

# Racial Differences in Effects of Parental Income & Wealth on Financing of Children's College Attendance, Quality & Graduation\*

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## Abstract

This paper uses the Panel Study of Income Dynamics (PSID) to examine differences between Blacks and Whites in the influence of parental housing wealth and income on children's college attendance, graduation, cost, and the quality of college children attend. As is well documented, there are sizable racial disparities in the income of parental income, home ownership and housing wealth and that black adolescent children are less likely to attend college relative to whites. We use data in the 2013 PSID on financial transfers that PSID respondents provided their children to ask three questions: 1) Are there race differences in whether parental income and wealth increase the likelihood of attending college? 2) Are these race differences explained by the influence of parental income and wealth on the amounts of these transfers? 3) Do Blacks and Whites differ in the extent to which parental income and wealth increase the likelihood of their child attending a higher quality college or graduating? Addressing these questions are important for understanding the Black-White gap in college enrollment and graduation and the sizable differences in student loan debt by race and ethnicity.

We identify black-white differences in the effect of changes in parental housing wealth and income on college enrollment, financing, and attainment. We find that increases to parental income and wealth both raise the likelihood of financial transfers from white parents to children to help pay for college. Only increases to parental income increase the likelihood of financial transfers from black parents to children, with an effect size approximately twice as large as the effects of income on the college financing decisions of white parents. Increases in the wealth of black parents raise the likelihood that their children attend college but do not increase the likelihood of parents providing financial transfers. These race differences in the role of income and wealth in educational decisions of their children persist after enrollment. We find a very large positive effect of increases to parental income on the likelihood of graduation for children of black parents, but no effect of income for children of white parents. Instead, the children of white parents are more likely to graduate from college when their parents experience increases in wealth.

Our findings indicate differences in the propensity or ability of black parents to utilize housing wealth to help finance college for their children, relative to white parents. There are several possible explanations for this finding. One is that there are racial disparities in the ability to qualify for home equity loans among black homeowners, possibly due to differences in the willingness of lenders to make such loans in the neighborhoods in which blacks reside. Another is that that black college-bound students are more likely to qualify for financial aid, such as Pell grants, than are white students and, thus, are less likely to need to depend on parental wealth for attending college.

# 1 Introduction

Even as more and more individuals pursue college, large racial disparities remain in educational outcomes. Four, five, and six year graduation rates were at least 20 percentage points higher for white students than for black students in 2011 (DeAngelo et al., 2011). Part of this gap is due to racial differences in college enrollment. In 2010 43% of white adults age 18-24 were enrolled in college, a full 5 percentage points higher than the 38% of black students who enrolled. But even accounting for the difference in enrollment rates, African American undergraduates are less likely to graduate from college than their white peers. Also in 2011, 39% of white adults between 25 and 29 had graduated with a bachelor's degree compared to 19% of black adults the same age, a difference of 20 percentage points (McFarland et al., 2017).

Previous work has established a link between parents' resources, in particular income and wealth, and post-secondary educational outcomes for their children. Parental wealth is a strong predictor of whether a child enrolls in college (Jez, 2014), as well as whether or not they graduate (Conley, 2001). In addition, parental income has become increasingly important for college enrollment in the new millenium (Lochner and Monge-Naranjo, 2011, 2012). These positive associations between parental income and wealth and their children's educational outcomes persist even after controlling for cognitive and noncognitive skills of parents (Doren and Grodsky, 2016).

Housing wealth is the central contributor to wealth for middle-class families (Wolff, 2016), and has been identified as having particular importance for college attendance and attainment. Lovenheim (2011) examines the effect of wealth via rising house prices for homeownership parents during a child's teenage years and finds that increases in home equity raise the likelihood the child enrolls in college, with especially large effects for low-SES families. Lovenheim and Reynolds (2013) show that increases in parental home value raise the probability of completing college for low-income students. Cooper and Luengo-Prado (2015) find that house price appreciation for parents when their child is age 17 leads to higher college enrollment rates, although they do not find significant effects on graduation. Finally, Hotz et al. (2018) examine the effects of both parental income and housing wealth together, and find that both parental income and parental

home equity increase the likelihood of college attendance for children via the mechanism of increased parental transfers to their children for their education. They find a larger effect of parental income than wealth on enrollment, but they find that increases in wealth increase the likelihood of graduating from college.

With the important role parental wealth and income play in determining the educational outcomes of their children, some of the racial disparity in college enrollment, quality, and attainment may be explained by the massive income and wealth gaps between black and white Americans. In 2014 the median income for white households was \$60,256 compared to \$35,398 for black households (DeNavas-Walt and Proctor (2015)). During the period from the mid-1980s through the mid-2000s, white households had approximately 10 times the median wealth of black households (Killewald, Pfeffer and Schachner, 2017*b*; Kochhar, Taylor and Fry, 2011).

Homeownership rates are much lower for black adults than for white ones. Using the 2001 American Housing Survey (AHS), Krivo and Kaufman (2004) find that 73.3% of white household heads are homeowners, compared to just 45.5% of black household heads. The benefits to wealth from owning a home also differ by race. Killewald and Bryan (2016) find that the wealth benefits to homeownership in each year for African Americans are only 48% as large as those of white homeowners. In addition, homeownership has become riskier for black families than white families in recent years. Sharp and Hall (2014) find that black homeowners who purchased their homes prior to 1980 were no more likely to transition to renting than white homeowners, but in the 2000s the exit rate from homeownership was 50% higher for black families than for white families.

While upper- and middle-class black individuals are more likely to provide informal financial assistance to friends and extended family (O'Brien, 2012), black families are less successful in passing on their wealth to their children and grandchildren than white families. White individuals leave bequests and make inter-vivos transfers to their children at higher rates and in higher amounts on average than black individuals (Gittleman and Wolff, 2004; Menchik and Jianakoplos, 1997; Avery and Rendall, 2002; McKernan, M. and Zhang, 2014). Killewald, Pfeffer and Schachner (2017*a*) find greater rates of downward intergenerational wealth mobility for black families compared to white families. They also find that provision for educational advantage

has a more important role in intergenerational wealth transmission than inheritances.

There is reason to suspect that differences may exist between black and white families in their ability or willingness to help finance college for their children, even after accounting for distributional differences in wealth and income, especially with respect to changes in housing wealth. Do (2012) examines the differences in the propensity to extract home equity across racial groups in the United States via home equity lines of credit and cash-out refinance loans and finds that non-hispanic black and hispanic homeowners are less likely to withdraw equity from their homes than non-hispanic white homeowners. One possible reason for this is that black homeowners may face credit constraints not faced by white home-owners. Charles and Hurst (2002) demonstrate that black mortgage applicants are almost twice as likely as comparable white applicants to be rejected, even after controlling for credit histories and household wealth. They also find that black households are less likely to apply for mortgages than comparable white households. Wheeler and Olson (2015) find that the gap in denial rates by race are highest where house prices are not rising rapidly. Others have found also found evidence consistent with discrimination against black families in lending practices for other markets, vehicles and businesses (Blanchflower, Levine and Zimmerman, 2003; Cavalluzzo and Wolken, 2005; Charles, Hurst and Stephens, 2008). Finally, it is possible that even in the absence of credit constraints, demand for withdrawing equity may be lower for black families due to unfamiliarity with treating houses as liquid assets, and other cultural differences (Deng, Ross and Wachter, 2003; Gabriel and Rosenthal, 2005; Krivo and Kaufman, 2004).

In this paper we explore whether racial differences exist in the role that parental resources play in the college enrollment and eventual attainment of their children, and its financing. First, we identify black-white differences in the extent to which increases in parental income and parental housing wealth increase the likelihood that an adult child enrolls in college. We further explore the degree to which changes in income and housing wealth operate by increasing the prevalence and amounts of financial transfers from parents to children for college. Finally, we trace the differential effects by race of parental income and wealth through college enrollment to consider how they affect the likelihood of graduation from college and enrolling in a post-graduate program.

To examine these issues, we use data from the 2013 Panel Study of Income Dynamics (PSID), which includes information on race, as well as family wealth and income. We take advantage of the Rosters and Transfers module, in which all parents in the PSID reported on the educational enrollment and attainment of their adult children, as well as any financial transfers they made to each child to help pay for college.

To properly identify the causal relationships between parental resources and educational outcomes such as college enrollment and graduation, as well as on financing decisions, we construct measures to use as instruments for parental housing wealth and parental income in the period just preceding the college enrollment and financing decisions of each child. These instruments consist of measures of changes in labor and housing market conditions local to each household that we argue are exogenous to enrollment, graduation, and parents' financial transfer decisions.

Consistent with prior work, we find evidence of positive effects of increases in both parental income and housing wealth on college enrollment for their children, as well as the likelihood that parents make financial transfers to help pay for their child's college. However, there are differences between white and black families in the significance and magnitude of these effects. Increases to parental income increase the likelihood of college enrollment for children of white parents but not for children of black parents, for whom we find a significant, though smaller, effect of increases in housing wealth on enrollment. For white families, increases to parents' income and wealth both raise the likelihood of parental transfers for college by similar amounts. Parental income also increases the probability of financial transfers for black parents, with an effect size approximately twice as large as for white parents. Increases to housing wealth do not significantly affect the likelihood that black parents will financially support their child's education via transfers. Consistent with these results, we find that increases to income for black parents are an important determinant of graduation for their children, raising the probability of completing a degree significantly. We find no such effect for white parents, but do estimate a smaller positive effect on the likelihood of graduation from increases to housing wealth.

While others have examined black-white differences in the financing of children in general, we look directly at parental financing of college in particular. This paper builds on previous

work that has examined the effects of parental wealth and income on college attendance and graduation individually by considering them together. We are able to compare the relative importance of income and wealth for families facing the prospect of sending a child to college. Furthermore, by contrasting these effects by race, we identify racial differences in parents' use of housing wealth to help finance college as a key factor in their child continuing on to graduation. Finally, we take seriously the likelihood of selection due to unobserved differences between white and black families in our sample. Our instrumental variables strategy allows us to obtain plausible estimates of the causal effects of parental income and wealth.

The rest of the paper is organized as follows. In Section 2 we describe the PSID data and how we form the different samples and measures we use in our analysis. In Section 3 we describe a model for families' decisions about child college attendance and parent's financial transfers for their child's college education. We also describe a model for graduation from college and enrollment in a post-graduate program. We explain our estimation strategy for each of these models. In Section 4 we describe the results from estimating the models proposed in the previous section. We account for racial differences in the distribution of parental income and wealth to compare their effects on children's college attendance and parent's financing decisions between white and black families, and examine differences by parent's race and homeownership status. We conclude in Section 5.

## 2 The PSID Data

The PSID began with a sample of roughly 18,000 people in approximately 5,000 household units in 1968. All individuals in households recruited into the PSID in 1968 are said to have the PSID gene. Individuals who are born to or adopted by someone with the PSID gene acquire the gene themselves and are recruited to become members of the PSID sample for the rest of their lives. This genealogical design implies that the study provides data on a sample of extended families at each wave. The extended family in the PSID is incomplete because some children (particularly stepchildren and children who have left the PSID sample), and some parents (for example in-laws without the PSID gene) are not included in the sample. The 2013 Roster and

Transfers Module was designed to complete the parent-adult child information in the PSID and to describe the transfers that parents and adult children make to one another.

## **2.1 The 2013 PSID Roster and Transfers Module**

We use the Roster and Transfers Module of the 2013 PSID in which respondents (PSID heads and spouses) are asked to list and describe their adult children and stepchildren age 18 and older, as well as their parents, stepparents, and in-laws (including in-laws from long-term cohabiting relationships) and to report about financial and time transfer to and from their parents and adults children. Importantly for our purposes, parents report about the age and educational attainment of their adult children and about financial transfers for school they have given to each of their children since the age of 18. Both whether assistance was provided and the amount of assistance is included in the module. Respondents report about relationships and transfers with coresident and non-coresident children (see Schoeni et al. (2015) for a more complete description of the module).

## **2.2 Samples**

Our sample starts with the parents and adult children reported in the 2013 Roster and Transfers Module. We are interested in two points in the lives of these adult children: the year in which the child turns 18 when decisions about college are made, and the year in which the child turns 24 when some of the consequences of financing college can be observed.

To create our main sample, we find the year in which the child turned 18 using the birth year in the Childbirth and Adoption History augmented by age reported in the Roster and Transfers Module. Using the Parent ID file augmented with the relationship information in the Roster and Transfers Module, we link each child with his or her father and mother. Because we need to determine the parents' housing wealth and household income at this point in the child's life, we restrict our sample of parent-child pairs to those in which the parents were present



as a head or wife of the PSID in the year this child was age 18.<sup>1</sup> We also require that the year in which the child turned 18 is after 1998 (which corresponds to children in birth cohorts beginning in 1980) since some of the data elements we need in our analyses are only available starting in 1998.<sup>2</sup> We further restrict our sample to black parents and white parents, because of our focus on racial differences in children’s college attendance and financing decisions, and the large number of both black and white parents in the PSID. We define race for parents using their responses to the question about their race in the 2013 PSID wave as follows: a parent household is defined as white if both the parent who is the head of the household and his or her spouse (if applicable) respond only ”white” when asked to report their race. The parent household is defined as black if both the parent who is the head of the household and his or her spouse (if applicable) give ”black” as one of their responses to the same question. All other parent households are dropped from the sample. A parent household is also dropped from the sample if they respond affirmatively when asked if they are ethnically hispanic. We include both parents who are renters as well as those who are home-owners in our sample. Finally, following Lovenheim (2011) we trim the top 1% of changes in house prices prior to the child turning 18. After all of these sample selections, we have a sample of  $N = 3,724$  parent-child pairs with which to estimate the effect of parental wealth on college attendance and parental transfers for college, 1,841 white and 1,883 black.<sup>3</sup>

To examine the consequences of college attendance and financing decisions on educational and financial outcomes, we examine the parent-child pairs in our main sample in the year in which the child turns 24. This limits the sample to parent-child pairs in which the child turned 18 prior to 2009.<sup>4</sup> For the outcome of parental debt, this restriction yields a sample size of 3,352 (1,674 white parent households and 1,678 black) for housing debt and 3,331 (1,665 white and 1,666 black) for non-housing debt that includes credit card debt, and auto loan debt. For the outcome of college completion, we further limit the sample to children who attended college

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<sup>1</sup>If the parents are not a PSID head or wife in the year in which the child turns 18 we go back one year at a time until the child age 13 at which point we drop the child-parent pair.

<sup>2</sup>The housing price measure from Zillow which we used to construct a measure for changes to local housing markets had inadequate geographic coverage prior to this period.

<sup>3</sup>the high number of black families in our sample relative to white families is a result of PSID oversampling of black families in 1968, and subsequent efforts by the PSID to retain black families at the expense of other respondents. A more detailed explanation can be found in Appendix A

<sup>4</sup>If the relevant data are not available for the child or parent in the year in which the child is age 24 we go back one year at a time until the child is age 22 and forward one year at a time until the child is 27.

which yields a sample size of 1,418 parent-child pairs.

