

## **Financial Innovation and Housing: Implications for Monetary Policy**

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In its latest *World Economic Outlook*, the IMF devotes chapter 3 to “The Changing Housing Cycle and the Implications for Monetary Policy.” The chapter examines how innovations in housing finance around the world have changed the role of housing in the business cycle and perhaps changed the way that monetary policy should respond to developments in housing. The chapter is a stimulating analysis of an important and clearly timely topic.

My comments focus on the U.S. situation and address two subjects: first, the effect of housing-related financial innovation on the sensitivity of the economy to different disturbances, and second, the implications of these evolving sensitivities for policymaking.

### **Financial innovation and the housing sector**

On the first subject, the most important message to take from this chapter and other research is that financial innovation amplifies the effect of certain economic shocks and dampens the effect of others. There is no easy answer to the question of whether financial innovation has made the economy more or less volatile on balance.

Several years ago, I wrote a paper with Karen Dynan and Dan Sichel in which we tried to catalog the channels through which financial innovation affects economic volatility.<sup>2</sup> The paper identified myriad channels affecting nearly every aspect of the economy; a central theme was that one could not deduce, as a matter of logic, whether the net effect of innovation was to raise or lower volatility. For example, we explained that financial innovation helps households and firms to smooth their spending through temporary shortfalls in income, but it also enables households and firms to boost spending too much if they become over-exuberant.

Financial innovation can push economic volatility in different directions for several reasons. One is that innovation takes many forms, and different changes in the financial system have different effects on volatility. Another is that economies have different initial conditions; securitization of mortgages has different effects in a system of regional banks with deposit-rate ceilings than in a system of nationwide banks without such ceilings. A third reason is that the importance of different economic disturbances changes over time, so the impact of augmenting or damping certain kinds of shocks will

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<sup>1</sup> These comments were prepared for a Brookings Institution event on “The Housing Crisis and Lessons for Monetary Policy.”

<sup>2</sup> See “Can Financial Innovation Help to Explain the Reduced Volatility of Economic Activity?,” *Journal of Monetary Economics*, January 2006, and Federal Reserve Board Working Paper, November 2005, <http://www.federalreserve.gov/pubs/feds/2005/200554/200554abs.html>.

matter more or less in certain periods. Lastly, a single type of innovation can affect differently situated households and firms differently, so one needs to aggregate the various responses.

To be concrete, let me review four channels through which financial innovation appears to have changed the sensitivity of the overall economy to shocks involving the housing sector. Some of these channels cause the housing sector to contribute less to economic volatility, all else equal, and some cause it to contribute more.

- First is a smaller effect on housing construction of changes in market interest rates. Several decades ago, when the Federal Reserve's Regulation Q capped interest rates that could be paid on bank deposits, an increase in market rates caused a sharp decline in bank deposits—a phenomenon known as disintermediation. In the absence of securitization, such disintermediation caused a sharp decline in mortgage lending and then in housing construction. Accordingly, Karen, Dan and I showed that the sensitivity of housing construction to movements in market interest rates has fallen substantially over time. By itself, this change makes the economy less volatile.
- Second is a larger effect on housing construction of changes in expected house prices. In general, the ability to borrow more easily or cheaply means that households and firms can increase spending today if their expectations about future income, profit opportunities, or asset appreciation become more favorable. That is generally a good thing when expectations are realistic, but a bad thing when expectations become unrealistic. Karen, Dan and I noted the example of the high-tech boom in the late 1990s: Ready access to credit enabled excessive enthusiasm about the potential of high-tech investments to be translated into a very high investment rate, and the ultimate consequence was a collapse of high-tech investment and stock prices. The obvious analogy for the past several years is overly optimistic expectations of future house prices. People seemed to extrapolate some initial appreciation in houses, and an enhanced ability to borrow against housing collateral then fueled housing demand. High demand pushed up house prices, which created a self-fulfilling cycle—for a while. The lesson is that the easier access to credit facilitated by financial innovation can accentuate asset price bubbles, which makes the economy more volatile.
- Third is a larger effect on consumer spending of changes in house prices. In a paper last year, my co-author Karen Dynan and Federal Reserve Vice Chairman Donald Kohn analyzed the causes and effects of the rise in U.S. household debt, with a particular focus on debt and housing.<sup>3</sup> Karen and Don explained that: “U.S.

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<sup>3</sup> See “The Rise in U.S. Household Indebtedness: Causes and Consequences” in *The Structure and Resilience of the Financial System*, Reserve Bank of Australia, 2007, and Federal Reserve Board Working Paper, August 2007, <http://www.federalreserve.gov/pubs/feds/2007/200737/200737abs.html>. The paper describes three linkages between recent movements in debt and house prices: Rising home values gave households more collateral to borrow against; financial innovation enhanced the availability of credit and thereby pushed up house prices; and the increase in housing equity boosted the reward to innovation that

households have become more exposed to shocks to asset prices through the greater leverage in their balance sheets; a given change on stock prices or home prices will have a larger effect on net wealth and so on spending.” In addition, as emphasized in this chapter of the IMF report, the increased ability to borrow against housing collateral for non-housing purposes increases the sensitivity of the consumption of otherwise constrained households to movements in house prices. This change makes the economy more volatile.

