Are Millennials Pursuing Higher Education at the Cost of Owning Homes?

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Abstract

At 1.3 trillion dollars and counting, the United States is a global leader in student loan debt (Student Loan Report, 2016). Many financial experts suggest that student loan debt is discouraging Millennials from owning homes. Although this particular question has not been greatly explored, previous academic literature presents mixed findings regarding the causality between student loan debt and homeownership. In this study, I use data from The Institute for College Access for per capita student debt and the United States Census Bureau for homeownership rates. I find a modest negative association between student debt and homeownership rates among Millennials. In addition, recession is not a statistically significant predictor of homeownership. Overall, I find limited evidence that student debt is a strong predictor of lower homeownership rates among Millennials. Other variables, such as transition markers and cultural changes as stated in previous studies, may account for variations in homeownership rates.
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Introduction

The phrase, “I worked my way through college” may sound familiar to those who either went to college in the 1980s or have parents who did. Today, the idea of Millennials paying for college with an average summer job is highly impractical and almost impossible. With the average tuition cost increased to $19,548 and Pell grants capped at $5,775, a student today would have to work 37-hour weeks, in addition to his or her courses to fully pay for that year’s tuition (College Board, 2018). With financial aid failing to cope with rising tuition costs, millions of young American students are left with no choice but to turn to student loans and make up for the difference.

In 2008, when poor lending practices and mortgage-backed securities spurred the financial crisis and took millions of Americans’ homes and retirement savings, policymakers were quick to introduce legal reforms to stabilize banks and the mortgage credit system to minimize further defaults. Yet currently, no significant legal reforms have been implemented towards student loans. With an average increase of 63% in tuition and fees from 2006 and 2016 and an annual income growth that falls too short, many Millennials have become young graduates with less disposable income than their parents. Rising tuition costs is not the only cause of the increase in student loans. Predatory lending practices have also become a compelling contributor to the crisis. These practices include private lenders encouraging students to borrow significantly more than what they actually need, Sallie Mae’s extension of subprime loans to risky borrowers, the Naviant lawsuit and many more.

Simultaneously, Millennials are less likely to become homeowners than young adults in previous generations. Following the Great Recession, the share of 18 to 34 year olds living with their parents increased from 28% in 2007 to 31% in 2014. While 3% might seem insignificant, the change is notable considering its stagnancy at approximately 27% since mid 1980s. Consequently, the demand for housing and growth of residential investment are projected to decrease as fewer Millennials purchase homes. The steep rise in aggregate student debt and decrease in homeownership have provoked a potential causality between the two. My thesis seeks to find if student debt is indeed a predictor of homeownership among Millennials today.

Existing literature on the effect of student debt on homeownership is limited and mixed in results. Houle and Berger (2015) find a modest negative correlation between student debt and homeownership that is statistically insignificant to prove causality, while Bleemer et al. (2017), Elliot et. al (2013) and Mezza et. al (2016) find otherwise. Despite these findings, there is little to no existing literature on the effect of student debt on homeownership during periods of stagflation, which more accurately depicts the current economy. This paper will add value to
existing literature by conducting a regression analysis for the last decade (2009-16).
With the regression, I analyze not only if the effect of student loan debt on homeownership is statistically significant today, but also if it is largely affected by the state of the economy. If the latter is true, I seek to create conversation about adjustments to the financial aid and student loan credit system that uphold education as an economic equalizer. Determining if a negative causality exists relates to a larger economic issue regarding economic growth and development. Home ownership is the fundamental way to acquire property rights. In a free economy, property rights are essential for economic growth and development as they facilitate the exchange of ownership to capital goods, which in turn develop and sustain financial markets. Without financial markets, the economy will be at a standstill or even collapse. When a generation is aggregately spending less on buying homes, financial markets are faced with a smaller demand for credit. Low demand may result in recessionary effects as many banks count on mortgages as a significant part of their loan portfolio.

**Student Loans and Homeownership: Review of Literature and its Limitations**

Houle and Berger (2015) find limited empirical evidence between student loan debt and homeownership by testing a longitudinal design of individual-level data from the National Longitudinal Survey of Youth 1997. The study maintains an “apple-to-apple” comparison by only focusing on young adults who attended postsecondary education and therefore, eliminating non-debtors who never acquired postsecondary education from the sample. Houle and Berger (2015) find a modest negative correlation between student debt and homeownership that is insignificant to prove causality. Rather, they suggest that other variables such as recession, demographic changes and transition markers as stronger factors affecting homeownership.

