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What are the Perceived Barriers to Homeownership for Young Adults?

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Abstract

As the U.S. emerges from the Great Recession, there is concern about slowing rates of new household formation and declining interest in homeownership, especially among younger households. Potential reasons that have been posited include tight mortgage credit and housing supply, changing preferences over tenure in the wake of the foreclosure crisis, and weak labor markets for young workers. In this paper, we examine how individual housing choices, and the stated motivations for these choices, reflect local housing affordability and individual financial circumstances, focusing particularly on young households. The analysis makes use of new individual-level data from the Survey of Household Economics and Decisionmaking (SHED). We find that housing affordability is correlated with county-level tenure rates and individual-level probability of homeownership for households with heads under age 40. However, it appears that young households' perceived barriers to homeownership are more closely related to individual financial circumstances than local housing market conditions.

Keywords: Housing demand; tenure choice; household formation; consumer preferences

JEL codes: R1, R21, R31, D10

The analysis and conclusions set forth are solely the responsibility of the authors and do not indicate concurrence by the Board of Governors or other staff in the Federal Reserve System.

1) Introduction

As the U.S. emerges from the Great Recession, there is concern about slowing rates of new household formation and declining interest in homeownership, especially among younger households. Among households headed by individuals under age 35, just 35 percent owned their home at the end of 2014, down from 43 percent a decade earlier in 2004 (U.S. Census Bureau 2015). New household formation fell from about 1.5 million households per year from 1997-2007 to around 500,000 per year from 2007-2010, with much of the decline coming from young adults ages 18 to 34 (Dunne 2012). Policymakers and researchers have speculated about the reasons behind these trends, including low rates of new construction, rising prices in many desirable locations, and tighter lending standards that hinder obtaining mortgages. Additionally, some commentators have suggested that as young adults observed the adverse experiences of some homeowners – including both losses in wealth and dislocations from foreclosure – it may have made homeownership seem a less desirable goal, or at least made potential buyers more cautious about concentrating the bulk of their assets in a single property.

Beyond housing market conditions, labor markets have been especially weak for younger and less-skilled workers (Abel, Deitz and Su 2014), and many young adults have substantial student loan burdens (Baum et al 2014, Bricker et al 2014). Standard housing economics models offer some insights into how housing decisions – tenure choice, location choice, and housing expenditures – reflect individual characteristics and macroeconomic housing market conditions, such as interest rates. However, research both pre-dating and since the recession on how local housing market conditions affect households' actions and preferences offers somewhat mixed findings (see, for instance, Ermisch and Di Salvo 1997, Gabriel and Rosenthal 2015, Haurin et al 1993, Molloy and Shan 2011, Paciorek 2013, Painter and Lee 2013, Rogers and Winkler 2014,

and Whittington and Peters 1996). Therefore increasing the understanding of how housing costs and other conditions affect housing behaviors and preferences is important to academics and policymakers seeking to understand aggregate housing markets as the U.S. continues to recover from the Great Recession.

In this paper, we examine how individual housing choices, and the stated motivations for these choices, reflect local housing affordability and individual financial circumstances, focusing particularly on younger households. The analysis uses individual-level data from the 2014 Survey of Household Economics and Decisionmaking (SHED) combined with publicly available data on local-area housing markets. The SHED data, which will be discussed further in section 3.1, is uniquely advantageous for this analysis for several reasons. It has information on individuals' stated rationale for their tenure choice, as discussed in more detail below. The restricted-use version of the data contains geographic identifiers to the zip-code level, which allows us to merge in county-level local area characteristics from Census Bureau's American Community Survey (ACS) data. The SHED also provides detailed information on other financial characteristics not typically tracked in housing surveys which may influence overall household budgets, such as student loan debt, credit card debt, and savings behavior.

Using these data, our major contributions to the literature on housing choice are twofold. First, we are able to control for a wider variety of individual financial circumstances than are included in previously available datasets. Second, in addition to observing housing outcomes, we can observe the stated reasons for those decisions which cannot be observed in other datasets. This provides further insight into how young adults are considering their housing choices and fills a gap in the literature on the formation of housing decisions.

The results in this paper find support for the hypothesis that absolute and relative housing affordability are correlated with tenure choice for younger households, at both the county and individual level. However, individual-level analysis suggests that local affordability is not a significant predictor of why young renters say they “cannot afford” to become homeowners. Rather, individual financial circumstances, such as the presence of student loan and credit card debt, seem to drive their perceptions that they cannot qualify for a mortgage or cannot afford a downpayment.

The remainder of this paper is organized as follows. Section 2 describes the previous literature. Section 3 describes the data and empirical approach. Section 4 presents results for county-level and individual-level analysis and section 5 concludes.

2) Previous Literature

A number of standard housing models explain equilibrium housing outcomes – tenure choice, location choice, household formation rates, and housing expenditures - as a function of individual characteristics and preferences (Börsch-Supan 1986; Dettling and Hsu 2014; DiPasquale and Wheaton 1994; Henderson and Ioannides 1983; Mayo 1981). Empirical research on these topics has established some consistent stylized facts about the relationships between individual characteristics and some of these housing outcomes. For instance, owner-occupancy rates increase with income, wealth, education, age, employment, and among families with children (Carliner 1973; Deng, Ross, and Wachter 2003; Lee and Painter 2013; Linneman and Wachter 1989; Painter, Gabriel, and Myers 2001). Additionally, homeownership rates increase as the cost of homeownership decreases relative to the cost of renting, as housing prices

decrease relative to incomes, and as mortgage availability and affordability increase (Duca and Rosenthal 1994; Haurin, Hendershott, and Kim 1993; Haurin, Hendershott, and Wachter 1995).

