The Racial Wealth Gap, Financial Aid, and College Access

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ABSTRACT

We examine how the racial wealth gap interacts with federal financial aid in American higher education to generate a disparate impact on college access and outcomes. Retirement savings and home equity are excluded from the formula used to estimate the amount a family can afford to pay. All else equal, omitting those assets mechanically increases the financial aid available to families that hold them. White families are more likely to own those assets, and in larger amounts. We document this issue and explore its relationship with observed differences in college attendance, types of institutions attended, degrees attained, and education debt using data from the Survey of Consumer Finances (SCF), the National Postsecondary Student Aid Study (NPSAS), and the Panel Study of Income Dynamics (PSID). We show that this treatment of assets provides an implicit subsidy worth thousands of dollars annually to white students from families with above-median incomes relative to Black students and Hispanic students with similar family incomes. This gap is associated with differences in educational advancement and loan levels, particularly between white and Black students. It may explain 10 to 15 percent of observed differences in certain college outcomes between white students and Black students and Hispanic students.

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The purpose of the federal financial aid system is to reduce the monetary constraint that families with fewer financial resources face in sending their children to college.[1] Applicants enter a large amount of personal and financial information about themselves and their parents into the Free Application for Federal Student Aid (FAFSA). Those responses are then used to estimate an "expected family contribution" (EFC). Families with lower incomes and lower levels of wealth are expected to contribute less and are eligible for more financial aid. The federal formula used to calculate EFC is neutral with respect to a student's race or ethnicity; indeed, data on race or ethnicity is not even collected on the FAFSA.

Nevertheless, a race-neutral formula can generate a disparate impact among Black and Hispanic families if the underlying inputs are correlated with race and ethnicity.[2] For instance, assigning police officers to geographic locations today based on the spatial distribution of arrests in the past would not be race-neutral if historical arrest rates were the result of racially disparate policing practices (cf. Richardson, Schultz, and Crawford, 2019).

Brown (2021) documents that the United States tax code suffers from a similar problem. For instance, income contributed to retirement accounts is tax deferred. Homeowners also have the option of deducting from their taxable income most or all of mortgage interest or property taxes incurred on their primary residence.[3] Black families are less likely to benefit from those tax

[1] The analysis provided in this paper focuses on dependent students because we are concerned with how the racial gap in family wealth may lead to disparate outcomes for children. We acknowledge the myriad challenges faced by adult learners and independent students more generally.

[2] Throughout this paper, we refer to disparate impact as the effect of policies, practices, rules, or systems that appear to be neutral but result in a disproportionate negative impact on a protected group (in this paper, members of racial/ethnic minority groups).

[3] The 2017 Tax Cuts and Jobs Act reduced the likelihood that families itemize their deductions by increasing the standard deduction, among other changes, reducing the value of the mortgage interest deduction (Eastman, 2019).

advantages because retirement savings and home ownership are less common for them (Bhutta, et al., 2020).[4]

In this paper, we consider the college financial aid system as another example of an objectively race-neutral policy that appears to have a disparate impact on members of racial and ethnic minority groups.[5] This impact is focused on those students typically from Black families and Hispanic families with above median incomes. It occurs because the federal formula used to compute EFC does not factor in retirement savings and home equity associated with the parents' primary residence. Families that hold those forms of wealth have greater financial resources (albeit not necessarily liquid resources) available to help pay for their child's college education. Omitting those assets from consideration in financial aid formulas makes college relatively more affordable for the families who hold them. Consequently, the racial and ethnic disparities in the ownership of such assets, which largely exist among those in the upper half of the income distribution, make college relatively more affordable for these white students than for Black students or Hispanic students at those income levels.

The differential treatment of assets in the financial aid system can have negative societal effects if it alters educational and economic outcomes. Chetty, et al. (2020) document the improvements in social mobility associated with a college education. To the extent that the federal financial aid system disadvantages certain Black students and Hispanic students, it could frustrate progress towards greater equality in income and wealth. The substantial Black-white

[4] Bankruptcy laws in the United States provide similar advantages for white families since they exempt some level of home equity (Auclert, Dobbie, and Goldsmith-Pinkham, 2019), a benefit which is larger for white families because of their greater propensity to own homes.

[5] Bleemer and Mehta (2022) provide another example of ways in which seemingly race-neutral higher education policies can have disparate impacts on Black, Hispanic, and Native American students. In their analysis, they find that GPA cutoffs to major in popular disciplines at public universities contribute to racial/ethnic gaps in college major, restricting access to higher-paying fields for these students.

wealth gap has stagnated since the mid-20th century (Derenoncourt, et al., 2021) for a variety of reasons, including structural factors.

To examine the effect of the racial wealth gap on postsecondary outcomes, we initially use data from the 2019 Survey of Consumer Finances (SCF) to conduct a simulation exercise.[6] We demonstrate how the racial wealth gap interacts with institutional features of the federal financial aid system to generate differences in college affordability by race and ethnicity, conditional on family income. After that, we present a descriptive analysis using data from the 2015-2016 National Postsecondary Student Aid Study (NPSAS) highlighting how these differences in affordability across groups are consistent with patterns by race/ethnicity and income in college enrollment and how parents and students pay for college once enrolled. Finally, we conduct an econometric analysis using data from the Panel Study of Income Dynamics (PSID) that examines the role that the racial wealth gap and the treatment of uncounted assets likely plays in determining children's educational opportunity and outcomes.

The results of our analyses suggest that the treatment of wealth by the federal financial aid system generates disparities in college affordability by race and ethnicity mainly among students from families with incomes above the median. For most families with below median incomes, wealth holdings are so low that the differential treatment of some forms of wealth is largely moot. This result is consistent with past research that shows assets play a relatively small role in determining financial aid awards in the aggregate (Dynarski and Scott-Clayton, 2006). It is also consistent with the "simplified needs test" built into the federal financial aid system that

[6] In all analyses, we focus on Black students and Hispanic students compared with white students, omitting a separate analysis of other racial and ethnic groups, including students of Asian American and Pacific Islander background. We do so partly because of insufficient sample sizes in the data we use and partly because wealth disparities are particularly prevalent and relevant for our analysis for Black students and Hispanic students. We also note that white, Black, and Hispanic students are mutually exclusive categories (i.e., white students and Black students are not also included in the category of Hispanic students).

allows students with family incomes below $50,000 ($60,000 starting in 2024) to skip entering information on asset holdings (Congressional Research Service, 2022).

White students from families with above-median incomes with equal calculated EFCs as Black students and Hispanic students often have parents with substantially greater uncounted assets than their counterparts. Those assets make college relatively more affordable for them. In essence, the formula mechanically increases the amount of available financial aid relative to a scenario in which housing/retirement wealth is treated in the same way as other savings. The result is an implicit subsidy associated with families' holdings of uncounted assets. For families with incomes between $75,000 to $125,000, who are typically eligible for financial aid at four-year residential colleges, the value of the implicit subsidy associated with uncounted assets is around $3,000 greater for white students than for Black students. For those with incomes between $125,000 and $250,000, who often are eligible for financial aid at four-year, residential private institutions, the gap in this implicit subsidy by race is around $12,000.

These implicit subsidies are correlated with differences in educational outcomes by race and ethnicity. For instance, data from NPSAS show that white students in above-median income groups are more likely to enroll at institutions that charge higher prices. Even among higher-EFC students attending institutions that cost roughly the same amount, white parents provide about the same level of financial support to pay for college as Black parents, but Black parents borrow more extensively to provide the financial support.

We also estimate multivariate models of college enrollment and attainment that provide evidence consistent with a causal relationship between uncounted assets and college affordability. We examine several types of educational outcomes in the PSID, including enrollment, type of institution attended, completion, and student borrowing. We relate those

outcomes to the extent of parents' uncounted assets prior to college attendance, controlling for income and counted assets along with other indicators of socio-economic status, race/ethnicity, and, in some specifications, previous academic performance. Income and counted assets are factored into the determination of federal financial aid, making college less expensive for those who can afford to pay less. That should dampen their independent effect on college outcomes. The federal financial aid formula ignores uncounted assets, however, suggesting that variation in them may have a greater impact on college outcomes.

Our results are consistent with those predictions. We find that greater levels of uncounted assets appear to directly contribute to differences in the examined educational outcomes. Their estimated impact is greater than the independent effect of family incomes and counted assets. Differences in these uncounted assets between white students and Black students alone can explain 10 to 15 percent of the college enrollment, completion, and debt gaps between these students. We detect similar contributions by differences in uncounted assets for Hispanic students compared with white students when it comes to explaining gaps in college completion and loan burdens.

We acknowledge that it is challenging to unequivocally conclude that the identified relationships are causal based on any single data source or analysis in this paper. Nevertheless, the weight of the evidence, taken together, is consistent with an interpretation that the treatment of uncounted assets in the federal financial aid system leads to disparities in college access and outcomes, with Black students experiencing the largest disparities.

I. Institutional Details Regarding the Financial Aid System

How much financial aid should a student receive? A need-based financial aid award is generally capped at a level defined as financial need, which represents an institution's cost of

attendance (COA) less the amount the family is estimated to be able to pay. The COA is a broad measure of college costs, including tuition, living expenses that may include room and board, and other miscellaneous expenses, like books and travel. Each institution of higher education that participates in the federal financial aid program is required to report the total amount.

The harder part of the process is determining how much a family can afford to pay, a concept that is inherently nebulous. Despite the obvious difficulties in defining and measuring it, the financial aid system includes such a calculation based on the information that students provide in the Free Application for Federal Student Aid (FAFSA).[7] The result of those calculations is called the "expected family contribution," or EFC.[8]

The EFC label is a misnomer because it forms the basis for determining what a student will pay to attend college, but it is not the exact amount that a student will pay.[9] First, it focuses on out-of-pocket expenditures, ignoring required "contributions" from expected loans and student employment. The combination of all forms of expected payments is labeled the net price. Second, most schools expect students eligible for financial aid to pay out-of-pocket more than the "EFC" (i.e. more than they can "afford"). These schools do not "meet full need."

Figure 1 dramatically simplifies the key characteristics of the financial aid system, relating EFC to net price at different types of institutions (Levine, 2022). The dotted line represents net prices charged at institutions that meet full need. After accounting for expected loans and student employment, the net price rises dollar for dollar with EFC until the COA is

[7] Roughly 400 largely private colleges and universities also require students to complete a more detailed financial aid form, the CSS Profile. That form also asks about home equity; many institutions that require students to complete the CSS Profile do count at least some of that home equity in determining their financial aid awards. The vast majority of college students, though, attend institutions that rely exclusively on FAFSA. We will restrict our analysis to the details of that system.

