Self-Reinforcing Effects Between Housing Prices and Credit

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The worldwide financial crisis that originated with the US sub-prime crisis of 2007 has highlighted the importance of the interplay between financial markets and the real economy. A great number of factors contributed to the current crisis [see IMF(2009), Hubbart and Mayer (2009) and Acharia and Schnabl (2009]. However, it seems to be widely agreed that it was primarily an unsustainable weakening of credit standards that induced the US mortgage lending and housing bubble. Other countries with more stable credit conditions were mainly affected through the international financial linkages, e.g. European banks incurring heavy losses on securities tightly connected to the US mortgage market in the wake of the meltdown. In those countries, as Duca, Muellbauer and Murphy (2010) emphasize, any overshooting of construction and housing prices owed more to traditional housing supply and demand factors.

However, there is a two-way direction of causation since imbalances in the housing market, or the real estate market in general, oftentimes have threatened the stability of the financial sector. In the past there have been numerous episodes where falling housing prices have preceded financial crises, as Koetter and Poghosyan (2010) point out.

In the real estate market and the housing market in particular the amount of credit made available by lenders depends on the net worth of the debtors. Due to imperfections and informational asymmetries in the credit markets, a prospective borrower is usually granted a loan only by putting up collateral. In the models developed by Kiyotaki and Moore (1997) and Bernanke and Gertler (1989) shocks to the real economy are amplified through the credit market by altering the value of borrowers' net worth.

This so-called financial accelerator mechanism offers an explanation to the housing market fluctuations. First, higher housing prices increase the amount of credit needed to finance a given housing purchase. Thus, we would expect higher property valuations to put an upward pressure on the demand for credit. Second, most housing loans are secured by the property itself. An increase in housing prices raises the value of the housing capital, which feeds into a greater net worth for the household sector. By increasing the net worth and thus the value of the collateral, higher housing prices will increase their borrowing capacity. At the same time, higher property valuations make banks' assets less risky, as the increased value of the collateral pledged reduces the likelihood of defaults on existing loans, which may stimulate the banks to expand their lending.

On the other hand, most housing purchases are financed by credit, and changes in household borrowing are expected to affect housing prices through liquidity effects. The potential self-reinforcing mechanism that works across these markets makes it important to study from the

perspective of financial stability, and it constitutes a main reason why central banks commonly assess financial sector vulnerability by monitoring both property prices and credit growth.

In this paper we analyze this long run dependence within a cointegrated vector autoregression in real housing prices, real disposable household income and real household debt, conditioning on the real after tax interest rate, the number of house transactions and the volume of housing capital.

The cointegration analysis supports two long run relationships: one for housing prices and one for household debt. Also, household income can be considered weakly exogenous with respect to the long run parameters. We find that housing prices depend on household borrowing, real disposable income and the housing stock in the long run, whereas real household debt is driven by the value of housing capital (housing prices times the housing stock), the real interest rate and the housing turnover. Housing prices and household debt are mutually dependent as both appear in the long run equation for the other. This suggests that there are feedback effects between the two in the long run. That said, housing prices are equilibrium correcting to deviations from both long run equations, whereas household debt adjusts only to debt disequilibria.

Second, we embed the long run equations from the long run analysis in a simultaneous system explaining the changes in housing prices and debt, following a general to specific strategy. The equations are estimated simultaneously by FIML and insignificant variables are removed stepwise from the two equations. The estimation results suggest that the credit aggregate is important for housing price dynamics, but that housing prices only affect household borrowing through the error correction term.

Third, a consumer confidence indicator measuring households' expectations concerning future developments in their private economy as well as the Norwegian macro economy is incorporated into our framework. This variable explicitly picks up expectations about future economic conditions and is shown to enter significantly in the housing price equation in the short run.

Fourth, the dynamic multipliers of the impulse response analysis provides clear evidence for the existence of a credit-housing price spiral in Norway. Higher housing prices result in higher credit growth due to collateral effects, which again spur housing price growth and so on, showing that there is indeed a financial accelerator at work.

However, these dynamic multipliers are partial in the sense that they are conditional on variables that are clearly economy endogenous, in particular household income and changes in the housing supply. We will therefore graft our housing price and debt equations into Statistics Norway’s quarterly macro-econometric model (KVARTS) in order to capture the feedback effects from those variables onto housing prices and household dept. This is likely to improve the assessment of the dynamic multipliers of, say, a change in the interest rate for the variables of interest.