Is Student Loan Debt Discouraging Home Buying Among Young Adults?

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Introduction

Amid concern that high levels of consumer debt may be slowing the housing market recovery, many media outlets and financial experts have suggested that rising student loan debt is discouraging home-buying among young adults. The stated rationale is that young adults, who now leave college with an average of $23,000 in student loan debt (Federal Reserve Bank of New York 2013; Rothstein and Rouse 2008), are either purposefully avoiding home ownership because they do not wish to take on additional debt, or are unable to get approval for a mortgage due to their high debt loads and poor credit scores. This is a major concern given that college educated young people are integral to the growth of the economy and the housing market in particular (Brown and Caldwell 2013). But despite the recent concern surrounding this issue, there is very little empirical research that actually interrogates the claim that student loan debt has discouraged home buying among young adults.

In this study, we examine this question and test the empirical claim that student loan debt has delayed home ownership among young adults. We make several contributions to the literature. First, we use individual-level longitudinal data from the National Longitudinal Study of Youth 1997 cohort (NLSY97), rather than aggregate-level or repeated-cross sectional data to test the claim that student loan debtors are less likely to buy homes or take on mortgages than their non-indebted counterparts in the most recent cohort of young adults. Second, we consider multiple outcomes related to home buying, including home ownership, holding a mortgage, and the amount of mortgage debt reported by respondents. Third, we account for a range of confounders that may render any association spurious, including sociodemographic characteristics, postsecondary educational characteristics, and state and year fixed effects. To account for the fact that both student loan debt and home buying are endogenous, we use the

sticker price of the institutions that young adults attended during their postsecondary career to instrument the effect of student loan debt on home buying. Finally, we examine whether the rise of student loan debt may have exacerbated existing social inequalities in home-buying, and ask if the effect of debt on home ownership varies by family background characteristics (race and socioeconomic status).

Student Loan Debt and Home Buying: A review of the evidence and limitations

The claim that student loan debt is discouraging home buying among young adults is largely based on the correlation of two historical trends. First, student loan debt has grown substantially among young adults in the last several years, as both the proportion of young adults with debt and the average debt among debtors has increased over time (Federal Reserve Bank of New York 2013; Houle 2014b). Student loan debt was the only type of consumer debt that grew during the Great Recession, and unlike other forms of debt it cannot be discharged in bankruptcy(Atkinson 2010). In 2010 outstanding student loan debt surpassed aggregate credit card debt for the first time in history and is now second only to home mortgage debt as the primary form of household debt in the United States (Federal Reserve Board 2010).

A second trend is that, as first-time home buyers, young adults make up a substantial portion of the housing market, but the proportion of young adults buying home has declined in recent years (Fisher and Gervais 2009; Houle 2014b; Segal and Sullivan 1998). The correlation between these two trends—rising student loan debt and falling home-ownership among young adults—has motivated the logic behind the claim that student loan debt may be decreasing home ownership.

There are at least two key problems with this logic. First, this logic is confounded by "the ecological fallacy", as it attempts to draw individual level conclusions about debtors and non-

debtors from aggregate-level trend data. Second, the downward trend in home buying among young adults predates the rise in student loan debt, and may have more to do with structural shifts in the transition to adulthood rather than the rise of student loan debt (Furstenberg 2010; Fussell and Furstenberg 2005; Houle 2014b).

As it stands, very little research has examined the link between student loan debt and home-buying. Among the few studies that have examined this issue, the evidence is mixed. For example, Chiteji (2007) uses data from the Panel Study of Income Dynamics and finds no significant association between non-collateralized debt (i.e. credit card and student loan debt) and transition into home ownership between the ages of 25-34. It is important to note that this study did not estimate separate effects for credit card and student loan debt, and thus it is unclear whether these findings reflect a null association between student loan debt and home ownership.