[8] The federal government avoids labeling the EFC as a measure of ability to pay (https://studentaid.gov/complete-aid-process/how-calculated, accessed 11/28/2021), but that is how it is used.

[9] It is being renamed the Student Aid Index (SAI) beginning in 2023 because of this labeling problem.

reached. At institutions that do not meet full need, net price is higher at each level of EFC, incorporating some level of "unmet need." The slope of that line may be less than one, but it is shown here with that slope as well for simplicity. Merit-based awards are also included for these institutions. Those awards often substitute for need-based awards, at least partially, for students with financial need and largely benefit students from higher-income families (Levine, 2022). The key lesson from this figure is that the calculation of EFC is the single-most important component of determining how much a student will pay for college at an individual institution, particularly for those who cannot afford to pay the sticker price, which is most families. Different institutions may have different profiles relating EFC to net price, but within an institution, EFC is the factor that matters the most in determining the family's contribution.

EFC is determined by the information students provide on the FAFSA form they submit. That form is notoriously complicated. Questions 88 through 90 focus on wealth, asking about the "current balance of cash, savings, and checking accounts" (question 88), the value of "parents investments, including real estate" (question 89), and the value of "current businesses and/or investment farms" (question 90). Question 89 specifically indicates "**Don't include** the home in which your parents live (emphasis included)." It also directs applicants to a note, which indicates that "**investments do not include** … retirement plans (401[k] plans, pension funds, annuities, non-education IRAs, Keogh plans, etc.)" (emphasis included).

The argument in favor of ignoring home equity and retirement savings is that families should not be expected to liquidate their homes or lose their retirement savings to pay for a child's college education.[10] From an economic perspective, however, those with greater resources have a greater ability to pay than those with lesser. Edlin (1993) argues in favor of an

[10] Mullaney (2019) expresses concerns along these lines.

approach based on permanent income, but a blend of current income and assets may be the closest feasible approach of capturing that concept.[11]

II. The Racial Wealth Gap and College Affordability: A Mechanical Relationship

The racial wealth gap interacts with these institutional features of the federal financial aid system to generate racial disparities in the amount that students and their families can afford to pay for college *between students with the same EFC*. The presence of this wealth gap has been documented previously (Bhutta, et al., 2020). We conduct a similar exercise, but we focus on families with high school aged children (13-17), and we distinguish asset categories into those that are counted by the federal financial aid formula ("counted assets," like cash, financial investments, business and farm assets) and those that are not ("uncounted assets," including home equity and retirement savings). We use data from the 2019 Survey of Consumer of Finances for this purpose.

Figure 2 displays the composition of family net worth in counted and uncounted assets by race/ethnicity and by level of family income.[12] The income bands include those below $75,000 (roughly median family income), those with incomes between $75,000 and $125,000 (largely eligible for financial aid at public residential 4-year universities with typical levels of assets) and between $125,000 and $250,000 (largely eligible for financial aid at private universities with typical asset levels).[13]

[11] The treatment of illiquid assets presents additional hurdles, both in terms of the logistics of accessing them and in terms of measurement. For instance, the ability to incorporate Social Security wealth and the expected value of defined benefit pension plans would improve our current ability to measure wealth, but those data are not readily available in a source that would contain any of the other information necessary for this analysis. Thompson and Volz (2021) show that both of these forms of wealth are held more broadly across racial and ethnic groups.

[12] Note that reported counted and uncounted assets represent medians. "Net worth" in this figure is defined as the sum of median counted and uncounted assets and does not exactly equal median net worth.

[13] In our sample, the shares of families with children approaching college age in the three family income categories in Figure 2 are 40%, 23%, and 17% for white families; 71%, 19%, and 7% for Black families; and 72%, 13%, and 11% for Hispanic families. The remaining shares of families are in the excluded income category of >$250,000. 50.8% of families in our sample have family incomes above $75,000.

Not surprisingly, median net worth is higher for families in the higher income bands. Within each income band, white families have greater net worth, confirming the existence of a racial wealth gap. That wealth gap is larger in the bands representing higher family incomes. Those with below median income levels have few assets regardless of race or ethnicity (although even at those low asset levels, a small racial wealth gap is apparent).

The other obvious pattern displayed in Figure 2 is that most assets among families in income bands likely to be eligible for financial aid are not counted by the federal financial aid system. Overall, roughly three-quarters of median family assets are not counted by the federal financial aid system.

Omitting these assets from the EFC calculation provides students from white families with a significant financial advantage in college affordability. We measure the extent of that advantage by simulating "current EFC" (the EFC value the current federal financial aid formula generates) and "full-asset EFC" (the EFC value that would result if all assets were treated the same way as counted assets are now).[14] In this and other sections of the paper, the simulations rely on a proprietary algorithm developed by MyinTuition Corp.[15] The difference between full-asset EFC and current EFC – the reduction in EFC due to uncounted assets – is an indication of

[14] Instead of treating uncounted assets comparably to counted assets, we could instead treat only the liquifiable portion of uncounted assets comparably to counted assets. This may make sense since, for instance, there are generally limits to how much equity can be extracted from one's home in the form of a home equity loan (say, 90%). There are also penalties for early withdrawals of retirement funding. We could make the necessary assumptions to implement this approach, but it would not change our main finding. A disparate impact on Black students and Hispanic students would still exist, albeit of a somewhat smaller magnitude.

[15] MyinTuition is an online tool that dozens of colleges and universities use to provide ballpark financial aid estimates based on a small number of financial inputs and the number of siblings enrolled in college. Levine is the founder and CEO of MyinTuition Corp. Minor differences across schools exist in the computation of EFC, but the approach used here would be relevant for typical institutions. For present purposes, the algorithm used simulates the federal methodology (FM) based on FAFSA. To simplify the subsequent analysis and discussion, we restrict all calculations to cases where the family has only one child in college at a time.

an *implicit subsidy* that the federal financial aid system awards to families that hold uncounted assets.[16]

Figure 3 displays the results of this exercise. As one might expect based on the low level of assets held by families with below median incomes, the distinction between counted and uncounted assets generates a modest racial and ethnic gap in this implicit subsidy. Among those with incomes between $125,000 and $250,000, though, the implicit subsidy is large, particularly for students from white families.[17] For them, their EFC is calculated to be over $15,000 higher if all their assets were counted. Students from Black families would benefit as well, but the implicit subsidy for them is less than $4,000. Overall, these calculations suggest that white students in this income group receive an implicit subsidy from the federal financial aid system that is $12,000 greater than for Black students, making college considerably more affordable for them. A similar calculation for students from families with $75,000 to $125,000 in family income indicates a difference in implicit subsidies of about $3,000 between white and Black students. Students from Hispanic families fall between these two groups.

III. Descriptive Analysis of College Choice and Means of Payment

We extend our analysis by providing descriptive evidence regarding the relationship between affordability, race/ethnicity, and college outcomes. Specifically, we compare differences in affordability by race and ethnicity to differences in the types of colleges students attend and how they pay for them.

[16] Families with more than one child in college are eligible for financial aid with higher incomes and assets because the EFC is split across enrolled children, so the implicit subsidy associated with uncounted assets would be even larger than those presented here.

[17] For simplicity of exposition here and throughout this analysis, any reference to white or Black families implies that they are not of Hispanic origin.

We use data from the 2015-2016 National Postsecondary Student Aid Survey (NPSAS) for this analysis. These data are high quality, merging administrative data from the U.S. Department of Education and data from the higher educational institutions that students attend, among other sources. The sample size is large; in these data, we restrict our analysis to the 33,000 dependent students enrolled at a single higher educational institution. The disadvantage of these data is that they only include students enrolled in college, preventing us from using them to examine the decision to enroll.

Initially, we consider the COA at the institutions in which these students enroll, disaggregated by race/ethnicity and family income. Many of them do not pay this sticker price because they are eligible for financial aid, but it is an indication of the overall expense of the type of institution students choose to attend. It also is the only amount that many students know regarding the cost of attending an institution (Hesel, Camara, and Kappler, 2015). Those students who are able to afford it may be more likely to enroll at institutions that are more selective and generally charge their students higher prices. Financial aid is, in theory, designed to correct for that problem, but it is unlikely to do so perfectly. Most institutions do not meet full need and many students have imperfect information regarding the availability of financial aid.

The enrollment patterns that emerge are displayed in Figure 4. The family income bands used here are the same as those in the SCF analysis presented earlier. Perhaps not surprisingly, these data indicate that families with higher incomes enroll their children at institutions with a higher COA..

Racial and ethnic differences, though, emerge in this relationship. For those with incomes below $75,000, the average COA is similar between white and Black students. In the higher income categories, a substantial gap by race emerges. Students from higher-income white

families pay considerably more to attend college. One potential explanation is that those institutions are more affordable for them despite similar income levels – perhaps because their families hold higher levels of uncounted wealth, as evidenced by our analysis of SCF data.

Enrollment patterns of Hispanic students from families with incomes between $125,000 to $250,000 fit the pattern we would anticipate based on Figures 2 and 3. Their level of uncounted wealth is between white and Black students and the average COA at the institutions these students attend is between white and Black students, as well. Lower- and middle-income Hispanic students, though, attend institutions that typically cost less than those of the other groups – conditional on financial resources – and that is reflected in a lowest average COA of all three groups. Although a full examination of the differences in enrollment patterns between Black and Hispanic students is beyond the scope of this analysis, we do know that Hispanic students are particularly likely to enroll in community colleges that have a low COA (Ma and Baum, 2016). That said, it is apparent from this descriptive analysis that differences in the types of institutions families can afford broadly reflect the racial/ethnic gaps in uncounted assets presented in earlier figures.

Our final analysis using the NPSAS data examines how families pay for college. For this analysis, we restrict the sample of students to those who were enrolled full-time, at a not-for-profit, four-year institution, and living away from their parents. We also distinguish public and private institutions. All of these decisions are designed to considerably narrow the gap in terms of the cost of attending these institutions. We also go one step further and distinguish students by their EFC, a statistic available in these data and drawn from the students' FAFSA filing. If the financial aid system worked as intended, the gap in net prices between students within these EFC categories should be small based on the sample restrictions imposed. We examine all forms of

contributions, including student loans and earnings, along with contributions from other family members, but we focus this discussion on contributions made by parents.[18] The amount of parental contributions are distinguished by whether they were made as direct payments (i.e. the parents "wrote a check") or whether they took the form of debt (i.e. a Parent PLUS or private education loan).

