

Borrowing Constraints and Homeownership

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Abstract: This paper identifies the impact of borrowing constraints on homeownership in the U.S. in the aftermath of the 2008 financial crisis. The existence of credit rationing in the U.S. mortgage market means that some households for whom it would be optimal to choose to be homeowners may not be able to do so. Borrowers with certain wealth, income and credit characteristics are unable to obtain a loan even if they are willing to pay a higher cost of credit (Linneman and Wachter 1989). The Stiglitz and Weiss (1981) canonical model sets up the rationale for this credit rationing. Using data from the 2001, 2004-2007 and 2010-2013 Surveys of Consumer Finance (SCF), this paper measures the impact of changes in the income, wealth and credit constraints on the probability of homeownership. Credit supply eased and then became considerably more restricted in the wake of the Great Recession. The loosening of borrowing constraints was accompanied by an increase in homeownership to 69 percent. In this paper we estimate the role the tightening of credit has had on the probability of individual households to become homeowners and the decline in the aggregate homeownership rate to 64 percent. The homeownership rate in 2010-2013 is predicted to be 5.2 percentage points lower than it would be if the constraints were at the 2004-2007 level and 2.3 percentage points lower than if the constraints were set at the 2001 level.

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Introduction

Borrowing constraints enable lenders to manage risk using non-price terms in the presence of imperfect information but also impact the ability of households to become homeowners. Some individual households' welfare would improve if constraints were lifted. However, as the subprime crisis demonstrates, indiscriminately lifting borrowing constraints increases risk in the mortgage market unsustainably and can entail systemic risk.

The literature has identified three constraints that limit access to mortgages: wealth (through maximum loan to value ratio), income (through maximum debt to income ratio) and credit (through minimum credit score). Households with insufficient wealth or income (relative to their preferred housing consumption and local house prices) or an inadequate credit score are unable to become owners even if that would be the optimal tenure based on their preferences, expected duration of residence, and user cost of owning relative to renting.

Changes in the mortgage market can lead to relaxed borrowing constraints, expanded access to mortgages, and increased homeownership. Whether such credit expansions are sustained depends on the ability of financial markets and regulations to ensure proper risk management and assessment.

The first section reviews evidence of the existence of credit rationing in the US mortgage market. The second section discusses the impact of borrowing constraints on homeownership outcomes post WW II. The third section presents new estimates of the effect of borrowing constraints in the aftermath of the 2008 financial crisis.

I. Credit Rationing and Homeownership

Stiglitz and Weiss (1981) develop a model in which lenders ration access to credit using non-price terms. Lenders' ability to risk-base price is limited by the high transaction and information costs associated with estimating credit risk; the presence of unobservable characteristics that affect credit risk; and the effect of higher interest rates on adverse selection and moral hazard. The empirical literature provides evidence of credit rationing in the mortgage market (Duca and Rosenthal, 1994). Lenders use non-rate terms to limit adverse selection associated with higher interest rates or moral hazard for borrowers with little collateral. In this context, borrowers who

cannot meet a minimum downpayment requirement, for example, will not be able to obtain a mortgage even if they are willing to pay a higher interest rate.

Due to the reliance on access to credit to purchase a home, the mortgage borrowing constraints that arise from credit rationing affect households' tenure (and the quantity of housing services they consume). Linneman and Wachter (1989) show that wealth and income constrained households have a lower propensity to be homeowners.¹

The literature shows that young and minority households are particularly impacted by borrowing constraints. Haurin et al. (1996) find that young households are more likely to be constrained and that being constrained has a large effect on the propensity of a young household to own. Barakova et al. (2003) look at recent movers under age 50 in 1989, 1995 and 1998 among households comprising the Federal Reserve Board's Survey of Consumer Finances and estimate that homeownership would double from about 30 percent to about 60 percent in that population if constraint removal were feasible. Examining differences across white and minority households, Gyourko et al. (1999) find that minority households are both more likely to be wealth constrained and less likely to be homeowners when constrained. Their results do not indicate significant differences across races in the homeownership rate of unconstrained households.