On the other hand, Bleemer et. al (2017) find a statistically significant association between student debt and homeownership in the Federal Reserve Bank of New York Staff Reports. The study uses longitudinal dataset called the FRBNY Consumer Credit Panel (CCP) which is built from consumer credit reports by Equifax. The method is different from Houle and Berger (2015)’s study in three ways. Firstly, Bleemer’s study constructs a cohort-level dataset instead of individual-level data. Secondly, Bleemer classifies the sample and results based on state. Thirdly, the study uses co-residence with parents as a substitute for purchase of homes when defining homeownership. The assumption is that young adults who are living with their parents are not homeowners. The study’s regression line reflects as student debt per graduate increases by $10,000, co-residence increase by 2.9% and thus, a negative relationship between the two variables. It is important to note, however, that using co-residence with parents to define homeownership is prone to error; someone who is not living with his parents may be renting and not buying a house. Therefore, the regression results may be overstated.

Elliot et al. (2013) used 2007-09 panel data from the Federal Reserve Board’s Survey of Consumer Finances (SCF). The study is different from the previous ones in which it focuses on how student debt affects homeownership before and after a recession. The research compares the home equity amounts in 2007 and 2009 between households with and without student loans, while controlling for variables such as race and unemployment rates. Elliot et al. find the median 2009 home equity amount for non-debtor households to be nearly twice higher than that of debtor households. This finding indicates that households with student debt are more adversely
affected in homeownership particularly during poor economic conditions. Furthermore, the study also analyzes the differences in home equity between four-year college graduates with outstanding student debt and those without. Graduates with debt suffered 40% more home equity loss than those debt-free; this reinforces the association between student debt and homeownership. That said, the study finds that graduates with debt still generate higher home equity than those without a degree. In other words, a college degree ultimately increases one’s chance of owning a house but obtaining it debt-free will further propel it.

Andrew (2009) analyzes the impact of higher student debt in the UK caused by financing reforms that shifts higher burden of paying for college from taxpayers to students during 2006-08. The study creates empirical modeling and simulation analyses by using data from the British Household Panel Survey (BHPS). The model distinguishes between male, female and couple graduates, as well as their financial backgrounds measure by parental income. Student debt acts as a wealth constraint and the study finds that a typical individual is likely to delay a home purchase until he or she is no longer constrained by wealth or income. In particular, increased student debt delays a typical male graduate in meeting lender deposit requirements by two years. For couples, the delay is extended by an additional four to five years. In addition, the property value also plays a factor. Higher student debt has a magnified impact on the time needed to meet deposit requirements when the value of a desired house is higher. Andrew concludes that higher student debt along with continuous borrowing restrictions by lenders will delay first-time homeownership.

Mezza et al. (2016) find that the US aggregate homeownership rate fell from 69% in 2005 to 64% in 2014. Meanwhile, the homeownership rate for 24 to 32 year olds fell from 45% to 36%, which is nearly twice as the aggregate change of 5%. Upon isolating the effect of student loan debt on homeownership rates, these members found that a 10% increase in student loan debt causes a 1 to 2% drop in the homeownership rate of these borrowers for the first 5 years after exiting school. The study is different from Houle and Berger’s study because it limits the time frame to 5 years after graduation. Thus, it eliminates potential cancelling effects because the burden of debt diminishes over time as the balance is paid down. This finding is also coherent with the Federal Reserve Bank of New York’s analysis, which stated that for the first time in at least a decade, households with student loan debt are less likely to own a mortgage than those who are debt-free.