Several recent papers have examined changes in household formation and/or tenure choice during the housing boom and bust of the 2000s, and have found substantively different results. Gabriel and Rosenthal (2015) estimate age-specific household-level tenure status as a function of localized housing price levels, expected one-year price changes, and price volatility. They find that higher house prices negatively affect the probability of homeownership, but that this effect diminished between 2000 and 2005, then strengthened from 2005 to 2009. Similarly, they find that, although housing price volatility is generally a deterrent to homeownership, the effect weakened during the boom and increased during the bust. They infer from changes in model coefficients that “households may have become more risk-loving during the boom and more risk averse” during the crash and recovery. Painter and Lee (2013) focus specifically on household formation rates among young adults; using individual-level data, they find that household formation generally decreases during recessions, but that decreased housing prices during the 2007-09 recession had little effect on household formation. By contrast, Dunne (2012) finds that metropolitan areas with weaker house price growth from 2007-2010 had lower rates of household formation by young adults; and Paciorek (2013) finds that rising housing costs and poor labor market outcomes have depressed the headship rate in recent years. Molloy and Shan (2011) investigate changes in location, household size and tenure of individuals who experienced foreclosure, and find that although foreclosure increases the probability of moving and decreases probability of owning, it does not significantly increase the probability of doubling-up. Rogers and Winkler (2014) examine the relationship between MSA-level housing prices, rents, and foreclosure rates and living arrangements of young adults from 2005 to 2011.

They find that, of the three housing market variables, only rents significantly negatively predict headship rates. They also conclude that individual-level factors trump housing market conditions in decisions about living arrangements, which is consistent with our individual-level analysis results.

3) Empirical approach and data sources

We start by examining the relationship between affordability and tenure among young households at the aggregate community level, then move to individual-level analysis. The community level analysis yields a baseline estimate of whether the general hypotheses posed by the existing literature are observed in aggregate housing markets. However, because aggregate county characteristics cannot capture underlying individual preferences and behaviors, we also include the individual analysis using the SHED. The individual level analysis tests whether local affordability influences individual choices and motivations once additional controls are added for individual financial circumstances and personal characteristics.

The analysis focuses on young individuals (under age 35 or 40, depending on the dataset), because they are more likely than older households to be making transitions in their location, household status, living arrangements and tenure. Were we to focus on all individuals, the results could therefore be swayed by individuals who made housing decisions years earlier, at a point when neighborhood conditions are quite different to what they are today.¹ In addition,

¹ If there were no transaction costs of buying or selling a home, this restriction would not be necessary, as it would then be costless for individuals to adjust their tenure and location choices based on evolving neighborhood conditions and personal circumstances. However, the large transaction costs involved in buying or selling a home means that location and tenure choices are relatively stable among homeowners, and the resulting lack of responsiveness to changing conditions would introduce additional error into our estimates were we to include older homeowners who may have purchased many years earlier.

young households have lower average incomes and wealth and so are likely more price sensitive in their decisions.

3.1) Data sources and descriptions

For the aggregate, county level analysis, we use the 2011 to 2013 county level American Community Survey (ACS) data collected by the United States Census Bureau.² The ACS data are based off of slightly over 2 million interviews per year, and include county-level statistics including measures of housing affordability, such as the median house price and price-income ratio, demographic characteristics of the county, including the age and education levels of county residents, and information on the housing stock, including the age of the housing stock and share of units that are multifamily homes.

This primary data for the individual analysis in this paper are the 2014 Survey of Household Economics and Decisionmaking (SHED), which is a nationally representative survey of U.S. adults conducted by the Federal Reserve Board (Board of Governors 2015).³ The 2014 SHED sample includes approximately 5,900 individuals, including an oversample of households with income under \$40,000.⁴ The survey includes questions on a range of household economic issues, including housing, savings, and credit usage. Importantly, in contrast to many other datasets which focus exclusively on economic outcomes (e.g. home ownership status, housing tenure, credit score), the SHED probes respondents on their underlying motivation for key decisions (e.g. why do you own/rent your home, how do you expect home prices to change in the

² For publicly available ACS data, see: U.S. Census Bureau, American Community Survey (ACS), <https://www.census.gov/programs-surveys/acs/>.

³ For publicly available data, see: Board of Governors of the Federal Reserve System, Survey of Household Economics and Decisionmaking (SHED), <http://www.federalreserve.gov/communitydev/shed.htm>.

⁴ Potential respondents are drawn from a larger panel of participants assembled through random address-based sampling. SHED respondents are then randomly selected for inclusion from the larger panel. All responses are weighted by gender, age, race/ethnicity, education, Census region, MSA residence, income, and internet access to match characteristics of the U.S. population. For more information about SHED and its comparability to surveys such as ACS, CPS and SIPP, see Larrimore et al (2015).

near future, etc.). This allows us to analyze an additional dimension of the housing choice model by considering what underlying rationales and expectations contribute to housing choices. The SHED also includes detailed information on respondents' financial situations, including whether the respondent's spending exceeds current income, and the presence of student loans and unpaid credit card balances. All data collected in the SHED, including housing tenure, is based on the respondent and his or her spouse.

Based on the respondent's ZIP code, we merge the individual-level SHED data with county-level data from the ACS. This creates a unique dataset that combines individual outcomes and financial circumstances, community demographic and housing market characteristics, and individuals' stated rationales for renting. Definitions for all county-level variables are shown in Appendix Table 1, definitions for individual-level variables are shown in Appendix Table 2.⁵

3.2) Empirical approach

The analysis tests several hypotheses about how affordability impacts tenure choice and perceived barriers to homeownership. The most straightforward, drawn directly from the previous literature, is that geographic areas with higher absolute and relative housing costs will have lower rates of homeownership, controlling for other factors.⁶ To investigate whether and how local housing affordability affects the rationales underlying housing decisions, we rely on a question in the SHED that asks renters to indicate reasons why they rent rather than own. Specifically, we look at the probability that they answer "It's cheaper to rent than own a home", "I can't qualify for a mortgage to buy a home", or "I can't afford the down payment on a

⁵ Because some ZIP codes cross county lines, in order to merge in ACS data at the county level any observations in ZIP codes that fall in multiple counties are split with their weight adjusted proportionally based on the share of the ZIP code's population residing in each county. This results in a higher number of observations whose weights have the same sum. All observation counts presented in this paper are those prior to splitting observations.