Figure 5 reports the results of this exercise, again separating parental contributions made on behalf of students enrolled at public and private, four-year, non-profit institutions. The main results are not terribly surprising – parents of students from higher EFC families made larger contributions to cover their children's educational expenses. That pattern is roughly consistent by race and ethnicity. In fact, the level of those total contributions within an EFC category across racial and ethnic groups is similar.[19]

Where we do see a striking pattern is the source of those contributions among families in the higher EFC categories. Among these families, Black parents with children enrolled at both types of institutions and Hispanic parents with children enrolled at public institutions make a larger share of their contributions by borrowing. At private institutions, one-third to one-half of parent contributions among higher EFC Black families comes from debt. For white parents, that figure is more like 10 to 20 percent. For families with children attending public institutions, parents typically borrow less, which is consistent with the lower price tag. Still, both Black and Hispanic families in the highest EFC category rely more heavily on parental loans than the

[18] Complete data regarding all payment types by race/ethnicity are reported in Appendix Tables A1 and A2 for private and public 4-year institutions, respectively. We use "contribution" to denote any type of funds received by the institution (cash or cash equivalent and loan disbursements), while "payments" are direct cash or cash equivalent transfers to colleges.

[19] Within an EFC category, white families do have a higher average EFC, but differences between them and Black families or Hispanic families is not large.

comparable EFC parents of white students. The existence of considerably higher uncounted assets among white families, as detailed in Figures 2 and 3, may help to explain that discrepancy.

IV. Behavioral Analysis of College Enrollment, Graduation, and Debt

We initially documented that a mechanical relationship exists between uncounted assets and college affordability. We showed that it produces a disparate impact on Black students and, to a lesser degree, Hispanic students. That relationship is consistent with patterns in the types and cost of institutions in which students enroll, and particularly differences in those outcomes between Black and white students. In this section, we use PSID data, extending our analysis to examine whether the extent of uncounted assets is related to differences in educational outcomes after holding constant potentially confounding factors. If so, underlying differences in family uncounted assets by race and ethnicity would be related to racial differences in student educational outcomes.

A. Methodological Approach

The role that wealth plays in college enrollment and subsequent economic outcomes for children has been previously documented, focusing primarily on variation in home equity (cf. Lovenheim, 2011; Lovenheim and Reynolds, 2013; Charles, Hurst, and Notowidigdo, 2018; Johnson, 2020; Bullman, 2021; and Hotz, et al., forthcoming). For the most part, though, these studies omit the detail that some forms of wealth are largely overlooked ("uncounted") by the federal financial aid system and none have explored the impact of racial disparities in wealth.[20]

[20] Similar issues exist regarding the consideration of disparities in transfers of wealth from extended family members, like grandparents, in the context of paying for college. Lefebvre (2018) focuses on that issue.

We modify the general approach used in previous analyses to highlight the role played by these uncounted assets. Specifically, the basic econometric model we seek to estimate takes the form:

$$y_i = \beta_0 + \beta_1 black_i + \beta_2 hisp_i + \beta_2 efc_i + \beta_3 efc_i^2 + \boldsymbol{\beta_4}(\boldsymbol{efc\ reduction_i}) + \boldsymbol{\beta_5}(\boldsymbol{efc\ reduction_i^2}) + \beta_6 X_i + \varepsilon_i \quad (1)$$

In this specification, y reflects the educational outcomes we consider for student i; we focus on college enrollment, graduation, and debt holdings. We hold constant race and ethnicity along with non-linear controls for a student's EFC. That variable represents a combination of income and counted assets; it is estimated from publicly available PSID data comparably to the approach we described earlier using the SCF (we provide more details on the data we use below). We also include additional measures of a family's socioeconomic status (the mother's age at the child's birth, whether she was a married at that time, and her level of education) that may also help hold those unobserved characteristics constant.

The key right hand side variables in this model, though, is the EFC reduction, included as a quadratic. This variable also is measured analogously to that described earlier using SCF data. It represents the reduction in a student's EFC that results from the fact that home equity and retirement savings are omitted from the formal EFC calculation in FAFSA. It is the difference between the EFC that would result if all assets were counted and the EFC that results from the current formula omitting those two wealth forms. It acts as an implicit subsidy towards the financing of higher education for families who hold those uncounted assets.

In this model, EFC holds constant direct measures of ability to pay, as calculated by the federal financial formula, which only incorporates family income and counted assets. The extent of financial aid a student receives is directly linked to their EFC; students with a higher EFC pay

a higher net price to attend college. The financial aid that families with lower levels of income and counted asset receive should dampen the impact on college attainment of having fewer resources to pay for college. Note that the relationship between financial resources and college pricing is non-linear, as shown in Figure 1. At some point, as resources get large enough, they no longer affect the amount of financial aid available; the student is no longer eligible. This explains why we include both EFC and EFC reduction in this specification non-linearly.[21]

There are likely other unobserved family and neighborhood characteristics, though, that are linked to college outcomes and to family income and counted measures of wealth (like the quality of K-12 schooling; see Baum and McPherson, 2022). EFC is at least partially controlling for those factors as well. These other characteristics likely introduce a positive bias in the estimated relationship between EFC and college outcomes. Our focus, though, is not on the EFC coefficient directly, but as a control variable.

It is the relationship between the EFC reduction and educational outcomes that we highlight. If the coefficient on the EFC reduction is positive, that indicates a benefit associated with the greater affordability resulting from the uncounted assets excluded from the financial aid formula (subject to the caveats to this interpretation, discussed below). Indeed, since the financial aid system does not take into account these assets in determining financial aid, one might expect the relationship between the EFC reduction and college attainment to be greater than the analogous one with EFC directly.

We also estimate alternative specifications that add controls for students' high school records, measured by test scores and grades, as represented in Equation 2.

[21] Conceptually, we could estimate a non-parametric specification (a spline) directly consistent with the patterns observed in Figure 1. In practice, every institution would have a different kink point depending on their full cost of attendance, complicating the implementation of such a model. A quadratic specification captures the generic shape of these functions.

$$y_i = \beta_0 + \beta_1 black_i + \beta_2 hisp_i + \beta_2 efc_i + \beta_3 efc_i^2 +$$
$$\boldsymbol{\beta_4}(\boldsymbol{efc\ reduction_i}) + \boldsymbol{\beta_5}(\boldsymbol{efc\ reduction_i^2}) + \quad (2)$$
$$\beta_6 X_i + \beta_7 Test\ Scores/Grades_i + \varepsilon_i$$

The presence of greater financial resources may improve students' high school record, making them more attractive to colleges and universities. Controlling for the high school record reduces the potential influence of that confounding factor. Alternatively, though, students who anticipate college will be less affordable may "invest less" in their academic performance. Concerns regarding racial and ethnic gaps in test scores (cf. Smith and Reeves, 2020) are another limitation in including them in our analysis. In our main specifications provided below, we report results based on Equation 1 (excluding test scores and grades), but we also test the sensitivity of these estimates, reporting results from Equation 2 (including test scores and grades) in appendix tables.

Regardless of specification, there remains the potential that our key explanatory variable, the EFC reduction, is endogenous. Holding certain forms of assets, like home equity and retirement savings, represents a portfolio decision. Those choosing to hold assets in those forms may also have greater preferences towards providing their children with a college education. It is possible that our included explanatory variables do not capture those preferences, which would likely introduce an upward bias in the relationship between the EFC reduction and educational outcomes. Alternatively, uncounted assets could be affecting college outcomes directly (say, by purchasing more college preparatory classes).

One approach to address this problem is to implement an instrumental variables strategy. Past research has done so in analyses addressing the impact of wealth on college outcomes.[22] Lovenheim (2011) was the first study to estimate models of college attendance as a function of wealth, instrumented by recent home price changes. Lovenheim and Reynolds (2013) examine the type of colleges students attend as a function of recent home price changes, which represents a reduced form variant of Lovenheim (2011). Cooper and Luengo-Prado (2015) estimate a similar reduced form specification to examine young adult earnings, comparing the behavior of renters and homeowners as a specification check. Johnson (2020) also estimates an instrumental variables model on college graduation similar to Lovenheim (2011), but also distinguishing renters from homeowners. Each of these papers found that greater housing wealth improved college outcomes.[23]

Our application is somewhat different, and more complicated. Our focus is not on wealth, per se, but the composition of that wealth. In essence, an instrumental variables strategy would require a source of exogenous variation both in counted assets and uncounted assets separately. Beyond capturing total wealth, it would require identification of portfolio choice. Moreover, we have a theoretical expectation, based on the structure of the financial aid system as depicted in Figure 1, that any such impact of wealth should be non-linear. Past research provides one possible instrument, recent changes in home prices as a predictor of home equity in the years

[22] Haider and McGarry (2018) report the results of OLS models relating college outcomes to financial wealth using the same component of the PSID data we use (the Transition to Adulthood supplement, described below) along with the Health and Retirement Survey. They similarly find a strong relationship between wealth and college outcomes.

[23] Three other papers address other aspects of the relationship between wealth and college attendance. Hotz, et al. (forthcoming) shows that that the relationship between home equity and college attendance is moderated by transfers of that wealth between parents and their children. Charles, Hurst, and Notowidigdo (2018) find that students who live in areas experiencing large changes in housing prices ("booms" or "busts") found that college attendance fell because of the opportunity cost of employment options. Bullman (2021) finds that children in households that recently received moderate lottery payouts are only somewhat more likely to attend college. Large lottery winners, however, are considerably more likely to attend.

leading up to college entry, but that instrument is insufficient to overcome the identification problem we face.[24]

Instead, we estimate OLS models of the forms reported in Equations 1 and 2. Our methods enable us to provide some support regarding causation. First, we conduct a placebo test, estimating the same model for high school graduation, an outcome where the structure of the financial aid system and the existence of uncounted assets should play less of a role. Second, as we discussed earlier, any effect of uncounted assets should enter the model non-linearly, consistent with our characterization of the relationship between financial resources and college pricing from Figure 1. Neither of these additional pieces of evidence can definitively distinguish a causal effect from a spurious one, but they do move us at least somewhat in that direction. It is the combination of these results along with our earlier analyses that provides the ability to suggest a conclusion based on the preponderance of the evidence.

B. Description of the Data

To implement our analysis, we use data from the Panel Study of Income Dynamics (PSID). Data collection for the PSID began in 1968, initially surveying around 5,000 families and 18,000 individuals. Those original members, all of their offspring, and any new members of their households continue to be interviewed biennially, with the last available data from the 2019 survey.