A recent study from the New York Federal Reserve offers a more direct test of this claim. In a brief report, Brown and Caldwell (2013) use Equifax data to examine the link between outstanding student loan debt and home mortgage debt among a sample of college-going and non-college-going young adults. They report three key findings. First, they find that young adult student loan debtors have historically had higher rates of home ownership than those without debt—which is unsurprising given that student loan debtors are more educated and have higher incomes than those without debt, many of whom did not attend college. Second, they find that this association flipped in the recent recession, such that by 2012 student loan debtors had marginally lower rates of home-ownership than non-debtors. Third, they find that in recent years young adults with student loan debt have lower credit scores than those without debt. Although they imply that the gap in credit scores could explain their finding that debtors have lower home ownership than non-debtors, the authors do not directly test for this mediation effect. Taken

together, Brown and Caldwell conclude that these findings suggest that high levels of student debt in recent years may dampen growth in the housing market.

There are several shortcomings of this study that limit our ability to make strong conclusions about the link between student loan debt and home-buying. First, as the authors note, student loan debtors differ from non-debtors on a range of factors, and their bivariate analysis is not able to account for such factors. Thus, it is possible that their key finding may be driven by other characteristics of student loan debtors, and not their debt, per se. Second, because their sample includes young adults who went to college and those who did not, they do not make an "apples to apples" comparison. If we are interested in whether or not student loan debt is an important factor for home buying, we should compare those who attended college, and are thus eligible to accumulate student loan debt.

A few other recent studies show that student loan debt is associated with delayed transition into adult social roles, and thus imply that debt may be linked to delayed home-buying. For example, Addo (2013) uses data from the NLSY-97 and finds that young women—but not young men—with student loan debt are less likely to marry than their debt-free counterparts. It follows that if young adults with debt are delaying marriage and family formation, they are also likely to be delaying home buying—which tends to follow rather than precede marriage (Furstenberg 2010; Rindfuss 1991; Settersten and Ray 2010). Finally, recent polls of young adults show that a large proportion of student loan debtors feel that they may have difficulty paying off their debt, and perceive that their debt will constrain their life choices—such as their ability to purchase a home and pursue their desired career (Ratcliffe and McKernan 2013; USA Today/National Endowment for Financial Education 2006).

In sum, there has been a great deal of concern and interest about the link between student loan debt and home-buying, but little research exists on this topic. The findings from existing research appear to support the claim that student loan debt discourages home buying, but there are several shortcomings that limit our ability to draw any strong or causal conclusions.

The Current Study

In this study we use longitudinal data from the NLSY97 and ask if student loan debt is associated with home buying. We make several contributions to the existing literature on this topic and shed more light on whether and how student loans influence home ownership.

First, we use longitudinal data and follow the most recent cohort of college-going young adults to examine if student loan debt is associated with subsequent home ownership. By comparing young adults who attended postsecondary institutions—and are therefore eligible to accrue student loan debt—we make an "apples to apples" comparison and improve on prior research that has examined differences among student loan debtors and non-debtors in samples that include respondents that never attended a postsecondary institution. Our longitudinal research design also increases our confidence in the causal ordering between student loan debt and home buying, and offers an improvement over repeated-cross-sectional data of aggregate debt and homeownership rates.

Second, to further increase our confidence in a causal association, we control for a range of sociodemographic characteristics, as well as state and year fixed effects, which could confound the link between student loan debt and home buying. As noted above, it's not clear from prior research whether differences in home ownership between debtors and non-debtors is driven by debt levels, or differences in the characteristics of these two groups. To further address this issue, we use the average sticker price of the institutions that respondents attended to

instrument the effect of student loan debt on home ownership outcomes. Although sticker price is not purely exogenous and may be associated with a range of respondent characteristics, by examining variation in debt that is a result of differences in price, we effectively net out confounding characteristics—such as financial literacy, or trouble with finances—that may render the association between debt and home ownership spurious. We note that institutional price is an imperfect instrument in that it is unlikely to be truly random. Rather, it is likely that institutional price is one factor that individuals consider when making decisions about postsecondary education. A better instrument would be average tuition prices in the state and year in which an individual was a junior or senior in high school as such prices do not reflect the price of the actual institution in which an individual subsequently enrolled. Unfortunately, we were unable to obtain such data for the years of observation of this study in time to complete these analyses. We plan to use such data for our instrumental variables strategy in future versions of this paper. In addition, however, recent research suggests that even imperfect instruments (such as sticker price) provide less biased estimates than OLS regression (Basu and Chan 2013).At the very least, our instrumental variables strategy should help reduce measurement error with regard to self-reporting of student loan debt.

