Commentary

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When monetary historians look back at this decade, they will undoubtedly highlight the major increases in house prices over the early part of the decade and the sharp declines of recent years as posing a major challenge for monetary policy and central banking.

"House Prices and the Stance of Monetary Policy" by Marek Jarociński and Frank Smets (JS) is a valuable early contribution to the understanding of this episode. It is extremely clear in spelling out and accomplishing its two major objectives: a retrospective econometric analysis of the role of housing markets in recent developments and a consideration of the potential role of house prices in a monetary conditions index.

For my purposes in this discussion, there are three important pieces of evidence provided by JS. Using conditional forecasting methods, the second section of their paper shows that there may be an important component of house price variation that cannot be accounted for by shifts in output and interest rates *or* there may not: The qualification is necessary because the results of difference and level VAR specifications differ importantly. Their third section uses an identified VAR to suggest that loose monetary policy may have contributed to the continuing increase in house prices in 2004 and 2005. Their fourth section investigates the effect of identified "housing demand shocks," with results that I will discuss further below.

MONETARY POLICY

From the standpoint of monetary policy, there are three key questions. First, was the behavior of house prices and quantities normal or unusual over the recent period? Second, did easy money cause a major portion of the rise in house prices and thus make house price declines a necessary outcome when monetary policy tightened? Third, could a regular response to housing—perhaps via the type of monetary conditions index discussed by JS—be desirable in smoothing out overall economic activity and housing markets themselves?

House Prices

It is important to stress that the second section of the JS study, about the extent to which movements in house prices are unusual, can be read in quite different ways.

JS show that movements in interest rates and output largely explain variation in house prices if one uses a *level* (Bayesian) VAR. In this case, there are two implications for monetary policy. First, it seems unnecessary to think about potentially including house prices in the state vector to which monetary policy should respond, since house prices appear to be well explained by interest rates and output. Second, there is no sense in which there is a puzzle in recent years: House prices just moved with macroeconomic conditions in a fairly standard manner. From the standpoint of modern macroeconomic analysis

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and modern central bank practice based on simple rules, this is an attractive reading of the data.

However, JS also show that it is possible to argue that developments in interest rates and output leave a great deal to be explained if one uses a *first difference* VAR. In this sense, there may be an unusual event in recent years, with house prices departing from output and interest rate fundamentals just during this period. Or house prices may be not too closely related to these fundamentals most of the time, so that may be a case for thinking about a separate monetary policy response to housing. That is, we need to know whether other periods of house price increases and decreases look similar to or different from those of recent years.

Monetary Policy as a Cause of House Prices

There has been a great deal of public discussion about "easy money" in the house price boom, and there is some evidence for this view in JS. By shutting down the identified monetary policy shock in panels 1 of their Figures 6A (differences VAR) and 6B (level VAR), they find that house prices would have been lower without monetary policy shocks during 2004 and early 2005.

I have three observations on this finding. First, one would like to know the statistical confidence with which we can make this statement (my own sense based on work with VARs is that this might be low). Second, taking the result at face value, it is important to stress that monetary policy accounts for only a temporary interval of higher house price increases and little of the ultimate decline in house prices. Third, the JS accounting method does not automatically mean that a shock yields a contribution during this period, as may be seen by comparing this to the contribution that JS suggest for a term structure spread: There is nothing contributed to house prices by the yield curve. So, the method is potentially informative in this and other contexts.

I think that we do not know the role that monetary policy played in these events, but there is good reason to be skeptical of the manner in which "easy money" is used in many public discussions.

In the public eye (that of my neighbors and my real estate agent in a Boston real estate market that was a hot one starting in about 2000), there were two distinct parts to the house price boom. The first was based on income and wealth: As my real estate agent said in 2000, people were buying houses in the face of rapidly increasing house prices with "real money" from successful economic ventures. The second was later: People were buying houses or refinancing houses, taking advantage of the increasingly favorable terms offered by lenders. Using my agent's terminology at the later time, this was "easy money." But lender terms were sufficiently generous that it is hard to draw a connection to the Fed: The public definition of easy money is a statement about lending terms, not necessarily about monetary policy.

