



How does home equity affect mobility? ☆

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ABSTRACT

The impact of the housing crash on household mobility is theoretically ambiguous. Households that have little or negative equity are less likely to move because the proceeds from the sale of the home may not be large enough to pay off the original mortgage and provide a sufficient down payment on a new home. On the other hand, at sufficiently negative levels of home equity, household mobility may actually increase through the foreclosure channel. In this paper we develop and empirically test a model that incorporates both of these mechanisms. Our empirical results – based on data for Florida homeowners – provide evidence of a non-monotonic relationship between home equity and mobility. Although default-induced mobility did increase following the financial crisis, this increase did little to offset the substantial decline in voluntary moves due to home equity lock-in; we find that on net, household mobility declined by roughly 25% in our sample because of reductions in equity.

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1. Introduction

Homeownership is promoted and heavily subsidized in the United States.¹ The usual justification for policies aimed at increasing homeownership rates is that homeownership is associated with important positive externalities, including greater investments in local amenities and social capital (DiPasquale and Glaeser, 1999). The value of these social benefits, however, needs to be weighed against possible negative externalities. In particular, homeowners may be less geographically mobile and less responsive to labor market shocks, contributing to higher unemployment and lower

wage growth (Oswald, 1996, 1997).² One reason why homeownership may “lock-in” people to their homes and thus reduce mobility is equity erosion. Those with little or negative home equity may be prevented from moving because proceeds from the sale of their home may be insufficient to repay their mortgage and provide a down payment on a new home (Stein, 1995; Engelhardt, 1996).

The housing market crash has renewed interest in the effects of equity erosion. The first-order effect of this housing crash was the destruction of nearly eight trillion dollars of household wealth and a concomitant reduction in consumption, leaving 22.8% of America households with negative equity as of the fourth quarter of 2011, according to data provided by CoreLogic.³ To the extent that equity lock-in effects have contributed to reduce households' geographic mobility in response to labor market shocks, it is conceivable that the erosion of home equity has also had important second-order effects on the real economy. However, an alternative hypothesis is that mobility has increased as a result of an increased number of foreclosures. In spite of its importance for policy, little is known

* The views expressed in this paper are those of the authors and do not necessarily reflect those of the Office of the Comptroller of the Currency or the U.S. Department of the Treasury.

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¹ Subsidies to homeowners resulted in nearly \$304 billion of forgone tax revenue in 2010 (Carroll et al., 2011). In addition, homeownership is promoted through subsidized mortgage rates through the government-sponsored enterprises Fannie Mae and Freddie Mac as well as a variety of other policies supporting homeownership, such as down payment assistance programs. Associated with the introduction and expansion of various housing subsidies, homeownership rates have increased over time. According to Census Bureau data, the fraction of U.S. households owning their own home increased from slightly over 60% in 1960 to nearly 70% at the peak of housing bubble. Since the bursting of the bubble, the homeownership rate has fallen to 67% as of 2011.

² The papers by Oswald present evidence of homeownership rates being positively correlated with unemployment rates, within and across countries. Subsequent studies, addressing various econometric issues, confirm the presence of adverse labor market impacts associated with homeownership. See, for example Henley (1998), Nickell and Layard (1999), Green and Hendershott (2001), Dietz and Haurin (2003), and Winkler (2010).

³ Due in part to more dramatic price corrections, the prevalence of underwater homeowners is particularly acute in many of the Sunbelt states, such as Nevada, Arizona, and Florida, which had negative equity rates of 61%, 48%, and 44% respectively.

about how important these effects are, let alone how home equity relates to household mobility overall. For instance, the study of Ferreira et al. (2010), using data from the American Housing Survey (AHS) finds that underwater homeowners are less mobile whereas the study of Schulhofer-Wohl (2011), using the same source of data, argues that underwater homeowners are in fact more mobile.⁴

This paper helps remedy the gap in the literature by investigating the relationship between home equity and household mobility, taking advantage of a newly constructed dataset that addresses significant limitations of the data employed in most previous studies. Specifically, we match an annually-updated property database containing information on home values, tenure status, transaction dates, and sales prices with a loan-level database reporting loan origination characteristics, loan performance information, and borrower characteristics. The chief advantages of the resulting database are accurate measures of home equity; the ability to separately identify involuntary mobility, which we define as a move resulting from mortgage default; and a longitudinal frame that extends over the 1999–2011 period, covering the boom and bust in the housing market.

The results from our analysis confirm the existence of significant and large home equity lock-in effects. The estimates from our empirical models suggest that equity erosion between 2006 and 2010 resulted in a 25% reduction in the one-year probability of household mobility. This substantial decline in equity was driven primarily by the reduction in voluntary moves in which a homeowner sells a home as a part of the relocation process. The sharp reduction in equity did increase mobility associated with foreclosure, but on net, this increase did little to offset the reduction in voluntary moves. These results have important policy implications. Specifically, policies aimed at help reducing the equity lock-in of homeowners may be justified if indeed reduced mobility impacts the real economy the way other studies suggest.