Measures of college quality and child indebtedness are only available for two subsamples of children: (a) those who are a PSID head or wife by age 24 or (b) those who are members of their parents' household at age 24 but are interviewed as part of the Transition to Adulthood (TA) study. The TA study has followed children in the PSID's Child Development Study (CDS) as they become adults. The TA study includes questions about which college children attended as well as information on income and debt. Using these two sources of data, we construct a total sample of 2,229 adult children with which to analyze their non-housing debt at age 24 (1,250 with white parents and 1,049 with black parents) and 1,678 with which to analyze student loan debt at that age (864 with white parents and 814 with black parents). We have a smaller sample of children to analyze student debt at age 24 because the PSID only started asking about this source of debt separately in 2011. For the outcomes of college cost and quality, we further limit the sample to children who attended college and whose college can be linked to the data from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) database which yields a sample size of 846 (634 white and 212 black) for tuition and 844 (633 white and 211 black) for four-year degree status. Public/private status of the college and our measure of college quality which we construct from the IPEDS data are only available for children who attend a four-year college which limits our sample to 682 (517 white and 165 black) for public/private college status, and 675 (512 white and 163 black) for college quality.

Table 1 provides a summary of the sizes of these various samples that we use in our analysis below. In Table 2, we also present descriptive statistics of the demographic characteristics of the parents and children, measured at the time the children were age 18, of the sample of the 3,724 parent-child pairs used in our analysis of college education decisions.

TABLE 1. Sample Size by Outcome and Race

| Samples                                      | White<br>Parents | Black<br>Parents | All<br>Parents |
|--|------------------|------------------|----------------|
| <i>Parent-Child Pairs for Analyses of:</i>   |                  |                  |                |
| Child's College Choices & Amount of Transfer | 1841             | 1883             | 3724           |
| Whether Child Graduated from College         | 958              | 544              | 1502           |

TABLE 2. Characteristics of Parents and College-Age Children in PSID, 1998-2013<sup>1</sup>

| Variable  | White   | Black   |
|---|---------|---------|
| <i>Parent Characteristics when Child was Age 18</i> |         |         |
| Single Parent when Child Age 18                     | 0.21    | 0.60    |
| Parent HH Headed by Male                            | 0.89    | 0.55    |
| Age of parent House Head                            | 46.42   | 43.47   |
| Number of children under 16 in HH                   | 1.93    | 2.00    |
| Parent's Education:                                 |         |         |
| High school or less                                 | 0.22    | 0.24    |
| Some College  | 0.41    | 0.59    |
| College graduate                                    | 0.37    | 0.17    |
| <i>Child Characteristics</i>                        |         |         |
| Sex of child (male=1)                               | 0.48    | 0.48    |
| Year child turned 18 <sup>2</sup>                   | 2004.77 | 2004.55 |

<sup>1</sup> Statistics weighted using PSID family weights. Dollar amount is in 10K of 2013\$.

<sup>2</sup> The range of years in which children turned 18 is 1998-2013

## 2.3 Measures

Below we describe how we construct the various measures used in our analyses. In later sections, we provide summary statistics.

*College Attendance and Graduation:* We measure college attendance and college graduation using the Roster and Transfers data. We consider a child to have attended college if the parents report in the Roster and Transfers data that the child has attended some college or has a college degree. This measure is somewhat different from the previous literature (Lovenheim, 2011; Lovenheim and Reynolds, 2013; Cooper and Luengo-Prado, 2015) which uses the annual PSID data to determine enrollment. The benefit of the measure from the Roster and Transfers data is that is considerably easier to identify students who enroll in but do not complete college. This is important to understanding the potential difference in effects of attending vs. graduating from college. We measure college graduation by a parental report that the child's highest level of educational attainment is college graduate or more.

*Financial Transfers for College:* Parents are considered to have given a financial transfer to a child for educational expenses if they report having done so in the long-term transfers question

in the Roster and Transfers Module. We eliminate the small number of cases in which parents report that their child has educational attainment below “some college” and report having given a transfer for post-secondary educational expenses. We measure the amount that parents report giving to their child in 2013\$.<sup>5</sup>

*College Cost and Quality:* We link responses from the main PSID interview or the TA study on the college attended to measures of college cost and quality available from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) database. We obtain the annual tuition costs for a full-time student at that institution in the year they would have started college. In doing so we use the state of residence of the parent at that time to determine whether children would have paid in-state or out-of-state tuition at any public institutions.<sup>6</sup> For college quality we use three separate measures. First, we measure whether the institution grants 4-year degrees. Second, we use whether a child attended a private university, where we restrict our attention to students who attend a 4-year university. Finally, we use the college quality index used in Black and Smith (2004), Black, Smith and Daniel (2005), Black and Smith (2006), Dillon and Smith (2017a), and Dillon and Smith (2017b).<sup>7</sup> The index is based on the following measures of colleges’ selectivity and resources: college’s mean SAT or ACT scores; percent of applications rejected; average salary of faculty involved in instruction; and the undergraduate faculty-student ratio.<sup>8</sup> The index is the first principal component of these four indicators of college quality measured in 2008.<sup>9</sup>

*Parental Housing Wealth and Income:* Over the entire span of the PSID, heads of households

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<sup>5</sup>We note that the decision to measure the amount of transfers in 2013\$ is not straightforward. Though parents were asked the question on amounts of transfers in 2013, it is not clear whether the reported amounts in terms of current dollars or the dollar value(s) at the time the transfers were made. We have re-run our specifications of regressions for the effects of parental housing wealth and income on the amount of transfers given to support a child’s college education under either of these two assumptions about parental reporting. While the magnitudes of the corresponding coefficients differed, none of the inferences we make below were affected. Accordingly, we only present results under the assumption that parents reported the amounts of these transfers in current (2013) dollars.

<sup>6</sup>We use in-state tuition if the parents resided in the same state as the institution in the year the child turned 18, and out-of-state tuition otherwise.

<sup>7</sup>We thank Nora Dillon and Jeff Smith for providing us with the latest version of these quality indices for 4-year and 2-year colleges in the U.S.

<sup>8</sup>These dimensions of quality for colleges in the U.S. are obtained from the Integrated Post-Secondary Education Data System (IPEDS) and college rankings by *U.S. News & World Report*.

<sup>9</sup>The particular version of college quality index we use takes on values from  $-9$  to  $+9$  and is constructed to have a mean of 0 across all of 4-year colleges and universities in the U.S.

or their proxy are asked whether they are a homeowner and, if they are, to provide an estimate of the value of their home and the remaining balance, if any, on their home mortgages and/or home equity loans. Mortgage debt includes all primary and secondary mortgages, along with home equity loans and lines of credit on the individual's primary residence. Then, we define an estimate of the parents net home equity as the reported market value of their home less any remaining mortgage balances. Parental income is measured by total family income reported in the annual PSID family data.

*Parental and Child Indebtedness:* We consider several forms of indebtedness for both parents and their children. For parents, we consider mortgage debt, the sum of all their primary and secondary mortgages along with home equity loans, and all other non-housing debt, including outstanding credit card and medical debt, as well as other outstanding loans. These measures are obtained in the PSID wealth module which has been included in every survey since 1997. For children, we examine debt in the form of outstanding student loans, as well as total other non-housing debt. Student loan debt is obtained from the TA survey and from the PSID wealth module after 2011. Total non-housing debt is measured in the TA survey and in the PSID wealth module.

### **3 Identifying Effects of Parental Wealth & Income on Children's College Attendance and Its Financing, College Graduation, and Post-Graduate Enrollment by Race**

In this section, we examine children's college attendance decisions and parents' role in helping to finance their children's choices. Specifically, we are first interested in whether there are racial differences in the extent to which changes in the levels of wealth and income of parents increase the likelihood of attending college for their children, both with and without parental financial assistance. We also examine the effects of parental income and wealth on the likelihood a college student graduates and subsequently enrolls in a graduate program. We begin by defining the notation for college attendance and parental financing as well as parental income and housing wealth and comparing the empirical distributions of parental wealth and income across college

attendance and financing decisions between black and white families in our sample. We then propose a model of college attendance and parental financing and describe our econometric strategy for estimating the causal impact of parental wealth and income on the decision of children to attend college and the decision of parents to help finance it and discuss our findings. We explain the measures we construct to use as instrumental variables in our estimation strategy. Finally, we establish a model of college graduation and enrollment in a post-secondary program and describe our strategy to estimate it.

### 3.1 Defining Children’s College Attendance and Parental Financing Choices

We define the following variables to characterize the college attendance and parental financing decisions for the  $j^{th}$  child of the  $i^{th}$  parent when the child is age 18:

$$EduFin0_{ij,18_j} = \begin{cases} 1, & \text{if child } j \text{ of parent } i \text{ did } \textit{not} \text{ enroll in college,} \\ 0, & \text{otherwise.} \end{cases} \quad (1)$$

$$EduFin1_{ij,18_j} = \begin{cases} 1, & \text{if child } j \text{ of parent } i \text{ enrolled in college \& parents didn't help pay,} \\ 0, & \text{otherwise.} \end{cases} \quad (2)$$

and

$$EduFin2_{ij,18_j} = \begin{cases} 1, & \text{if child } j \text{ of parent } i \text{ enrolled in college \& parents did help pay,} \\ 0, & \text{otherwise.} \end{cases} \quad (3)$$

where  $EduFin0_{ij,18_j} + EduFin1_{ij,18_j} + EduFin2_{ij,18_j} = 1$ .

Conditional on  $EduFin2_{ij,18_j} = 1$ , we can measure the *amount of financial help* parent

$i$  provided to child  $j$  in support of the child’s college attendance. Denote this amount as  $CollTrans_{ij,18_j}$ .

TABLE 3. Child’s College Enrollment Choices and Parental Transfers for College among Homeowning Parents and College Age Children in PSID, 1997-2015<sup>1</sup>

| Variable  | White  | Black  |
|---|--------|--------|
| Child does not enroll ( $EduFin0$ )             | 0.38   | 0.62   |
| Child enrolls, no transfer ( $EduFin1$ )        | 0.27   | 0.29   |
| Child enrolls, transfer ( $EduFin2$ )           | 0.35   | 0.09   |
| Amount of Transfer ( $CollTrans$ ) <sup>2</sup> | \$3.20 | \$0.82 |

<sup>1</sup> Statistics weighted using PSID family weights.

<sup>2</sup> Conditional on those students who attended college and received a financial transfer from their parents for their college education ( $EduFin2 = 1$ ). Dollar amount is in 10K of 2013\$.

Table 3 shows the distribution of  $EduFin$  for both white and black families in our sample. We see large differences in college enrollment decisions by race: 62% of black children do not attend college, compared to only 38% of children with white parents.<sup>10</sup> We also observe differences in patterns of college financing. Overall, 9% of black children receive financial transfers from their parents to help pay for their education, while 35% of white children do. This means that 56% of all white children and only 24% of all black children who attend college do so with financial support from their parents. Conditional on their child attending college and parents making a financial transfer to them for school, white parents give more money on average. The mean transfer amount is \$32,000 from white parents, compared to \$8,200 from black parents.

As mentioned above, we are interested in the role that parents’ financial resources play in the decisions of their child to attend college and the parents’ decision to help finance it, with a particular emphasis on differences by parental race. To begin, we characterize the housing measures we construct from the PSID data. Let  $MktValue_{imt_{18,j}}$  denote the *parents’ estimated market value of their home* (measured in 2013 dollars) located in market  $m$  (which is in state  $s$ ) in the year in which child  $j$  was age 18 ( $t_{18_j}$ ). Further, let  $MortBal_{imt_{18,j}}$  denote the remaining balances on parents’ home mortgages and home equity loans as of year  $t_{18_j}$ , again in 2013\$.

<sup>10</sup>This gap is larger than that found in some other surveys. A larger proportion of white children in our sample enroll in college than documented by McFarland et al. (2017), as our measurement of college attendance will include some individuals who enroll in college after their early 20s.

Then, we define an estimate of the parents (*net*) home equity as:

$$H_{imt_{18_j}} = MktValue_{imt_{18_j}} - MortBal_{imt_{18_j}}. \quad (4)$$

Let  $Y_{imt_{18_j}}$  denote the parent  $i$ 's total household income in year  $t_{18_j}$  when they were residing in local labor market  $m$ . We include both home-owners and renters in our analysis. We assign parents who rent their homes a value of zero for net home equity ( $H_{imt_{18_j}}$ ). Let  $I_{imt_{18_j}}^{HO}$  be an indicator variable equal to 1 if the parents own a home and 0 if the parents are renters.

In addition to the sizable racial differences in college attendance and financing decisions, we also observe disparities by race in the wealth and resources available to parents when their child is 18. Table 4 shows weighted means for home value, net home equity, income, and total wealth of parents in our sample by race. We also show rates of home-ownership, working and unemployment, and the incidence of home equity loans. The differences by race here are also stark. We show these values for our entire sample, as well as calculated for the portion of our sample in each college attendance and financing category (e.g.  $EduFin0$ ,  $EduFin1$ ,  $EduFin2$ ).

White parents have higher income and wealth on average than black parents. The mean household income for all white parents is \$97,400 compared to only \$48,000 for black parents. Similarly, white parents have an average home value of \$182,600 with \$97,400 in net equity compared to only \$83,900 and \$32,800 for black parents, respectively. This difference is even more pronounced among parents who help pay for their child's college. For such parents ( $EduFin2 = 1$ ), the difference between white and black parents for income (\$133,400 vs. \$62,400), home value (\$242,800 vs. \$100,900), and net equity (\$138,300 vs. \$41,700) are larger than the difference between black and white families overall. White parents of children who attend college with financial support have \$55,700 [= \$138,300 - \$82,600] more in net equity when their child is age 18 than those whose children attend college without financial support, and black parents have only \$4,900 [= \$41,700 - \$36,800] more. Together, these suggest that housing wealth may play a more important role for white parents than black parents in the decision to provide financial transfers to their children for college.

We also see large differences in home-ownership by race. 80% of white parents with college-



TABLE 4. Parents' Wealth and Resources when Child was Age 18<sup>1</sup>

| Variable                                    | Full Sample | <i>EduFin0</i><br>(No Coll) | <i>EduFin1</i><br>(Coll, but No Transfer) | <i>EduFin2</i><br>(Coll & Transfer) |
|---|-------------|-----------------------------|---|-------------------------------------|
| <i>White Parents</i>                        |             |                             |   |                                     |
| Home-owner ( $I_{imt18j}^{HO}$ )            | 0.80        | 0.66                        | 0.82                                      | 0.94                                |
| Home Value ( $MktValue_{18}$ ) <sup>2</sup> | \$18.26     | \$12.26                     | \$16.00                                   | \$24.28                             |
| Net Equity ( $H_{imt18j}$ ) <sup>2</sup>    | \$9.74      | \$5.64                      | \$8.26                                    | \$13.83                             |
| Income ( $Y_{imt18j}$ )                     | \$9.49      | \$6.22                      | \$9.06                                    | \$13.34                             |
| Total Wealth                                | \$32.00     | \$17.55                     | \$24.65                                   | \$52.87                             |
| Working                                     | 0.89        | 0.84                        | 0.90                                      | 0.93                                |
| Unemployed                                  | 0.03        | 0.06                        | 0.03                                      | 0.00                                |
| Home Equity Loan <sup>2</sup>               | 0.14        | 0.09                        | 0.16                                      | 0.17                                |
| <i>Black Parents</i>                        |             |                             |   |                                     |
| Home-owner ( $I_{imt18j}^{HO}$ )            | 0.45        | 0.40                        | 0.53                                      | 0.58                                |
| Home Value ( $MktValue_{18}$ ) <sup>2</sup> | \$8.39      | \$7.31                      | \$9.58                                    | \$10.09                             |
| Net Equity ( $H_{imt18j}$ ) <sup>2</sup>    | \$3.28      | \$2.85                      | \$3.68                                    | \$4.17                              |
| Income ( $Y_{imt18j}$ )                     | \$4.80      | \$4.08                      | \$5.90                                    | \$6.24                              |
| Total Wealth                                | \$4.50      | \$4.02                      | \$4.86                                    | \$6.51                              |
| Working                                     | 0.73        | 0.67                        | 0.81                                      | 0.87                                |
| Unemployed                                  | 0.10        | 0.13                        | 0.04                                      | 0.02                                |
| Home Equity Loan <sup>2</sup>               | 0.08        | 0.09                        | 0.05                                      | 0.13                                |

<sup>1</sup> Statistics weighted using PSID family weights. Dollar amount is in 10K of 2013\$.

