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A Conference on Housing, Stability, and the Macroeconomy: International Perspectives

This article provides an introduction to the *JMCB* special issue on housing bubbles, the global financial crisis and the ensuing recessions in countries that experienced housing busts. We focus on five themes that are important for policymakers and researchers alike: the domestic and international factors driving housing booms and busts, the relevance of the housing sector for the real economy, how monetary policy should react to housing booms and busts, how housing and mortgage finance reform could affect financial stability, and the broad lessons learned for macroeconomics and macroprudential policy.

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1. INTRODUCTION

In the wake of the housing-related recessions that followed the global financial crisis, there has been renewed interest in understanding the linkages between housing, macroeconomic activity, and financial stability. This special issue of the *Journal of Money*, *Credit and Banking* examines these issues and provides international perspectives. These pages present the proceedings of a conference on Housing, Stability, and the Macroeconomy: International Perspectives, held in Dallas on November 14-15, 2013. The conference was sponsored by the Federal Reserve Bank of Dallas, the International Monetary Fund, and the Center for Banking Excellence at the University of Kansas.

The recessions that followed the housing-triggered global financial crisis tended to be initially deeper in countries that had experienced earlier housing booms and were exacerbated by housing busts. Consequently, there has been renewed interest in understanding the linkages between housing, macroeconomic activity and financial stability, centering on several sets of research questions. To what extent did house price expectations, sentiment, and credit standards drive booms and busts? How did international capital flows induce or propagate these housing market swings and how did these roles differ across advanced and emerging economies? To what degree were the ensuing recessions in some countries (e.g., the U.S., UK, Spain and Ireland) exacerbated by the direct effects of house prices on construction and consumption and/or by indirect debt overhang and foreclosure effects on credit availability and household spending?

Answers to these and related questions will help inform the ongoing policy debate. In the near term, how (if at all) should monetary policy take into account or be adjusted for large swings in housing market activity? How should countries reform their mortgage finance and housing policies to improve macro-stability in an efficient and cost-beneficial way? What lessons have we learned from the housing-related global financial crisis and what housing patterns and issues will likely emerge or prevail in the future?

The remainder of this introductory article reviews the proceedings of the conference and summarizes many of the most salient points and arguments made there. Section 2 describes domestic and international factors that drive housing booms and busts. Section 3 discusses some

consequences of housing booms and busts. Section 4 gives an overview of different policy reforms currently being discussed. Section 5 concludes and looks forward.

2. WHAT DRIVES HOUSING BOOMS AND BUSTS?

One group of conference papers and commentaries focuses squarely on the factors that have driven housing booms and busts across countries. Muellbauer (2015) discusses what drives house prices and how one can account for the remarkable diversity of international experience, which is not well explained by the usual suspects such as incomes, interest rates, demographics, etc. Muellbauer argues that the diversity can only be explained by taking changing mortgage lending standards into account.

Wachter's (2015) viewpoint is somewhat different. In a comparison of Europe and the U.S., Wachter notes how financial markets funded mortgages in countries experiencing housing booms and busts. She stresses how the originate-to-distribute system of securitization, which shifted much default risk away from loan originators, has been blamed for the recent housing bust in the U.S., but that this cannot explain the recent housing swings in several bank-centric European countries, where loan originators retained the first loss from default risk under one of two finance systems. The main source of funding new mortgages in countries such as Spain, the Netherlands, and Denmark was covered bonds versus short-term wholesale funding in Ireland and the UK. Wachter argues that the common culprit across the financial market-funded booms and busts in the U.S. and Europe was over-optimism on the part of homebuyers that pushed up house prices in thinly traded markets. Prices, in turn, were mistakenly treated as correctly indicating the value of housing collateral by lenders and investors, who granted more credit, which amplified the initial rise in house prices.