For our purposes, these data possess two components critical for our analysis, detailed data on college outcomes for one cohort of children and income and asset data necessary to construct the relevant EFC measures in Equations 1 and 2. Beginning in 1997, the PSID began

[24] We have attempted to estimate an instrumental variables model using recent home price changes as an instrument just for the EFC reduction in a linear specification of Equations 1 and 2, but the instrument was weak with resulting estimates that were extremely imprecise. The standard errors were multiples of those obtained from OLS.

the Child Development Supplement (CDS), which included detailed information on the lives of children aged 12 and under. As those children aged, they transitioned into the subsequent Transition to Adulthood Survey (TAS), which began in 2005 and has been conducted biennially since then. The TAS provides extensive additional information not elsewhere included on the survey. Its focus is on the CDS cohort as they aged from 18 to 28.

These data are relevant for our analysis because of the extensive detail obtained from TAS cohort members regarding their educational outcomes, including the IPEDS institution identifier for those students who enrolled in college.[25] We use these data to create indicators of whether TAS respondents enrolled in college by age 19, the type of institution in which they enrolled if they did attend college (private 4 year, public 4 year, or other – mainly community colleges), and whether they received a bachelor's degree. Our full sample includes 2,464 individuals.[26]

Along with these measures of educational attainment, the TAS data also enable us to examine the extent to which students took on debt to finance a college education. Information on parent and student educational debt were also collected in the TAS. Andreski, et al. (2015) report a comparison of these student loan data with other data reported in NPSAS. The two sources of data differ somewhat in the borrowing being measured (all student borrowing versus borrowing among currently enrolled students). The authors conclude that "the estimates in the two sources

[25] The institution identifier is only available for users with a restricted use agreement. The TAS also includes data on student test scores (ACT and/or SAT) and high school grades, which are necessary to estimate Equation 2. The data appendix provides more detail regarding the construction of those and other measures obtained from the PSID.

[26] In all analyses, we include sample weights that account for the longitudinal structure of the PSID data and the differential attrition that takes place over time ("individual longitudinal weights"). We use the value of this weight in the survey year relevant for the outcome measured (i.e., college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24 – note two ages are required because of the biannual nature of the survey). A small number of TAS respondents did not complete the survey in the relevant years. We omit those individuals from our analysis. The IPEDS data is from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), 2019.

are, in general, fairly similar, although some differences do exist." We use these PSID data on student debt as an outcome measure in our analysis.

One outcome that would have been desirable to add to this analysis is the amount of Parent Plus Loans that families took out to pay these students' higher education bills. We saw important patterns in that measure in the NPSAS data. Unfortunately, these data are not separately broken out in the TAS supplement.[27]

The detailed data on income and wealth available in the PSID provide us with the ability to construct our key explanatory variables, EFC and EFC reduction. These data have been shown to compare favorably to data available from the SCF (Pfeffer, et al., 2015).[28] As we described in that analysis, breaking up wealth into the parts that are counted by the financial aid system and the parts that are not (distinguished by the treatment of retirement savings and home equity) is critical for generating measures of EFC and the EFC reduction for each survey respondent. The PSID contains that level of detail.[29] We use the family-based structure of the PSID to obtain the wealth components we need for TAS respondents based on their parents' wealth in the years leading up to potential college entry.[30]

[27] Starting in 2011, the wealth supplement fielded to all PSID households included a new question asking respondents whether "you or anyone in your family living there currently have any other debts such as student loans, medical or legal bills, or loans from relatives?" The next question asks for the amount of student loan debt, if any. That variable should capture Parent Plus Loans, but they would not be specific to the individual student in the TAS survey. It also started being asked well after the TAS started to be administered. Our preliminary analysis of these data suggest that they are not appropriate for our analysis. For one thing, they show average Parent Plus loan debt considerably greater for white families than for Black families - even among those families who borrow –, which is not consistent with other data sources.

[28] Net worth data from the SCF is somewhat higher than that in the PSID, although most of the gap results from SCF respondents in the very top of the wealth distribution. Differences in wealth throughout the remainder of the distribution are modest.

[29] We note that the PSID estimates of the EFC reduction are a lower bound because respondents are asked about retirement funds in individual retirement accounts, not balances in employer defined contribution pension plans (Cooper, Dynan, and Rhodenhiser, 2019). According to the Investment Company Institute (2020), IRA balances total $11 trillion compared to $8.7 trillion in defined contribution pension plans.

[30] Typically, parent wealth is measured when the child is age 17 or 18, but in those instances where the family is not included in the survey when the child is that age, we use parent wealth at ages 15 or 16 if those data are available.

Beyond these data items specific to our key explanatory and outcome measures, the overall structure of the PSID provides other advantages. We use the longitudinal, family-based structure of these data to provide additional measures of each family's socioeconomic status (SES) beyond their current EFC. In all econometric models, we also control for mother's educational attainment along with her marital status at birth and her age when the student was born.[31]

Table 1 presents a series of descriptive statistics from our PSID-TAS extract. The top panel of the table provides details of families' financial characteristics for all respondents and by race/ethnicity. We present both the median and 75th percentile values of family income, net worth, and counted and uncounted assets separately. Income and wealth differences by race/ethnicity are well documented. Table 1 also supports earlier findings that most assets are uncounted at these positions in the wealth distribution; white families have considerably more of uncounted assets. The formula for calculating the EFC would therefore affect college affordability more for these families.

The remainder of the table documents differences in the educational outcomes we examine in this analysis. Statistics are segmented by whether the population included is all students, those enrolled in college, or those who graduated from college, with relevant outcomes considered in each category. The patterns observed here are largely consistent with those observed elsewhere (cf. de Brey, 2019). In particular, differences in educational patterns between white and Black students are large. The gaps between white and Hispanic students are still evident in places The question we address in this analysis is whether any of those disparities in

[31] We focus on mother's characteristics because children are more likely to be living with their mothers throughout their childhood, increasing mothers' influence on children's outcomes. We also measure marital status at birth rather than contemporaneously because of the possible endogeneity of current marital status and family finances.

college outcomes, and particularly those between white and Black students, can be attributable to differences in college affordability driven by omitting some forms of assets from financial aid calculations.

C. Econometric Results

The results of our regression analysis characterized by Equation 1 are reported in Tables 2 and 3. Analogous results of models that also include test scores and grades, as described by Equation 2, are reported in Appendix Tables A3 and A4. As highlighted earlier, our focus is on the impact of the EFC reduction that prospective college students face if they have greater assets in the form of home equity and retirement savings. Our tables focus on those coefficients. We also report the coefficients on race/ethnicity indicator variables, since differences across groups are also a focus of this analysis. We initially report in these tables the results of regressions with just those indicator variables included to estimate unadjusted differences across groups. We also control for students' estimated EFC, to hold constant differences how much they are estimated to be able to pay for college, as calculated by FAFSA, and additional measures of socioeconomic status to capture (at least partially) differential pathways and barriers towards higher education.

We initially focus on the likelihood of graduating from high school and then the decision to enroll in college in Table 2. The top panel of the table demonstrates the same raw gaps in educational attainment as reported in Table 1. The bottom panel of the table reports the results of our multivariate analysis. The results indicate that even after controlling non-linearly for estimated EFC and other indicators of socioeconomic status, the presence of greater uncounted assets, quantified by our EFC reduction, is positively related to college enrollment (Column 2). We interpret the magnitude of these effects below.

Moreover, note that the exact same specification for high school graduation yields different results. We find no statistically significant relationship between the EFC reduction and the likelihood of graduation. Neither of these findings is definitive in "proving" our proposed mechanism is causal, but they are consistent with a causal interpretation.

The remainder of the table indicates that these increases in enrollment would be more common at public and private 4-year institutions. Enrollment at other institutions (mainly community colleges) would fall.

Table 3 provides results from the same analysis focusing on ultimate degree completion (2-year or 4-year) and student loan debt at ages 21 or 22.[32] We conduct this analysis separately for all survey participants and for those who started college for degree completion and for those who graduated from a 4-year college for student loan debt. The results are consistent with a beneficial impact of uncounted assets on subsequent education outcomes. Uncounted assets are positively related to graduation from a 4-year institution and negatively related to receiving a 2-year degree and to owing student loan debt.[33]

We also have estimated alternative specifications that control for student grades and test scores (ACT/SAT), which are available in these data. As discussed previously, the advantage of including these variables is that they can capture differences in student performance – which may be attributable to disparities along geographic dimensions, e.g., public investments made at earlier stages in a student's life – or help to absorb some unobserved heterogeneity. They may

[32] Our goal is to measure student loan debt around the time a student may have graduated from a 4-year institution but had not yet started repaying the loan or taken out additional debt to pay for graduate school. With a biennial survey, we chose ages 21 and 22.

[33] We conducted an analogous exercise (not shown) where the dependent variable represents the 10-year out median earnings of graduates of the institutions TAS respondents first attended (for those who enrolled in college). These data are available from the College Scorecard (https://collegescorecard.ed.gov/). Earnings are strongly correlated with the types of institutions students attend. As a result, it is not surprising that greater uncounted assets are also positively related to attending an institution where graduates tend to earn higher wages.

also capture differences in anticipated college affordability, though. Students more comfortable in their ability to afford college may be more likely to take the SAT (perhaps paying for courses to increase their scores), for instance.

Adding these variables somewhat reduces the estimated differences in outcomes by race/ethnicity (see Appendix Tables A3 and A4). The estimated impact of EFC reduction, however, is somewhat smaller, but qualitatively similar to what we reported in earlier when we omitted the grades and scores from the set of controls. These results suggest that the disparate impact in terms of our outcome variables is not due to differences in student achievement (after controlling for family characteristics and EFC).

D. Interpreting the Results

To interpret the magnitude of the potential impact of the EFC reduction on gaps in educational attainment, we conduct a simulation exercise. We use our underlying individual data and the regression coefficients reported in Tables 3 and 4 to simulate the impact of the uncounted assets each individual's family holds on our outcome measures. Then we aggregate those simulated impacts, calculating the mean values for each racial and ethnic group. The difference in these simulated outcomes between groups informs our primary question of the potential aggregate impact of uncounted assets on educational disparities by race/ethnicity. We ask the following question: According to our estimates, if Black families had the same uncounted assets as white families did, how would their educational outcomes change relative to white families?