⁶ Because of the cross-sectional nature of our analysis, we do not need to account for changes in credit availability and pricing over time. We assume that pricing of mortgages operates on a national market.

home”.⁷ Renters in local areas with higher relative costs of owner-occupancy should be more likely to answer that renting is cheaper. Both absolute and relative prices are expected to affect the probability of the second and third answers; higher prices will increase the dollar value of down payments and monthly mortgage payments. We also test the relative importance of individual financial circumstances to both the likelihood of owning and the reasons provided for renting among those who do not own. In particular, we test the hypothesis that young adults with more non-housing debt or without savings are less likely to be homeowners, and are more likely to indicate that they rent due to an inability to qualify for a mortgage or afford a down payment. Our model specifications are common to the literature, with the exception of the added richness of the available SHED data.

For the county-level analysis, the general form of the regression to be estimated is:

$$Y_j = \beta_0 + \beta_1 \textit{Affordability}_j + \beta_2 X_j + \beta_3 \textit{Region}_r + \varepsilon_j$$

where j indexes the county and r the OMB region. Y is a series of housing outcomes, including owner-occupant share for all households and for households under 35. *Affordability* is measured by one of four variables: median house price, median rent, price-rent ratio or price-income ratio. X is a vector of county-level control variables indicating local economic conditions and housing markets, such as population age distribution, prevalence of households with children, educational attainment, race and ethnicity, change in the county’s home prices in the past 5 years, the share of multifamily housing and the share of housing built prior to 1940. These variables measure characteristics that have been identified in the previous literature as predictive of individual tenure choice. Region fixed effects for the ten OMB regions are included to capture larger

⁷ The survey gives respondents several other options as to why they rent rather than own, although these answers are much less frequently selected than the ones we examine. Other options include: “It’s more convenient to rent”, “I plan on moving in the near future”, “I simply prefer to rent”, and “I’m currently looking to buy”. Respondents can choose multiple options or write in additional reasons.

regional differences that might influence either availability of housing or rationales for tenure decisions, such as barriers to housing development or social norms about tenure and household formation, such as age of first marriage.

Recognizing the limits of aggregate data for studying individual decisions and outcomes, we then turn to the individual level analysis. For this analysis, the general regression to be estimated is a slightly modified version of that used for the county-level regression:

$$Y_{ij} = \beta_0 + \beta_1 \textit{Affordability}_j + \beta_2 \textit{Individual}_i + \beta_3 X_j + \beta_4 \textit{Region}_r + \varepsilon_{ij}$$

where i , j and r index the individual respondent, county and OMB region, respectively. Y is a series of individual-level housing outcomes or tenure rationales for respondents up to age 40, including tenure and the stated reasons for renting. *Affordability* is measured at the county level by one of four variables: median house price, median rent, price-rent ratio or price-income ratio.⁸ *Individual* is a vector of individual-level characteristics, including age, gender, race/ethnicity, income, education, and the presence of student loan or credit card debt. X is the same vector of county-level control variables used for the county regressions, and fixed effects are included for the ten OMB regions. Reflecting that each of the individual-level housing outcomes and rationales are binary variables, each of the individual level regressions are all estimated using Logit regressions.

4) Results

Results from the county-level analysis are consistent with predictions from the tenure choice literature, namely that lower affordability in local housing markets is associated with

⁸ The price-income ratio is based on the median home price in the county relative to the median income. In contrast to the median price-income ratio in the county, which can only be measured for homeowners, this approach reflects the income of all individuals – both owners and renters – in the area.

lower homeownership, including among younger households. These results are robust across several measures of housing affordability. The individual-level analysis also confirms that young respondents in counties with less affordable housing are less likely to be homeowners, although somewhat surprisingly the absolute measures of affordability – price and rent levels – are more robust predictors of homeownership among young households than are the ratio of prices to rents.

While local housing conditions do impact the tenure outcomes of young adults, the local affordability metrics are generally not significantly correlated with reasons why young renters choose to rent rather than own. Individual financial circumstances, in particular the presence of student loan and credit card debt, are more robust predictors of perceived barriers to homeownership than local economic conditions.

4.1) County-level results

An important condition for conducting cross-sectional analysis of how affordability affects housing choices is whether there is sufficient variation across counties not just in the overall level of prices and rents, but also in relative affordability (price-rent and price-income ratios). As shown in Table 1, both relative affordability measures are fairly dispersed: the mean price-rent ratio is 20.5 with a standard deviation of 4.4, and the average price-income ratio is 3.1, with a standard deviation of 1.0. Variation in the price-rent ratio implies that there are some counties where owner-occupied housing is objectively more expensive relative to rental housing (with the caveats that we cannot observe housing quality for either rental or owner-occupied units and that current housing prices are self-reported in the ACS which introduces a potential source of error). Variation in the price-income ratio implies that in some counties, fewer owner-occupied houses are affordable to the average household (or the average household would have

greater difficulty in purchasing the average house). We also see substantial variation in our outcome measures, the homeownership rate among all households and among those aged 25 to 34.

As a preliminary test of the relationship between affordability and tenure at the county level, we calculate correlation coefficients between the county homeownership share and our four affordability metrics (Table 2)⁹. To test our expectation that the relationship between homeownership and our price measures will be stronger for younger households – both because they are more likely to be making active decisions about tenure choice and location and because they face tighter budget constraints – we look at homeownership among all households and among three age groups: 25-34 years, 35-44 years and 45-54 years. Overall, the correlation coefficients have the expected signs: higher prices and higher price-income ratios are negatively and significantly correlated with homeownership for all households and among each of the age groups. The magnitudes of the correlations decrease with increasing age, which supports both the hypothesis that prices are more of a binding constraint on tenure for younger households and that tenure decisions are only reevaluated sporadically so older cohorts may have made their choices years earlier when local housing prices were different.