The remainder of the paper is organized as follows. In Section 2 we review the previous literature on how equity impacts mobility. In Section 3 we present a theoretical model that motivates our empirical work. The data used in our analysis are described in Section 4, and Section 5 presents our empirical framework. In Section 6 we present the results from our empirical analysis, and Section 7 concludes.

2. Literature review

There are two types of moves that are associated with ownership changes. In the first – and most common – type of move, a homeowner relocates from his existing residence voluntarily, generally selling his home and purchasing another in the open market during the relocation process; we refer to this type of move as *voluntary mobility*. The second type of mobility is related to mortgage default. Although the existing credit risk literature does not typically emphasize the mobility aspect of default, because most defaults result in foreclosure, serious mortgage delinquencies often serve as triggers for household mobility. In the following discussion, because such moves are effectively triggered by an eviction, we refer to them as *involuntary mobility*.⁵ In the rest of this paper, we use the term *voluntary mobility* to refer to any non-default related mobility and *involuntary mobility* to refer to default-induced mobility.

Because our sample is comprised of a substantial number of households making both voluntary as well as involuntary moves, there are three types of studies that are germane to our analysis.

⁴ These and other studies on the impact of equity on mobility are reviewed in detail in the next section.

⁵ It should be noted that, in the case of strategic default, the delinquency is voluntary in nature but the repossession of the property still occurs through eviction.

The first branch of the relevant literature focuses solely on voluntarily mobility, whereas the second set of studies investigates default behavior, ignoring voluntary moves. The final, and most recent, collection of papers on the mobility–equity link does not distinguish between the whether a move is voluntary or the result of foreclosure. These studies are reviewed in turn below.

The voluntary mobility literature conjectures that homeowners with low levels of equity are less likely to move because of credit market imperfections. Specifically, when a borrower's equity falls – either due to an increase in debt or a reduction in housing values – she may be prevented from moving because the proceeds from the sale of her current home are insufficient to cover down-payment requirements on a new home. Stein (1995) provides a theoretical model developing this hypothesis formally, and Chan (2001) is the first study using U.S. data to test the equity lock-in hypothesis empirically.⁶ Chan's (2001) estimates suggest average 3-year mobility would have been 24% higher if prices had not declined during the housing downturn in the early 2000s. Because the data used for the analysis include a very select sample of borrowers, it is not clear how applicable these results are for broader populations of homeowners.⁷ A second study providing support for the lock-in hypothesis is Engelhardt (2003), who investigates the impact of home equity constraints and nominal loss aversion on young homeowners. Using data from the National Longitudinal Survey of Youth (NLSY79) over the 1985–1996 period, Engelhardt (2003) provides evidence that equity constraints reduce mobility, with equity lock-in effects exerting a greater influence on inter- as compared to intra-metropolitan mobility.

Each of the aforementioned empirical studies relied on data during periods when house price variation was relatively modest, especially when compared with the housing market's most recent boom-bust cycle. The homeowners in these studies were thus unlikely to have mortgages with outstanding balances that were significantly larger than the value of the property, a situation that became increasingly common following the 2008 financial crisis. The absence of deeply “underwater” borrowers in previous work is important because there is reason to believe that changes in equity may impact household mobility differently for such borrowers, a point that is emphasized in studies of mortgage default which hypothesize a much different relationship between home equity and involuntary mobility. Building on real options theory, such studies view default as the exercise of the put option embedded in mortgage contracts; in theory, borrowers default on a mortgage once the value of his property falls *sufficiently* far below the value of his mortgage contract. Such behavior is known in the literature as “ruthless” or “strategic” default. Thus, in stark contrast to the voluntary mobility literature, the real options theory of mortgages suggests an inverse relationship between mobility and equity: as equity falls, borrowers are more likely to find it optimal to default on the mortgage with the subsequent foreclosure triggering a household relocation. The mortgage default literature that emphasizes the importance of trigger events such as employment and divorce (see, e.g., Foote et al., 2008) also postulates a positive relationship between mobility and equity as equity impacts the borrower's ability to avoid default in times of temporary economic hardship.

Vandell (1995) provides a review of the early default literature, which will not be summarized here. More recent studies suggest

⁶ Henley (1998) represents an earlier study on the impact of equity on household mobility using data for the United Kingdom.

⁷ In particular, the data used for the analysis is restricted to 30-year adjustable rate mortgages originated by one bank between November 1989 and January 1994 in the states of New York, New Jersey, and Connecticut that meet the underwriting standards of Fannie Mae. The sample will thus exclude, for example, borrowers with poor credit.

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