Third, we use three key measures of home buying, including home ownership, whether individuals hold a mortgage, and the amount of mortgage debt owed by respondents. By examining both home ownership and mortgage debt, we can interrogate whether student loans are discouraging home buying or simply leading young adults to purchase less expensive homes (and thus taking on less mortgage debt). Such differences could imply drastically different policy solutions.

Finally, we examine potential heterogeneity in the effect of debt on home ownership across sociodemographic groups. We are particularly interested in whether debt may be more strongly predictive of home ownership among youth from disadvantaged family backgrounds. Recent research shows that youth from disadvantaged backgrounds and black youth tend to have greater student loan debt burdens than their more affluent, white, counterparts (Houle 2014a), and are also less likely to enter into home ownership (Conley 1999; Oliver and Shaprio 2006). As such, young adults from disadvantaged backgrounds may be "doubly disadvantaged" due to their family background and student loan debt. Thus, we expect that the impact of student loan debt on home ownership to be stronger for African American youth and youth from lower SES backgrounds. We approximate SES by parental education.

Data and Methods

Sample

Our individual level data are drawn from the NLSY97, which began with a nationally representative sample of 8,984 12-16 year olds in 1997. These individuals have been interviewed annually ever since. At each interview wave, data are collected on education, achievement, employment, family structure, childhood experiences, parenting and family processes, income, health and mental health, crime, and substance use. At approximately age 25, respondents were asked about types and amounts of debt they hold, assets, and homeownership; they were again asked these questions at age 30. The NLSY97 data are particularly well-suited for our analyses in that the study follows a recent cohort of youth that hold historically high levels of student loan debt during their transition into adulthood. The NLSY97 data also allows us to identify all postsecondary educational institutions attended by an individual and, thus, to link each individual

8

to price data for these institutions. Although the NLSY97 data are limited by the fact that debt is only well measured at two time points, this cohort is particularly important given that it entered post-secondary school and transitioned to adulthood during an era of unprecedented access to credit and high and rising tuition costs. As such, our results may provide crucial insights into the role of education debt vis-à-vis homeownership patterns among a recent cohort of young adults.

All NLSY97 sample members had reached age 25 by the 2011 (most recent) wave of data collection and, from the full sample of 8,984 young adults, 8,089 individuals were interviewed at approximately that age; 2,953 individuals had reached the age of 30 and completed the age 30 debt module by the 2011 wave of data collection. This constituted 11,042 potential person-wave observations. Of these, we excluded 1 observation that was missing state of residence, 16 observations that were missing homeownership status, and an additional 22 observations that were missing information on educational debt. This left us with a final analysis sample of 11,003 person-wave observations for which 8,060 individuals were observed at age 25 and 2,943 individuals were observed at age 30; 2,905 individuals were observed at both 25 and 30, whereas 5,193 were observed only once.

For all other variables with missing data, we replaced missing values with either the sample mean (for continuous variables) or zero (for dichotomous and categorical variables) and included in our regression models dummy variables indicating that the initial value was missing. The proportion of missing data was less than 1% for each of the control variables with the exception of parent education and income, for which 3% and 15% of observations were missing.

Measures

We focused on three homeownership-related outcomes which were measured at both age 25 and age 30: whether the individual and/or his or her spouse owned their home; whether the individual held a mortgage on the home; and the amount of the mortgage held on the home.

Our key predictor was the total amount of educational debt held by an individual, again measured at age 25 and age 30. This included all types of educational-related debt including that borrowed from government, private institutions, and friends and family.

We used the average cost of all of the educational institutions attended by an individual in the years in which he or she attended them to predict total educational debt in our instrumental variables models (individuals who did not attend and postsecondary institution were coded zero on this measure). We draw these data from the Integrated Postsecondary Education Data System (IPEDS) Delta Cost Project Database, which provides longitudinal information on postsecondary institutional characteristics attended by NLSY-97 respondents. In addition to using this measure to instrument total educational debt, we also employed it in a series of reduced form models (described below) in which we directly regressed the homeownership outcomes on average educational institution cost.