The results of this analysis are reported in Table 4 for our main specification and Appendix Table A.5 for our alternative specification that also includes grades and test scores. The results are clear that the racial and ethnic gap in uncounted assets generates substantive differences in the simulated educational outcomes by race. If the families of Black and white

students had the same uncounted assets, the gap in college enrollment would close by an estimated 2.8 percentage points. Holding constant test scores and grades reduces that estimated impact to 1.9 percentage points. The raw gap in that statistic, reported in the top panel of Table 3, is 21 percent. The 29.8 percent raw gap in graduating from a 4-year institution between Black and white students who enrolled in college by age 19 would close by an estimated 4 percentage points (or 2.7 percentage points if we control for test scores and grades). Our estimates indicate that some 10 to 15 percent of the raw gap in college enrollment and graduation from a 4-year institution between Black and white students could be attributable to the exclusion of uncounted assets from the EFC formula.

The pattern is similar for Hispanic students relative to white students, suggesting that eliminating the gap in uncounted assets would also reduce the gap in estimated educational outcomes. The difference for Hispanic students is that the unadjusted gap in overall college enrollment relative to white students is small due to relatively high enrollment in community colleges among Hispanic students. Nevertheless, according to our estimates, eliminating the gap in uncounted assets, would similarly reduce the Hispanic/white gap in four-year college completion and student loan debt by 10 to 15 percent.

V. Summary and Discussion

This paper has documented the financial disadvantage that some Black families and Hispanic families – particularly those in above-median income bands – face in the financial aid system because of wealth inequality. FAFSA and the federal methodology for estimating EFC do not account for home equity or retirement savings, both of which are much more likely to be held by white families. This discrepancy in the treatment of assets does not affect students from below-median income families because asset holdings of any type are so low for them.

We document that the presence of these uncounted assets has the effect of making college relatively less affordable for above-median income Black families and Hispanic families. This presents itself in the data in the differences in cost of attendance at the institutions to which Black, Hispanic, and white students apply and which they attend. It also shows up in the much larger extent to which above-median income Black parents finance their children's tuition bills using debt, in the form of Parent Plus Loans, than paying the institution directly. In addition, we show that students from families having more uncounted assets (measured by our EFC reduction variable) have better educational (enrolling in college, attending and graduating from a 4-year institution) and financial (taking on less student debt) outcomes. Those findings hold despite controlling for a variety of socioeconomic variables at the family and student level. We acknowledge that we are unable to definitively provide causal evidence of these effects. Nevertheless, our results are consistent with the interpretation that the existing racial wealth gap interacts with the EFC calculation, as currently implemented, in ways that contribute to racial and ethnic disparities in college access, attainment, and family debt burdens.

A relevant question, then, is what, if anything, should be done to address these disparities? Closing the racial gap in education attainment would help reduce income gaps today and may reduce wealth gaps down the road. One potential path is to target additional grant aid to families disadvantaged by the current system (families with low levels of uncounted assets). This would improve college access for students from families with low asset holdings across income and racial/ethnic groups.

Alternatively, the financial aid formula could be modified to include a portion of the currently uncounted forms of assets, but then reduce the implicit "tax rate" on income and assets used to estimate families' ability to pay (a nebulous concept in the first place). This is analogous

to a revenue neutral tax reform proposal where the tax base is broadened, while tax rates are lowered.

There could be offsetting costs, though, associated with such changes. One shortcoming of the current financial aid system is its complexity; completing complicated forms to obtain financial aid that is difficult to forecast can stifle college attendance (Dynarski, et al., 2021; and Levine, 2022). Legislation enacted in 2020 designed to simplify the FAFSA sought to address this problem, at least partially. Even if families with below-median incomes are exempt from the data collection, asking for more detail regarding asset holdings works against that goal. And verifying the accuracy of reported asset values would be complicated.

Finally, both targeted grant aid and changes to the financial aid formula based on home equity and retirement assets might provide disincentives to accumulating those types of wealth. We believe this is unlikely for the formula change given that the significant subsidies and tax advantages inherent in owning a primary residence and saving for retirement (particularly in an employer-sponsored plan) vastly outweigh the expected contribution out of those assets during college years.[34] On the other hand, providing grant aid directly to families with low levels of currently-uncounted assets might also provide a disincentive to the accumulation of those uncounted assets for parents of school-aged children.

[34]Early studies of disincentives to the accumulation of financial assets due to federal financial aid rules, including Edlin (1993) and Feldstein (1995), found strong disincentive effects, but such studies typically focused on financial assets and explicitly excluded home equity on the primary residence and/or tax advantaged retirement savings accounts. Later studies, e.g. Monks (2004) and Reyes (2008), concluded that estimates from those earlier studies overstated the disincentive. Long (2004) found no evidence of a strong savings response to implicit asset taxes in the financial aid system. Finally, considering disincentives to earned income, Darolia (2017) finds no evidence that students adjust work hours even in the presence of an implicit tax to the tune of 50 cents to the dollar, likely due to lack of knowledge, abstruse formulas, and the timing of aid receipt.

A thorough, dynamic, benefit cost analysis of these alternative policy solutions is outside the scope of this study. The goal in this paper is to highlight that the current version of the financial aid system (and potentially further steps to simplify it) may impose economically significant costs for Black families and Hispanic families (particularly those with above median family incomes) in the form of disparate college access and affordability. Those costs should not be ignored.

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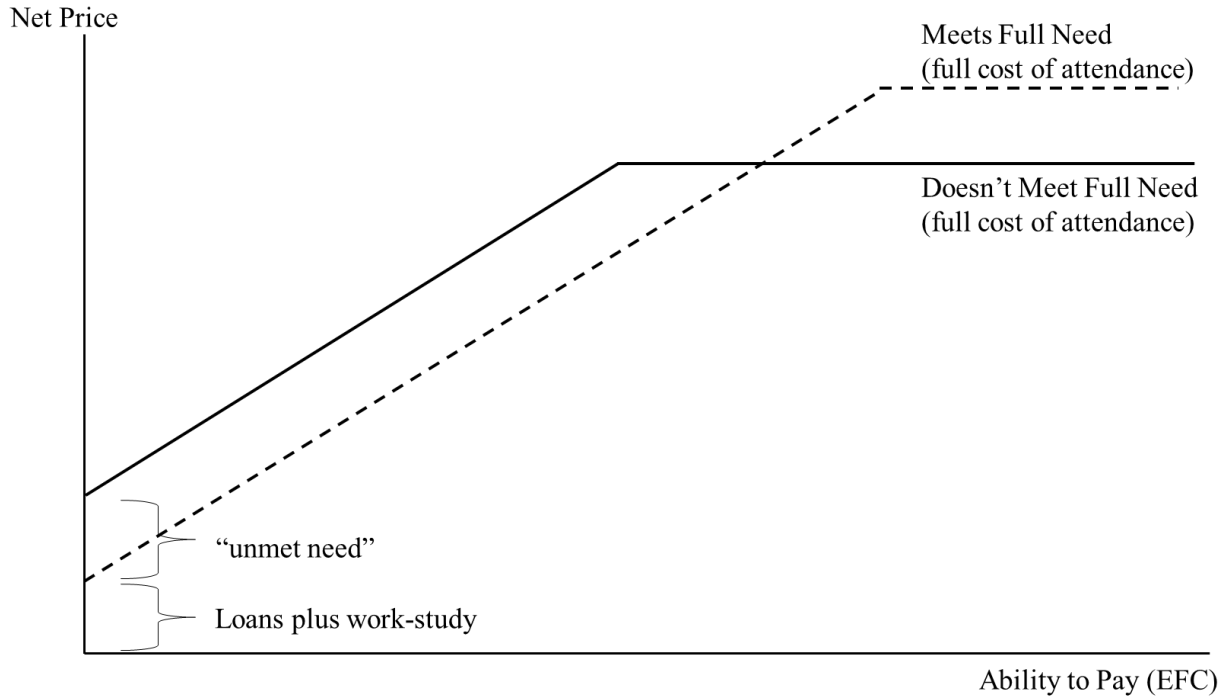
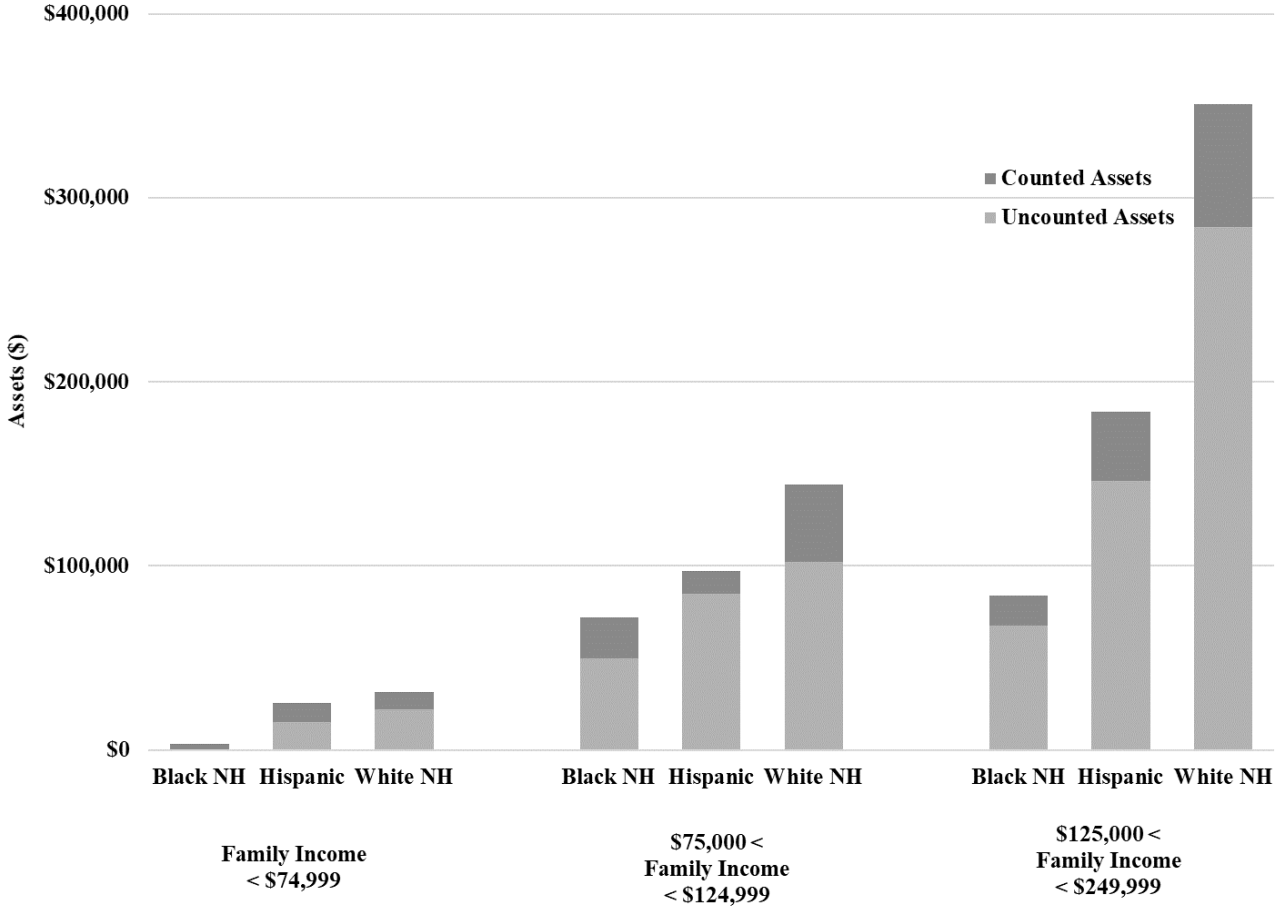
Figure 1: Simplified Version of College Pricing System