Monetary Policy Response to Housing

An unfortunate aspect of the JS paper is that the dynamic response to an identified housing demand shock—that object to which a monetary policy authority would potentially want to respond—just doesn't look plausible to me. The key features of this shock, as described at the start of their third section, are that it raises housing prices; it raises private consumption and national product; and it has a positive effect on house investment with a timing that is curious.

From the standpoint of designing a monetary policy response to the housing sector, this puzzling pattern of responses makes it problematic to address my third question (above), which is the critical one from the standpoint of monetary policy.

THINKING ABOUT DYNAMIC RESPONSES IN HOUSING

The analysis of the housing demand shock requires that we begin to think more carefully about the nature of housing dynamics. While macroeconomists use the "time to build" model of Kydland and Prescott (1980) much less now than some time ago, housing is surely a setting in which this model is the benchmark.

To sketch how such a model works and the potential conflict that I see with the impulse responses for the identified demand shock of JS, let's think about a setting in which there is an unexpected increase in housing demand at a fixed stock of housing. We would see an increase in house prices, which in turn would stimulate housing starts and an interval of higher housing expenditure. If the housing starts were undertaken "on spec" by construction companies, then one would expect increased starts only if the future house prices were expected to be high enough to justify construction costs.

JS cite the empirical estimates of Topel and Rosen (1988) and the simulations of a recent quantitative macro model developed by Iacoviello and Neri (2007) as guidance in terms of the effects of house prices on residential investment. The estimates of Topel and Rosen (1988), in particular, suggest an elasticity in the range of 1.5 to 3.15 for the response of investment two years later to a permanent change in house prices. And JS argue that their model captures this level of overall response, thus supporting the identification of the housing demand shock. However, in terms of deciding whether this measure of a housing demand shock is plausible, I think that we need more detailed dynamic information.

Suppose that it takes three quarters of a year to complete a housing construction project and that the distribution of expenditure is uniform over the construction project. Then, housing investment (i) is an equally weighted moving average of starts (s),

$$i_t = \alpha \frac{1}{3}\left[s_t + s_{t-1} + s_{t-2}\right],$$

where α is a parameter describing the size of investment projects. More generally, the time-to-build model may suggest that the time-path of investment depends on the distribution of investment costs over the life of the construction process and the interaction of optimal "housing starts" with the anticipated path of house prices.

Suppose further that starts increase permanently at date $t = \tau$. Then, investment builds up to a new higher level, with one-third of the increase taking place in each period. Now, the factors generating starts are not permanent, but if there is a sustained increase in house prices, then this calculation should capture the early part of the impulse response.

From the standpoint of this type of model, then, the dynamics in Figure 3 seem curious. That is, a housing demand shock raises prices at a point in time by about 1 percent, by the same amount by a year later, by perhaps 1/2 percent after two years, and by nothing after three years. The investment dynamics are a response of about 0.05 for the first two quarters, then perhaps half that by year's end, and zero by six quarters.

A conventional view of the construction process is that at least a year is a reasonable horizon overall, with the first quarter devoted to planning and permits and the last three quarters involving the bulk of the expenditure. There is no question that construction is faster now than it was a couple of decades ago. But before accepting the identification of the housing demand shock, one would like to see that dynamics are consistent with estimates of the distribution of quarterly construction costs.