<sup>2</sup> Conditional on parents being home-owners.

age children own homes, compared to only 45% of black parents. Home-ownership appears to be more closely linked to parental financial support for college among white parents than black. 94% of white children who receive transfers for college have parents who are home-owners, compared to only 58% of black children.

Prior research suggests that for many parents, a key mechanism for helping fund college education for children is the ability to extract wealth from their home via a home equity loan or line of credit (Lovenheim and Reynolds, 2013; Hotz et al., 2018). When comparing black parents in our sample who help pay for their child's college ( $EduFin2 = 1$ ) with those whose children attend college without parental support ( $EduFin1 = 1$ ), we see that they are very similar in income (\$62,400 vs. \$59,000), home value (\$100,900 vs. \$95,800), and net equity (\$41,700 vs. \$36,800). However, black parents who help pay for college are nearly 3 times as likely to hold a home equity loan as parents who do not (13% vs. 5%). This suggests that one important

difference between black parents who are able to pay for college for their children and those who aren't is the ability to obtain such a loan. White parents exhibit no such difference in the incidence of home equity loans between those who pay for college (17%) and those whose children attend college without their support (16%). Here the difference between the two groups is that parents who help pay for college earn more (\$133,400 vs. \$90,600), and have more valuable homes (\$242,800 vs. \$160,000) with greater equity (\$138,300 vs. \$82,600) than those who do not. In short, this evidence suggests that the role of parental income and housing wealth may be quite different, depending on whether a family is white or black. For white families, having greater resources in the form of income and housing wealth appear to be a crucial predictor of whether they choose to help finance college for their children. For black parents, access to a home equity loan may be a more significant factor. There are several possibilities for why many black families may face obstacles to obtaining a home equity loan (e.g. discrimination, redlining, etc.) that white families with similar income and wealth may not experience. This, along with the large overall racial differences in the distribution of income and wealth could help explain why college attendance and financing patterns are so different by race.

To help identify the extent of race differences in how the likelihood of attending college and the prevalence of financial transfers from parents for college increases with higher levels of parental income and housing wealth, we can examine differences in behavior between white and black families with similar levels of resources. First, we calculate income and net housing equity quartiles from our sample, using PSID family weights. By classifying each parent in our sample by the income and net equity quartile they fall into, we can see how rates of college attendance and financing, transfer amounts, and incidence of home equity loans vary across the joint income and wealth distribution. Table 5 shows the percentage of families in each income-equity quartile cross where the child does not enroll (*EduFin0*), enrolls with no financial transfer (*EduFin1*), and enrolls with a transfer (*EduFin2*). We also display mean transfer amounts and percentage of families with a home equity loan for each income/wealth category. These are shown separately for white parents and black parents, with the third section showing the white-black difference for each cell.

We see similar patterns for college attendance for both black and white families. Broadly,

the percentage of children that do not enroll in college ( $EduFin0$ ) falls as income and net equity quartile increase. The change is more dramatic for white families than black families. For parental financing, we see evidence of differing behavior by race. At nearly every level of income and net equity, a higher proportion of white families help finance their child’s education than black families ( $EduFin2$ ). This difference is most pronounced among the wealthiest and highest earning parents, where 69% of white parents help pay for their child’s college education compared to only 29% of black parents, a difference of 40 percentage points.

For white parents, those with higher equity are more likely to have their child enroll in college with a transfer than those with lower equity, holding income quartile constant. The rate for parents at the lowest income quartile rises from 4% of those in the lowest net equity category to 29% for those in the highest income category. This pattern is also present for parents in the 2nd (14% to 35%), 3rd (20% to 54%), and 4th (43% to 69%) income quartiles. This is not the case for black families. The relationship between net equity quartile and rates of financial assistance for college are much weaker. Only for families in the 3rd income quartile does the rate of financial transfers rise by more than 4 percentage points from the lowest to the highest net equity levels. For black parents in the lowest income quartile, transfer rates actually fall, from 5% to 1%. From this it appears that housing wealth has a much stronger relationship with the ability for parents to help finance college for their children for white families than black ones.

Table 5 also indicates that for black families at the highest income levels, rates of college enrollment *without* parental financial assistance ( $EduFin1$ ) increase steadily and dramatically with housing wealth. The percentage of black families in this category rises from 37% at the lowest net equity quartile, to 40%, 58%, and 64% at the 2nd, 3rd, and 4th equity quartiles, respectively.

### 3.2 Modeling Children’s College Attendance and Parental Financing Choices

To model parental-child college and financing decisions, let the utility/payoff for  $EduFin_{ij,18_j}$

TABLE 5. College Attendance and Financing Rates, Mean Transfer Amounts, and Home Equity Loan Rates by Income and Net Equity Quartile<sup>1</sup>

| Net<br>Equity<br>Quartile                                 | White Parents |      |      |      | Income Quartile<br>Black Parents |      |      |      | Difference |       |       |       |
|---|---------------|------|------|------|----------------------------------|------|------|------|------------|-------|-------|-------|
|   | 1st           | 2nd  | 3rd  | 4th  | 1st                              | 2nd  | 3rd  | 4th  | 1st        | 2nd   | 3rd   | 4th   |
| <i>Child does not enroll (EduFin0)</i>                    |               |      |      |      |                                  |      |      |      |            |       |       |       |
| 1st   | 0.69          | 0.67 | 0.51 | 0.26 | 0.73                             | 0.65 | 0.56 | 0.36 | -0.04      | 0.02  | -0.05 | -0.10 |
| 2nd   | 0.66          | 0.57 | 0.38 | 0.25 | 0.66                             | 0.50 | 0.50 | 0.51 | 0.00       | 0.07  | -0.12 | -0.26 |
| 3rd   | 0.68          | 0.52 | 0.30 | 0.18 | 0.76                             | 0.65 | 0.45 | 0.20 | -0.08      | -0.13 | -0.15 | -0.02 |
| 4th   | 0.35          | 0.34 | 0.16 | 0.11 | 0.95                             | 0.61 | 0.31 | 0.07 | -0.60      | -0.27 | -0.15 | 0.04  |
| <i>Child enrolls, no transfer (EduFin1)</i>               |               |      |      |      |                                  |      |      |      |            |       |       |       |
| 1st   | 0.27          | 0.20 | 0.29 | 0.31 | 0.22                             | 0.24 | 0.40 | 0.37 | 0.05       | -0.04 | -0.11 | -0.06 |
| 2nd   | 0.33          | 0.27 | 0.32 | 0.40 | 0.25                             | 0.38 | 0.36 | 0.40 | 0.08       | -0.11 | -0.04 | 0     |
| 3rd   | 0.22          | 0.26 | 0.36 | 0.25 | 0.18                             | 0.25 | 0.45 | 0.58 | 0.04       | 0.01  | -0.09 | -0.33 |
| 4th   | 0.36          | 0.31 | 0.31 | 0.20 | 0.04                             | 0.24 | 0.34 | 0.64 | 0.32       | 0.07  | -0.03 | -0.44 |
| <i>Child enrolls, transfer (EduFin2)</i>                  |               |      |      |      |                                  |      |      |      |            |       |       |       |
| 1st   | 0.04          | 0.14 | 0.20 | 0.43 | 0.05                             | 0.11 | 0.04 | 0.27 | -0.01      | 0.03  | 0.16  | 0.16  |
| 2nd   | 0.01          | 0.16 | 0.30 | 0.35 | 0.09                             | 0.13 | 0.14 | 0.09 | -0.08      | 0.03  | 0.16  | 0.26  |
| 3rd   | 0.11          | 0.22 | 0.35 | 0.57 | 0.06                             | 0.10 | 0.10 | 0.22 | 0.05       | 0.12  | 0.25  | 0.35  |
| 4th   | 0.29          | 0.35 | 0.54 | 0.69 | 0.01                             | 0.15 | 0.34 | 0.29 | 0.28       | 0.20  | 0.20  | 0.40  |
| <i>Amount of Transfer (CollTrans)<sup>2</sup></i>         |               |      |      |      |                                  |      |      |      |            |       |       |       |
| 1st   | 0.02          | 0.07 | 0.42 | 1.33 | 0.02                             | 0.04 | 0.05 | 0.10 | 0.00       | 0.03  | 0.37  | 1.23  |
| 2nd   | 0.02          | 0.13 | 0.37 | 1.20 | 0.27                             | 0.06 | 0.12 | 0.08 | -0.25      | 0.07  | 0.25  | 1.12  |
| 3rd   | 0.08          | 0.36 | 0.74 | 1.76 | 0.01                             | 0.08 | 0.06 | 0.29 | 0.07       | 0.28  | 0.68  | 1.47  |
| 4th   | 1.08          | 0.62 | 1.39 | 3.66 | 0.00                             | 0.12 | 0.01 | 0.04 | 1.08       | 0.50  | 1.38  | 3.62  |
| <i>Parent Has a Home Equity Loan when child is age 18</i> |               |      |      |      |                                  |      |      |      |            |       |       |       |
| 1st   | 0.01          | 0.01 | 0.04 | 0.09 | 0.00                             | 0.01 | 0.00 | 0.04 | 0.01       | 0.00  | 0.04  | 0.05  |
| 2nd   | 0.05          | 0.10 | 0.15 | 0.18 | 0.06                             | 0.12 | 0.13 | 0.03 | -0.01      | -0.02 | 0.02  | 0.15  |
| 3rd   | 0.01          | 0.11 | 0.15 | 0.16 | 0.01                             | 0.01 | 0.2  | 0.14 | 0.00       | 0.10  | -0.05 | 0.02  |
| 4th   | 0.11          | 0.05 | 0.20 | 0.18 | 0.00                             | 0.12 | 0.01 | 0.04 | 0.11       | -0.07 | 0.19  | 0.14  |

<sup>1</sup> Statistics weighted using PSID family weights.

Income and net equity quartile cutpoints were determined from the full sample of white and black parents pooled together. The cutpoints by income quartile are \$37.4k (1st quartile), \$68k (2nd quartile), \$107.1k (3rd quartile), and \$1,021k (4th quartile). For net equity the cutpoints are \$0 (1st quartile), \$27.4k (2nd quartile), \$79.2k (3rd quartile), and \$2,062k (4th quartile).

<sup>2</sup> Dollar amount is in 10K of 2013\$.

be denoted by  $U_{kijm,18_j}^*$  and assume that choice  $k = 0$  is the base category. The payoff functions

for parent  $i$  of child  $j$  made when the child is age 18 are given by:

$$\begin{aligned}
U_{kijm,18_j} = & \lambda_{k0}^U + \lambda_{k1}^U Y_{imt_{18_j}} + \lambda_{k2}^U H_{imt_{18_j}} I_{imt_{18_j}}^{HO} + \lambda_{k3}^U Y_{imt_{18_j}} I_{imt_{18_j}}^{HO} \\
& + \lambda_{k4}^U Y_{imt_{18_j}} Black_i + \lambda_{k5}^U Y_{imt_{18_j}} I_{imt_{18_j}}^{HO} Black_i + \lambda_{k6}^U H_{imt_{18_j}} I_{imt_{18_j}}^{HO} Black_i \\
& + \lambda_{k7}^U I_{imt_{18_j}}^{HO} + \lambda_{k8}^U Black_i + \lambda_{k9}^U I_{imt_{18_j}}^{HO} Black_i \\
& + \lambda_{k10}^U \mathbf{X}_{ij} + \lambda_{k11}^U \mathbf{M}_{mt_{18_j}} + \phi_{kt_{18_j}}^U + \delta_{ks}^U + \varepsilon_{kijm,18_j}^U,
\end{aligned} \tag{5}$$

for  $k = 0, 1, 2$ , where the  $H_{imt_{18_j}}$  and  $Y_{imt_{18_j}}$  are parental wealth and income respectively,  $I_{imt_{18_j}}^{HO}$  is an indicator variable equal to 1 if the parent owns a home,  $Black_i$  is an indicator variable equal to 1 if the parents are black,  $\mathbf{X}_{ij}$  is a vector of demographic characteristics of parents  $i$  and their  $j^{th}$  child,  $\mathbf{M}_{mt_{18_j}}$  is a vector of time-varying characteristics of location  $m$  in year  $t_{18_j}$ ,  $\phi_{kt_{18_j}}$  and  $\delta_s$  are year and state-of-residence *fixed effects*, respectively, and  $\varepsilon_{kijm,18_j}$  are choice-specific unobserved parent and child traits. White parents who rent their place of residence is the omitted housing category in these and the following specifications.

We include in  $\mathbf{X}_{ij}$  a set of demographic characteristics including the age, marital status, race, and education of the parent. Also included are a set of variables describing the family structure of the child's household at age 18 including whether the household is headed by a single-female, the number of children in the household under age 16, whether there is a child in the household who is less than five years older than child  $j$ , whether there is a child in the household who is less than five years younger than child  $j$ , and the gender of child  $j$ .

We include in  $\mathbf{M}_{mt_{18_j}}$  the average weekly wage and employment rate in market  $m$  in year  $t_{18_j}$ , where the latter variables are taken from the Quarterly Census of Employment and Wages (QCEW). We use a share-weighting approach to make the average weekly wage more accurately reflect the labor market teenage workers would face if they do not attend college. We use the Current Population Survey to calculate the composition of industries that teenagers are employed in nationally in each year and apply these weights to local industry-specific wages. We also control for the college-wage premium for younger workers directly. Following Lovenheim and Reynolds (2013) we use data from the Current Population Survey to calculate the college-

wage premium for young workers in the state,  $s$ , in which market  $m$  is located in year  $t_{18_j}$  as the ratio of hourly wages of 25 - 40 year olds with a bachelor's degree (BA) to the hourly wages of 25 - 40 year olds whose highest level of educational attainment is a high school diploma. We also include the college-associate degree wage premium calculated as above but using individuals with an associate's degree as the comparison group. As long as high-skilled labor demand is not highly localized, these state-level measures control for the demand for high-skilled vs. low-skilled labor for younger workers.

We characterize the optimal college/financing choice for child  $j$ ,  $k^\dagger$ , as follows:

$$k_i^\dagger = \arg \max_k U_{kijm,18_j}, k = 0, 1, 2. \quad (6)$$

Assuming that the random variable,  $\varepsilon_{kijm,18_j}^U$ , has a Type II extreme value distribution and assuming that we treat  $H_{imt_{18_j}}$  and  $Y_{imt_{18_j}}$  as exogenous to child  $j$ 's college enrollment and parental financing decisions, it follows that the model of the college attendance and its financing choice can be estimated as a multinomial logit model.

This modeling approach is an extension of the approach of Hotz et al. (2018) to incorporate renters into the analysis along with homeowners, and to allow for differing effects of parental income and wealth by race. We also allow for the effect of parental income to vary based on the home-ownership status of parents. Housing wealth is zero for renters, and can therefore have no effect.