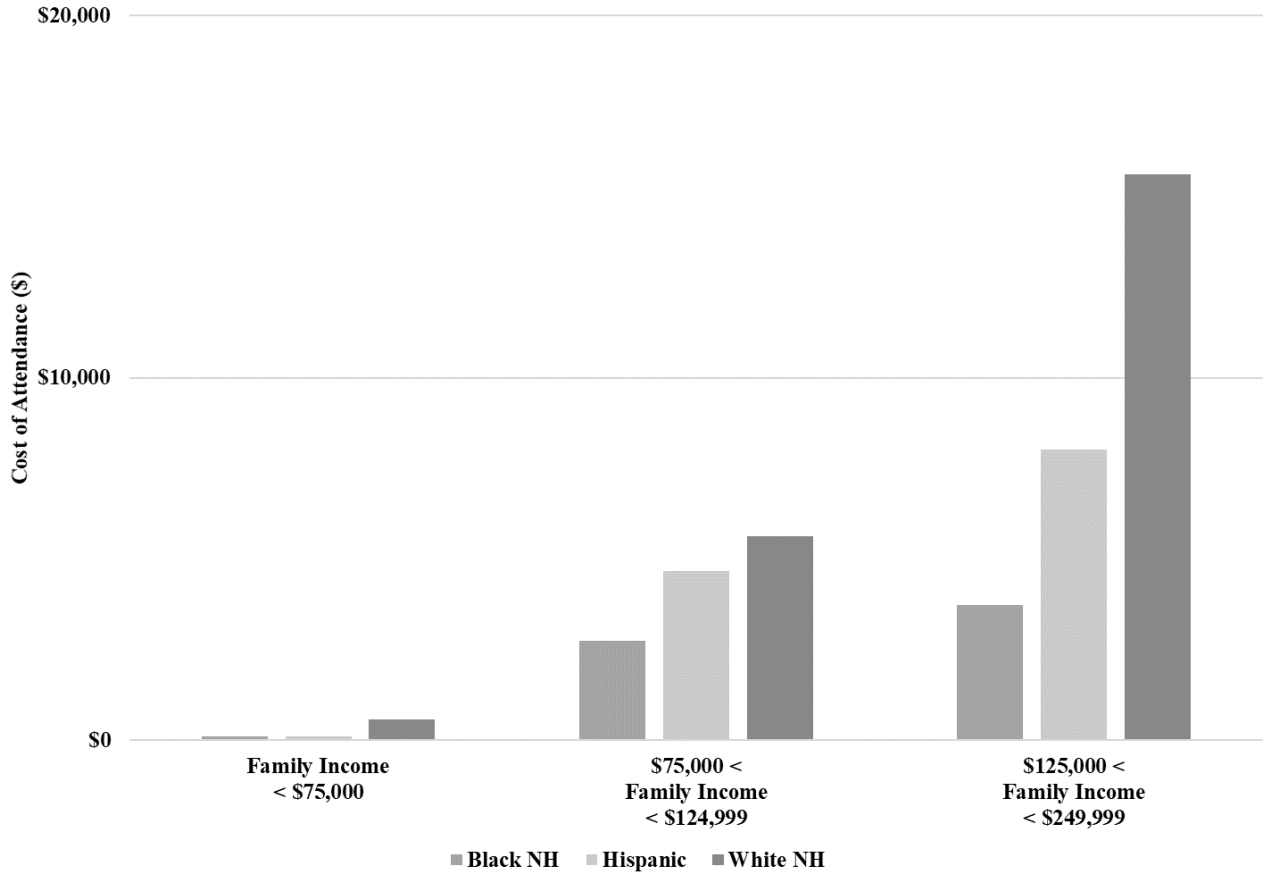
Source: Levine (2022)

Figure 2: Median Net Worth for Families with Children Approaching College Age, by Family Income, Race/Ethnicity, and Asset Category



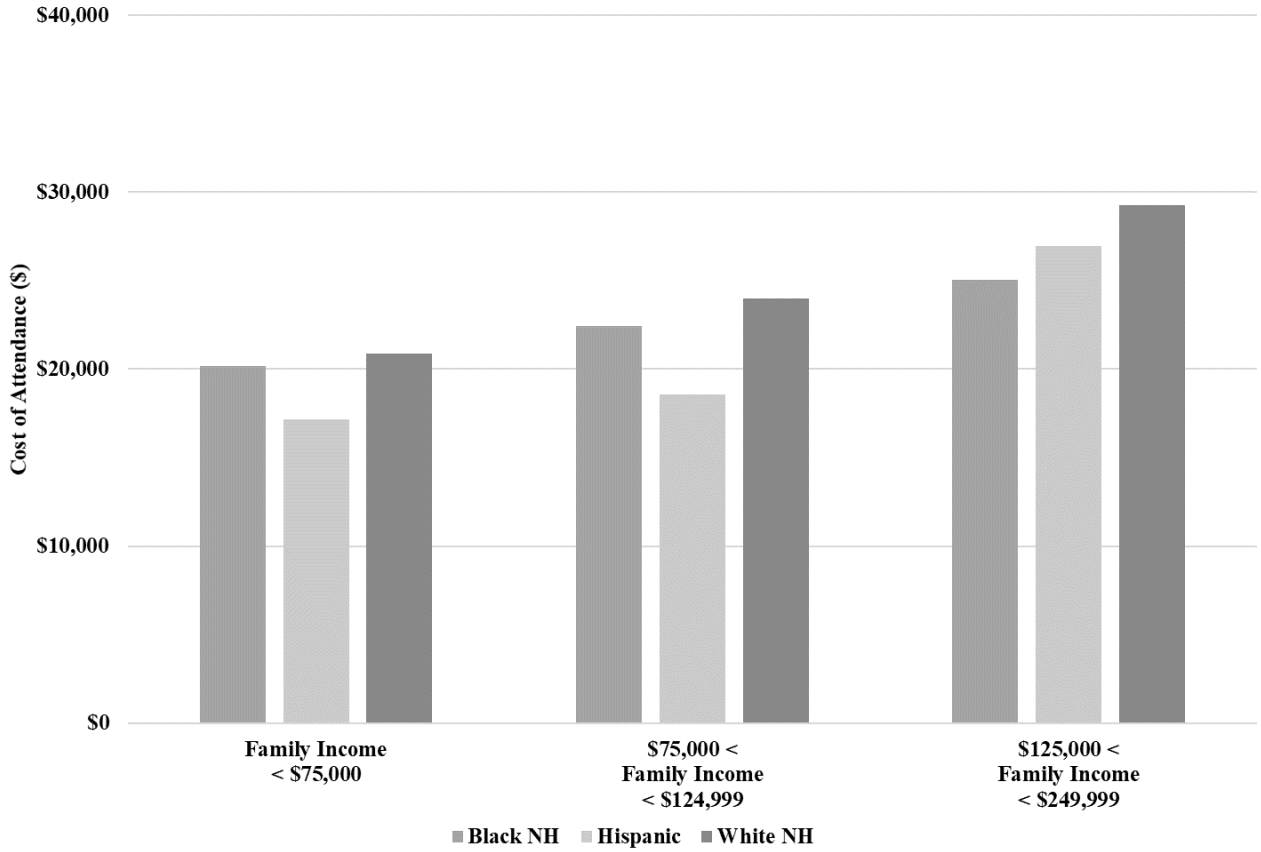
Source: Authors' calculations based on data from the 2019 Survey of Consumer Finances (SCF)
Notes: Sample includes respondents with children between the ages of 13 and 17.

Figure 3: EFC Reduction Associated with Uncounted Assets, by Income Category and Race/Ethnicity



Source: Authors' calculations based on data from the 2019 Survey of Consumer Finances (SCF)
Notes: Sample includes respondents with children between the ages of 13 and 17. Reduction in Expected Family Contribution (EFC) is defined as the difference between "full-asset" EFC and "current" EFC. Full-asset EFC simulates EFC levels if uncounted assets were treated the same as counted assets by the financial aid system. Current EFC simulates the current formula that excludes uncounted assets.