These studies were conducted in periods with moderate house price appreciation, which would tend to limit the binding impact of borrowing constraints. Rapidly rising house prices contribute to increasing the demand for homeownership due to backward looking higher expectations for price appreciation (Case and Shiller, 1989). With rising house prices, constraints become more binding increasing pressure to relax them; and the level of constraints themselves may become endogenous and pro-cyclical, contributing to financial instability.

II. Borrowing Constraints and Homeownership Post WW II

In the post WW II period we have seen three different mortgage lending regimes characterized by differing borrowing constraint conditions and homeownership outcomes. Borrowing constraints can change as the result of regulatory shifts or financial innovations or market

¹ Duca and Rosenthal (1994) and Rosenthal (2002) find similar results, as does Haurin et al. (1996) with wealth endogenized.

pressures. The mechanism through which the loosening of constraints occurs has implications for the sustainability of the expansion of credit and homeownership access.

From 1940 to 1960, the US homeownership rate increased by almost 20 percentage points, from 44 percent to 62 percent (U.S. Census, 2015). New government entities in the mortgage market, established in the aftermath of the Great Depression, specifically FHA and the secondary market institution Fannie Mae, along with the economic expansion that followed WW II, contributed to this rise. According to Fetter (2013), the self-amortizing long-term fixed rate mortgage with lower downpayments, introduced by FHA, was a major factor in this rapid and large increase.

For the subsequent three decades of this post WW II regime, between the 1960s and the 1990s, homeownership remained stable. The conventional self-amortizing 30 year fixed rate “American” mortgage (Green and Wachter 2005) provided housing finance, funded by banks and S&Ls, through deposits, until the 1980s.² In the aftermath of the S&L crisis, in the 1980s and the 1990s, this instrument continued to prevail, funded by the secondary market.³ Despite substantial population growth and increasing inflation over this period, housing remained affordable due to this instrument, rising incomes, and an elastic housing supply.

Starting in the late 1990s, but accelerating during the years 2003 to 2007, a combination of regulatory shifts, changes to the structure of the mortgage market, and rising house prices, generated the second mortgage lending regime, which would prove to be turbulent (McCoy et al. 2009). The expansion of credit in the latter part of this period was quite dramatic.⁴ The number of purchase mortgages originated increased from 4.3 in 2001 to 5.7 million in 2004 and remained above 5.5 million through 2006 (FFIEC, 2015).

This increase in debt was not the result of changes in underlying debt repayment capacity of households (such as a positive shock to permanent income) but of changes in credit supply (Levitin and Wachter, 2012). During the same period, household debt increased faster than income (Mian

² In this period mortgages were effectively rationed. Competition for deposits was limited due to Regulation Q deposit rate ceilings. Similarly deposit taking institutions did not compete for mortgage borrowers on rate.

³ Securitized mortgages through the GSEs funded the long term fixed rate mortgage after rising inflation decapitalized the S&Ls. The “housing finance revolution” ended deposit regulation and linked housing finance markets to credit markets (Green and Wachter 2005). The GSEs continued to impose credit constraints for “prime” mortgages that they guaranteed (Levitin and Wachter 2012).

⁴ There is some evidence of the GSEs expanding credit (Fuster et al. 2015), while borrowing constraints remained close to historical levels before the early 2000s (Rosenthal 2002).

and Sufi 2015), driven by the increasing volume and market share of nontraditional mortgages (NTM), subprime lending, and second liens.

Gabriel and Rosenthal (2015) show that age specific homeownership rates increased after 2000 beyond levels explainable by observables. Barakova et al. (2014) show that, in the years 2003 to 2007, credit constraints eased considerably relative to historic norms. National homeownership rates peaked in 2004. Despite the easing of lending constraints, rising house prices increased the share of households affected by constraints (Barakova et al., 2014).

Debates exist as to where credit was directed: to minority and low income households (Mian and Sufi 2015); across the entire income spectrum (Adelino et al. 2015; Acolin et al. 2016a); or to investors (Haughwout et al. 2011).