The assumption that each of  $Y_{imt_{18_j}}$ ,  $H_{imt_{18_j}}I_{imt_{18_j}}^{HO}$ ,  $Y_{imt_{18_j}}I_{imt_{18_j}}^{HO}$ ,  $Y_{imt_{18_j}}Black_i$ ,  $Y_{imt_{18_j}}I_{imt_{18_j}}^{HO}Black_i$ , and  $H_{imt_{18_j}}I_{imt_{18_j}}^{HO}Black_i$  are exogenous is a strong one. Accordingly, we wish to allow for the potential endogeneity of these six variables in the estimation of the payoff functions in (5). To deal with the endogeneity of these variables, we use a control function estimator (Blundell and Powell, 2003) applied to the multinomial logit specification (Petrin and Train, 2010; Wooldridge, 2014). This estimator can be implemented in two stages. In the first stage, we regress the endogenous variables  $Y_{imt_{18_j}}$ ,  $H_{imt_{18_j}}I_{imt_{18_j}}^{HO}$ ,  $Y_{imt_{18_j}}I_{imt_{18_j}}^{HO}$ ,  $Y_{imt_{18_j}}Black_i$ ,  $Y_{imt_{18_j}}I_{imt_{18_j}}^{HO}Black_i$ , and  $H_{imt_{18_j}}I_{imt_{18_j}}^{HO}Black_i$  on exogenous regressors, including the exogenous variables,  $\mathbf{X}_{ij}$  and  $\mathbf{M}_{mt_{18_j}}$  in (5) and year and state-of-residence fixed effects, as well as a vector of instrumental

variables,  $\mathbf{Z}_{imt18_j}$  (which we define in the next section) to account for the endogeneity of  $Y_{imt18_j}$ ,  $H_{imt18_j} I_{imt18_j}^{HO}$ ,  $Y_{imt18_j} I_{imt18_j}^{HO}$ ,  $Y_{imt18_j} Black_i$ ,  $Y_{imt18_j} I_{imt18_j}^{HO} Black_i$ , and  $H_{imt18_j} I_{imt18_j}^{HO} Black_i$ . That is, these first-stage regressions are:

$$H_{imt18_j} I_{imt18_j}^{HO} = \pi_1^H \mathbf{Z}_{imt18_j} + \pi_2^H \mathbf{X}_{ij} + \pi_3^H \mathbf{M}_{mt18_j} + \phi_{t18_j}^H + \delta_s^H + \nu_{imt18_j}^H, \quad (7)$$

$$H_{imt18_j} I_{imt18_j}^{HO} Black_i = \pi_1^H \mathbf{Z}_{imt18_j} + \pi_2^H \mathbf{X}_{ij} + \pi_3^H \mathbf{M}_{mt18_j} + \phi_{t18_j}^H + \delta_s^H + \nu_{imt18_j}^H, \quad (8)$$

$$Y_{imt18_j} = \pi_1^Y \mathbf{Z}_{imt18_j} + \pi_2^Y \mathbf{X}_{ij} + \pi_3^Y \mathbf{M}_{mt18_j} + \phi_{t18_j}^Y + \delta_s^Y + \nu_{imt18_j}^Y, \quad (9)$$

$$Y_{imt18_j} I_{imt18_j}^{HO} = \pi_1^Y \mathbf{Z}_{imt18_j} + \pi_2^Y \mathbf{X}_{ij} + \pi_3^Y \mathbf{M}_{mt18_j} + \phi_{t18_j}^Y + \delta_s^Y + \nu_{imt18_j}^Y, \quad (10)$$

$$Y_{imt18_j} Black_i = \pi_1^Y \mathbf{Z}_{imt18_j} + \pi_2^Y \mathbf{X}_{ij} + \pi_3^Y \mathbf{M}_{mt18_j} + \phi_{t18_j}^Y + \delta_s^Y + \nu_{imt18_j}^Y, \quad (11)$$

$$Y_{imt18_j} I_{imt18_j}^{HO} Black_i = \pi_1^Y \mathbf{Z}_{imt18_j} + \pi_2^Y \mathbf{X}_{ij} + \pi_3^Y \mathbf{M}_{mt18_j} + \phi_{t18_j}^Y + \delta_s^Y + \nu_{imt18_j}^Y, \quad (12)$$

One then retrieves the residuals from these regressions, which we denote as  $\widehat{\nu}_{imt18_j}^{HI^{HO}}$ ,  $\widehat{\nu}_{imt18_j}^{HI^{HO} Black}$ ,  $\widehat{\nu}_{imt18_j}^Y$ ,  $\widehat{\nu}_{imt18_j}^{Y I^{HO}}$ ,  $\widehat{\nu}_{imt18_j}^{Y Black}$ , and  $\widehat{\nu}_{imt18_j}^{Y I^{HO} Black}$  respectively. In the second stage, we estimate a multinomial logit model where we include  $\widehat{\nu}_{imt18_j}^{HI^{HO}}$ ,  $\widehat{\nu}_{imt18_j}^{HI^{HO} Black}$ ,  $\widehat{\nu}_{imt18_j}^Y$ ,  $\widehat{\nu}_{imt18_j}^{Y I^{HO}}$ ,  $\widehat{\nu}_{imt18_j}^{Y Black}$ , and  $\widehat{\nu}_{imt18_j}^{Y I^{HO} Black}$  as additional regressors, with separate coefficients, in the payoff functions in (5). To account for the estimation error in  $\widehat{\nu}_{imt18_j}^{HI^{HO}}$ ,  $\widehat{\nu}_{imt18_j}^{HI^{HO} Black}$ ,  $\widehat{\nu}_{imt18_j}^Y$ ,  $\widehat{\nu}_{imt18_j}^{Y I^{HO}}$ ,  $\widehat{\nu}_{imt18_j}^{Y Black}$ , and  $\widehat{\nu}_{imt18_j}^{Y I^{HO} Black}$  and the quasi-ML nature of estimation in the second stage, we adjust the estimation of the variance-covariance matrix of the  $\lambda$ s as characterized in Wooldridge (2014). We use bootstrap to calculate these standard errors.

Finally, conditional on  $EduFin2 = 1$ , we can estimate the impacts of parental housing wealth and household income on the amount of the parents' transfer,  $CollTrans_{imt18_j}$ . Mimicking the specification of payoffs in (5), we estimate the following OLS regression:

$$\begin{aligned} CollTrans_{imt18_j} &= \lambda_0^T + \lambda_{k1}^T Y_{imt18_j} + \lambda_{k2}^T H_{imt18_j} I_{imt18_j}^{HO} + \lambda_{k3}^T Y_{imt18_j} I_{imt18_j}^{HO} \\ &\quad + \lambda_{k4}^T Y_{imt18_j} Black_i + \lambda_{k5}^T Y_{imt18_j} I_{imt18_j}^{HO} Black_i + \lambda_{k6}^T H_{imt18_j} I_{imt18_j}^{HO} Black_i \\ &\quad + \lambda_{k7}^T I_{imt18_j}^{HO} + \lambda_{k8}^T Black_i + \lambda_{k9}^T I_{imt18_j}^{HO} Black_i \\ &\quad + \lambda_{k10}^T \mathbf{X}_{ij} + \lambda_{k11}^T \mathbf{M}_{mt18_j} + \phi_{kt18_j}^T + \delta_{ks}^T + \varepsilon_{kijm,18_j}^T, \end{aligned} \quad (13)$$

where all of the control variables are the same as described above but we use MSA level fixed effects for urban residents and state level fixed effects for rural residents instead of state-level fixed effects. To account for the potential endogeneity of  $Y_{imt18_j}$ ,  $H_{imt18_j} I_{imt18_j}^{HO}$ ,  $Y_{imt18_j} I_{imt18_j}^{HO}$ ,  $Y_{imt18_j} Black_i$ ,  $Y_{imt18_j} I_{imt18_j}^{HO} Black_i$ , and  $H_{imt18_j} I_{imt18_j}^{HO} Black_i$  in (13), we employ an instrumental variables estimator (2SLS), using the same vector of instruments,  $\mathbf{Z}_{imt18_j}$ , used in the control function estimator of the parameters in the payoff functions in (5) which we describe next.

### 3.3 Instrumental Variables: Changes in Local Housing Prices & Wages

As noted above, we seek to instrument for parents' housing wealth and income, accounting for race and difference in home-ownership status, in the estimation of the payoff functions for the college education and financing choices parents make for their  $j$ th child. The variables we instrument for are  $Y_{imt18_j}$ ,  $H_{imt18_j} I_{imt18_j}^{HO}$ ,  $Y_{imt18_j} I_{imt18_j}^{HO}$ ,  $Y_{imt18_j} Black_i$ ,  $Y_{imt18_j} I_{imt18_j}^{HO} Black_i$ , and  $H_{imt18_j} I_{imt18_j}^{HO} Black_i$ . In this section, we describe the variables we use as instruments ( $Z$ ) in our analyses and how they are constructed.

We use changes in local housing market prices and changes in labor market wages to construct our instruments. In particular, we construct measures of the change in the parents' housing wealth and parental income immediately before child  $j$  reaches age 18 to serve as instrumental variables for parental housing wealth and income in the estimation of our college attendance and financing models and our estimation of the effects of these decisions on subsequent educational outcomes described in Section 3.4. In spirit of the approach in Lovenheim and Reynolds (2013), we use changes in market-level measures of average housing values in the local market in which parents resided in the year in which the child was age 16, i.e., in year  $t_{16_j}$ . We use lagged values of changes in local market conditions for two reasons.

First, we want to avoid the possible endogenous decision that parents may make to move to a different locality (market) at the time of their child's college decision, possibly to improve either their ability to finance the costs of college, e.g., they sell a more expensive home, take the equity from that home to pay for college and move to a less expensive home, or to reduce the cost of the college their child may attend, e.g., moving closer to a college or to a state that



charges lower tuition.

Second, one might expect that parents base their assessment of whether they can use the equity in their home as collateral for a loan to pay for their children’s college education (via a home equity loan, for example) based on any changes in local housing values one or two years prior to the actual decision, rather than based on what happens to housing values in the year when their child would be going to college. We note that this strategy of using changes in local housing values a few years prior to the child’s college decision is similar to the one used by Lovenheim (2011) and Lovenheim and Reynolds (2013) in their studies of the effects of parental housing wealth on children’s decisions to attend college. Finally, we note that we use the same strategy when constructing measures of the changes in local labor market conditions that may be expected to affect their personal income.

More precisely, our instrument for changes in local housing values is constructed as follows. For the locality,  $m$ , in which parents reside in year  $t_{16,j}$ , we obtain housing price indices,  $HPI_{mt}$ , from external data sources to construct the percentage change in local housing values. Where possible, i.e., where we have data on local housing prices, we define the local housing market at the zip code level and, where possible, we use housing price indices constructed by Zillow. For zip codes where a Zillow price index is not available in year  $t_{16,j}$ , we use the Zillow index for the county in which the parents/child reside in that year. When a price index is not available for the parents’ county of residence, we use the price index of the MSA- or state-of-residence. Finally, for some years and locations in which the parents in our data reside in markets not covered by Zillow data, we make use of the housing price index constructed by the Federal Housing Finance Agency (FHFA) as our measure of  $HPI_{mt}$ . With the resulting indices, we construct the percentage change in this index over a 4-year period centered on year  $t_{16,j}$ ,

$$\frac{HPI_{mt_{18,j}} - HPI_{mt_{14,j}}}{HPI_{mt_{14,j}}}. \tag{14}$$

We note that by using percentage changes in housing price indices,  $HPI_{mt}$ , rather than simple changes, we minimize any problems of non-comparability of the Zillow and FHFA housing price indices.<sup>11</sup> We then “scale” this percentage change by the net home equity the parents report in

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<sup>11</sup>We trimmed these changes when they were exceedingly large in absolute value.

year  $t_{16_t}$  to form our housing market instrument:

$$\Delta HPI_{mt18_j} \equiv H_{imt16_j} \left[ \frac{HPI_{mt18_j} - HPI_{mt14_j}}{HPI_{mt14_j}} \right]. \quad (15)$$

We note that we found that trimming the changes affects the precision of our results.

For our instrumental variable for local labor market conditions, we use data from the QCEW to obtain the average annual wages in each county,  $m$ , in each year,  $t$ . We then construct average wages by county-of-residence of parents for the years around when their child was age 16, i.e.,  $t_{16_j}$ . We denote these average wage measures by  $\bar{W}_{mt}^P$ . We then construct the percentage changes in these average wages, i.e.,

$$\frac{\bar{W}_{mt18_j}^P - \bar{W}_{mt14_j}^P}{\bar{W}_{mt14_j}^P}, \quad (16)$$

and scale it by parent's annual income in year  $t_{16,j}$  to construct the following instrumental variable:

$$\Delta W_{mt18_j}^P \equiv Y_{imt16_j} \left[ \frac{\bar{W}_{mt18_j}^P - \bar{W}_{mt14_j}^P}{\bar{W}_{m,t14_j}^P} \right]. \quad (17)$$

Taking these two instruments  $\Delta HPI_{mt18_j}$  and  $\Delta W_{mt18_j}^P$ , we interact them with race  $Black_i$  and home-ownership status  $I_{imt18_j}^{HO}$  to obtain enough instrumental variables to ensure identification. Thus, our vector of instruments is given by:

$$\begin{aligned} \mathbf{Z}_{imt18_j} \equiv & (\Delta HPI_{mt18_j} I_{imt18_j}^{HO}, \Delta HPI_{mt18_j} I_{imt18_j}^{HO} Black_i, \Delta W_{mt18_j}^P, \\ & \Delta W_{mt18_j}^P I_{imt18_j}^{HO}, \Delta W_{mt18_j}^P Black_i, \Delta W_{mt18_j}^P I_{imt18_j}^{HO} Black_i, \Delta HPI_{mt18_j}) \end{aligned} \quad (18)$$

### 3.4 Modeling Children's College Attainment

As noted in Section 2.3, we use information on completed schooling reported in the 2013 PSID

Roster and Transfers Module to form measures of whether each child  $j$  of parent  $i$  that attended college at age 18 graduated from college, which we denote by dummy variable  $Grad_{ij,18,j}$ , and whether they enrolled in any post-baccalaureate education, denoted by the dummy variable  $PostGrad_{ij,18,j}$ .

Table 6 shows the mean values for each of the measures described above for the children in our family. Means are shown separately by race of each child’s parents, for all college attendees, for children who attend college without parental support ( $EduFin1$ ), and for children who attend college and receive a financial transfer from their parents ( $EduFin2$ ). Here we again see disparities between children of white and black parents. 21% of all children from white families in our sample graduate from college, while only 8% of children from black families graduate.<sup>12</sup> Not all of this is explained by differing rates of enrollment, as among children who enroll in college, 34% of white children graduate, compared to only 22% of black children. Children from white families are more likely to enroll in post-graduate studies.

TABLE 6. College Graduation & Post-Graduate Enrollment<sup>1</sup>

|   | Full Sample | Attended College | $EduFin1$<br>(Coll, but No Transfer) | $EduFin2$<br>(Coll & Transfer) |
|---|-------------|------------------|--------------------------------------|--------------------------------|
| <i>White Parents</i>  |             |                  |                                      |                                |
| Graduated from College ( $Grad$ ) <sup>2</sup>                | 0.21        | 0.34             | 0.33                                 | 0.35                           |
| Enrolled in Post-Graduate Studies ( $PostGrad$ ) <sup>2</sup> | 0.07        | 0.11             | 0.11                                 | 0.10                           |
| <i>Black Parents</i>  |             |                  |                                      |                                |
| Graduated from College ( $Grad$ ) <sup>2</sup>                | 0.08        | 0.22             | 0.22                                 | 0.19                           |
| Enrolled in Post-Graduate Studies ( $PostGrad$ ) <sup>2</sup> | 0.02        | 0.05             | 0.05                                 | 0.04                           |

<sup>1</sup> Statistics weighted using PSID family weights. Tuition amounts are in 2013\$.