Finally, we controlled for a host of individual and family characteristics that are likely to be associated with both homeownership and educational debt. The included respondent race (black and other, with white as the reference category), whether the respondent lived in a urban locale in 1997, region of residence in 1997 (north central, south, and west, with northeast as the reference category), the respondent's family structure at age 12 (lived with a stepparent, a single parent, or another family arrangement, with lived with both biological parents as the reference category), the highest educational attainment of the respondent's most educated parent (high school degree or less, two-year college degree, and four-year college degree, with some college

but no degree as the reference category), whether the respondent was living with his or her parent(s) and was married, employed, or a parent at each interview, the respondent's educational attainment level at each interview (less than a high school degree, some two-year college, a two-year college degree, some four-year college, and a four-year college degree, with a high school degree as the reference group), and the respondent's household income at each interview. All models also accounted for state of residence at each interview and the year in which each interview was conducted.

Analytic Strategy

We estimated three specifications of regression models for each outcome. First, we estimated reduced form ordinary least squares (OLS) regressions (linear probability models (for the dichotomous outcomes) in which each outcome was regressed on average cost of the institutions attended by a respondent and the full set of controls. This allowed us to gauge whether institutional price was directly associated with each measure of homeownership. Second, we estimated OLS models in which the outcomes were regressed on respondent-reported total educational debt and the full set of controls. This allowed us to assess whether student loan debt was directly associated with homeownership net of a host of potential selection factors. Finally, we estimated instrumental variables (two-stage least squares) models in which total educational debt was first predicted by average cost of the institutions attended, then associations between the homeownership measures and the predicted value of educational debt were estimated. As noted above, if our instrument is exogenous, then these models can be assumed to estimate the unbiased local average treatment effect of educational debt on homeownership. However, it is likely that this is not the case with regard to our current instrument because individuals may select educational institutions based, at least in part, on

11

sticker price. Thus, we use the instrumental variables approach simply as a robustness check to our OLS models under the assumption that this strategy should at least reduce bias due to measurement error in reporting educational debt. In future incarnations of this work we plan to use average postsecondary education costs in the state and year in which an individual finished high school as our instrument. This measure should better satisfy the exclusion restriction.

We present results from the instrumental variables models for the full sample as well as for only those young adults who attended some postsecondary education (and were therefore subject to tuition). Finally, we present these results for separate models by respondent race.

Results

Descriptive Statistics

Descriptive statistics for the full sample of person-wave observations, as well as by homeownership status, are presented in Table 1. On the whole, 20% of the sample was observed owning a home and 17% holding a mortgage. These figures at ages 25 (30) were 15% (31%) and 14% (24%) (not shown in table). Among homeowners, the average amount of mortgage debt was approximately $116,000. The raw data also show that homeowners had greater average amounts of educational debt than non-homeowners ($6,200 versus $5,300). This likely reflects that homeowners were more likely to have engaged in some postsecondary education (71% versus 59%) and therefore faced greater average educational institution costs ($4,800 versus $4,100).

We also see that homeowners and non-homeowners differ on a host of background characteristics such that homeowners were generally more socioeconomically advantaged than non-homeowners. Homeowners were disproportionately white and from non-urban areas. They were also more likely to have lived with both biological parents at age 12, to have had more highly educated parents, to be married, employed, and a parent themselves, as well as to have

higher levels of educational attainment and greater household incomes. We controlled for these differences in our regression models.

Reduced Form and Individual-Level OLS Results

Our reduced form and individual-level OLS results are presented in Table 2. The reduced form estimates suggest that having experienced higher average educational institution costs was associated with a lower likelihood of owning a home and of having a mortgage, whereas the association with mortgage amount was negative but nonsignificant. The associations of average educational institution costs with homeownership and mortgage holding were, however, relatively small in magnitude. For example, experiencing $10,000 greater educational costs was associated with a 2 percentage point lower likelihood of being a homeowner and also a 2 percentage point lower likelihood of holding a mortgage.