- Fourth is a larger effect on housing construction of shocks to credit supply. Last spring, Federal Reserve Chairman Ben Bernanke and many other observers expected that the subprime mortgage problems would be “contained.” That turned out not to be so, because those problems spurred a rethinking of the risks associated with all mortgage-backed securities and other debt instruments. This rethinking led to, among other disruptions, a virtual halt in private securitization of mortgages and strains in markets for all asset-backed securities. All told, the stronger links between the mortgage market and broader financial markets make housing demand more susceptible to shocks to market functioning, even though less sensitive to straightforward changes in interest rates.

With all of these conflicting forces, where do we end up? For the housing sector, and for the economy as a whole, the net effect of financial innovation on volatility is clearly an empirical question. The empirical analysis that Karen, Dan, and I did suggested that the net effect was reduced volatility. We concluded that “financial innovation should be added to the list of likely contributors to the mid-1980s stabilization” of the U.S. economy.

Of course, this conclusion does not imply that further financial innovation beyond the average level reached during the past two decades has, or would, reduce volatility further. In any case, Karen, Dan, and I stressed that our analysis was exploratory rather than conclusive, and that more research on this topic was needed. That judgment is even truer today.

One challenge is that measuring financial innovation is difficult. This chapter of the *World Economic Outlook* constructs an explicit measure, but one that unavoidably relies heavily on analysts’ judgment. Other research, like my paper with Karen and Dan, proceeds by inference based on circumstantial evidence. Indeed, all empirical estimates in economics are fraught with peril, and one should never take any result too seriously

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liquefies housing equity. The paper concludes that the increase in house prices played the central role in boosting household debt, noting that: All of the increase in aggregate debt relative to income is debt on primary residences; high-frequency changes in mortgage borrowing and house prices are closely correlated; the rise in indebtedness is concentrated among homeowners; and changes in house prices and debt are correlated geographically. The paper goes on to explore various channels through which financial innovation that increased debt has affected the volatility of economic activity. For example, the paper expands on the observation made by Karen, Dan, and me that innovation smoothes economic activity by enabling marginal borrowing when incomes fall short and not by raising average borrowing. We noted the caveat: “If households or firms are carrying a lot of debt under good economic conditions, they might be unable or unwilling to increase their indebtedness when conditions deteriorate.”

until many economists using many different datasets and different empirical techniques find similar answers. A further challenge is that the financial system is always changing. It is possible, for example, that the spread of securitization stabilized the economy between the mid 1980s and early 2000s but that the more-recent burgeoning of complex derivatives for asset-backed securities has tilted the balance toward destabilization with the consequences we are now seeing.

For policy purposes, we do not need to answer the overarching question of whether financial innovation as a whole has been stabilizing or destabilizing. Even if innovation has been stabilizing, on balance, that does not imply that all innovation is stabilizing, or that all innovation should be allowed. Policymakers need to develop a regulatory framework that encourages productive innovation and discourages counterproductive innovation. Drawing that line, of course, is difficult. Together with Martin Baily and Bob Litan, I am currently writing about ways to reduce the probability of a recurrence of the current problems; our recommendations will be released next month at another Brookings event. We stress the importance of rules that require transparency and that better align incentives, in order to give private agents both the tools and the motivation to monitor the pluses and minuses of different forms of innovation themselves.

### **Housing and monetary policy**

Chapter 3 of *The World Economic Outlook* explains: “Central bank orthodoxy suggests that monetary policymakers should refrain from targeting any specific level of asset prices and should respond to changes in asset prices only insofar as they affect inflation and output outcomes and expectations.” The chapter goes on to say: “Some argue that there are benefits to be derived from ‘leaning against the wind,’ that is increasing interest rates to stem the growth of house price bubbles and help restrain the buildup of financial imbalances.” The chapter tilts strongly toward the heterodox view, concluding: “In economies with more developed mortgage markets, economic stabilization could be improved by a monetary policy approach that responds to house price developments in addition to consumer price inflation and output developments.” I disagree with this conclusion, so let me explain why.

I view the Federal Reserve as setting monetary policy based on the difference between forecasts of actual inflation and desired inflation and the difference between forecasts of actual and potential output. This dependence of policy on the inflation and output gaps is quite similar, of course, to the original formulation of the Taylor rule, except that John Taylor initially used *contemporaneous* inflation and output gaps. In reality, the *expected* gaps are more important because the economy reacts to monetary policy with a lag.