<sup>2</sup> Conditional on those students who attended a 4-year college at age 18.

<sup>3</sup> Conditional on those who attended a 4-year college at age 18

Comparing graduation and college quality between children who receive financial support from their parents for college and those who do not reveals further mean differences between white and black families. Children of white parents who receive parental transfers are 2 percentage points more likely to graduate from college than those who do not receive any transfers. Children of black parents who receive financial support from their parents are no

<sup>12</sup>Note that the graduation rates of both white and black children in our sample are lower than those measured by McFarland et al. (2017) for 25-29 year old adults, suggesting that a significant number of college graduates obtain their degrees in their mid or late-twenties.

more likely to graduate or enroll in post-graduate studies than their peers who do not receive parental support. The lack of observed mean differences between black children who receive aid for college from their parents and those who do not may be explained in part due to the fact that black parents are much less likely to provide aid for their children than white parents (only 9% of all black parents, compared to 35% of white parents), thus limiting the number of observations from which the means were calculated. Further, even among parents who did make transfers to their children for college, black parents give much less on average than white parents.

We examine how parental income and parental housing wealth affect college quality using changes in parental income and wealth in the years before a child turns 18 as instruments for income and housing wealth. These specifications mirror those on college attendance and financing decisions in Section 3.2 estimating regressions of the following form:

In order to identify whether racial differences exist in how parental income and parental housing wealth affect college graduation and quality, we utilize changes in parental income and wealth in the years just before a child turns 18 as instruments for income and housing wealth. We model college graduation, post-graduate enrollment, and college quality using similar specifications to those modeling college attendance and financing decisions in Section 3.2. We estimate regressions of the following form:

$$\begin{aligned}
CollOut_{qij,18_j} = & \lambda_{q0}^O + \lambda_{q1}^O Y_{imt18_j} (1 - I_{imt18_j}^{HO}) + \lambda_{q2}^O Y_{imt18_j} I_{imt18_j}^{HO} + \lambda_{q3}^O H_{imt18_j} I_{imt18_j}^{HO} \\
& + \lambda_{q4}^O \mathbf{X}_{ij18_j} + \lambda_{q5}^O \mathbf{M}_{mt18_j} + \phi_{qt18_j}^O + \delta_{qm}^O + \varepsilon_{ij,18_j}^q,
\end{aligned} \tag{19}$$

for  $CollOut_q = Grad, PostGrad$  and where  $\phi_{qt18_j}^O$  and  $\delta_{qm}^O$  are year and the parents' MSA fixed effects, respectively. The vector,  $\mathbf{X}_{ij18_j}$ , used in (19) is the same as the one used in equations (5) and (7) through (13) except that it also includes a dummy variable for whether the child has become a head or wife in a PSID household by age 24. This extra variable controls for the source of data from which college information is obtained (PSID main interview versus Transition to Adulthood). The principal difference between the specifications in Section 4.1 and the college graduation and quality specifications here is that we do not include parental race in the explanatory variables for  $CollOut$ , instead estimating (19) separately for black and

white families.

We address the potential endogeneity of  $H_{imt_{18_j}}$  and  $Y_{imt_{18_j}}$  in (19) by using a 2SLS approach in addition to obtaining OLS estimates. We use the two instruments described in Section 3.3,  $\Delta HPI_{mt_{18_j}}$  and  $\Delta W_{mt_{18_j}}^P$ , that were used in the control function estimates of college choices and parental financing decisions as well as the amount of parental financial transfers made to their child.

## 4 Empirical Results

In this section we discuss our empirical results from estimating the models described in Section 3. We first discuss our estimates of racial differences in the effects of parental income and housing wealth on children’s college enrollment and parental financing decisions, including both the likelihood that parent’s make a financial transfer to help pay for their child’s college, and the amount of the transfer. Next, we explore alternative approaches to calculating marginal effects from our estimated model to account for distributional differences in parental income and wealth by race. Finally, we describe our estimates of the effects of parent’s net equity and income on the probability their child graduates from college, and that he or she enrolls in graduate school.

### 4.1 Children’s College Attendance and Its Financing

Table 7 shows the results of estimating (5). We show estimates of the marginal effects of parental net equity ( $H_{imt_{18_j}}$ ) and income ( $Y_{imt_{18_j}}$ ) on children’s college choices ( $EduFin0$ ,  $EduFin1$ , and  $EduFin2$ ) for both the unadjusted multinomial logit specification and for our preferred specification using the control function estimation strategy. These marginal effects are calculated separately for white parents and black parents, and by home-ownership status.<sup>13</sup> In our model of parent-child college and financing decisions, renters’ decisions are not impacted

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<sup>13</sup>The reported wealth ( $H_{imt_{18_j}}$ ) and income ( $Y_{imt_{18_j}}$ ) values for each observation were used, and all other covariates are assigned their grand sample means in the calculations. See 4.2 for further discussion.

by net equity, since we assume that net equity is zero for all renters. Table 9 shows the results of estimating (13). We present OLS and 2SLS estimates for  $H$  and  $Y$ , and estimate each model separately by race.

TABLE 7. Marginal Effects of Changes in Wealth and Income on College Attendance and Financing Choices<sup>1</sup>

| Variable  | <i>Parents are Renters</i>     |  |  | <i>Parents are Home-owners</i> |  |  |
|---|--------------------------------|--|--|--------------------------------|--|--|
|   | EduFin0<br>(No<br>Coll)<br>(1) | EduFin1<br>(Coll, but<br>No Transfer)<br>(2) | EduFin2<br>(Coll &<br>Transfer)<br>(3) | EduFin0<br>(No<br>Coll)<br>(4) | EduFin1<br>(Coll, but<br>No Transfer)<br>(5) | EduFin2<br>(Coll &<br>Transfer)<br>(6) |
| <i>Panel A. Multinomial Logit, White Parents</i>                                |                                |  |  |                                |  |  |
| $Y_{imt18j}$  | -0.0197***<br>(0.00512)        | 0.0135**<br>(0.00472)                        | 0.00625***<br>(0.00151)                | -0.0245***<br>(0.00251)        | 0.00806*<br>(0.00350)                        | 0.0164***<br>(0.00323)                 |
| $H_{imt18j}$  |                                |  |  | -0.00269<br>(0.00249)          | -0.000964<br>(0.00188)                       | 0.00365*<br>(0.00177)                  |
| <i>Panel B. Multinomial Logit, Black Parents</i>                                |                                |  |  |                                |  |  |
| $Y_{imt18j}$  | -0.0156**<br>(0.00511)         | 0.0128**<br>(0.00488)                        | 0.00278*<br>(0.00110)                  | -0.0158**<br>(0.00524)         | 0.0123**<br>(0.00466)                        | 0.00344<br>(0.00263)                   |
| $H_{imt18j}$  |                                |  |  | -0.00610<br>(0.00339)          | 0.00517<br>(0.00334)                         | 0.000933<br>(0.00185)                  |
| N   | 1303                           | 1303   | 1303                                   | 2420                           | 2420   | 2420                                   |
| <i>Panel C. Control Function w/ Bootstrapped SEs, White Parents<sup>2</sup></i> |                                |  |  |                                |  |  |
| $Y_{imt18j}$  | -0.0235**<br>(0.00923)         | 0.0114<br>(0.0085)                           | 0.0120***<br>(0.0041)                  | -0.0187**<br>(0.0089)          | 0.00402<br>(0.00723)                         | 0.0147**<br>(0.0075)                   |
| $H_{imt18j}$  |                                |  |  | -0.0123<br>(0.00824)           | -0.00243<br>(0.00641)                        | 0.0148**<br>(0.00677)                  |
| <i>Panel D. Control Function w/ Bootstrapped SEs, Black Parents<sup>2</sup></i> |                                |  |  |                                |  |  |
| $Y_{imt18j}$  | -0.0163<br>(0.0102)            | 0.00964<br>(0.00977)                         | 0.00664***<br>(0.00212)                | -0.00456<br>(0.0109)           | -0.00978<br>(0.01053)                        | 0.0143***<br>(0.004)                   |
| $H_{imt18j}$  |                                |  |  | -0.0311**<br>(0.0125)          | 0.0374***<br>(0.0120)                        | -0.00627<br>(0.00573)                  |
| N   | 1303                           | 1303   | 1303                                   | 2420                           | 2420   | 2420                                   |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex, race), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and state fixed effects.

<sup>2</sup> The variables  $H_{imt18j}$  and  $Y_{imt18j}$  were treated as endogenous in the control function specification and were instrumented with  $\Delta HPI_{mt18j}$  and  $\Delta W_{mt18j}^P$ . See Section 3.3 for a description of these instruments.

In Panel A of Table 7, we present estimates of the marginal effects of white parents' net home equity when their child was age 18 ( $H_{imt_{18_j}}$ ) and parents' annual income at that age ( $Y_{imt_{18_j}}$ ) for the unadjusted multinomial logit specification. For renters, \$10,000 increase in income decreases the likelihood that the child does not attend college by 1.97 percentage points, increases the likelihood that they attend college but with no parental transfer by 1.35 percentage points, and increases the likelihood that they go to college and their parents provide financial help by 0.625 percentage points, with all of these effects being statistically significant at at least the 5% level. For white home-owners the effects are more pronounced. For this group, a \$10,000 increase in income decreases the likelihood that the child does not attend college by 2.45 percentage points, increases the likelihood that they attend college without parental transfers by 0.806 percentage points, and increases the likelihood that they go to college with financial support by 1.64 percentage points. A \$10,000 increase in net equity increases the likelihood the child attends college with a transfer by 3.65 percentage points, with this effect being statistically significant at the 10% level.

In Panel B of Table 7, we show estimates of the marginal effects of net equity and income for black parents from the unadjusted multinomial logit specification. In contrast to the estimates for white parents, for black parents we find no significant effects of housing wealth on the likelihood of college attendance or parental financing. For renters, the effect of a \$10,000 increase in income on the likelihood of not attending college and attending college without a college transfer are comparable to the estimated marginal effects for white renters (decrease of 1.56 and increase of 1.28 percentage points, respectively), while the estimated effect on the likelihood of attending college with a financial transfer is smaller (increase of 0.278 percentage points). All three estimates are statistically significant at at least the 10% level. For black home-owners, \$10,000 increase in income decreases the likelihood that the child does not attend college by 1.58 percentage points and increases the likelihood that they attend college but with no parental transfer by 1.23 percentage points, with both effects being statistically significant at the 5% level.

In Panels C and D of Table 7 we account for the potential endogeneity of parental home equity and income on these choices. For both white parents who rent and who are home-owners, we find that a \$10,000 increase in income decreases the likelihood of not attending college (2.35

and 1.87 percentage points) for the child, and increases the likelihood of attending college with a financial transfer (1.20 and 1.47 percentage points, respectively). All these estimates are statistically significant at the 5% level at least. For black parents we fail to find a similar effect of an increase in income on the likelihood the child does not go to college. For black renters, a \$10,000 increase in income does increase the likelihood that the child will attend college and receive a financial transfer from their parents by 0.664 percentage points, almost half the size of the effect for white renters. For black home-owners, the effect of an increase in income is 1.43 percentage points, comparable to the effect for white home-owners. For white home-owners we find that a \$10,000 increase in net equity increases the likelihood that the child will attend college with a transfer by 1.48 percentage points, over four times the size of the effect in the unadjusted specification, and statistically significant at the 5% level. We do not find a similar effect for black home-owners, however. Instead we show that an increase in net equity of \$10,000 for black families increases the likelihood that their child attends college *without* a financial transfer by 3.74 percentage points, and decreases the likelihood of not attending college by 3.11 percentage points, with the effects being statistically significant at the 1% and 5% levels, respectively.

Since black and white families do not face equal distributions of parental income, net equity (see Table 4), nor similar rates of college attendance and financing (see Table 3), it can be difficult to directly compare our estimates between racial groups. To address this issue, and to convert our control function estimates of the effects of parental income and parental net equity into comparable terms, we compute elasticities of each of our estimates of the marginal effects of  $Y_{imt18,j}$  and  $H_{imt18,j}$  with respect to our education and financing outcomes ( $EduFin$ ). Table 8 shows the elasticities of parental income and parental housing wealth by parental race for the college attendance and financing outcomes displayed in Table 7. Among white homeowners, the elasticity of parental income with respect to going to college and receiving financial support is 0.383. The elasticity of parents' net housing equity for going to college with support is 0.352, only slightly below the estimate for income elasticity. For black families the gap is much larger, with the elasticities estimated at 0.715 and -0.171, respectively. Hotz et al. (2018) find larger effects of income than for equity for homeowners overall in the PSID. Our findings suggest that the extremely high marginal propensity to finance a child's college from income for black families is likely driving their results. The elasticity of income with respect to attending college with



parental support is 0.36 among black renters, and 0.52 for white renters.<sup>14</sup>

TABLE 8. Elasticity Estimates of Effects of Parents' Home Equity and Family Income on College Attendance and Financing Choices<sup>1</sup>

| Variable  | <i>Parents are Renters</i> |                                    |                              | <i>Parents are Home-owners</i> |                                    |                              |
|---|----------------------------|------------------------------------|------------------------------|--------------------------------|------------------------------------|------------------------------|
|   | EduFin0<br>(No Coll)       | EduFin1<br>(Coll, but No Transfer) | EduFin2<br>(Coll & Transfer) | EduFin0<br>(No Coll)           | EduFin1<br>(Coll, but No Transfer) | EduFin2<br>(Coll & Transfer) |
|   | (1)                        | (2)                                | (3)                          | (4)                            | (5)                                | (6)                          |
| <i>Panel C. Control Function, White Parents</i> |                            |                                    |                              |                                |                                    |                              |
| $Y_{imt18j}$                                    | -0.175**                   | 0.218                              | 0.520***                     | -0.644**                       | 0.153                              | 0.383**                      |
| $H_{imt18j}$                                    | x                          | x                                  | x                            | -0.386                         | -0.085                             | 0.352**                      |
| <i>Panel D. Control Function, Black Parents</i> |                            |                                    |                              |                                |                                    |                              |
| $Y_{imt18j}$                                    | -0.091                     | 0.147                              | 0.360***                     | -0.050                         | -0.178                             | 0.715***                     |
| $H_{imt18j}$                                    | x                          | x                                  | x                            | -0.185**                       | 0.372***                           | -0.171                       |
| N   | 1303                       | 1303                               | 1303                         | 2420                           | 2420                               | 2420                         |

<sup>1</sup> \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

All elasticities are calculated with % changes from race and homeownership-specific means of  $Y_{imt18j}$ ,  $H_{imt18j}$ , and  $EduFin_i$ ,  $i \in 0, 1, 2$ .

Table 9 shows the results of estimating (13) by race. The OLS results in columns (1) and (3) indicate that white parents who experience a \$10,000 increase in income transfer more money to their children for college on average, \$680 for renters and \$790 for homeowners. Similarly, black parent homeowners who experience such an increase in income transfer \$180 more to their children on average. White parents whose home equity increases by \$10,000 transfer \$290 more on average, with no corresponding difference for black parents. Once the endogeneity of income ( $Y_{imt18j}$ ) and housing wealth ( $H_{imt18j}$ ) are accounted for in our 2SLS specifications in columns (2) and (4), we find significant positive effects of income on financial transfers for renters and homeowners of both races. In dollar terms, the effect is 4-5 times larger in magnitude for white parents than it is for black parents, with a \$10,000 increase in parental income increases transfers by \$1,750 for white renters compared to only \$360 for black renters, and by \$1,560 for white homeowners compared to just \$400 for black homeowners.<sup>15</sup>

<sup>14</sup>Each elasticity is evaluated at the means of the probabilities of  $EduFin0$ ,  $EduFin1$ , and  $EduFin2$  and the means of  $Y_{imt18j}$  and  $H_{imt18j}$  for the subsample of the appropriate racial group and homeownership status.