Turning to the individual-level OLS results, we find even smaller and statistically weaker associations between actual (self-reported) educational debt and both of these outcomes. At the same time, however, we find a somewhat larger and significant association with mortgage amount such that each additional $1000 of educational debt was associated with $146 less mortgage debt.

For the most part, the covariates function in expected directions. For example, being black, growing up in an urban area, having lived in household at age 12 that did not include both biological parents, and currently living with one's parents are all inversely associated with homeownership. By contrast, being married, employed and a parent, as well as household income, are all positively associated with homeownership.

Instrumental Variables Results

Our primary instrumental variables results are shown in Table 3. The first stage coefficients indicate that average educational institution cost is highly correlated with educational debt. In all cases, the first-stage F-statistic exceeds a magnitude of 10, indicating that the instruments are not weakly correlated with educational debt. The second stage estimates suggest that, in both the full sample and the subsample with some postsecondary education, total educational debt is inversely associated with homeownership and mortgage holding. As with the OLS results, the association with mortgage amount was negative but nonsignificant. In addition, these estimates are larger than those from the standard OLS regressions, suggesting that those coefficients were likely biased toward zero. The instrumental variables coefficients are modestly large in size. For example, among those with some postsecondary education, having $10,000 more educational debt is associated with a 6 percentage point lower probability of homeownership and a 7 percentage point lower probability of holding a mortgage.

Finally, we estimated the instrumental variables models separately for black and white individuals in the full sample. These results, shown in Table 4, indicate that the inverse association of educational debt with homeownership is considerably stronger for black individuals than for white individuals. None of the second stage estimates were significant for whites, whereas the estimates for both homeownership and holding a mortgage were marginally significant for blacks. The latter were also much larger. These estimates indicate that, whereas there is no discernible association between educational debt and homeownership or mortgage holding for whites, $10,000 greater educational debt for blacks is associated with an 11 percentage point lower probability of homeownership and a 9 percentage point lower probability of holding a mortgage. These constitute very large effects given that the mean homeownership and mortgage holding rates for black individuals in our sample were 12% and 8%.

Discussion

Is student loan debt causing young adults to retreat from the housing market en masse? Or, are student loan debtors buying homes at similar rates as non-debtors—which would imply that young adults' retreat from the housing market has little to do with rising debt? In this paper, we provide one of the first tests of this question and examine the association between student loan debt and home ownership by the age of 30 among the most recent cohort of young adults. In both the reduced form and instrumental variable models, we find an inverse association between student loan debt and home ownership, mortgage acquisition, and the amount of mortgage debt among home owners. But while the association is statistically significant, the size of the association is very small. The modest effect sizes thus provide limited evidence that rising student loan debt is a major culprit in the decline in home-ownership among young adults in the overall population, though it may have a small marginal effect on home ownership rates.

One caveat is that the effect of student loan debt on homeownership is larger for blacks than whites. This suggests that, to the extent that student loan debt is a barrier to home ownership, it is a more significant barrier for black young adults. This is particularly concerning because black young adults already face structural barriers to home ownership compared to their white counterparts (Conley 1999; Oliver and Shaprio 2006). As such, it is possible that student loan debt could contribute to black-white wealth inequalities in wealth in the 21st century, at least among the college educated.

In this paper, we provide a preliminary test of the hypothesis that rising student loan debt has led young adults to retreat from the housing market. Our study provides one of the first direct tests of this hypothesis, and has several strengths. First, we use longitudinal data that allows us to examine how accruing student loan debt is associated with later home-ownership. Second, we

15

account for several potential confounders that may render the debt-ownership association spurious, including sociodemographic background and postsecondary educational characteristics. Third, our instrumental variables approach allows us to draw stronger conclusions about the link between student loan debt and home ownership. Although our instrument is imperfect, it does reduce concerns about measurement error of self-reported debt and limits our analysis to variation in debt that is exogenously induced by institutional price. Thus, concern about potential confounders—such as financial literacy or poor financial management—are somewhat reduced.