As the credit expansion took place, the market share of subprime and NTM products increased but neither the risk characteristics of the mortgages issued, nor how the risk was priced, was known (Levitin and Wachter 2012). In the aftermath, we now know that rising prices and price expectations were associated with increased NTM issuance (Brueckner et al. 2012; Pavlov and Wachter 2011)

As house prices peaked in January 2006 and then rapidly declined, with subprime and NTM issuance going near zero, over a third of US homes with mortgages fell “underwater.” Plummeting collateral values and a weakening economy, combined with the risky characteristics of the loans originated during the boom period, drove foreclosure rates to their highest ever recorded levels. In response, a third regime shift took place.

III. Borrowing Constraints and Homeownership After the Great Recession

The homeownership rate declined from a high of 69 percent in 2004 to 63.7 percent in the third quarter of 2015 (U.S. Census Bureau 2015).⁵ In response to high foreclosure rates and “put-backs” to originators of defaulting mortgages, lenders and secondary market institutions tightened the “credit box.” Evidence on credit availability, based on the characteristics of borrowers, indicate

⁵ The decline in homeownership was particularly pronounced among 30 to 39 year old household heads who experienced a 10.4 percentage point decline between 2004 and 2014 (from 61.9 to 51.5%) compared to a 4.6 percentage point decline in the overall population. The current homeownership rate would be even lower without the aging of the population. At 2004 age structure, the homeownership in 2014 would be 62.8 percent instead of 64.5 percent (U.S. Census Bureau 2015).

tightening of mortgage underwriting over the period 2008-2013 beyond historic norms (Goodman et al. 2015). Nonetheless the impact of tightened credit on homeownership has not been estimated.

We estimate the impact of borrowing constraints on homeownership after the Great Recession using the Federal Reserve Survey of Consumer Finance (SCF) for 2010 and 2013 and compare these estimates to those obtained using previous (2001, 2004 and 2007) surveys (Acolin et al. 2015b). The SCF has detailed information about household wealth and income and variables to impute a credit score based on the model developed in Barakova et al. (2003). In addition, with access to local information it is possible to estimate the (unconstrained) preferred house value for a household, given their place of residence, to identify constrained households.

We find that tightened borrowing constraints have a substantial negative impact on the probability of becoming a homeowner in the aftermath of the Great Recession. In the overall population, the estimated marginal decline in the likelihood of being an owner, associated with being subject to one or more of the three borrowing constraints (wealth, income or credit), is 26 percent in 2001 and 23 percent in the period 2004-2007. Following the Great Recession (for the period 2010-2013), the marginal effect of being constrained is a 30 percent decrease in likelihood of owning—substantially larger than in 2001 and 2004-2007 (Table 1).

Table 1: Borrowing Constraints Marginal Effects on Propensity to Own, Entire Population

	2001	2004-2007	2010-2013
Borrowing constraint	-0.26*** (0.02)	-0.23*** (0.01)	-0.30*** (0.01)
Individual and local controls	X	X	X

Robust standard errors in parentheses. *** $p < 0.01$.

Based on simulations, we predict homeownership rate in the overall population in 2010-2013 compared to 2004-2007, the loosened credit regime, and to 2001, the historical credit regime. The homeownership rate in 2010-2013 is 5.2 percentage points lower than it would have been if the constraints were at the 2004-2007 level and 2.3 percentage points lower than if the constraints were set at the 2001 level.

Table 2: Predicted Homeownership Rate Based on Different Regime Constraints

Coefficients

	2001	2004- 2007	2010- 2013
Predicted homeownership rate	67.3%	68.9%	66.2%
Predicted homeownership rate: 2001 constraint coefficient		65.2%	68.5%
Predicted homeownership rate: 2004-2007 constraint coefficient			71.4%

Conclusion

The rationing of credit in the mortgage market due to imperfect information impacts households' propensity to own. In the post-World War II era, institutional shifts and mortgage product innovation increased access to mortgages and homeownership. In the decade 2000 to 2010, changes in the mortgage market led to house price volatility, due to significant easing and then tightening of the credit box, to levels beyond historic norms and, ultimately to significant declines in homeownership rates.

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