House Price, Mortgage Premium, and Business Fluctuations

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Summary

Given that the housing market is closely connected to economic activity, the purpose of this paper is twofold. First, using a dynamic stochastic general equilibrium (DSGE) model, we characterize the relationship between the housing market and business cycle regularities for the U.S. economy. To address this issue, we modify the models by Aoki *et al*. (2004) and Bernanke *et al*. (1999) to focus on financial frictions in the housing market. The main transmission mechanism of the model is the external finance premium (EFP) on housing, or specifically the mortgage premium, which is contingent on the ratio of borrower's net worth to housing investment and measures the severity of credit market friction. Calibrated to the U.S. economy, the model is used to investigate properties of the U.S. housing market and business cycles. Second, following the argument of Taylor (2007, 2009) and Ahrend *et al*. (2008), that the deviation of federal funds rates from the Taylor rule during 2002-2004 substantially boosted the U.S. house prices before the subprime crisis, we conduct a counterfactual analysis to examine how the U.S. housing market and economic activity might have reacted had the Federal Reserve raised the interest rate beginning in 2002Q1.

The model is able to capture the relationship between the U.S. housing market and business cycles: the relative standard deviation of residential investment is much larger than non-residential investment, the correlation between residential investment and GDP is smaller than that between non-residential investment and GDP, the volatility of house price is larger than that of GDP, and the mortgage premium is pro-cyclical. We also find that the mortgage premium is crucial for the amplification and propagation of the model to match the data of the U.S. housing market and business cycles. Counterfactual analysis shows that if the Federal Reserve had raised the interest rate in 2002Q1, the pre-emptive monetary policy would have stabilized house price and housing investment volatilities, but at the cost of substantially suppressing housing investment. In particular, the tightening monetary policy aimed to contain the housing market boom takes a big toll on real GDP: its volatility remains approximately the same, but the level of GDP contracts dramatically.