However, there are also several limitations that we look forward to improving on in future iterations of this manuscript. First, there are several unmeasured confounders that may bias our current findings. For instance, other forms of debt—particularly credit card debt—may jointly influence the ability of young adults to be approved for a mortgage. Other confounders, such as more detailed postsecondary institutional characteristics (number of years enrolled full time, number of years enrolled in a private versus public school) are strongly associated with student loan debt (Houle 2014a) and may also influence home ownership. Financial literacy may also be an important unmeasured confounder. Many if not all of these measures are readily available in the NLSY-97, and we plan to adjust for these confounders in future iterations of our analysis.

Another key limitation of our study is that we measure home ownership at only two points in time, at age 25 and 30. This limits our analyses in several different ways. First, it potentially ignores the timing of home ownership prior to or between these ages. Second, it substantially reduces our sample size because only a small proportion of NLSY-97 have reached the age of 30 and are thus eligible for the age 30 assets and debts module. The latter issue is out of control, though we will be able to add more respondents to the analyses as new survey waves

are released. We plan to take several steps to deal with the former issue. First, one additional

question we would ask is whether or not young adults who own homes at baseline (e.g. at age 25

or prior) are more likely to exit home ownership if they have student loan debt. Although student

loan debt has been framed as a potential deterrent for home ownership, student loan debt may be

especially problematic for homeowners who fall on hard times. Unlike homes, student loan debt

cannot be discharged in bankruptcy (Atkinson 2010), repossessed, or discharged in a foreclosure.

Thus, one way that student loan debt may inhibit home ownership is by hastening

homeownership exit among young adults. We are unlikely to capture such important differences

in our current analyses. Second, in future analyses we plan to better utilize the longitudinal

structure of the NLSY-97 data and improve upon our measurement of the timing of student loan

debt and home ownership. For example, student loan debt is measured at ages 25 and 30, but

outstanding student loan debt is also measured at each year that the respondent is enrolled in a

postsecondary institution. Although the homeownership data is a bit more sparse (collected only

at age 20, 25, 30, but annually from 2008-present), we could potentially conduct an event history

analysis that would better reveal the importance of student loan debt for the timing of home

ownership among young adults.

Relatedly, we also plan to improve on our methodological strategy. Though we feel that

our state by year fixed effects and instrumental variables strategy is a vast improvement over

existing work on this topic, we recognize that our instrument (institutional sticker price) may be

problematic. Indeed, it's possible that sticker price is not technically exogenous, as young adults

may select institutions based on sticker price. Thus, we plan to examine several additional

variables that may be better instruments than institutional sticker price. First, we plan to use

average state-level prices, which is likely much more exogenous than institutional price. Second,

we also plan to use average amounts of student loan debt accrued by students at postsecondary institutions (reported by institutions in the IPEDS dataset) to instrument the effect of student loan debt on home ownership. Average debt among students at a given institution is likely more exogenous than price, given that it is not advertised and less likely to factor into young adults' college decisions, and it is strongly associated with young adult's accrued student loan debt.

Despite limitations, this study scrutinizes the recent claim that student loan debt is leading to declining home ownership among young adults. Although we do find a very modest association between debt and home ownership, we find little evidence that student loan debt is a "major culprit" of declining home ownership among young adults. Instead, it is likely that declining home ownership among young adults—which predates the recent rise in student loan debt—is more responsive to structural changes in the economy and changes in the transition to adulthood (Furstenberg 2003; Furstenberg 2010; Houle 2014b). However, future research is needed to more fully understand how student loan debt may inhibit wealth acquisition and participation in the housing market.