In this framework, the question of how monetary policymaking should respond to financial innovation in the housing sector can be divided into two pieces:

First, should the Fed’s forecast methods change in order to capture the changing impact of housing sector developments that we just discussed? The answer is clearly yes. For example, between 2001 and 2006, when I worked on forecasting at the Fed, the outlook

for house prices became much more central to our overall economic forecast. Moreover, we paid much more attention to mortgage borrowing and to household responses to changes in housing wealth. The general point is that central banks need to be very attentive to the evolution of their economies. Model estimates based on the experience of the preceding ten or twenty or thirty years will always lag behind an evolving reality, and forecasters need to make appropriate allowance for that.

Second, should house prices enter the policy rule separately, aside from their role in output and inflation forecasts? That is the real question posed by the heterodox view of monetary policy, and I think the answer should be no:

- One problem is that detecting and quantifying asset bubbles is difficult. Bubbles often begin with rational increases in asset prices that are then extrapolated to an irrational degree by market participants and become self-fulfilling for a time. Discriminating between the rational and irrational increases is not straightforward. Federal Reserve Chairman Alan Greenspan thought he might have detected such a shift when he wondered about possible “irrational exuberance” in stock prices in late 1996. As it turned out, the S&P 500 moved quickly above that level in the next year and has never been below it since.

This is not to say that informed analysts cannot sometimes find evidence of overvaluation of assets, including housing. Federal Reserve economist Josh Gallin argued in a 2004 paper that the price-rent ratio helps to predict house-price movements, and he showed that this ratio was then at an all-time high, nearly 20 percent above its average during the preceding three decades.<sup>4</sup> This analysis certainly seems prescient, but how confident should policymakers have been of this result at the time?

- The other, and I think more significant, problem is that monetary policy is a very blunt tool for preventing asset bubble inflation. Those who advocate “leaning against the wind” need to be explicit about what they mean quantitatively and what consequences their recommendations would have for the overall economy.

For example, John Taylor said last summer that the Fed should have set the funds rate significantly higher in the first part of the decade—above its actual value beginning in 2002 and three percentage points above its actual value by early 2004.<sup>5</sup> This alternative policy would certainly have damped the excesses in the housing market, as Taylor showed. However, it would have had very high costs for the overall economy, which Taylor did not show or discuss. I argued in a note last fall that the unemployment rate would likely have peaked above 7½ percent under this policy rather than just above 6 percent as actually occurred.<sup>6</sup>

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<sup>4</sup> See “The Long-Run Relationship between House Prices and Rents,” Federal Reserve Board Working Paper, September 2004, <http://www.federalreserve.gov/pubs/feds/2004/200450/200450pap.pdf>.

<sup>5</sup> See “Housing and Monetary Policy,” Jackson Hole conference, August 2007.

<sup>6</sup> See “Was the Fed Too Easy for Too Long?,” Brookings Institution paper, November 2007. I concluded that “the paths of inflation and unemployment imply that monetary policy should have been a little less

This chapter of the IMF report presents model results in which including house prices directly in the policy rule improves economic outcomes in economies where housing collateral is important for borrowing. However, this result appears to be an artifact of the baseline policy rule, which uses contemporaneous output and inflation gaps. With this baseline rule, any variable with significant predictive power for future output or inflation will find a useful role. That is exactly why central banks use forecasts in setting economic policy, but it does not speak to the real question at hand.

If monetary policy is too blunt a tool for addressing asset price concerns, what do I recommend? Good regulatory policy. Financial markets will always experience swings between confidence and fear, but good regulatory policy can reduce the frequency, magnitude and broader consequences of the swings. The IMF chapter focuses on monetary policy and includes a footnote saying that regulatory policy is also important; I would have switched these, focusing the chapter on regulatory policy and devoting a footnote to monetary policy.

Of course, improving regulatory policy in order to keep pace with financial innovation is very challenging. As I mentioned earlier, Martin Baily and Bob Litan and I will be making specific recommendations at an upcoming Brookings event. One key goal regarding asset bubbles is to limit excessive risk-taking and leverage. Accomplishing this goal would reduce both the extent to which bubbles inflate and the collateral damage when they burst. A further goal is to design financial products and institutions that are robust to asset-price declines.

In my view, regulators and innovators are in a race, and the regulators will always lose that race. But it matters how much they lose by. If regulators do not try to keep up, and innovation pushes ahead without attention to transparency and appropriate incentives, then financial and economic risk can reach dangerous levels. Reducing the probability of that outcome without stifling innovation is the challenge we face.

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expansionary” in the early 2000s, with a funds rate about 50 basis points higher between mid-2004 and mid-2006 than actually occurred. However, “the slightly better policy that one can envision with hindsight would not have materially altered recent events.”