Data and Method

The independent variable in this study is student loan debt. The Institute for College Access (TICAS) provides comprehensive data on student debt reported by colleges through the Common Data Set (CDS) survey which is used by college guide publishers. The data set contains the percentage of graduates with debt, average debt per graduate, per capita student debt, and racial makeup of graduates by state and year. The dependent variable is homeownership rates among Millennials. The United States Census Bureau provides homeownership rates by age group, state and year from 2006 to 2016. The age group that mostly pertains to the generation of interest, Millennials, is 25 to 34 years old. The data also distinguish between owner and renter occupied rates, where owner-occupied represents the rate of homeowners and renter-occupied represents the rate of renters for each age group.
The control variables included in the regression are unemployment rates, race, state and year. It is necessary to control for unemployment as a higher aggregate unemployment rate will generally affect the homeownership rate negatively, all else equal. Race is also a control variable to control for particular race specific variations such as African Americans, who are less likely to become homeowners compared to other races.

The regression method is a fixed-effects regression by state and year. I regressed the natural logs of each independent variable (per capita debt and each race) on the natural log of owner-occupied rate and renter-occupied rate separately for 586 observations across 11 years (2005-2016). Transforming the regression to a natural log form eliminates the differences in units across variables. For example, the student debt values are in dollars while the race values are in number of persons. Dummy variables are created for each state and each year except for one of each to avoid perfect multicollinearity.

The regression equation is given by:

\[
\ln(\text{homeowner rate}) = \beta_0 + \beta_1(\ln\text{per capita debt graduates}) + \beta_2(\ln\text{Asian or other}) \\
+ \beta_3(\ln\text{black}) + \beta_4(\ln\text{Hispanic}) + \beta_5(\ln\text{foreign}) + \beta_6(\ln\text{unknown}) + e_i
\]

where \(e_i\) is the error term.

The coefficients of interest for each regression are the coefficients of per capita debt (\(\beta_1\)). These coefficients represent the percentage change in homeownership or rent ownership rates for a particular age group that is caused by a one percent change in per capita student debt, and hence, the student debt elasticity of home and rent ownership.

Two and four-year lags are also introduced to the model to examine if there is a relationship between student debt and homeownership after the student graduates. Intuitively, students typically do not buy homes immediately after they graduate college. In addition, existing literature mentions the effect of student debt to be magnified at times of recession. To examine this claim, I create an interaction term between per capita debt and recession. The interaction term isolates the effect of student debt during recessionary periods, if any, on homeownership rates. Recession years are 2008 and 2009, as defined by the National Bureau of Economic Research (NBER).

**Regression: Results and Analysis**

Stata outputs for the regressions vary in statistical significance. Table 1a below shows the student debt elasticity of homeownership for each age group, including the group of interest (25 to 34 year olds). The student debt elasticities of homeownership for Millennials are -0.1277 with no lag and -0.0723 with a two-year lag. Thus, a ten percent change in per capita debt causes a 1.277% decrease and a 0.723% decrease in homeownership rate among Millennials with no lag and a two-year lag respectively. To give a perspective, student debt among Americans has more than doubled over the last decade. Hence, all else equal, homeownership rates among Millennials
have decreased by 12.7% (with no lag) over the last decade. The elasticities are inelastic and quite small which means that there may be other factors that better predict the changes in homeownership rates. Furthermore, the elasticities decrease (become more inelastic) over time as seen by comparing the no lag to two and four-lag figures. This finding is consistent to Mezza et al.’s study that predicts that the effect of student debt on homeownership diminishes over time.

Table 1a: Parameter Estimates for Per Capita Student Debt Elasticity of Home Ownership by Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No Lag</th>
<th>2-Year Lag</th>
<th>4-Year Lag</th>
<th>55+</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Coefficient</td>
<td>Coefficient</td>
<td>Coefficient</td>
</tr>
<tr>
<td>15 to 24</td>
<td>-0.1181*</td>
<td>-0.1637**</td>
<td>-0.1520</td>
<td>0.0042</td>
</tr>
<tr>
<td></td>
<td>(0.0680)</td>
<td>(0.0746)</td>
<td>(0.0934)</td>
<td></td>
</tr>
<tr>
<td>25 to 34</td>
<td>-0.1277***</td>
<td>-0.0723***</td>
<td>-0.0068</td>
<td>0.0271***</td>
</tr>
<tr>
<td></td>
<td>(0.0260)</td>
<td>(0.0277)</td>
<td>(0.0295)</td>
<td></td>
</tr>
<tr>
<td>35 to 44</td>
<td>-0.0565***</td>
<td>-0.0435**</td>
<td>-0.0226</td>
<td>0.0307*</td>
</tr>
<tr>
<td></td>
<td>(0.0216)</td>
<td>(0.0237)</td>
<td>(0.0267)</td>
<td></td>
</tr>
<tr>
<td>45 to 54</td>
<td>0.0620***</td>
<td>0.0670***</td>
<td>0.0307*</td>
<td>0.0267***</td>
</tr>
<tr>
<td></td>
<td>(0.0129)</td>
<td>(0.0125)</td>
<td>(0.0165)</td>
<td></td>
</tr>
<tr>
<td>55+</td>
<td>0.0042</td>
<td>0.0271***</td>
<td>0.0267***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0105)</td>
<td>(0.0090)</td>
<td>(0.0100)</td>
<td></td>
</tr>
</tbody>
</table>