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Table 1. Descriptive Statistics

	Full Sample	Non-Homeowner	Homeowner	
Homeowner	0.195			
Mortgage holder	0.166		0.891	
Mortgage amount	18664.5		115509.2	
	(56412.2)		(92257.4)	
Total educational debt	5486.1	5319.0	6177.6	*
	(15694.6)	(15345.3)	(17051.0)	
Average educational institution cost	4204.9	4069.7	4764.5	***
	(6056.4)	(6052.8)	(6040.7)	
No postsecondary education	0.385	0.408	0.290	***
White	0.571	0.530	0.742	***
Black	0.278	0.313	0.133	***
Other race	0.143	0.148	0.121	***
Urban	0.730	0.754	0.634	***
Northeast region	0.171	0.182	0.125	***
North central region	0.230	0.210	0.310	***
South	0.383	0.388	0.363	*
West	0.216	0.219	0.202	+
Lived with both parents at age 12	0.473	0.442	0.603	***
Lived with step parent at age 12	0.136	0.135	0.136	
Lived with single parent at age 12	0.327	0.350	0.228	***
Lived in other family structure at age 12	0.061	0.069	0.032	***
Parent(s) had HS degree or less	0.489	0.505	0.420	***
Parent(s) had some college	0.154	0.153	0.158	
Parent(s) had two-year degree	0.100	0.095	0.122	***
Parent(s) had four-year degree or more	0.223	0.211	0.270	***
Currently lives with parent(s)	0.262	0.311	0.056	***
Married	0.289	0.205	0.640	***
Employed	0.834	0.817	0.908	***
Parent	0.478	0.458	0.563	***
Less than HS education	0.114	0.130	0.047	***
HS degree	0.593	0.612	0.516	***
Some two-year college	0.171	0.175	0.157	*
Two-year degree	0.063	0.056	0.091	***
Some four-year college	0.146	0.151	0.124	**
Four-year degree	0.227	0.199	0.345	***
Household income	51395.7	47511.0	67475.2	***
	(52999.8)	(52287.3)	(52912.7)	
Observations	11003	8862	2141	11003

Note: 11,003 person-wave observations. Mean (and standard deviation) or proportion presented. + p<.10, * p<.05, ** p<.01, *** p<.001.

Table 2. Reduced form and OLS results

	Reduced Form			OLS		
	Homeowner	Mortgage Holder	Mortgage Amount	Homeowner	Mortgage Holder	Mortgage Amount
Avg. educ. institution cost ($1000s)	-0.002**	-0.002**	-97.153			
	(0.001)	(0.001)	(136.048)			
Total educational debt ($1000s)				-0.001***	-0.001**	-145.824***
				(0.000)	(0.000)	(38.857)
Black	-0.058***	-0.047***	-4010.519**	-0.056***	-0.046***	-3795.136**
	(0.009)	(0.009)	(1307.019)	(0.009)	(0.009)	(1305.534)
Other race	-0.013	-0.010	-570.633	-0.012	-0.009	-332.483
	(0.012)	(0.011)	(1964.538)	(0.012)	(0.011)	(1964.819)
Urban	-0.035***	-0.025**	-629.600	-0.035***	-0.025**	-645.035
	(0.010)	(0.009)	(1358.991)	(0.010)	(0.009)	(1355.801)
North central region	-0.014	0.005	595.661	-0.016	0.004	762.986
	(0.047)	(0.045)	(7215.381)	(0.047)	(0.045)	(7184.765)
South	0.057	0.040	6523.260	0.056	0.038	6523.530
	(0.038)	(0.037)	(7544.501)	(0.038)	(0.037)	(7500.224)
West	0.081+	0.073	9017.011	0.079	0.071	9148.100
	(0.049)	(0.048)	(7897.529)	(0.049)	(0.048)	(7864.283)
Lived with step parent	-0.035**	-0.027*	-3165.288+	-0.035**	-0.026*	-3046.518+
	(0.012)	(0.011)	(1784.496)	(0.012)	(0.011)	(1781.735)
Lived with single parent	-0.038***	-0.033***	-4444.875**	-0.038***	-0.033***	-4393.666**
	(0.009)	(0.009)	(1388.349)	(0.009)	(0.009)	(1385.279)
Lived in other family structure	-0.074***	-0.064***	-8417.039***	-0.073***	-0.064***	-8419.021***
	(0.014)	(0.013)	(1811.675)	(0.014)	(0.013)	(1814.494)
Parent(s) had HS degree or less	0.006	0.008	517.075	0.007	0.009	542.113
	(0.010)	(0.009)	(1487.103)	(0.010)	(0.009)	(1484.007)
Parent(s) had two-year degree	0.013	0.013	923.402	0.014	0.014	1028.406
	(0.014)	(0.014)	(2179.911)	(0.014)	(0.014)	(2179.160)
Parent(s) had four-year degree or more	-0.020	-0.018	-715.434	-0.023+	-0.021+	-1082.877
	(0.012)	(0.012)	(1958.672)	(0.012)	(0.012)	(1959.131)
Currently lives with parent(s)	-0.137***	-0.127***	-1.53e+04***	-0.137***	-0.127***	-1.53e+04***
	(0.007)	(0.006)	(1056.005)	(0.007)	(0.006)	(1060.232)
Married	0.242***	0.233***	30210.979***	0.243***	0.234***	30225.260***
	(0.010)	(0.010)	(1696.035)	(0.010)	(0.010)	(1697.426)
Employed	0.035***	0.038***	3828.787***	0.034***	0.037***	3634.581***
	(0.008)	(0.007)	(1047.710)	(0.008)	(0.007)	(1049.130)
Parent	0.037***	0.028***	931.735	0.037***	0.028***	819.322
	(0.008)	(0.008)	(1234.440)	(0.008)	(0.008)	(1232.499)