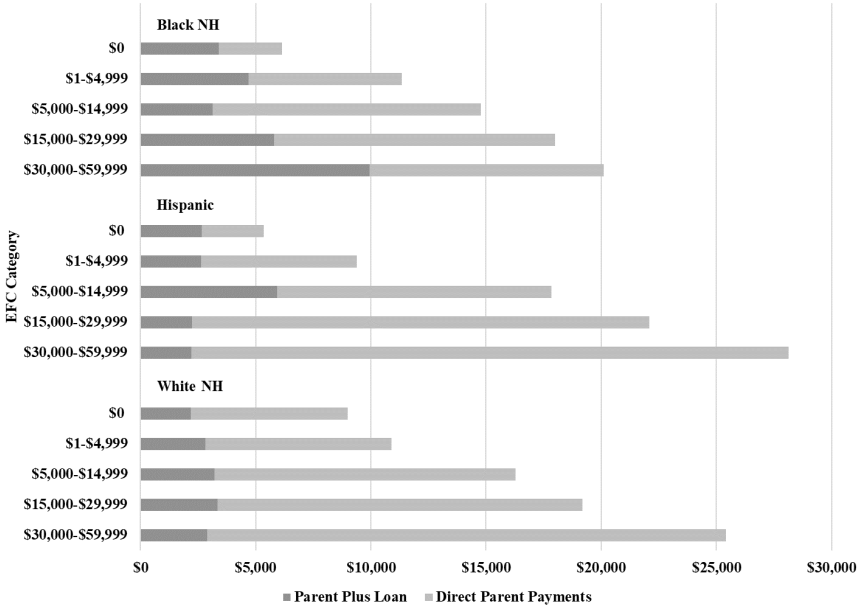
Figure 4: Cost of Attendance at Dependent Students' Institution, by Income Category and Race/Ethnicity



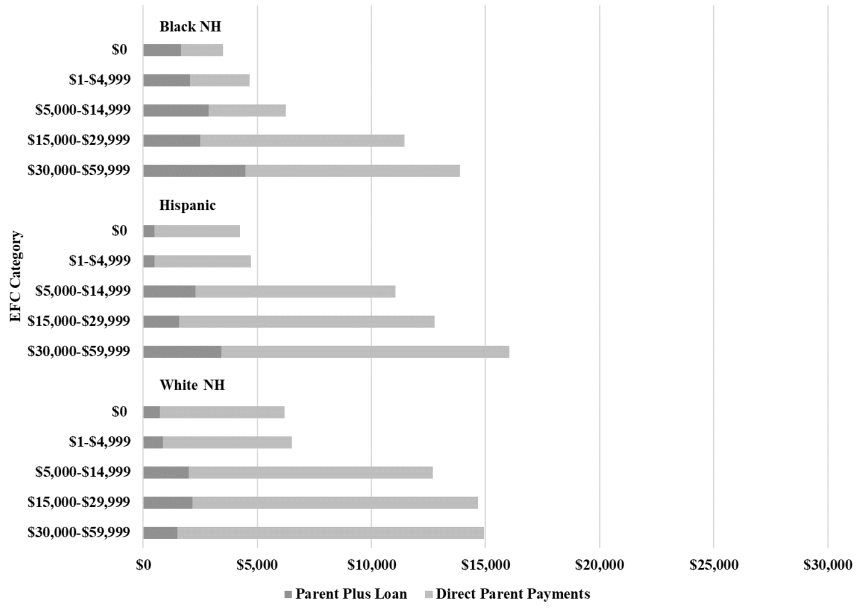
Source: Previously unpublished tabulations based on the U.S. Department of Education, National Center for Education Statistics, 2015-2016 National Postsecondary Student Aid Study (NPSAS:16)
Notes: Cost of attendance is a broad measure of college costs, including tuition, living expenses that may include room and board, and other miscellaneous expenses, like books and travel.

Figure 5: Average Payments Made by Parents at Four-Year Private and Public Institutions, by Expected Family Contribution Category, Payment Type, and Race/Ethnicity

Panel A: Private, Non-Profit Institutions



Panel B: Public Institutions



Source: Previously unpublished tabulations based on the U.S. Department of Education, National Center for Education Statistics, 2015-2016 National Postsecondary Student Aid Study (NPSAS:16)
Notes: All students are dependents, enrolled full-time, live away from their parents, and, for public institutions, are state residents.

Table 1: Descriptive Statistics of Family Finances and Educational Outcomes

	All	White, non-Hispanic	Black, non-Hispanic	Hispanic
	Income and Assets (median/75th percentile), in $1,000s			
Family Income	$73/$120	$92/$139	$38/$65	$45/$78
Net Worth	$96/$279	$137/$366	$11/$64	$44/$133
Counted Assets	$20/$90	$31/$120	$4/$20	$7/$31
Uncounted Assets	$60/$170	$82/$215	$0/$38	$30/$100
	Educational Outcomes (All Students): N = 2,464			
High School Graduate	89.7%	90.9%	79.6%	89.6%
Enrolled in:				
College by Age 19	75.8%	77.8%	56.8%	76.6%
Private 4 Year	13.0%	15.5%	7.9%	6.6%
Public 4 Year	29.8%	32.5%	18.4%	25.2%
Other	33.0%	29.8%	30.4%	44.8%
Graduated from:				
2 Year Institution	9.9%	10.5%	5.0%	9.8%
4 Year Institution	37.3%	43.6%	15.3%	25.3%
Mean Student Loan Debt	$5,393	$6,091	$4,412	$3,361
	Educational Outcomes (Enrolled in College by Age 19): N=1,742			
Enrolled in:				
Private 4 Year	17.1%	19.9%	13.9%	8.6%
Public 4 Year	39.3%	41.8%	32.5%	32.9%
Other	43.6%	38.3%	53.6%	58.5%
Graduated from:				
2 Year Institution	13.1%	13.5%	8.9%	12.9%
4 Year Institution	49.3%	56.1%	27.0%	33.0%
Mean Student Loan Debt	$6,934	$7,672	$7,516	$4,244
	Educational Outcomes (Bachelor's Degree): N = 752			
Mean Student Loan Debt	$9,839	$9,971	$18,266	$7,087

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement

Table 2: Impact of Uncounted Assets on High School Graduation and College Enrollment

	Dependent Variable:				
	Graduate High School	Enroll in College	Enroll in 4 Year Private	Enroll in 4 Year Public	Enroll Other
			No Controls		
Black	**-0.113**	**-0.210**	**-0.076**	**-0.141**	0.007
	(0.034)	**(0.045)**	**(0.028)**	**(0.034)**	(0.042)
Hispanic	-0.013	-0.012	**-0.089**	**-0.073**	**0.150**
	(0.024)	(0.032)	**(0.020)**	**(0.034)**	**(0.037)**
			With Controls (including Mother's SES)		
Black	-0.047	-0.078	-0.008	-0.065	-0.005
	(0.037)	(0.045)	(0.029)	(0.037)	(0.047)
Hispanic	**0.062**	**0.141**	0.002	0.021	**0.119**
	(0.029)	**(0.038)**	(0.026)	(0.038)	**(0.043)**
EFC	**0.012**	**0.024**	0.007	0.006	0.011
(in $10,000s)	**(0.003)**	**(0.005)**	(0.006)	(0.007)	(0.007)
EFC Squared	**-0.0002**	**-0.0005**	**-0.0002**	-0.0001	**-0.0003**
	(0.0001)	**(0.0001)**	**(0.0001)**	(0.0002)	**(0.0001)**
EFC Reduction	0.011	**0.046**	**0.036**	**0.048**	**-0.038**
(in $10,000s)	(0.007)	**(0.012)**	**(0.013)**	**(0.018)**	**(0.016)**
EFC Reduction	-0.0007	**-0.0027**	**-0.0019**	-0.0020	0.0012
Squared	(0.0005)	**(0.0011)**	**(0.0007)**	(0.0013)	(0.0008)
Sample Size	2,464	2,464	2,464	2,464	2,464

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement

Notes: Bolded cells represent coefficients statistically significant at the 5 percent level. Reduction in Expected Family Contribution (EFC) is defined as the difference between "full-asset" EFC and "current" EFC. Full-asset EFC simulates EFC levels if uncounted assets were treated the same as counted assets by the financial aid system. Current EFC simulates the current formula that excludes uncounted assets. Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Table 3: Impact of Uncounted Assets on College Graduation and Student Debt

	Dependent Variable:					
	Received 2 Year Degree		Received 4 Year Degree		Student Loan Debt	
	Full Sample	Enrolled in College	Full Sample	Enrolled in College	Full Sample	4 Year College Graduates
	No Controls					
Black	**-0.055**	-0.039	**-0.301**	**-0.298**	**-1,775.4**	**9,055.5**
	(0.018)	(0.030)	**(0.033)**	**(0.051)**	**(834.9)**	**(2,153.6)**
Hispanic	-0.003	-0.011	**-0.145**	**-0.200**	**-2,908.3**	-3,245.7
	(0.025)	(0.030)	**(0.038)**	**(0.045)**	**(855.8)**	(1,757.7)
	With Controls (including Mother's SES)					
Black	**-0.066**	**-0.084**	**-0.137**	**-0.149**	-685.9	**6,842.3**
	(0.023)	**(0.035)**	**(0.039)**	**(0.061)**	(832.1)	**(2,379.3)**
Hispanic	-0.019	**-0.078**	0.064	0.014	-502.8	**-4,254.8**
	(0.026)	**(0.034)**	(0.040)	(0.052)	(901.4)	**(2,099.1)**
EFC (in $10,000s)	0.007	0.004	**0.033**	**0.023**	-15.8	**-610.5**
	(0.005)	(0.005)	**(0.007)**	**(0.008)**	(175.3)	**(264.3)**
EFC Squared	-0.0001	-0.0001	**-0.0008**	**-0.0005**	-5.4	6.4
	(0.0001)	(0.0001)	**(0.0002)**	**(0.0002)**	(3.7)	(5.6)
EFC Reduction (in $10,000s)	**-0.021**	**-0.032**	**0.080**	**0.060**	-806.1	**-1,799.6**
	(0.010)	**(0.011)**	**(0.019)**	**(0.018)**	(502.6)	**(570.5)**
EFC Reduction Squared	0.0006	**0.0012**	**-0.0037**	**-0.0027**	**108.5**	**169.4**
	(0.005)	**(0.0006)**	**(0.0015)**	**(0.0012)**	**(40.4)**	**(30.9)**
Sample Size	2,371	1,676	2,160	1,510	2,370	778

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement

Notes: Bolded cells represent coefficients statistically significant at the 5 percent level. Reduction in Expected Family Contribution (EFC) is defined as the difference between "full-asset" EFC and "current" EFC. Full-asset EFC simulates EFC levels if uncounted assets were treated the same as counted assets by the financial aid system. Current EFC simulates the current formula that excludes uncounted assets. Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Table 4: Simulated Impact of EFC Reduction on Gaps in Educational Outcomes

		White/Black Gap		White/Hispanic Gap	
	Sample	Unadjusted	Impact of Uncounted Assets	Unadjusted	Impact of Uncounted Assets
Enroll in College by Age 19	All students	21.0%	2.9 pp	1.2%	2.1 pp
Graduating from 2-Year Institution	Enrolling Students	3.9%	-2.2 pp	1.1%	-1.8 pp
Graduating from 4-Year Institution	Enrolling Students	29.8%	4.0 pp	20.0%	3.1 pp
Student Loan Debt	4-Year Graduate	$9,056	-$856	$-3,246	-$584

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement

Notes: pp indicates percentage point changes. The percent change in the enrollment/graduation outcomes reflects the percentage point change divided by the unadjusted percentage (x 100).

