Funding Liquidity, Market Liquidity and Housing Starts

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More than six years after the financial crisis began, new single-family housing unit starts continue to trend at only 66 percent of their 15-year average, and well below levels reached from 2002-2006. Additionally some commentators have observed that the entry level market is not participating in the housing market recovery as in the past. These observations highlight the importance of liquidity in capital intensive and highly leverage asset such as housing. Indeed many attribute the slump in housing starts to tighter credit standards and greater credit constraints, which make it harder for many Americans to get a mortgage (see Ortalo-Magne and Rady (2006)). Others attribute the slump to massive losses on levered properties that has reduced the purchasing power of buyers and to an increase in foreclosures, because foreclosures create renters rather than buyers (see Guren and McQuade (2012)).

Recently, Brunnermeier and Pedersen (2009) propose a model of the link between as asset market liquidity, the ease with which the housing asset can be traded, and the owner's funding liquidity, the ease with which credit can be obtained. An important implication of their model is that market liquidity and funding liquidity could be mutually reinforcing which leads liquidity spirals. In this regard one testable prediction of their model is that when funding is tight households become reluctant to buy capital intensive asset such housing because both the cost of credit and cost of their equity (in terms of down payment requirement) have gone up. Moreover, the market illiquidity becomes exacerbated due to liquidity spiral.

In this paper, we aim to understand better the impact of both mortgage credit availability (funding liquidity) and market liquidity on residential construction. We define market liquidity as the market turnover defined as the ratio of property transactions to total single family properties at the each PUMA level. Our proxy for funding liquidity is TED, the price difference between three-month futures contract for U.S. Treasuries and three-month contracts for Eurodollars with identical expiration month.

We have organized this paper into the following four sections: First, the background and context section, in which we offer a theoretical framework for this study, provide an overview of research on housing starts, and describe the percentage change in housing starts from peak to trough since World War II. In this section, we also outline the ways in which mortgage credit availability and market liquidity may affect housing starts, and we explain why we use a discontinuity analysis to determine the impact of mortgage credit availability on residential construction. Second, in the Research Design section, we explain the dataset and our regression-discontinuity design. Third, in the Findings section, we report the effect of mortgage credit availability and market liquidity on the number of single-family housing starts. Finally, in the Discussion section, we explore the implications of this finding for policymakers.

Research Design

A standard depiction of the stock-level demand for owner-occupied housing units is

$$SSFit = \lambda_0 + \lambda_1 HOSF_{it} + \lambda_2 KSF_{it-1} + \lambda_3 VUSFi_{t-1} + \lambda_4 FLIQUIDITY_{it} + \lambda_5 MLIQUIDITY_{it} + \mu_i + \varepsilon_i$$

where

SSF_{it}	=	number of single-family housing starts;
$HOSF_{it}$	=	number of occupied single-family units;
KSF_{it}	=	number of existing single-family units;
$VUSF_{it}$	=	number of vacant single-family units;
$FLIQUIDITY_{it}$	=	a binary variable that takes on a value of 1 if funding liquidity or credit availability in market area i is above-normal (with a low cost) and 0 otherwise;
$MLIQUIDITYit$	=	a binary variable that takes on a value of 1 if market liquidity in the market area i is above-normal and 0 otherwise
μ_i	=	Unobserved (to the researcher) area differences, not related to the impact of credit availability or market liquidity (like local supply constraints from natural or preserved features that restrict the number of new house that are built
εi	=	a random error term

The subscript i is used to index areas and t to denote periods.

The model assumes that housing starts are determined by the demand-side in the market, the net change in the number of occupied single-family units (a measure reflecting the net increment to demand), the part of production that replaces depreciated, removed, or converted units (assumed to be proportional to the outstanding stock of units), and the part of production necessary to bring the number of vacant units into line with the desired level.

In this paper we specifically consider two other potential determinants of housing starts, the availability of mortgage credit or funding liquidity and market liquidity or the ease and quickness with which property is sold at low transaction. Here we model the discontinuity of SSF_{it} with respect to the availability of mortgage credit following Ortalo-Magne and Rady (2006), where the tightening (and loosening) of credit markets and credit constraints reduces (increases) the purchasing power of young households, thereby lowering (raising) the demand for owner-occupancy. Our model is also related to Brunnermeir and Pedersen (2009), where low funding liquidity reduces market liquidity leading to inability or reluctance on the part of households to participate in the capital intensive single family housing market. As fewer and fewer young households are able to get on to the property ladder, there are fewer buyers in the entry-level market and fewer trades. With fewer trades in the entry-level market, there are fewer sellers who are able to trade up to a higher-priced home. The resulting drop in demand, in turn, has a dampening effect on existing home sales and the number of single-family housing starts.

Let the availability of mortgage credit to young households in area i at time t be denoted by X_{it}. Areas with credit availability, X_{it}, greater than or equal to a cutoff value, c, experience a higher demand for owner-occupancy, while those with credit availability below the cutoff experience a declining demand for owner-occupancy, so that we have $AVAIL_{it} = 1$ if $X_{it} \geq c$ and $AVAIL_{it} = 0$ if $X_{it} < 0$. The challenge is

to construct a comparison between areas with above- and below-normal credit availability. Similarly, one can visualize market liquidity in the same setting, and we do so in this study.