	(1)	(2)	(3)	(4)	(5)	(6)
Less than HS education	-0.048***	-0.054***	-3718.869**	-0.048***	-0.054***	-3723.212**
	(0.011)	(0.010)	(1323.663)	(0.011)	(0.010)	(1322.616)
Some two-year college	0.017	0.017	4190.957*	0.013	0.013	4210.628*
	(0.011)	(0.011)	(1710.384)	(0.011)	(0.011)	(1714.615)
Two-year degree	0.092***	0.088***	7182.579**	0.090***	0.085***	7982.786**
	(0.018)	(0.018)	(2462.284)	(0.018)	(0.017)	(2426.686)
Some four-year college	0.005	0.010	2073.582	0.000	0.003	2689.266+
	(0.012)	(0.012)	(1758.580)	(0.012)	(0.011)	(1626.410)
Four-year degree	0.102***	0.105***	14224.828***	0.100***	0.101***	16015.970***
	(0.014)	(0.014)	(2209.882)	(0.013)	(0.013)	(2114.344)
Household income ($1000s)	0.001***	0.001***	114.411***	0.001***	0.001***	113.793***
	(0.000)	(0.000)	(15.065)	(0.000)	(0.000)	(15.014)
Constant	0.158***	0.082+	-3026.400	0.161***	0.084+	-2628.856
	(0.046)	(0.045)	(8036.666)	(0.046)	(0.045)	(7988.344)
Total Observations	11,003	10,741	9,871	11,003	10,741	9,871
R2	0.229	0.226	0.150	0.229	0.226	0.151

Note: 11,003 person-wave observations. Coefficients and robust standard errors from OLS regressions presented. Standard errors were adjusted for intra-cluster correlation due to multiple observations of each individual. All models also control for state and year of observation. + $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$.

Table 3: Instrumental variables results

	Homeowner	Mortgage Holder	Mortgage Amount
Panel A: Full sample			
First Stage			
Average educational institution cost	0.366***	0.368***	0.348***
($1000s)	(0.052)	(0.052)	(0.053)
Second Stage			
Total educational debt ($1000s)	-0.006**	-0.006**	-279.078
	(0.002)	(0.002)	(389.286)
Total Observations	11,003	10,741	9,871
R2	0.173	0.162	0.132
Panel B: Those with some postsecondary education			
First Stage			
Average educational institution cost	0.394***	0.395***	0.377***
($1000s)	(0.059)	(0.059)	(0.060)
Second Stage			
Total educational debt ($1000s)	-0.006**	-0.007**	-438.951
	(0.002)	(0.002)	(411.656)
Total Observations	6,768	6,591	6,159
R2	0.172	0.150	0.133

Note: 11,003 person-wave observations. First- and second-stage coefficients and robust standard errors from two-stage OLS regressions presented. Standard errors were adjusted for intra-cluster correlation due to multiple observations of each individual. All models adjust for the full set of covariates shown in Table 2. + $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$.