Appendix Table A.1 Form of Family Payments Towards a Child's College Education, By Expected Family Contribution at Private 4-Year Institutions

	Student		Parent		
	Loan	Earnings	Loan	Direct	Other Family
EFC			White		
$0	$5,603	$3,652	$2,183	$6,803	$1,546
$1-$4,999	$5,767	$3,836	$2,823	$8,080	$1,295
$5,000-$14,999	$7,710	$3,918	$3,208	$13,086	$1,590
$15,000-$29,999	$7,141	$3,224	$3,346	$15,836	$1,252
$30,000-$59,999	$7,292	$3,042	$2,904	$22,508	$1,769
			Black		
$0	$6,986	$4,139	$3,396	$2,739	$566
$1-$4,999	$8,202	$3,420	$4,695	$6,655	$294
$5,000-$14,999	$6,263	$2,093	$3,124	$11,661	$663
$15,000-$29,999	$7,903	$1,363	$5,794	$12,194	$177
$30,000-$59,999	$8,315	$2,196	$9,952	$10,149	$65
			Hispanic		
$0	$4,822	$3,011	$2,654	$2,688	$691
$1-$4,999	$6,511	$3,666	$2,641	$6,757	$226
$5,000-$14,999	$6,392	$2,635	$5,936	$11,907	$1,246
$15,000-$29,999	$2,184	$2,248	$19,854	$484	$4,435
$30,000-$59,999	$2,882	$2,196	$25,929	$1,675	$4,643

Source: Previously unpublished tabulations based on the U.S. Department of Education, National Center for Education Statistics, 2015-2016 National Postsecondary Student Aid Study (NPSAS:16)
Notes: Student payment options include debt (loans) and work-study and other forms of employment (earnings). Parent payment options include debt (Parent Plus loans) and direct payments to the college ("writing a check" with no indication of how those funds were obtained). Payments from other families may reflect financial help provided by a student's grandparents or other relatives.

Appendix Table A.2 Form of Family Payments Towards a Child's College Education, By Expected Family Contribution at Public 4-Year Institutions (State Residents)

	Student		Parent		
	Loan	Earnings	Loan	Direct	Other Family
EFC			White		
$0	$4,991	$4,967	$735	$5,456	$909
$1-$4,999	$4,876	$4,670	$855	$5,670	$1,058
$5,000-$14,999	$4,793	$4,668	$2,009	$10,687	$1,972
$15,000-$29,999	$4,771	$4,559	$2,144	$12,532	$690
$30,000-$59,999	$3,620	$4,690	$1,489	$13,434	$974
			Black		
$0	$5,646	$4,320	$1,644	$1,866	$140
$1-$4,999	$6,142	$4,311	$2,055	$2,600	$393
$5,000-$14,999	$5,127	$5,387	$2,875	$3,373	$120
$15,000-$29,999	$5,134	$4,582	$2,512	$8,946	$306
$30,000-$59,999	$4,761	$2,906	$4,471	$9,408	$118
			Hispanic		
$0	$3,195	$4,285	$496	$3,739	$600
$1-$4,999	$3,790	$3,456	$488	$4,235	$369
$5,000-$14,999	$5,101	$4,102	$2,288	$8,761	$495
$15,000-$29,999	$3,928	$3,114	$1,580	$11,186	$328
$30,000-$59,999	$4,364	$2,733	$3,433	$12,599	$352

Source: Previously unpublished tabulations based on the U.S. Department of Education, National Center for Education Statistics, 2015-2016 National Postsecondary Student Aid Study (NPSAS:16)

Appendix Table A.3: Impact of Uncounted Assets on High School Graduation and College Enrollment (includes grades and test scores as explanatory variables)

	Dependent Variable:				
	Graduate High School	Enroll in College	Enroll in 4 Year Private	Enroll in 4 Year Public	Enroll Other
			No Controls		
Black	**-0.113**	**-0.210**	**-0.076**	**-0.141**	0.007
	(0.034)	**(0.045)**	**(0.028)**	**(0.034)**	(0.042)
Hispanic	-0.013	-0.012	**-0.089**	**-0.073**	**0.150**
	(0.024)	(0.032)	**(0.020)**	**(0.034)**	**(0.037)**
			With Controls (including Mother's SES)		
Black	0.004	-0.011	0.024	-0.017	-0.019
	(0.033)	(0.037)	(0.029)	(0.037)	(0.046)
Hispanic	0.003	**0.110**	0.005	0.016	**0.088**
	(0.017)	**(0.034)**	(0.025)	(0.037)	**(0.042)**
EFC	0.002	0.013	0.004	-0.001	0.010
(in $10,000s)	(0.002)	(0.004)	(0.006)	(0.007)	(0.007)
EFC Squared	0.0000	**-0.0003**	-0.0001	0.0000	**-0.0002**
	(0.0000)	**(0.0001)**	(0.0001)	(0.0002)	**(0.0001)**
EFC Reduction	0.000	**0.031**	**0.028**	**0.037**	**-0.034**
(in $10,000s)	(0.006)	**(0.010)**	**(0.013)**	**(0.017)**	**(0.016)**
EFC Reduction	0.0000	**-0.0018**	**-0.0015**	-0.0014	0.0012
Squared	(0.0003)	**(0.0007)**	**(0.0007)**	(0.0011)	(0.0008)
Sample Size	2,464	2,464	2,464	2,464	2,464

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement

Notes: Bolded cells represent coefficients statistically significant at the 5 percent level. Reduction in Expected Family Contribution (EFC) is defined as the difference between "full-asset" EFC and "current" EFC. Full-asset EFC simulates EFC levels if uncounted assets were treated the same as counted assets by the financial aid system. Current EFC simulates the current formula that excludes uncounted assets. Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Appendix Table A.4: Impact of Uncounted Assets on College Graduation and Student Debt (includes grades and test scores as explanatory variables)

	Dependent Variable:					
	Received 2 Year Degree		Received 4 Year Degree		Student Loan Debt	
	Full Sample	Enrolled in College	Full Sample	Enrolled in College	Full Sample	College Graduates
	No Controls					
Black	**-0.055**	-0.039	**-0.301**	**-0.298**	**-1,775.4**	**9,055.5**
	(0.018)	(0.030)	**(0.033)**	**(0.051)**	**(834.9)**	**(2,153.6)**
Hispanic	-0.003	-0.011	**-0.145**	**-0.200**	**-2,908.3**	-3,245.7
	(0.025)	(0.030)	**(0.038)**	**(0.045)**	**(855.8)**	(1,757.7)
	With Controls (including Mother's SES)					
Black	**-0.065**	**-0.112**	-0.035	-0.045	703.8	**7,425.0**
	(0.023)	**(0.036)**	(0.033)	(0.052)	(762.3)	**(2,418.4)**
Hispanic	-0.032	**-0.091**	0.059	0.063	-557.1	-3,929.5
	(0.026)	**(0.035)**	(0.037)	(0.046)	(881.2)	(2,117.9)
EFC (in $10,000s)	0.007	0.004	**0.021**	**0.019**	-169.0	**-601.1**
	(0.005)	(0.005)	**(0.007)**	**(0.007)**	(174.7)	**(261.8)**
EFC Squared	-0.0001	-0.0001	**-0.0005**	**-0.0004**	-2.2	6.4
	(0.0001)	(0.0001)	**(0.0002)**	**(0.0002)**	(3.7)	(5.5)
EFC Reduction (in $10,000s)	**-0.021**	**-0.028**	**0.051**	**0.042**	**-1,199.2**	**-1,776.3**
	(0.010)	**(0.011)**	**(0.015)**	**(0.016)**	**(472.0)**	**(569.4)**
EFC Reduction Squared	0.0007	**0.0011**	**-0.0025**	**-0.0021**	**128.0**	**169.1**
	(0.0005)	**(0.0005)**	**(0.0010)**	**(0.0009)**	**(34.7)**	**(31.0)**
Sample Size	2,371	1,676	2,160	1,510	2,370	778

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement

Notes: Bolded cells represent coefficients statistically significant at the 5 percent level. Reduction in Expected Family Contribution (EFC) is defined as the difference between "full-asset" EFC and "current" EFC. Full-asset EFC simulates EFC levels if uncounted assets were treated the same as counted assets by the financial aid system. Current EFC simulates the current formula that excludes uncounted assets. Additional control variables in lower panel include mother's level of education, mother's age at birth of child, and mother's marital status at time of birth. All specifications are weighted by "individual longitudinal weights" in the PSID, measured in the survey year relevant for the outcome measured (i.e. college enrollment in the year respondents were ages 17/18 and college graduation at ages 23/24).

Appendix Table A.5: Simulated Impact of EFC Reduction on Gaps in Educational Outcomes (includes grades and test scores as explanatory variables)

		White/Black Gap		White/Hispanic Gap	
	Sample	Unadjusted	Impact of Uncounted Assets	Unadjusted	Impact of Uncounted Assets
Enroll in College by Age 19	All students	21.0%	1.9 pp	1.2%	1.4 pp
Graduating from 2-Year Institution	Enrolling Students	3.9%	-1.9 pp	1.1%	-1.5 pp
Graduating from 4-Year Institution	Enrolling Students	29.8%	2.7 pp	20.0%	2.1 pp
Student Loan Debt	4-Year Graduate	$9,056	-$837	$-3,246	-$569

Source: Authors' calculations based on data from the Panel Study of Income Dynamics' (PSID) Transition to Adulthood Supplement
Notes: pp indicates percentage point changes. The percent change in the enrollment/graduation outcomes reflects the percentage point change divided by the unadjusted percentage (x 100).

Data Appendix – PSID

Respondents in TAS are linked to parents and grandparents using the Parent Identification File and using fields Family ID and Person ID. Each TAS respondent is assigned guardian(s) at age 17-18 (or, if not available, at age 15-16) based on the match between the child's Interview Number and the parents' Interview Numbers. All income and wealth metrics, defined below, are pulled from the assigned guardian(s)' Wealth Supplement data at the relevant age (17-18 or, if not available, 15-16) and adjusted for inflation.

Variable	PSID Module or Supplement	Notes
	Family Resources	
Family Income	Wealth Supplement	
Counted Assets	Wealth Supplement	Net Worth – Uncounted Assets
Uncounted Assets	Wealth Supplement	Retirement Savings (excl. Defined Benefit and Defined Contribution) and Home Equity on Primary Residence
Net Worth	Wealth Supplement	
Mother's Socio-Economic Status	Wealth Supplement	
	Educational Outcomes	
Graduated from High School by Age X	Transition into Adulthood	
Enrolled in College by Age X	Transition into Adulthood	
Graduated from College by Age X	Transition into Adulthood	
High School Background	Transition into Adulthood	Defined at age 17-18
Student Loan Debt	Transition into Adulthood	Undergraduate debt only (Stafford, Perkins)
	Demographics	
Demographics: Child	Transition into Adulthood	
Demographics: Parents	Parents: Individual Files	