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Financial integration, housing, and economic volatility ☆

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ABSTRACT

The Great Recession illustrates the sensitivity of the economy to housing. This paper shows that financial integration, fostered by securitization and nationwide branching, amplified the positive effect of housing price shocks on the economy during the 1994–2006 period. We exploit variation in credit supply subsidies across local markets from government-sponsored enterprises to measure housing price changes unrelated to fundamentals. Using this instrument, we find that house price shocks spur economic growth. The effect is larger in localities more financially integrated, through both secondary loan market and bank branch networks. Financial integration thus raised the effect of collateral shocks on local economies, increasing economic volatility.

1. Introduction

The recent Great Recession, many argue, had its origins in the boom and bust in housing and the knock-on effects of the resulting financial crisis (Brunnermeier, 2008). The length and depth of the recession is partly attributed to the slow recovery from the housing bust and the associated consumer-debt overhang (Mian and Sufi, 2014).

This paper shows that financial integration amplified the boom and bust housing cycle by strengthening the spillover from the housing market to the rest of the economy. As shown theoretically in Morgan, Rime, and Strahan (2004), financial integration can smooth credit supply disturbances, but it can amplify the effect of collateral booms (housing booms). Increases in collateral values alleviate contracting problems between borrowers and lenders (Holmstrom and Tirole, 1997). With financial integration, credit can flow into regions with collateral (housing) booms from areas without (or with smaller) booms. Hence, booming regions experience stronger increases in growth (fueled by credit), while nonbooming regions export capital, which slows down their growth. Thus, financial integration ought to amplify the effects of housing shocks on real economic activity and lead to divergence in economic growth across areas.

We test these implications using panel data at the Central Business Statistical Area (CBSA) level. We first show that financial integration strengthened the effect of housing shocks on several broad economic outcomes (income, employment, and total output). We then show that housing shocks in external markets connected financially reduce local economic outcomes, consistent with capital flowing toward areas with stronger housing

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markets and away from those with weaker housing markets.

In our first core test, we evaluate whether shocks to house prices during the 1994 to 2006 period stimulate the local economy and whether financial integration amplifies this stimulus. For identification, we exploit subsidies in financing from the government-sponsored enterprises (GSEs) Federal National Mortgage Association (Fannie Mae) and Federal Home Loan Mortgage Corporation (Freddie Mac). Fannie and Freddie subsidize mortgages, but only those below the jumbo-loan threshold. The threshold is exogenous to individual CBSA economic conditions, as it depends mechanically on past changes in nationwide housing prices. The jumbo-loan threshold matters because borrowers below the threshold enjoy more abundant and cheaper credit. Borrowers close to the threshold are funding-constrained and respond to a rise in the threshold by increasing their housing demand (Adelino, Schoar, and Severino, 2011).

While the jumbo-loan cutoff changes uniformly across all markets, its effects vary across CBSAs. For example, in Los Angeles (where about 5.3% of loan applicants fall within 5% of the jumbo-loan cutoff) the change in the cutoff would have a bigger impact than in Wichita, Kansas (where this fraction is only 0.5%). We build a set of instruments to trace out how an exogenous shock to financial constraints (a change in the jumbo-loan cutoff) affects local housing prices, incorporating interactions related to both demand- and supply-side frictions. CBSAs with more borrowers around the cutoff (more constrained borrowers) should experience slower housing price appreciation than other markets. As the constraint is relaxed (by increasing the cutoff), constrained borrowers enjoy wider access to GSE subsidies. Hence, demand for housing ought to increase more in markets with more borrowers near the cutoff. However, if housing supply is elastic, this increase in demand would have a smaller effect on prices. Following this intuition, we use three instruments: the share of applicants within 5% of the cutoff in year $t-1$, its interaction with the change in the jumbo-loan cutoff from year $t-1$ to t, and a triple interaction with the measure of housing supply elasticity (Saiz, 2010). We find our instruments do explain housing price growth within CBSAs, in line with this intuition.

Armed with exogenous variation stemming from the jumbo-loan cutoff movement, we show that housing prices have a strong causal impact on growth in local employment, personal income, and output. In our base model, a 1% increase in housing prices increases local growth by about 0.34% and increases nonconstruction, nonfinance employment growth by about 0.22%, suggesting that higher prices spill over to sectors not directly related to housing.

We then evaluate the core issue of this paper, which is whether the effect of house price shocks on real economic output strengthens with financial integration. We employ two measures of financial integration to address this issue. The first captures integration stemming from the growth of secondary market for mortgages; the second, the extension of bank branch networks across markets. In local areas 1 standard deviation above the mean of financial integration, a 1% housing price shock raises local growth by about 0.43%, but the effect is insignificant at 1 standard deviation below the mean of financial integration. Our results imply that financial integration increased local economic volatility by amplifying the effect of collateral values (house prices) on the overall economy.

In our final set of tests, we provide micro-foundations for the effects of financial integration. We show that individual lenders reallocate funds across their markets toward those with stronger housing price appreciation and away from weaker areas (controlling for economic fundamentals). We alleviate reverse causality by controlling for lender-year effects and local economic conditions, and we show that the results are similar in magnitude when we limit the sample to lenders whose market share is too small to plausibly move local housing prices. The estimated elasticity of credit growth with respect to housing price growth of about 1.7 is large enough to generate spillovers and, thus, fuel a general economic boom. We then show a negative relation between local outcomes and external housing shocks in financially connected markets, suggesting that capital outflows lead to growth divergence between integrated markets.

Our paper contributes to three strands of literature. First, many argue that the Great Recession has its root in the crash of housing prices beginning in the middle of 2006. Our results support this explanation but also suggest that the pre-crash economic boom was itself fueled by house price appreciation. The findings extend Mian and Sufi (2011), who show that households financed consumption with housing wealth during the boom. Moreover, large-firm investment (Chaney, Sraer, and Thesmar, 2011) and self-employment and employment in small firms (Corradin and Popov, 2012; and Adelino, Schoar, and Severino, 2014) increase with housing wealth. Chakraporty, Goldstein, and Macinlay (2013) find that local business lending declines when banks reallocate capital toward areas with housing booms. Unlike these studies, however, we go a step further and estimate the total effect of housing price shocks on the economy and we condition this estimate on aspects of the financial system. We document that shocks to housing have had a large effect on the overall economy, especially in markets that are well integrated nationally.

Second, the effect of financial integration on economic volatility and business cycle synchronization has been explored both across US states and in the context of liberalization of international capital markets (e.g., Peek and Rosengren, 2000; Morgan, Rime, and Strahan, 2004; Demyanyk, Ostergaard, and Sorenson, 2007; Kalemli-Ozcan, Papaioannou, and Peydró, 2013; Imai and Takarabe, 2011; Cetorelli and Goldberg, 2012). Most of these studies explore settings where capital supply shocks dominate and, hence, document that integration can increase synchronization and smooth business cycles. We find that integration can amplify shocks and de-sychronize asset markets in an environment of strong credit demand and a stable, profitable financial sector.

Third, conventional explanations for the US housing boom blame loose lending practices as the key driver of price appreciation (e.g., Mian and Sufi, 2009; Demyanyk and Van Hemert, 2009; Keys, Mukherjee, Seru, and Vig, 2010; Loutskina and Strahan, 2011). Yet these studies do little to