<sup>15</sup>Table C.1 in Appendix C shows estimates using the same specifications, conditional on the child attending

As with our estimates in Table 8 above, we calculate elasticities for each of our estimates of the effects of parental income with respect to transfer amounts.<sup>16</sup> We find that parents of both races who rent their homes are much more sensitive to changes in income when choosing how much financial assistance to provide their children for college than are homeowners. The elasticity of income with respect to financial transfers for college is 4.39 for white homeowners and 4.56 for black homeowners, compared to 1.19 and 1.84 for white and black renters, respectively. Black parents are slightly more sensitive to income changes than are white parents, conditional on homeownership status.

TABLE 9. Effects of Changes in Wealth and Income on Amount of Parental Financing<sup>1</sup>

| Variable                     | <i>White Parents</i> |                          | <i>Black Parents</i> |                          |
|------------------------------|----------------------|--------------------------|----------------------|--------------------------|
|                              | OLS<br>(1)           | 2SLS <sup>2</sup><br>(2) | OLS<br>(3)           | 2SLS <sup>2</sup><br>(4) |
| Rent $\times Y_{imt18j}$     | 0.068*<br>(0.036)    | 0.175***<br>(0.052)      | 0.005<br>(0.005)     | 0.036**<br>(0.016)       |
| Own Home $\times Y_{imt18j}$ | 0.079***<br>(0.020)  | 0.156***<br>(0.046)      | 0.018***<br>(0.004)  | 0.040***<br>(0.011)      |
| Own Home $\times H_{imt18j}$ | 0.029**<br>(0.014)   | 0.030<br>(0.032)         | -0.005<br>(0.004)    | -0.006<br>(0.013)        |
| N                            | 1783                 | 1783                     | 1837                 | 1837                     |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The sample used for these specifications includes all parent-child pairs, regardless of EduFin status. The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex, race), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and MSA fixed effects.

Transfer amounts are in 10K of 2013\$.

<sup>2</sup> The variables  $H_{imt18j}$  and  $Y_{imt18j}$  were treated as endogenous in the 2SLS specifications and were instrumented with  $\Delta HPI_{mt18j}$  and  $\Delta W_{mt18j}^P$ . See Section 3.3 for a description of these instruments.

college and receiving a transfer. We again find significant positive effects of income on transfer amounts for parents of both races and homeownership statuses, though the magnitudes of the effects are larger. The effects remain larger for white families than for black families, though the gap is smaller (less than 3 times as large).

<sup>16</sup>Separate elasticities are computed for renters and homeowners, as well as by the parents' race, using means of *CollTrans* and *Y* for each subgroup.

## 4.2 Accounting for Distributional Differences in Parental Income and Wealth By Race

As we discuss in Section 4.1, estimating our multinomial logit specification of child college attendance and parental financing (5) using a control function strategy, we find significant differences by race in the effects of parental income and parental housing wealth. In our results, parental income decreases the likelihood of not attending college for children of white parents, regardless of their homeownership status, and increases the likelihood that they receive a financial transfer from their parents for college. For black families, parental income makes parental financial support for college more likely, but does not decrease the probability of not attending college. However, parental housing wealth does decrease the likelihood a child from a black families foregoes college, but does not increase the likelihood of parental support. Higher housing wealth for white parents increases the likelihood of helping to pay for college for their child, but does not make it more likely their child will attend college.

While we include extensive controls for parent characteristics, family structure, location, and local labor market conditions in our model, it is possible that our analysis fails to fully account for the differences between black and white families in the distribution of parental income and parental housing wealth. When we calculate the marginal effects of income ( $Y$ ) and wealth ( $H$ ) shown in Table 7, we hold most explanatory variables at their grand sample means, but we use the observed value of income and wealth for each observation in the calculation. Since black and white families are not distributed evenly throughout the joint income and equity distribution<sup>17</sup>, this means that our marginal effects are calculated around different points in the distribution on average, and we are not getting a true "apples-to-apples" comparison when we compare estimates between racial groups. Lovenheim and Reynolds (2013) find differing effects of changes to home equity by family income. It is likely that family income becomes increasingly important in college attendance and financing decisions for families with low net equity due to families having less housing wealth to utilize and increased difficulty for low-equity families in extracting wealth from their homes via a home equity loan.

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<sup>17</sup>White parents in our sample have much higher mean income and net equity than black parents (see Table 4)—\$97,400 compared to \$32,800 for net equity, and \$94,900 compared to \$48,000 for income. Further evidence of racial distributional differences can be found in Table B.1 and Table B.2 in Appendix B, which show the number of observations in each net equity and income quartile by race and weighted shared by race.

To address these concerns and check the robustness of the results in Table 7, we recalculate the marginal effects of income and wealth from our control function specification, holding parental wealth and income constant across race. Table 10 shows the results of these calculations. Panel A and Panel B show the marginal effects of income ( $Y$ ) and net equity ( $H$ ) for white parents and black parents, respectively, calculated at the weighted sample income and equity means of black parents. This gives an "apples-to-apples" comparison of the effects of wealth and income if black and white families had the same levels of financial resources available to them.

### 4.3 Children's College Attainment

The results from Panel A are very similar to our findings from Panel C of Table 7. The principal difference is that here we find positive effect of parental income for renters on the *EduFin1* margin as well as for *EduFin2*. A \$10,000 increase in parental income increases the likelihood of attending college without parental support by 1.26 percentage points. The estimated effects for black families are nearly identical to our findings from Panel D of Table 7. We again find no effect of income on the likelihood a child forgoes college, but an increased likelihood attending college with parental aid. We also still find that parental housing wealth decreases the likelihood of not attending college and increases the likelihood of attending college without financial transfers from parents.

Panels C and D of Table 10 show the marginal effects of income ( $Y$ ) and net equity ( $H$ ) for white and black parents, respectively, this time using the weighted sample means of equity and income of white parents. In the Panel C results for white parents, we now find a significant effect of net equity on the likelihood the child does not attend college, a \$10,000 increase in net equity decreasing this likelihood by 1.3 percentage points. The estimated effects for black families in Panel D show the same patterns as previous estimates.

In summary, after recalculating the marginal effects of parental income and parental housing wealth on child college attendance and parental financing decisions accounting for distributional differences between white and black families, our results remain consistent and robust. We find that parental income increases the likelihood the child attends college with financial support

from their parents for everyone regardless of race and homeownership status, although the effect is larger for homeowners. We also find that parental income decreases the likelihood that children decide to forego college white families, but not for black families. Finally, we find that parent’s net equity decreases the likelihood the child skips college and increases the likelihood of attending college without financial transfers from parents. There is some sensitivity in the estimated effect of housing wealth on the chances of not attending college for white families, but these effects are smaller in magnitude than the estimates for black families and not consistently significant.

In Table 11, we present the OLS and 2SLS estimates of the effects of parental income ( $Y_{imt_{18_j}}$ ) for renters and parental housing equity ( $H_{imt_{18_j}}$ ) for both renters and homeowners on college graduation ( $Grad_{ij,18_j}$ ) and subsequent post-graduate enrollment ( $PostGrad_{ij,18_j}$ ) for their child. As noted above, we provide separate estimates by parental race. Our OLS estimates in Panel A show no significant relationship between parental income and wealth and college graduation. The mean differences observed between children who attend college with financial support and those who attend college without parental aid are no longer evident once family characteristics such as parental age, family structure, education, and location are controlled for.

Our 2SLS estimates indicate that, once the endogeneity of parental income and housing wealth are controlled for, housing wealth increases the likelihood of graduation for children of white parents by 1.6 percentage points for a \$10,000 increase in net equity. We find no significant evidence of similar effects of wealth for black families. Instead, our estimates indicate that parental income increases the likelihood of graduation for children of black parents both for families who are renters and those who own homes. The effect of a \$10,000 increase in parental income is 5.3 percentage points for black renters, more than twice the magnitude as the effect for homeowners, 2.5 percentage points. Our 2SLS estimates for *PostGrad* in Panel B only show significant effects on post-graduate enrollment for children of black homeowners, where a \$10,000 increase in home equity increases the likelihood of enrollment by 1.1 percentage points. Expressing these estimates as elasticities as in Section 4.1, we find that the elasticity of college graduation with respect to parental income is 1.18 for children of black renters and 0.60 for children of black homeowners, compared to just 0.10 and 0.004 for children of white renters and

homeowners, respectively. The elasticity of graduation with respect to parental housing wealth is 0.45 for children of white parents, compared to 0.16 for children with black parents.

Here we again find differences by race in the effect of parental resources on graduation. It is interesting to note that these results, combined with our findings from Table 7 in Section 4.1 indicate that for black families, parental wealth increases college enrollment but not the likelihood of graduation, while parental income does have a positive effect on graduation, but does not make enrollment any more likely. A possible explanation for these patterns is that, although increases to housing wealth for black parents may provide sufficient additional resources and financial security to induce their child to enroll in college<sup>18</sup>, the difficulty for black families in extracting equity via home equity loans makes them unable to continue support for their children throughout their college experience, making graduation more difficult. We see this in the results in Section 4.1, where we find that housing wealth does not make black parents any more likely to give their children financial transfers for school. Black parents who experience increases in income (for which liquidity is not a concern the way it is for housing wealth) are both more likely to give money to their children for college and make larger transfers than those who do not. Parental financial assistance could be an important determinant in whether a child has support throughout all their years in college and are able to graduate.

In additional specifications discussed in Appendix D we estimate the effect of parental income and wealth on measures of college quality. We find small negative effects of income on annual tuition for black renters, and on the likelihood of attending a 4-year or private college for white renters.

In summary, our results from this section suggest that there are significant racial differences in the effect of parental housing wealth and parental income on their child's likelihood of graduation. Housing wealth is an important determinant of graduation for white children, whereas income matters more for whether black children graduate from college, and increases

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<sup>18</sup>One possible reason for this is that increases to net housing equity from appreciation to the parents' main residence are explicitly excluded from the calculated Expected Family Contribution (EFC) used to determine a child's eligibility for Pell grants and other forms of student financial assistance. The presence of additional family financial resources without decreasing student financial aid possibilities could explain why housing wealth increases enrollment, whereas increases to parental income – which *would* be included in EFC calculations and reduce expected grant awards – would not.

the likelihood of enrollment in graduate school for black renter families. Furthermore, the effect of income on the likelihood of graduation for black families is quite large in magnitude.

## 5 Conclusion

This paper builds upon the literature identifying the important role that parental financial resources play in whether their child enrolls in college, the type and quality of college attended, and whether their child graduates from college. Given the documented gaps between black and white families in wealth and income, as well as disparities between black and white students in post-secondary educational outcomes including, enrollment, college quality, graduation, and student debt, we explore the link between parental resources and financing of college for their children and these racial differences.

We use data from the PSID and leverage information from the 2013 Rosters and Transfers Module that details the incidence and amounts of financial transfers from parents to children for college. We construct instruments for the endogeneity of parents' income and net housing equity with college enrollment and financing choices and graduation using measures of changes to local labor market and housing market conditions. We use these instruments to estimate the effects of parents' net home equity and income on these educational outcomes. We obtain separate estimates for black and white families for comparison.

We find evidence of significant racial differences in the effects of parental income and housing wealth. We find that increases in parental income increase the likelihood that parents make financial transfer to their child to help pay for college for both black and white families. For white families, increases in parental income also increase the likelihood that their child enrolls in college, but does not for black families. Our results indicate that increases to parental housing wealth for black parents make it more likely that their child attends college, but does not increase the probability that the parents help pay for their child's college. Increases to white parent's wealth do not affect the likelihood that their child enrolls in college, but do raise the likelihood that the parents will offer financial support to their child. The effects of parental income and parental wealth on whether parents offer financial assistance for their child's college are similar

in size for white parents, while the effect of income is much larger than the effect of wealth for black families. These findings are robust to alternative estimates accounting for differences in the joint distribution of income and wealth between white and black families. We further find that increases to parent's income increases the amount of financial support offered to children, and the impact is much larger for white parents than for black parents.

The racial differences are evident in graduation from college as well. We find that increases to parent's housing wealth increases the probability of graduation for children of white parents but not for children of black parents, but increases to parental income increase the likelihood of graduation for black children but not white. The effects of parental income on graduation for black children are larger than the effects of parental wealth on graduation for white children. We also find evidence that increases to parent's income reduce the average annual tuition of the college attended by black children and the likelihood of attending a 4-year or private college for white children, but only for renters.

These findings are important because they establish the existence of racial differences in patterns of parental support for college. Prior research has identified that parental income and wealth affect college attendance and graduation, and that financial transfers from parents to child is a key mechanism through which this relationship works. Our results suggest that there are fundamental differences in the way this mechanism operates for housing wealth between black and white families. Even though black parents who experience increased housing wealth do not give their children more support for college, their children are still more likely to enroll. That black parents seem unable or unwilling to take advantage of their housing wealth to support their children's college education may play an important role in the documented racial gaps in educational outcomes, leading to the observed lower graduation rates and higher student loan debt<sup>19</sup> for black college students. It is the case that black parents are much less likely to own a home, and have lower home equity conditional on being a homeowner, but even comparing "apples to apples", black parents are less likely to take advantage of increases in wealth to pay for their child's college than white parents with similar resources.

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<sup>19</sup>In future work we will explore the role of college attendance and parental financing decisions on subsequent indebtedness for racial differences. A preliminary table of mean differences in indebtedness can be found in Appendix E.



Exploring these patterns further is an important topic for future research. There is some evidence that black families may be more constrained in their ability to obtain home equity loans than comparable white families. Testing the extent to which such constraints explain the differing responses to increases of housing wealth of black and white parents would be a valuable contribution to our understanding of the link between racial gaps in wealth and educational attainment.<sup>20</sup> Increases in parents' housing wealth do not impact their child's eligibility for needs-based financial aid in the form of pell grants, etc. the same way a similar increase in income or non-housing wealth would. This attribute of financial aid policy may reduce the effect of wealth on a parent's likelihood to offer financial support to their child for college relative to effect of income. Exploring the role of financial aid in the child's college attendance and parent's college financing decision could also be a fruitful avenue for future work.<sup>21</sup> Finally, understanding the relative contributions to the black-white gap in enrollment, graduation, and subsequent debt of initial racial gaps in wealth and income versus the liquidity constraints faced by black parents in extracting wealth from their homes to contribute to their child's college education could offer insight into areas of focus for public policy to address racial inequality in education.

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<sup>20</sup>In future work we will introduce specifications that include whether or not parent's have obtained a home equity loan in addition to their primary mortgage to explore the importance of liquidity constraints in extracting home equity. We also will explore using information collected in accordance with the Home Mortgage Disclosure Act (HMDA) to construct measures of mortgage application rejection rates by race for different geographic locations. We intend to use these measures as an instrument for the ability to borrow against one's home.

<sup>21</sup>In future work we intend to construct measures of eligibility for financial aid for each child in our sample to include in our model of college attendance and parental financing decisions.