Standard errors in parentheses
Control variables include race, unemployment rates, state and year
***p<0.01, **p<0.05, *p<0.1
No. of observations: 586
Years regressed: 11

Even though the age group of interest for this paper is 25 to 34 year olds, it is also important to note that there is similar relationship between student debt and homeownership for 35 to 44 year olds. The elasticities are more inelastic (-0.0565 and -0.0435 with no lag and a two-year lag respectively), but still statistically significant at the 1% and 5% level. Therefore, it is fair to say that student debt may affect homeownership even 15-20 years after a student graduates. Furthermore, there is actually a positive relationship, although very small between student debt and homeownership for older age groups, especially 45 to 54 year olds. A possible explanation for this is if 45 to 54 years is the age where people previously with student debt are able to purchase homes.

Table 1b below shows the student debt elasticity of rent ownership for each age group. There is statistical significance for older age groups (45 to 54 and 55+ year olds) which depicts a positive relationship between the two variables which is consistent with the owner-occupied regression. There is no statistical significance on the elasticities for most age groups, including Millennials which is the parameter of interest. Therefore, the effect of student debt on rent ownership cannot be inferred from the model. That said, the thesis pertains to home ownership, not rent ownership and thus, the renter-occupied results are not as relevant.
Table 1b: Parameter Estimates for Per Capita Student Debt Elasticity of Rent Ownership by Age Group

<table>
<thead>
<tr>
<th>Lag Type</th>
<th>15 to 24</th>
<th>25 to 34</th>
<th>35 to 44</th>
<th>45 to 54</th>
<th>55+</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Lag</td>
<td>-0.0279</td>
<td>-0.0017</td>
<td>0.0662***</td>
<td>0.1095***</td>
<td>0.0566***</td>
</tr>
<tr>
<td></td>
<td>(0.0329)</td>
<td>(0.0186)</td>
<td>(0.0242)</td>
<td>(0.0230)</td>
<td>(0.0183)</td>
</tr>
<tr>
<td>2-Year Lag</td>
<td>-0.0334</td>
<td>0.0225</td>
<td>-0.0039</td>
<td>0.1340***</td>
<td>0.0459**</td>
</tr>
<tr>
<td></td>
<td>(0.0365)</td>
<td>(0.0190)</td>
<td>(0.0244)</td>
<td>(0.0251)</td>
<td>(0.0194)</td>
</tr>
<tr>
<td>4-Year Lag</td>
<td>-0.0122</td>
<td>0.0206</td>
<td>-0.0273</td>
<td>0.0438</td>
<td>-0.0603***</td>
</tr>
<tr>
<td></td>
<td>(0.0443)</td>
<td>(0.0237)</td>
<td>(0.0280)</td>
<td>(0.0297)</td>
<td>(0.0223)</td>
</tr>
</tbody>
</table>

Standard errors in parentheses
Control variables include race, unemployment rates, state and year
***p<0.01, **p<0.05, *p<0.1
No. of observations: 586
Years regressed: 11

The current study finds no statistical significance of a recession magnifying the effect of student debt on homeownership. As shown in Table 1c below, the elasticities of the model with and without a recession term are almost equal. Therefore, the model suggests identical effect of student debt on homeownership even during recessionary periods (2008 and 2009). This finding is inconsistent with Elliot et al.’s study that states debtors’ home equity are more adversely affected during poor economic conditions than their non-debtors’ counterparts. Lastly, the Adjusted $R^2$ for all figures are above 0.99 which means that 99% of the variation in the data is explained by the model.