Perhaps counterintuitively, the correlation coefficient between rents and homeownership is also negative for all age groups. However, this is likely a reflection of the fact that rents and housing prices are also correlated, and the negative relationship between homeownership rates and housing prices overwhelms the expected positive relationship between rents and homeownership. As expected, the point estimate for the correlation coefficient between the

⁹ Because ACS produces three-year estimates only for counties above a certain population threshold (20,000), the 1,631 counties in the sample do not cover the universe of counties in the US.

price-rent ratio and homeownership is negative for all age groups, although it is only significant for homeowners under 35 who we expect to be most responsive to price changes.

Figures 1 and 2 show the same relationships graphically, displaying scatterplots of log median house prices and homeownership shares for all U.S. counties in metropolitan statistical areas. Figure 1 does so for all households and Figure 2 considers only young households under age 35. Consistent with the correlation coefficients in Table 2, both graphs show a downward sloping relationship, with a slightly steeper slope for young households. However, the figures also reveal considerable dispersion. The data labels identify the largest 20 counties by population. Even among these largest counties, there remains substantial dispersion in median home prices and a negative relationship between prices and homeownership shares. However, the fact that these large counties all have tenure rates below that which would be predicted from their prices alone reflects the fact that county-level tenure rates reflect many more factors than just housing prices.

The additional factors which influence county-level tenure rates likely including the age distribution, demographics and unemployment of the county, the mixture of household types, and the age and composition of the housing stock, to name just a few. To reflect the importance of these additional characteristics, Table 3 moves from exploring simple pairwise correlations to regressions, controlling for these other variables. When doing so, the results still reveal negative and significant relationships between housing affordability metrics and countywide homeownership. Both without any controls except for the OMB region (Column 1), and when including controls for individual and local characteristics (Column 2), all four affordability metrics are negative and significantly associated with homeownership. While the controls generally do not alter the direction of the relationship between our affordability metrics and

homeownership rates, it is clear that the controls do play a role in the tenure decision, as the R-squared values for both all adults and just those under age 35 are very low when just including housing affordability metrics, but increase substantially with the addition of controls.¹⁰

Similar patterns are observed for younger households (Columns 3 and 4), as all of the affordability metrics have a negative and significant impact on homeownership rates among these individuals both with and without the inclusion of additional control variables.

4.2) Individual-level results

Table 4 presents summary statistics on the tenure and perceived barriers to homeownership for SHED respondents; Column 1 shows all respondents and Column 2 shows only respondents age 40 or younger.¹¹ Unsurprisingly, a higher share of respondents up to age 40 are renters (42 percent compared to 28 percent total).¹² A slightly higher share of young renters would prefer to own than the overall renter sample. This difference in preferences for renting may reflect that older renters often have idiosyncratic, non-financial reasons for renting. Looking at the reasons given for renting, young respondents are quite similar to the full sample, however: about half of young renters believe they can't afford a down payment, 32 percent state they can't qualify for a mortgage, and 25 percent state that renting is cheaper than owning. Note that the wording of the last question is open to numerous interpretations about what constitutes the cost of renting versus owning; respondents were not asked to consider this for identical

¹⁰ For example, the R-squared for the young adults regression measuring affordability as the median home value increases from 0.231 to 0.626 when including the additional community controls.

¹¹ While the county-level analysis looks at tenure for households under age 35, in the individual analysis we look at respondents up to age 40 because it increases the sample size considerably, giving us more power and ability to decompose results by tenure.

¹² The share of respondents who rent and own do not sum to 100 percent since respondents can report that they neither own nor rent. This population is larger for young respondents, partially reflecting young respondents who live with their parents without paying rent.

housing units or neighborhoods, for instance, or instructed to take into account all components of ownership (mortgage payment, property taxes, homeowners' insurance). So while this question likely reflects their general opinion of the relative cost of homeownership, it is somewhat ambiguous what factors inform their perceptions.

Similar to the county-level results, when performing a logit regression using the individual level SHED data, we observe that lower housing affordability reduces the probability of young adults being homeowners (Table 5). All numbers shown are odds ratios from separate regressions; values less than one indicate a reduced probability of being a homeowner for increased values of the given affordability metric. The first column shows odds ratios from regressions on each affordability metric alone, the second column adds in individual-level control variables, and the third column shows results that include both individual and county-level controls. Consistent with the observations from the aggregate county-level regressions, the odds ratios of county prices are below one and significant in all specifications, indicating that higher prices decrease the probability of homeownership among young households. The magnitudes of the odds ratios drop when adding in individual controls, suggesting that affordability matters more on the margin, then increase again somewhat when county-level controls are added. A similar pattern is observed when measuring local area affordability using the county price-income ratio. However, the results are less robust on price-rent ratios. The odds ratios on price-rent is only significant in the model with individual controls, and not significantly different from one in the full-controls model (Column 3), suggesting no relationship between the relative cost of owning and the probability of owning.

While Table 5 finds fairly consistent evidence that affordability is correlated with whether young households choose to own, the analysis summarized in Tables 6-8 show only

limited evidence that affordability explains the reasons why young renters choose to rent. The results shown in all three tables are odds ratios from regressions with both individual and county-level controls. In addition to showing the odds ratios on the four county affordability metrics, we show two measures of individual financial circumstances that might reasonably affect renters' ability to purchase a home: the presence of student loan and credit card debt.