TABLE 10. Marginal Effects of Changes in Wealth and Income on College and Financing Choices, Calculating MEs at Different Values of Income and Net Equity<sup>1</sup>

| Variable  | <i>Parents are Renters</i>  |   |                                     | <i>Parents are Home-owners</i> |   |                                     |
|---|-----------------------------|---|-------------------------------------|--------------------------------|---|-------------------------------------|
|   | EduFin0<br>(No Coll)<br>(1) | EduFin1<br>(Coll, but No Transfer)<br>(2) | EduFin2<br>(Coll & Transfer)<br>(3) | EduFin0<br>(No Coll)<br>(4)    | EduFin1<br>(Coll, but No Transfer)<br>(5) | EduFin2<br>(Coll & Transfer)<br>(6) |
| <i>Panel A. Control Function, White Parents, Income and Equity Means of Black Parents<sup>2</sup></i> |                             |   |                                     |                                |   |                                     |
| $Y_{imt_{18j}}$   | -0.0209***<br>(0.0065)      | 0.0126**<br>(0.0060)                      | 0.00829***<br>(0.0016)              | -0.0218**<br>(0.0099)          | 0.00876<br>(0.0080)                       | 0.0130***<br>(0.0050)               |
| $H_{imt_{18j}}$   |                             |   |                                     | -0.0138<br>(0.0091)            | 0.00141<br>(0.0068)                       | 0.0123***<br>(0.0047)               |
| <i>Panel B. Control Function, Black Parents, Income and Equity Means of Black Parents<sup>2</sup></i> |                             |   |                                     |                                |   |                                     |
| $Y_{imt_{18j}}$   | -0.0168<br>(0.0114)         | 0.0100<br>(0.0109)                        | 0.0068***<br>(0.0023)               | -0.0052<br>(0.0101)            | -0.0088<br>(0.0087)                       | 0.0140***<br>(0.0041)               |
| $H_{imt_{18j}}$   |                             |   |                                     | -0.0304**<br>(0.0106)          | 0.0358***<br>(0.0094)                     | -0.00542<br>(0.0044)                |
| N   | 1304                        | 1304                                      | 1304                                | 2420                           | 2420                                      | 2420                                |
| <i>Panel C. Control Function, White Parents, Income and Equity Means of White Parents<sup>3</sup></i> |                             |   |                                     |                                |   |                                     |
| $Y_{imt_{18j}}$   | -0.0231***<br>(0.0074)      | 0.0128*<br>(0.0066)                       | 0.0104***<br>(0.0023)               | -0.0193**<br>(0.0081)          | 0.0028<br>(0.0079)                        | 0.0165**<br>(0.0074)                |
| $H_{imt_{18j}}$   |                             |   |                                     | -0.0130*<br>(0.0076)           | -0.0037<br>(0.0057)                       | 0.0167***<br>(0.0065)               |
| <i>Panel D. Control Function, Black Parents, Income and Equity Means of White Parents<sup>3</sup></i> |                             |   |                                     |                                |   |                                     |
| $Y_{imt_{18j}}$   | -0.0190<br>(0.0125)         | 0.0098<br>(0.0115)                        | 0.0092**<br>(0.0038)                | -0.0038<br>(0.0090)            | -0.0133<br>(0.0087)                       | 0.0171***<br>(0.0066)               |
| $H_{imt_{18j}}$   |                             |   |                                     | -0.0282***<br>(0.0078)         | 0.0381***<br>(0.0085)                     | -0.00104**<br>(0.0038)              |
| N   | 1304                        | 1304                                      | 1304                                | 2420                           | 2420                                      | 2420                                |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex, race), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and state fixed effects.

The variables  $H_{imt_{18j}}$  and  $Y_{imt_{18j}}$  were treated as endogenous and were instrumented with  $\Delta HPI_{mt_{18j}}$  and  $\Delta W_{mt_{18j}}^P$ . See Section 3.3 for a description of these instruments.

Marginal effects are calculated separately for renters and homeowners, holding all covariate values at the sample mean for all parents with the appropriate home-ownership status, except for Income ( $Y_{imt_{18j}}$ ) and Net Equity ( $H_{imt_{18j}}$ ).

<sup>2</sup> For these specifications, marginal effects are calculated as above, and at the weighted income and net equity means of all black parents with the appropriate home-ownership status in our sample.

<sup>3</sup> For these specifications, marginal effects are calculated as above, and at the weighted income and net equity means of all white parents with the appropriate home-ownership status in our sample.

TABLE 11. Effects of Parents' Home Equity and Family Income on Probability of Child Graduating from College and Enrolling in Graduate School<sup>1</sup>

| Variable   | <i>White Parents</i> |                          | <i>Black Parents</i> |                          |
|--|----------------------|--------------------------|----------------------|--------------------------|
|  | OLS<br>(1)           | 2SLS <sup>2</sup><br>(2) | OLS<br>(3)           | 2SLS <sup>2</sup><br>(4) |
| <i>Panel A. Graduate from College</i> <sup>3</sup>     |                      |                          |                      |                          |
| Rent $\times Y_{imt18j}$                               | -0.002<br>(0.005)    | 0.005<br>(0.007)         | 0.007<br>(0.008)     | 0.053***<br>(0.019)      |
| Own Home $\times Y_{imt18j}$                           | 0.001<br>(0.002)     | -0.007<br>(0.006)        | 0.007<br>(0.005)     | 0.025**<br>(0.011)       |
| Own Home $\times H_{imt18j}$                           | 0.000<br>(0.001)     | 0.016*<br>(0.009)        | -0.002<br>(0.003)    | 0.012<br>(0.009)         |
| N  | 1134                 | 1134                     | 665                  | 665                      |
| <i>Panel B. Enroll in Graduate School</i> <sup>3</sup> |                      |                          |                      |                          |
| Rent $\times Y_{imt18j}$                               | -0.001<br>(0.005)    | 0.005<br>(0.008)         | 0.003<br>(0.004)     | 0.012<br>(0.012)         |
| Own Home $\times Y_{imt18j}$                           | -0.0001<br>(0.0013)  | -0.003<br>(0.003)        | 0.004<br>(0.003)     | 0.011**<br>(0.006)       |
| Own Home $\times H_{imt18j}$                           | 0.0004<br>(0.0005)   | 0.006<br>(0.0039)        | 0.00003<br>(0.0022)  | -0.004<br>(0.0041)       |
| N  | 1134                 | 1134                     | 665                  | 665                      |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and MSA fixed effects.

<sup>2</sup> The variables  $H_{imt18j}$  and  $Y_{imt18j}$  were treated as endogenous in the control function specification and were instrumented with  $\Delta HPI_{mt18j}$  and  $\Delta W_{mt18j}^P$ .

See Section 3.3 for a description of these instruments.

<sup>3</sup> Conditional on those students who attended college at age 18.

<sup>4</sup> Conditional on those students who attended a 4-year college at age 18.

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## **Appendix A PSID Oversampling of Black Families**

The main sample used in our analysis of child college attendance and parental financing decisions made by families in the PSID consists of 3,724 parent-child pairs, 1,841 with non-hispanic white parents and 1,883 with non-hispanic black parents. The number of black families at first glance may seem very large relative to the number of white families, since the percentage of the US population who are black was much lower than the percentage that were white during our study period of 1998-2013, 12.3% black in 2000, 12.6% black in 2010 (Grieco and Cassidy (2001), Humes, Jones and Ramirez (2011)). However, the high number of black families in our sample can be explained in large part due to (1) the sampling design of the original 1968 PSID survey; (2) choices made by the PSID in 1997 when the sample was reduced; (3) differential divorce rates by race; and (4) differential fertility by race.

### **Appendix A.1 Original Survey Design**

The Panel Study of Income Dynamics was launched in 1968. As a continuation of the Survey of Economic Opportunity (SEO) study started by the U.S. Bureau of the Census at the direction of the Office of Economic Opportunity to evaluate the success of the War on Poverty, it consisted of two components. First, a subsample of the 1966 and 1967 SEO sample, which oversampled census districts with large non-white populations. Second, a nationally representative sample from the national sampling frame used by the Survey Research Center (SRC) at the University of Michigan was also included. In its first year, the full 1968 PSID sample had 1,872 low income households from the SEO and 2,930 households from the SRC sample, which were nationally representative. As the low-income households from the SEO were more likely to include black respondents than the overall population, the PSID began with a higher number of black households than a truly nationally representative sample would be. These original 1968 PSID respondents passed on the "PSID gene" to their children, and on

to subsequent generations, who make up the sample we use in our analyses.<sup>22</sup> This sample includes descendants of 1968 PSID respondents from both the SEO and SRC portions, so we would expect a higher proportion of black families from which to draw parent-child pairs for our analyses than would be found in the general national population.

## Appendix A.2 1997 Sample Changes

By 1997 the number of households in the core PSID sample had grown to create a larger sample than it was feasible to continue to follow given the funding available. As a result, starting with the 1997 wave the PSID made several changes in order to reduce costs. One of these changes was a significant reduction in the PSID "core" sample, which was decreased in size by approximately one third. A portion of the SEO sample was dropped, including all non-black SEO sample members. Only black family trees were retained from the SEO sample, further increasing the number of black households relative to white (Heeringa and Connor (1999)).

In addition, there were 600 black PSID families with children under age 13 who were initially identified to be dropped from the study that were retained (or "reinstated") in order to participate in the new Child Development Supplement (CDS) to the PSID that was introduced in 1997 (Freedman and Schoeni (2016)). Not only did this further increase the number of black families in the PSID, it increased the number of black *parents* in particular. Since the sample we use in our analyses includes only households with children that turn 18 between 1998 and 2013, this choice to "reinststate" black parents led to a larger number of black parent-child pairs being available for us to use.

As a result of these choices, in 1997 30.6% of all PSID households had a black head, compared to only 12% of all households in the 1997 CPS. 33.5% of all individuals in 1997 PSID were black, compared to 12.8% of all individuals in 1997 CPS.

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<sup>22</sup>More information about the design and history of the PSID can be found in McGonagle et al. (2012)



### Appendix A.3 Differential Divorce Rates and Fertility by Race

In the sample we use for our analyses in this paper, it is possible for children to appear more than once. If a child's parents are divorced and both parents are PSID respondents, then two distinct parent-child pairs could be formed, one to each parent, and the child would appear twice. If divorce rates differ by race and black parents are more likely to separate than white parents, this could lead to more children of black parents to be "double counted" in this way, increasing the number of black parents further relative to white parents.

It appears to be the case that black parents in our sample are more likely to be separated than white parents. In our sample, 60% of all black parent households are headed by a single parent, compared to only 21% of white parent households (see Table 2). Furthermore, it is the case that only 4.6% (85) of children of white parents appear twice in our sample, compared to 7.3% (137) of children of black parents.

Finally, it is also possible for *parents* to be "double counted" in our sample if they have more than one child reach the age of 18 during our sample period of 1998 to 2013. If black parents are more likely to be "double counted" in this way, this would further increase the number of black families relative to white families. There is evidence of just such a racial gap in fertility in our sample. Black parent households in our sample have on average 2.0 children under 16 in their households, compared to 1.93 children on average for white parent households (see Table 2). 936 (51%) of white parents in our sample have at least one additional child under 16 in their household, compared to 1,149 (61%) of black parents.

## Appendix B Number of Black and White Parents by Net Equity and Income Quartiles

TABLE B.1. Number of Observations in Housing Wealth and Income Quartiles by Race<sup>1</sup>

| Net Equity Quartile  | Income Quintile |     |     |     | Total |
|----------------------|-----------------|-----|-----|-----|-------|
|                      | 1st             | 2nd | 3rd | 4th |       |
| <i>White Parents</i> |                 |     |     |     |       |
| 1st                  | 160             | 129 | 79  | 42  | 410   |
| 2nd                  | 68              | 133 | 92  | 40  | 333   |
| 3rd                  | 35              | 110 | 227 | 150 | 522   |
| 4th                  | 26              | 79  | 142 | 329 | 576   |
| Total                | 289             | 451 | 540 | 561 | 1841  |
| <i>Black Parents</i> |                 |     |     |     |       |
| 1st                  | 626             | 276 | 101 | 26  | 1029  |
| 2nd                  | 144             | 155 | 99  | 16  | 414   |
| 3rd                  | 65              | 129 | 79  | 49  | 322   |
| 4th                  | 16              | 28  | 35  | 38  | 117   |
| Total                | 851             | 588 | 314 | 129 | 1882  |

<sup>1</sup> The sample uses for this table corresponds exactly to the sample used to produce Table 5. Income and net equity quartile cutpoints were determined from the full sample of white and black parents pooled together.

TABLE B.2. Shares of Parents in Housing Wealth and Income Quintiles by Race<sup>1</sup>

| Net Equity Quartile  | Income Quintile |        |          |          | Total   | Quantile Max |
|----------------------|-----------------|--------|----------|----------|---------|--------------|
|                      | 1st             | 2nd    | 3rd      | 4th      |         |              |
| <i>White Parents</i> |                 |        |          |          |         |              |
| 1st                  | 10.33%          | 6.80%  | 3.89%    | 2.04%    | 23.05%  | \$0          |
| 2nd                  | 4.20%           | 6.85%  | 4.49%    | 2.17%    | 17.71%  | \$27.4k      |
| 3rd                  | 2.35%           | 5.92%  | 11.77%   | 8.01%    | 28.06%  | \$79.2k      |
| 4th                  | 1.51%           | 4.05%  | 7.21%    | 18.40%   | 31.18%  | \$2,062k     |
| Total                | 18.39%          | 23.63% | 27.36%   | 30.62%   | 100.00% |              |
| <i>Black Parents</i> |                 |        |          |          |         |              |
| 1st                  | 34.12%          | 16.17% | 7.65%    | 1.89%    | 59.82%  | \$0          |
| 2nd                  | 8.83%           | 6.52%  | 4.34%    | 0.76%    | 20.44%  | \$27.4k      |
| 3rd                  | 2.49%           | 6.21%  | 3.95%    | 2.33%    | 14.98%  | \$79.2k      |
| 4th                  | 1.15%           | 1.38%  | 0.74%    | 1.49%    | 4.76%   | \$2,062k     |
| Total                | 46.58%          | 30.29% | 16.67%   | 6.46%    | 100.00% |              |
| Quantile Max         | \$37.4k         | \$68k  | \$107.1k | \$1,021k |         |              |

<sup>1</sup> The sample uses for this table corresponds exactly to the sample used to produce Table 5. Income and net equity quartile cutpoints were determined from the full sample of white and black parents pooled together.

Weighted percentages calculated using PSID family weights.

## Appendix C Additional Analysis of the Effects of Changes in Wealth and Income on the Amount of Parental Financing for Child's College

TABLE C.1. Effects of Changes in Wealth and Income on Amount of Parental Financing, Conditional on Attending College with Parental Financial Assistance<sup>1</sup>

| Variable                        | <i>White Parents</i> |                     | <i>Black Parents</i> |                    |
|---------------------------------|----------------------|---------------------|----------------------|--------------------|
|                                 | OLS                  | 2SLS <sup>2</sup>   | OLS                  | 2SLS <sup>2</sup>  |
|                                 | (1)                  | (2)                 | (3)                  | (4)                |
| Rent $\times Y_{imt_{18j}}$     | 0.087<br>(0.090)     | 0.238**<br>(0.110)  | 0.040<br>(0.039)     | 0.172*<br>(0.088)  |
| Own Home $\times Y_{imt_{18j}}$ | 0.109***<br>(0.030)  | 0.265***<br>(0.088) | 0.077***<br>(0.020)  | 0.095**<br>(0.038) |
| Own Home $\times H_{imt_{18j}}$ | 0.030<br>(0.028)     | 0.001<br>(0.047)    | -0.055*<br>(0.027)   | 0.027<br>(0.049)   |
| N                               | 644                  | 644                 | 191                  | 191                |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex, race), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and MSA fixed effects.

