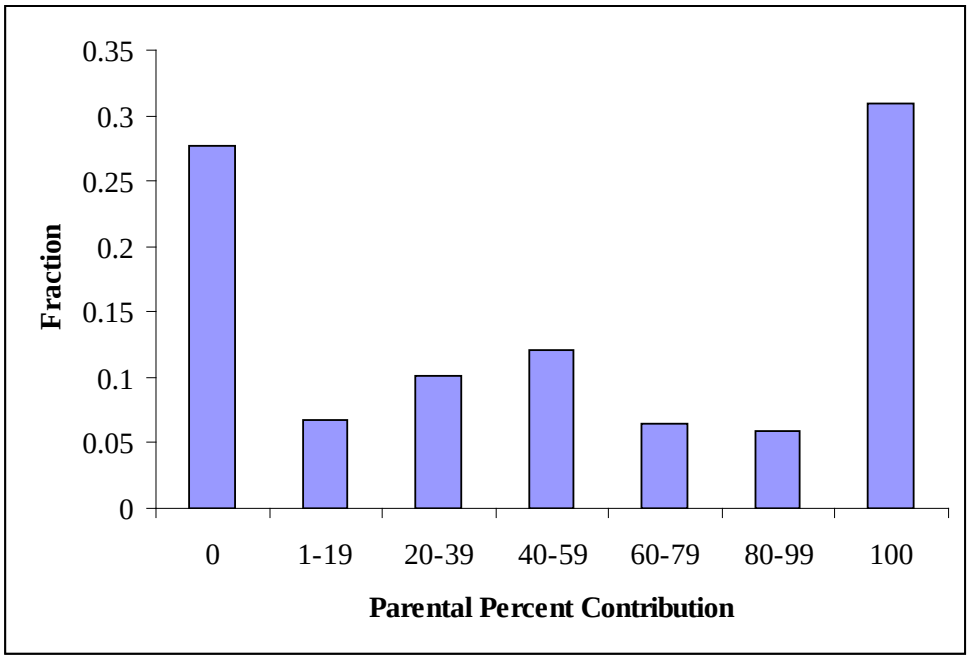

Figure 2. Histogram for Parental Contribution to Room and Board Away