Table 6 begins by analyzing the probability that young renters indicated that they rent because "renting is cheaper than owning". We would expect to see odds ratios above one (increased probability) for price levels, the price-rent ratio, and the price-income ratio. By this logic, each of these three price measures are unexpected in direction, although the latter is not statistically significant.¹³ It is particularly surprising that the price and the price-rent ratio (calculated from observed median housing values and median contract rents) are both negatively and significantly associated with the perceived relative cost of renting.

There are several possible explanations for this surprising result. One is that renters are more attuned to the cost of rents in the area than they are housing prices. As a result, higher rents that come in high cost areas make renters perceive that renting is more expensive than owning, even if this is not actually reflected in the true relative costs. There is some limited support for this hypothesis in that higher rents are negatively associated with believing that renting is cheaper than owning (Column 2), although this result is not statistically significant. A second possible explanation is that our price and rent measures do not take into account potential quality differences in the rental and owner-occupied stock, and are not restricted to units actually available on the market. Additionally, recognizing that this question is only asked of renters, it is

¹³ When considering these regressions with no controls, or with only individual level controls, no results are statistically significant.

possible that those who are most likely to feel that owning is cheaper are disproportionately likely to act on that belief and purchase a home.¹⁴

Looking at whether young renters state that they rent because they “can’t qualify for a mortgage”, we would expect odds ratios greater than one for price, price-income ratio, and price-rent ratio (Table 7). It is less clear a priori how rent levels will affect mortgage eligibility directly. The odds ratios resulting from the regressions that measure affordability using the price and price-income regressions are greater than one, but neither these results nor the results measuring affordability using the price-rent ratio are statistically significant. However we do observe that the presence of student loan debt is associated with increased probability of responding that they “can’t qualify” in all specifications. This indication that student loan debt impacts the perceived ability of borrowers to obtain a mortgage is consistent with observations that student loan debt can play a role in homeownership decisions (Brown et al. 2014).

The final analysis examines the relationship between affordability metrics and whether young renters “can’t afford a down payment” (Table 8). A priori, we would expect that the odds ratios on price, price-rent and price-income should be greater than one (increased probability), because higher prices will translate in larger required down payments. Higher rent levels will also reduce the ability of renters to save for a down payment. The estimated odds ratios are all greater than one, but, as was seen for the other reasons for renting, none are statistically significant.¹⁵ As with the results on qualifying for a mortgage, both indicators of non-housing debt are greater than one and significant in all specifications, and quite large in magnitude. It

¹⁴ The lack of a significant relationship between the local price-income ratio and tenure decisions in Table 5, however, suggests that the exclusion of homeowners in the regression is likely not the primary driver of this result.

¹⁵ However, in contrast to that seen for the likelihood of saying that you cannot qualify for a mortgage, where no affordability metrics were statistically significant prior to including county level controls, the results for how affordability impacts the likelihood of stating an inability to ability to afford a downpayment are statistically significant using each affordability metric when including the individual level controls but not the county controls.

seems feasible that having to make debt payments on student loans and credit card balances reduces the ability of young renters to save for a down payment. However, while we do partially control for other financial circumstances by including parental education, own income, own education, and whether the respondent could cover 3 months of expenses from savings, it is possible that both the accumulation of debt and the lack of funds for a down payment may reflect unobserved financial circumstances such as family wealth, prior-year incomes, or attitudes towards saving, which impact both resources for a down payment and the accumulation of education and credit card debts.

5) Conclusions

Policymakers, researchers and housing industry members have been concerned at the low rates of new household formation and first-time homeownership in the wake of the Great Recession. As yet, it is unclear whether young households' delay in forming independent households and purchasing homes reflects macroeconomic factors, local housing market conditions, local labor market conditions, individual financial circumstances or shifts in preferences. In this paper, we examine the determinants of tenure for young households at both county-level and individual-level, focusing particularly on the roles of local housing affordability and individual financial conditions.

Results at the county level are consistent with hypotheses from the housing economics literature: higher absolute and relative housing costs are associated with lower homeownership among young households, controlling for other factors. Results from individual-level analysis on housing tenure are also consistent with these patterns. Higher prices are associated with lower odds of owning for young respondents. Additionally, results indicate that having student loan debt increases the odds that young renters say they can't qualify for a mortgage and having either

credit card or student loan debt increases the odds that they say they cannot afford a down payment. More puzzling, however, is that county-level measures of housing affordability generally are not significantly predictive of the perceived barriers to homeownership among young renters, and the one instance where they are – considering the impact of the price-rent ratio on renting because it is cheaper – the direction of the effect is the opposite of that expected. This seems to suggest, consistent with the findings in Rogers and Winkler (2014), that local housing market conditions have little impact on the stated reasons for one's housing decisions, and that instead individual circumstances and backgrounds play a more important role.