Transfer amounts are in 10K of 2013\$.

<sup>2</sup> The variables  $H_{imt_{18j}}$  and  $Y_{imt_{18j}}$  were treated as endogenous in the control function specification and were instrumented with  $\Delta HPI_{mt_{18j}}$  and  $\Delta W_{mt_{18j}}^P$ . See Section 3.3 for a description of these instruments.

# Appendix D Racial Differences in The Role of Parental Income and Wealth on Additional College Outcomes

## Appendix D.1 Data and Measures

To examine the consequences of college attendance and financing decisions on educational and financial outcomes, we examine the parent-child pairs in our main sample in the year in which the child turns 24. This limits the sample to parent-child pairs in which the child turned 18 prior to 2009.<sup>23</sup> For the outcome of parental debt, this restriction yields a sample size of 3,352 (1,674 white parent households and 1,678 black) for housing debt and 3,331 (1,665 white and 1,666 black) for non-housing debt that includes credit card debt, and auto loan debt. For the outcome of college completion, we further limit the sample to children who attended college which yields a sample size of 1,418 parent-child pairs.

Measures of college quality and child indebtedness are only available for two subsamples of children: (a) those who are a PSID head or wife by age 24 or (b) those who are members of their parents' household at age 24 but are interviewed as part of the Transition to Adulthood (TA) study. The TA study has followed children in the PSID's Child Development Study (CDS) as they become adults. The TA study includes questions about which college children attended as well as information on income and debt. Using these two sources of data, we construct a total sample of 2,229 adult children with which to analyze their non-housing debt at age 24 (1,250 with white parents and 1,049 with black parents) and 1,678 with which to analyze student loan debt at that age (864 with white parents and 814 with black parents). We have a smaller sample of children to analyze student debt at age 24 because the PSID only started asking about this source of debt separately in 2011. For the outcomes of college cost and quality, we further limit the sample to children who attended college and whose college can be linked to the data

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<sup>23</sup>If the relevant data are not available for the child or parent in the year in which the child is age 24 we go back one year at a time until the child is age 22 and forward one year at a time until the child is 27.

from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) database which yields a sample size of 846 (634 white and 212 black) for tuition and 844 (633 white and 211 black) for four-year degree status. Public/private status of the college and our measure of college quality which we construct from the IPEDS data are only available for children who attend a four-year college which limits our sample to 682 (517 white and 165 black) for public/private college status, and 675 (512 white and 163 black) for college quality.

*College Cost and Quality:* We link responses from the main PSID interview or the TA study on the college attended to measures of college cost and quality available from the National Center for Education Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS) database. We obtain the annual tuition costs for a full-time student at that institution in the year they would have started college. In doing so we use the state of residence of the parent at that time to determine whether children would have paid in-state or out-of-state tuition at any public institutions.<sup>24</sup> For college quality we use three separate measures. First, we measure whether the institution grants 4-year degrees. Second, we use whether a child attended a private university, where we restrict our attention to students who attend a 4-year university. Finally, we use the college quality index used in Black and Smith (2004), Black, Smith and Daniel (2005), Black and Smith (2006), Dillon and Smith (2017a), and Dillon and Smith (2017b).<sup>25</sup> The index is based on the following measures of colleges' selectivity and resources: college's mean SAT or ACT scores; percent of applications rejected; average salary of faculty involved in instruction; and the undergraduate faculty-student ratio.<sup>26</sup> The index is the first principal component of these four indicators of college quality measured in 2008.<sup>27</sup>

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<sup>24</sup>We use in-state tuition if the parents resided in the same state as the institution in the year the child turned 18, and out-of-state tuition otherwise.

<sup>25</sup>We thank Nora Dillon and Jeff Smith for providing us with the latest version of these quality indices for 4-year and 2-year colleges in the U.S.

<sup>26</sup>These dimensions of quality for colleges in the U.S. are obtained from the Integrated Post-Secondary Education Data System (IPEDS) and college rankings by *U.S. News & World Report*.

<sup>27</sup>The particular version of college quality index we use takes on values from  $-9$  to  $+9$  and is constructed to have a mean of 0 across all of 4-year colleges and universities in the U.S.

We obtain the annual tuition costs for a full-time student at that institution in the year they would have started college, which we denote by the variable  $Tuition_{ij,18_j}$ . We measure whether the institution was a 4-year college or university, denoted by the variable  $4YrColl_{ij,18_j}$ , and whether it was a private institution, denoted by the dummy variable  $Private_{ij,18_j}$ . We denote the quality index described above by  $Quality_{ij,18_j}$ .

Table 6 shows the mean values for each of the measures described above for the children in our family. Means are shown separately by race of each child’s parents, for all college attendees, for children who attend college without parental support ( $EduFin1$ ), and for children who attend college and receive a financial transfer from their parents ( $EduFin2$ ). Children from white families are more likely to attend a 4-year institution, and attend a private institution than children from black families. They also attend more expensive (\$10,166 per year versus \$7,324) and higher quality colleges on average.

## Appendix D.2 Empirical Results

We estimate (19) as described in Section 3.4, substituting  $CollOut_q = Tuition, 4YrColl, Private,$  and  $Quality$ .

In Table D.3, we present OLS and 2SLS estimates of the effects of parental net equity and parental income on different measures of quality for the colleges each child attended, in the year the child turned 18. In Panel C we show the effects on annual tuition costs ( $Tuition$ ). Our results indicate that for black parents who rent their homes, income has significant negative effect on the average tuition of the college their child attends. A \$10,000 increase in income decreases the mean tuition of their child’s college by \$1,724.8 on average, a sizable change from the overall mean tuition of \$7,324 for all black college students in our sample. We find no significant effects of income or wealth on tuition for black homeowners, nor do we find any effects of income or wealth on any of the other college quality measures for black families.

We do not find any significant effect of income on tuition for white families. Our results

do show that children of white parents who experience an increase in net equity do attend slightly more expensive schools on average (only \$117.7 higher than the mean of \$10,166), but this disappears when the endogeneity of net equity is accounted for in the 2SLS specification. Panel D and Panel E suggest that for white families who rent their homes, a \$10,000 increase in parental income decreases the likelihood their child attends a 4-year college and they attend a private college, by 2.6 and 2.9 percentage points, respectively. A similar increase in housing wealth for white parents decreases the likelihood of their child attending a 4-year college by 1.2 percentage points.

TABLE D.1. Annual Tuition, Types of College, and College Quality<sup>1</sup>

|  | Attended<br>College | EduFin1<br>(Coll, but<br>No Transfer | EduFin2<br>(Coll &<br>Transfer |
|--|---------------------|--------------------------------------|--------------------------------|
| <i>White Parents</i>                                     |                     |                                      |                                |
| Annual Tuition ( <i>Tuition</i> ) <sup>2</sup>           | \$10166             | \$8290                               | \$11461                        |
| Attended 4-year College ( <i>4YrColl</i> ) <sup>2</sup>  | 0.81                | 0.75                                 | 0.85                           |
| Attended Private College ( <i>Private</i> ) <sup>3</sup> | 0.41                | 0.39                                 | 0.43                           |
| College Quality Index ( <i>Quality</i> ) <sup>3</sup>    | 0.31                | -0.02                                | 0.50                           |
| <i>Black Parents</i>                                     |                     |                                      |                                |
| Annual Tuition ( <i>Tuition</i> ) <sup>2</sup>           | \$7324              | \$7047                               | \$8019                         |
| Attended 4-year College ( <i>4YrColl</i> ) <sup>2</sup>  | 0.67                | 0.67                                 | 0.66                           |
| Attended Private College ( <i>Private</i> ) <sup>3</sup> | 0.36                | 0.36                                 | 0.36                           |
| College Quality Index ( <i>Quality</i> ) <sup>3</sup>    | -0.21               | -0.23                                | -0.15                          |

<sup>1</sup> Statistics weighted using PSID family weights. Tuition amounts are in 2013\$.

<sup>2</sup> Conditional on those students who attended a 4-year college at age 18.

<sup>3</sup> Conditional on those who attended a 4-year college at age 18



TABLE D.2. Effects of Parents' Home Equity and Family Income on the Type of College their Child Attends<sup>1</sup>

| Variable  | <i>White Parents</i> |                          | <i>Black Parents</i> |                          |
|---|----------------------|--------------------------|----------------------|--------------------------|
|   | OLS<br>(1)           | 2SLS <sup>2</sup><br>(2) | OLS<br>(3)           | 2SLS <sup>2</sup><br>(4) |
| <i>Panel C. Annual Tuition Costs<sup>3</sup></i>    |                      |                          |                      |                          |
| Rent $\times$ $Y_{imt18j}$                          | -273.7<br>(236.4)    | -207.8<br>(381.2)        | -1216.6**<br>(485.0) | -1724.8**<br>(719.0)     |
| Own Home $\times$ $Y_{imt18j}$                      | 6.4<br>(54.4)        | 117.6<br>(171.8)         | -474.6<br>(296.2)    | -510.8<br>(449.9)        |
| Own Home $\times$ $H_{imt18j}$                      | 117.7**<br>(50.8)    | -75.07<br>(228.4)        | -283.6<br>(256.1)    | -649.6<br>(513.0)        |
| N   | 693                  | 693                      | 238                  | 238                      |
| <i>Panel D. Attended 4-Year College<sup>3</sup></i> |                      |                          |                      |                          |
| Rent $\times$ $Y_{imt18j}$                          | -0.016***<br>(0.006) | -0.026***<br>(0.009)     | -0.025<br>(0.031)    | -0.078<br>(0.052)        |
| Own Home $\times$ $Y_{imt18j}$                      | -0.001<br>(0.002)    | 0.003<br>(0.005)         | -0.010<br>(0.012)    | -0.023<br>(0.025)        |
| Own Home $\times$ $H_{imt18j}$                      | 0.002<br>(0.002)     | -0.012*<br>(0.007)       | 0.014<br>(0.011)     | 0.012<br>(0.015)         |
| N   | 692                  | 692                      | 237                  | 237                      |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex, race), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and MSA fixed effects.

<sup>2</sup> The variables  $H_{imt18j}$  and  $Y_{imt18j}$  were treated as endogenous in the control function specification and were instrumented with  $\Delta HPI_{mt18j}$  and  $\Delta W_{mt18j}^P$ . See Section 3.3 for a description of these instruments.

<sup>3</sup> Conditional on those students who attended college at age 18.

<sup>4</sup> Conditional on those students who attended a 4-year college at age 18.

TABLE D.3. Effects of Parents' Home Equity and Family Income on the Average Tuition and Quality of the College their Child Attends<sup>1</sup>

| Variable  | <i>White Parents</i> |                          | <i>Black Parents</i> |                          |
|---|----------------------|--------------------------|----------------------|--------------------------|
|   | OLS<br>(1)           | 2SLS <sup>2</sup><br>(2) | OLS<br>(3)           | 2SLS <sup>2</sup><br>(4) |
| <i>Panel E. Attended Private College</i> <sup>4</sup> |                      |                          |                      |                          |
| Rent $\times Y_{imt18j}$                              | -0.016<br>(0.014)    | -0.029**<br>(0.014)      | -0.048<br>(0.039)    | -0.045<br>(0.038)        |
| Own Home $\times Y_{imt18j}$                          | -0.001<br>(0.003)    | -0.003<br>(0.009)        | -0.007<br>(0.024)    | 0.005<br>(0.042)         |
| Own Home $\times H_{imt18j}$                          | 0.003<br>(0.003)     | -0.008<br>(0.013)        | -0.024<br>(0.018)    | -0.073<br>(0.062)        |
| N   | 555                  | 555                      | 179                  | 179                      |
| <i>Panel F. College Quality Index</i> <sup>4</sup>    |                      |                          |                      |                          |
| Rent $\times Y_{imt18j}$                              | 0.034<br>(0.022)     | 0.033<br>(0.031)         | 0.021<br>(0.071)     | 0.019<br>(0.073)         |
| Own Home $\times Y_{imt18j}$                          | 0.024**<br>(0.010)   | 0.019<br>(0.030)         | 0.003<br>(0.043)     | -0.041<br>(0.116)        |
| Own Home $\times H_{imt18j}$                          | 0.017*<br>(0.009)    | 0.002<br>(0.029)         | 0.010<br>(0.033)     | 0.094<br>(0.166)         |
| N   | 550                  | 550                      | 177                  | 177                      |

<sup>1</sup> Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The explanatory variables included in these regressions are as follows: characteristics of parents when child was 18 (age, marital status, family structure, education, sex, race), sex of child, average weighted wage rates for young people, employment rate when the child was 18, the high school and college wage premium, year fixed effects, and MSA fixed effects.

<sup>2</sup> The variables  $H_{imt18j}$  and  $Y_{imt18j}$  were treated as endogenous in the control function specification and were instrumented with  $\Delta HPI_{mt18j}$  and  $\Delta W_{mt18j}^P$ . See Section 3.3 for a description of these instruments.

<sup>3</sup> Conditional on those students who attended college at age 18.

<sup>4</sup> Conditional on those students who attended a 4-year college at age 18.

## Appendix E Parent and Child Debt, Post-College

### Appendix E.1 Measures

*Parental and Child Indebtedness:* We consider several forms of indebtedness for both parents and their children. For parents, we consider mortgage debt, the sum of all their primary and secondary mortgages along with home equity loans, and all other non-housing debt, including outstanding credit card and medical debt, as well as other outstanding loans. These measures are obtained in the PSID wealth module which has been included in every survey since 1997. For children, we examine debt in the form of outstanding student loans, as well as total other non-housing debt. Student loan debt is obtained from the TA survey and from the PSID wealth module after 2011. Total non-housing debt is measured in the TA survey and in the PSID wealth module.

TABLE E.1. Parents' and Child's Debt when Child Age 24, by College Attendance and Financing Decisions<sup>1</sup>

| Variable             | Full Sample | EduFin0<br>(No Coll) | EduFin1<br>(Coll, but No Transfer) | EduFin2<br>(Coll & Transfer) |
|----------------------|-------------|----------------------|------------------------------------|------------------------------|
| <b>Parents' Debt</b> |             |                      |                                    |                              |
| <i>White Parents</i> |             |                      |                                    |                              |
| Mortgage Debt        | \$6.62      | \$3.62               | \$5.93                             | \$10.03                      |
| Other Debt           | \$1.39      | \$0.88               | \$1.42                             | \$1.85                       |
| <i>Black Parents</i> |             |                      |                                    |                              |
| Mortgage Debt        | \$2.46      | \$1.78               | \$2.99                             | \$5.20                       |
| Other Debt           | \$0.70      | \$0.42               | \$1.16                             | \$1.05                       |
| <b>Child's Debt</b>  |             |                      |                                    |                              |
| <i>White Parents</i> |             |                      |                                    |                              |
| Other Debt           | \$1.21      | \$0.78               | \$1.62                             | \$1.28                       |
| Student Debt         | \$1.12      | \$0.18               | \$1.70                             | \$1.56                       |
| <i>Black Parents</i> |             |                      |                                    |                              |
| Other Debt           | \$0.53      | \$0.27               | \$0.95                             | \$0.95                       |
| Student Debt         | \$0.53      | \$0.20               | \$1.04                             | \$1.29                       |

<sup>1</sup> Statistics weighted using PSID family weights. All debt amounts are in 10K of 2013\$.