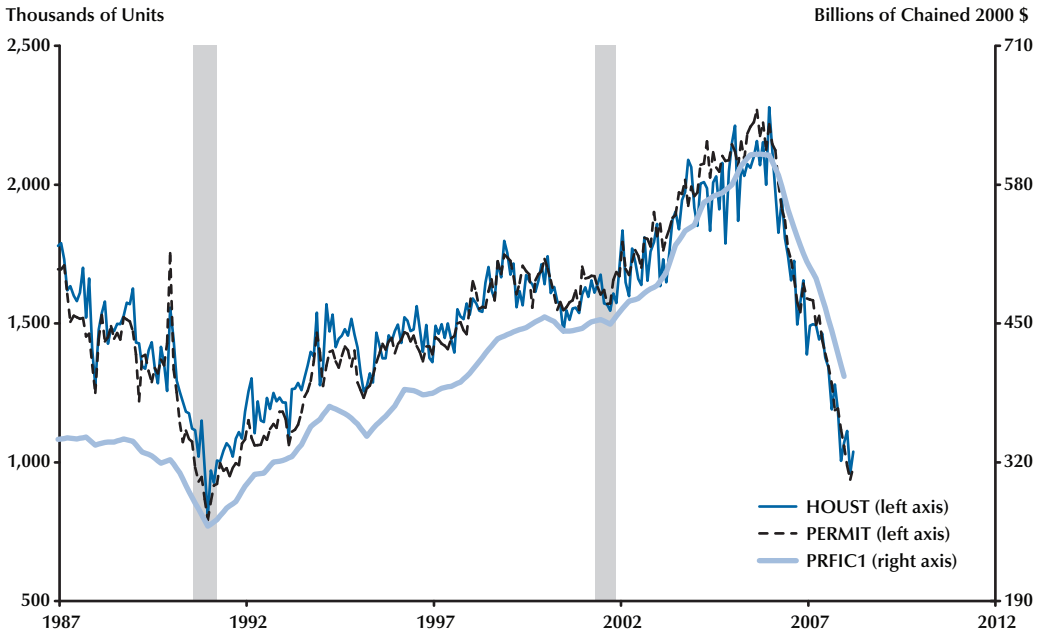
Housing Permits, Starts, and Investment

Housing permits have long been used as a leading indicator (included in the Conference Board's series of leading economic indicators), as have housing starts. Both of these series have been historically treated as noisy ones, but also containing useful information about future economic activity. Figure 1 of this commentary shows why, starting in 1987 as do JS. The reader's eye is drawn naturally to the most recent part of the period, where housing permits and starts (monthly data) move prior to investment (quarterly data). If there is a persistent decline in housing starts, caused by a negative housing demand shock, then there will be a persistent decline in investment in any time-to-build model, but it will take time for the full effect to build up. From this standpoint, the near-term forecasts for housing investment are not too rosy.

The identification of housing demand shocks would benefit from using indicators of permits and starts. Such empirical work, expanding on

Figure 1

Housing Starts and Permits and Residential Fixed Investment



NOTE: HOUST is housing starts: total: new privately owned housing units started; PERMIT is new private housing units authorized by building permit; and PRFIC1 is real private residential fixed investment, 1 decimal. Shaded areas indicate U.S. recessions as determined by the National Bureau of Economic Research.

SOURCE: Federal Reserve Bank of St. Louis: research.stlouisfed.org.

the study of JS, could lead to dynamic responses for investment flows in response to identified housing demand shocks that are more in line with the structural characteristics of housing market investment. In turn, this would provide a more secure basis for analysis of the monetary policy response to housing.

CONCLUSION

The events of the last few years will certainly stimulate much additional research on the nature of housing and mortgage markets, as well as their implications for monetary policy. The analysis of Jarociński and Smets highlights a series of important questions about these linkages, as well as providing some interesting early empirical evidence.

REFERENCES

Iacoviello, Matteo and Neri, Stefano. "The Role of Housing Collateral in an Estimated Two-Sector Model of the U.S. Economy." Working Papers in Economics No. 659, Boston College Department of Economics, 2007.

Jarociński, Marek and Smets, Frank. "House Prices and the Stance of Monetary Policy." Federal Reserve Bank of St. Louis *Review*, July/August 2008, *90*(4), pp. 339-65.

Kydland, Finn and Prescott, Edward C. "Time To Build and Aggregate Fluctuations." *Econometrica*, November 1982, *50*(6), pp. 1345-70.

Topel, Robert. H. and Rosen, Sherwin. "Housing Investment in the United States." *Journal of Political Economy*, August 1988, *96*(4), pp. 718-40.