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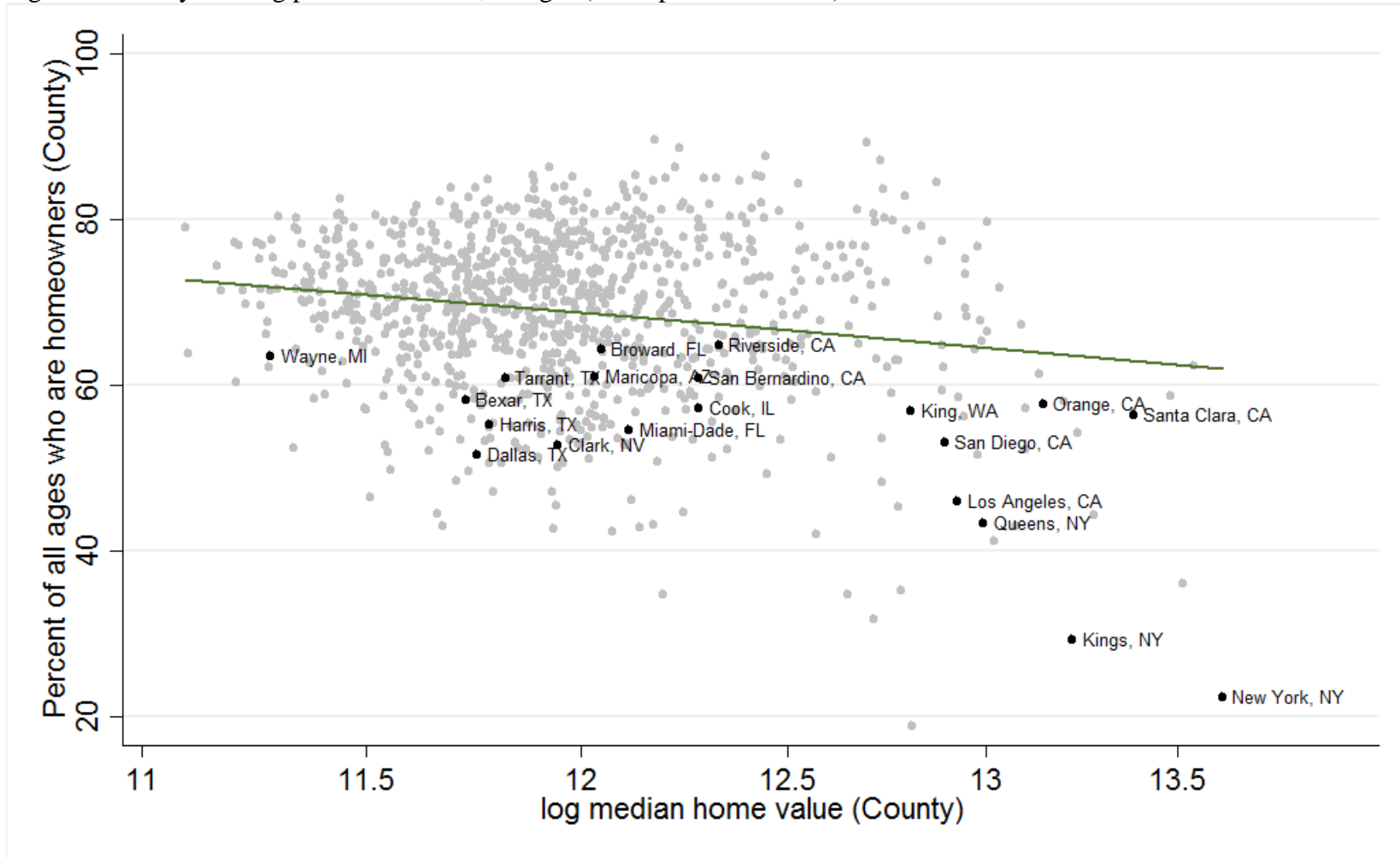
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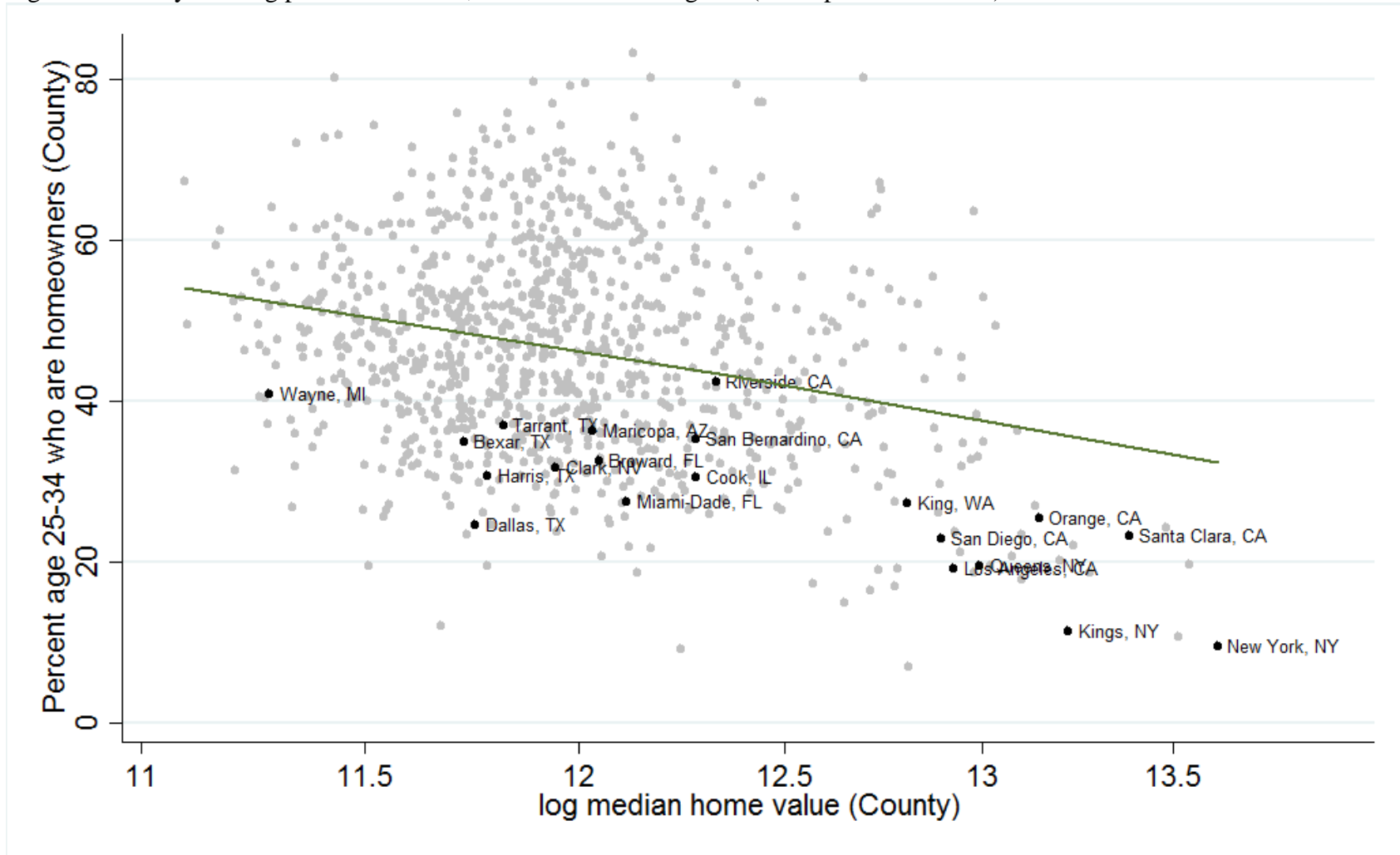
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Figure 1: County housing prices and tenure, all ages (Metropolitan counties)



Source: U.S. Census Bureau, ACS 2011-2013.