Table 1c: Parameter Estimates for Per Capita Student Debt Elasticity of Homeownership for 25 to 34 year olds

<table>
<thead>
<tr>
<th>Lag Type</th>
<th>Without recession term</th>
<th>With recession term</th>
</tr>
</thead>
<tbody>
<tr>
<td>No lag</td>
<td>-0.1277*** (0.0260)</td>
<td>-0.1265*** (0.0275)</td>
</tr>
</tbody>
</table>
Data Limitations

Student Debt Data

Student debt data published by TICAS and gathered by the CDS survey is the only data available for the average cumulative student debt levels, both federal and private loans, for bachelor’s degree students annually (TICAS). That said, the data is subject to a few limitations. Firstly, the CDS survey is completed voluntarily by college officials and not audited, which may incentivize colleges to underreport or not report their students’ debt levels. In fact, very few for-profit colleges report their figures to the CDS, causing a potential source of error as students attending these schools typically acquire more loans. In addition, since the survey is not audited, colleges may not have a high priority to accurately report student debt. For instance, they may not allocate resources to fully measure all the private loans taken by students. Therefore, the actual student debt levels may be higher than reported.

The CDS survey also excludes debt levels of transfer students and debt carried in by students. The exclusion is a limitation because it does not account for students who take on more debt from transferring to a more expensive school. For instance, it is quite common for Millennials to transfer from community colleges to Four-Year institutions for a more reputable degree. Again, this limitation may understate the actual debt levels that students have. Lastly, the ways in which colleges report data changes every year and is not standardized across schools. Hence, variations in student debt levels over time may be caused by these reporting differences and not the actual debt itself.

Homeownership Data

The Current Population Survey and Housing Vacancy Survey by the United States Census Bureau provides the homeownership rates used in the study. These surveys are highly reliable sources of housing information that are widely used among researchers alike. Nonetheless, no data is free from error. Census Bureau uses a probability-selected sample of approximately 72,000 housing units. Like any other sample, it is prone to sampling error. For instance, there could be bias if 35 to 44 year olds are in general, more responsive to the survey and thus, more representative of the sample. Nonresponse error is also a limitation because it is quite impossible to predict which groups did not respond and quantify the effects consequently. Lastly, coverage error is a limitation that best pertain to my thesis. Since the goal of the CPS/HVS survey is not specifically for Millennials, the surveys are not made to fully represent Millennials as a population interest. Thus, the homeownership rates for 25 to 34 year olds recorded on the survey may lack significant data points.

Method Limitations

The regression method used in this paper is limited in a few ways. For one, unemployment rates by age group, state and year are not available. Consequently, as much as the unemployment rates used in the model control for yearly variations for 25 to 34 year olds, they do not account for state variations for these rates during the time period. Another limitation is the lack of individual-level information such as education-level and income of Millennial homeowners. Since the two
variables, homeownership and student debt uses two different samples, there is a potential for error since there is no way to predict if individual A’s homeownership outcome results from his particular debt level during college. In other words, the model would be much more accurate if it tracks the same group of individuals from their debt levels during college until adulthood where homeownership choices are subsequently made.

Conclusion

This paper estimates the effect of student loans debt on homeownership rates among Millennials. I find statistically significant evidence that student debt lowers homeownership rates among Millennials. That said, the inelastic elasticity shows that the relationship is small in magnitude and diminishes a few years post-graduation, which is a more relevant time period to be examined as buying homes is typically not a recent graduate’s top priority. There may be other factors, along with student debt that better predict homeownership rates. Existing literature attributes factors such as cultural changes, transition to adulthood and economic factors such as the recession. My findings show no significant correlation between the recession and homeownership rates. The data and method used in the current study are subject to its various limitations such as omitted variable bias and reporting inaccuracies. I hope that future data to be used for other studies can mitigate these limitations and paint a clearer picture on the conversation regarding student debt and homeownership rates. The issue remains important in determining the transfer of wealth from the older to current generation and subsequently, the state of the economy.
References


Houle, Jason N., and Lawrence Berger. 2015. "Is Student Loan Debt Discouraging Homeownership among Young Adults?" Social Service Review 89, no. 4.