Figure 2: County housing prices and tenure, households under age 35 (Metropolitan counties)



Source: U.S. Census Bureau, ACS 2011-2013.

Table 1: County summary statistics

	mean	sd	min	max	n
Affordability metrics					
Price	153,219	80,319	51,000	823,300	1,631
Rent	607	199	294	1,697	1,631
Price-rent ratio	20.5	4.4	9.3	49.8	1,631
Price-income ratio	3.1	1.0	1.4	12.1	1,631
Housing choices					
Homeowners (%)	69.5	8.4	18.8	89.6	1,631
Homeowners, 25-34 (%)	46.8	12.2	7.0	83.2	1,631
Homeowners, 35-44 (%)	65.0	10.0	14.2	90.6	1,631

Notes: Data from U.S. Census Bureau, ACS 2011-2013. N = 1631 counties.

Table 2: County-level correlation, affordability and housing choices

	Price	Rent	Price-rent ratio	Price-income ratio
Homeowners (%)	-.2141***	-.2358***	-0.0368	-.4362***
Homeowners, 25-34 (%)	-.2870***	-.3004***	-.0999***	-.5015***
Homeowners, 35-44 (%)	-.1856***	-.2060***	-0.0162	-.4334***
Homeowners, 45-54 (%)	-.1491***	-.1374***	-0.0189	-.4142***

Notes: Data from U.S. Census Bureau, ACS 2011-2013. N = 1631 counties.

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 3: County regression results

Dependent var:	Homeowners (%)		Homeowners, 24-35 (%)	
	Price	-2.357*** (0.758)	-2.909*** (0.528)	-3.617*** (0.862)
Rent	-5.722*** (0.884)	-0.953 (0.786)	-7.986*** (1.152)	-6.202*** (1.658)
Price-rent ratio	2.613* (1.513)	-3.380*** (0.637)	2.537 (1.720)	-0.884 (1.350)
Price-income ratio	-12.24*** (1.258)	-6.167*** (0.534)	-18.06*** (1.104)	-7.902*** (1.152)
Additional controls:	No	Yes	No	Yes

Notes: Robust standard errors in parentheses. All affordability metrics are in natural logs. All models include region fixed effects. Additional controls include: pop under 24 yrs, pop 45-59, pop >60, black, Hispanic, BA+, 18+ in college, HH w/ kids, married HHs w/ no kids, young adult unemployment, HPI 5 yr change, HPI change missing, multifamily hsg, hsg pre-1940. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Summary statistics, individual data

	All respondents	Respondents < 40
Own (self or spouse/partner)	61.4	35.3
Rent (self or spouse/partner)	28.0	42.4
Renters who would prefer to own	81.2	87.3
Stated reason for renting:		
It's cheaper than owning.	26.6	25.3
Can't qualify for a mortgage	30.9	31.3
Can't afford down payment	50.2	52.0
Number of owners =	3638	563
Number of renters =	1769	871

Notes: Data from Board of Governors of the Federal Reserve System, SHED 2014. “Live alone” is defined as the set of respondents who live with immediate family and have no one else in their household.

Table 5: Odds ratios for housing tenure, respondents age 40 or younger

Dependent variable:	Homeowner - under 40 yrs (odds ratios)		
	None	Individual	Indiv + county
Median county home price	0.582*** (0.106)	0.290*** (0.0674)	0.451** (0.180)
Median county monthly rent	0.330*** (0.0933)	0.125*** (0.0454)	0.108*** (0.0702)
County Price-Rent ratio	0.751 (0.236)	0.290*** (0.110)	1.103 (0.579)
County Price-Income ratio	0.361*** (0.0902)	0.150*** (0.0484)	0.475* (0.210)
n =	1,658	1,641	1,636

Notes: Robust standard errors in parentheses. All affordability metrics are in natural logs. All models include region fixed effects. Individual controls include male, somecoll, baplus, age25_29, age30_34, age35_39, parent_somecoll, parents_1BA, parents_2BA, parents_unknown, black_nh other_nh, tworace_nh, Hispanic, emergency_savings, midincome, highincome, studentloan, creditcard. County controls include: pop under 24 yrs, pop 45-59, pop >60, black, Hispanic, BA+, 18+ in college, HH w/ kids, married HHs w/ no kids, young adult unemployment, HPI 5 yr change, HPI change missing, multifamily hsg, hsg pre-1940.
 *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Odds ratios, young renters who state “Renting is cheaper than owning”

Dep var:	Renting is cheaper (odds ratio)			
	(1)	(2)	(3)	(4)
Price	0.382* (0.202)			
Rent		0.552 (0.514)		
Price-rent			0.243** (0.174)	
Price-income				0.405 (0.231)
Student loan debt	0.704 (0.173)	0.702 (0.172)	0.719 (0.176)	0.713 (0.174)
Credit card debt	1.053 (0.280)	1.050 (0.281)	1.046 (0.277)	1.046 (0.279)
n =	817	817	817	817

Notes: Robust standard errors in parentheses. All affordability metrics are in natural logs. All models include region fixed effects, individual and county controls.
 *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Odds ratios, young renters who state “Can’t qualify for a mortgage”

Dep var:	Can't qualify (odds ratio)			
	(1)	(2)	(3)	(4)
Price	1.500 (0.882)			
Rent		5.459* (5.294)		
Price-rent			0.837 (0.612)	
Price-income				1.120 (0.726)
Student loan debt	1.506* (0.365)	1.563* (0.380)	1.493* (0.361)	1.493* (0.362)
Credit card debt	1.436 (0.361)	1.428 (0.359)	1.441 (0.364)	1.441 (0.364)
n =	817	817	817	817

Notes: Robust standard errors in parentheses. All affordability metrics are in natural logs. All models include region fixed effects, individual and county controls.

*** p<0.01, ** p<0.05, * p<0.1.

Table 8: Odds ratios, young renters who state “Can’t afford a downpayment”

Dep var:	Can't afford downpayment (odds ratio)			
	(1)	(2)	(3)	(4)
Price	1.839 (0.920)			
Rent		3.058 (2.602)		
Price-rent			1.602 (1.045)	
Price-income				1.248 (0.695)
Student loan debt	1.776*** (0.393)	1.795*** (0.399)	1.755** (0.387)	1.757** (0.387)
Credit card debt	1.919*** (0.472)	1.918*** (0.471)	1.929*** (0.475)	1.932*** (0.476)
n =	817	817	817	817

Notes: Robust standard errors in parentheses. All affordability metrics are in natural logs. All models include region fixed effects, individual and county controls.

*** p<0.01, ** p<0.05, * p<0.1.

Appendix Table 1: County variable definitions

Variable	Definition
Price	Median value, owner-occupied hsg
Rent	Median contract rent
Price-rent ratio	Median value/median rent
Price-income ratio	Median value/median HH income
Homeowners (%)	% owner-occupied housing
Homeowners, 25-34 (%)	% pop age 25-34, owner occupants
Homeowners, 35-44 (%)	% pop age 35-44, owner occupants
Solo HHs < 35 (%)	% pop < 35 living alone
Pop < 24 yrs	% pop < 24 yrs
Pop 44-59 yrs	% pop 44-59 yrs
Pop 60+ yrs	% pop 60+ yrs
Black	% African-American
Hispanic	% Hispanic (all races)
BA+	% pop w/ bachelors or graduate degree
Pop 18+ in college	% pop over 18 in college (full-time?)
HHs w/ kids	% households w/ kids under 18
Married HHs no kids	% households married, no kids
Multifamily hsg	% housing units in 5+ unit buildings
Hsg pre-1940	% housing built pre-1940
Young adult unemployment	% unemployed age 16-35
HPI - 5 yr change	% change (5 yr) in CoreLogic Home Price Index
HPI change missing	% change in CoreLogic Home Price Index Missing

Notes: All county level variables are from the U.S. Census Bureau's ACS from 2011-2013, except for the home price index, which is from CoreLogic.

Appendix Table 2: Individual variable definitions

Variable	Definition
male	= 1 if male, = 0 otherwise
somecoll	= 1 if some college, = 0 otherwise
baplus	= 1 if bachelor's degree or higher, = 0 otherwise
age25_29	= 1 if age 25-29, = 0 otherwise
age30_34	= 1 if age 30-34, = 0 otherwise
age35_39	= 1 if age 35-39, = 0 otherwise
age30_44	= 1 if age 25-29, = 0 otherwise
age45_59	= 1 if age 30-34, = 0 otherwise
age60+	= 1 if age 35-39, = 0 otherwise
parents_somecoll	= 1 if one with some college, =0 otherwise
parents_1BA	= 1 if one with bachelor's degree, =0 otherwise
parents_2BA	= 1 if both with bachelor's degree, =0 otherwise
parents_unknown	= 1 if does not know either parents education, =0 otherwise
black_nh	= 1 if black, non-Hispanic, = 0 otherwise
other_nh	= 1 if other, non-Hispanic, = 0 otherwise
hispanic	= 1 if Hispanic, = 0 otherwise
tworace_nh	= 1 if 2+ races, non-Hispanic, = 0 otherwise
emergency_savings	=1 if could cover 3 months expenses using savings, = 0 otherwise
midincome	=1 if income \$40,000-\$100,000
highincome	=1 if income \$100,000+
studentloan	=1 if any student loan debt, = 0 otherwise
creditcard	=1 if any credit card debt, = 0 otherwise

Notes: All individual level variables are from the Board of Governors of the Federal Reserve System's 2014 Survey of Household Economics and Decisionmaking (SHED).

Appendix Table 3: Odds ratios, housing tenure among all SHED respondents

Dependent variable:	Homeowner - all respondents (odds ratios)		
Controls:	None	Individual	Indiv + county
Median county home price	0.669*** (0.0660)	0.415*** (0.0556)	0.635* (0.156)
Median county monthly rent	0.511*** (0.0799)	0.259*** (0.0546)	0.380** (0.149)
County Price-Rent ratio	0.661** (0.111)	0.365*** (0.0817)	0.872 (0.266)
County Price-Income ratio	0.394*** (0.0537)	0.237*** (0.0424)	0.648* (0.171)
n =	5,287	5,261	5,238

Notes: Robust standard errors in parentheses. All affordability metrics are in natural logs. All models include region fixed effects. Individual controls include male, somecoll, baplus, age25_29, age30_34, age35_39, parent_somecoll, parents_1BA, parents_2BA, parents_unknown, black_nh other_nh, tworace_nh, Hispanic, emergency_savings, midincome, highincome, studentloan, creditcard. County controls include: pop under 24 yrs, pop 45-59, pop >60, black, Hispanic, BA+, 18+ in college, HH w/ kids, married HHs w/ no kids, young adult unemployment, HPI 5 yr change, HPI change missing, multifamily hsg, hsg pre-1940.
 *** p<0.01, ** p<0.05, * p<0.1.