The study by Ling, Ooi, and Lee (2015) focuses on how the sentiments of lenders, mortgage borrowers and home builders interact and affect house prices. After orthogonalizing separate measures of lender, borrower and builder sentiment against economic fundamentals, they find the common, remaining "nonfundamental" component across these measures

significantly affects house prices. They also find evidence that past house price movements predict both the future non-fundamental component of sentiment and future house prices. These findings, as noted by Lansing (2015), provide evidence consistent with the view (most prominently, of Shiller (2005)) that house prices feedback onto sentiment and that household views of future house prices arise from non-rational or adaptive expectations formation. As Lansing emphasizes, these results raise concerns that the feedback loops and spirals set off by sentiment may be masked by simple aggregate loan-to-value ratios, which are misleading because of their endogeneity, consistent with points made by Duca, Muellbauer, and Murphy (2011). From a broader perspective, Ling, Ooi, and Lee go beyond the earlier work of Shiller (2005), Case, Shiller, and Thompson (2012) and Gelain, Lansing, and Mendicino (2013) and especially contribute to the literature by showing how the dynamic feedbacks among the sentiment of these three key types of agents and house prices can amplify the initial effects of changes in sentiment and give rise to persistent swings in house prices.

Three conference papers examine the role of international capital flows in housing booms and busts. As noted earlier, a number of advanced and emerging markets experienced strong booms in house prices over the 2000s. The papers explore different facets of the role that global liquidity may have played in generating these booms. The paper by Cesa-Bianchi, Cespedes and Rebucci (2015) looks at the contribution of an increase in the worldwide supply of bank credit to house price booms in emerging markets. The authors find that the response of house prices in a representative emerging market economy to an innovation in global bank credit is five times the size it is in advanced economies. In his discussion, Kuttner (2015) notes that the extensive data set put together by the authors could be used in future studies to explain disparities among countries in the response of house prices to global liquidity shocks. For example, why did Estonia experience a four-fold increase in house prices followed by a collapse when lending retrenched, whereas prices in Switzerland took off only after the global bust and prices in Canada remained largely untouched by the pullback in cross-border lending?

Sá and Wiedalek (2015) study the extent to which house price dynamics in the United States have been influenced by capital flows from the rest of the world. They use a structural vector autoregression with sign restrictions to identify the effect of these flows. Their variance decompositions suggest that such flows may have accounted for 7 to 10 percent of U.S.

residential investment and house prices. This suggests, as noted by Gete (2015), that while capital flows did play some role, there is ample room left for other explanations of the U.S. boom-bust cycle, including 'loose' monetary policy (generally described as a deviation by the Fed from a Taylor Rule during 2004-06).

The paper by Fererro (2015), on the other hand, argues that monetary factors played only a minor role in driving the U.S. housing boom. Using a dynamic stochastic general equilibrium (DSGE) model, the paper demonstrates that credit and preference shocks can generate the house price booms of the sort experienced in the 2000s, as well as a substantial part of the increase in U.S. current account deficits. However, these shocks put upward pressure on real interest rates, contrary to what was observed. Fererro shows that a combination of expansionary monetary policy in the U.S. and a regime of managed exchange rates in the rest of the world can account for low global real interest rates; however, credit and preference shocks remain the main driver of house price and current account dynamics. Leamer (2015b) expresses some skepticism about these conclusions. He notes that the DSGE model is estimated from historical correlations, which may not have been a reliable guide to what might have happened if the Fed had tightened in 2003-06; in particular, since many more mortgages were tied to short-term interest rates than in the historical data, a Fed tightening may have cooled off housing markets more so than in the past. Leamer also argues that some of the credit and preference shocks in Fererro's analysis may themselves have been the result of the low interest rate policy of the Fed; the low teaser rates of subprime mortgages, for instance, were tied to the low federal funds rate.

3. SOME CONSEQUENCES OF HOUSING BOOMS AND BUSTS

Housing, credit and consumption booms tend to go hand in hand, especially when lending standards are relaxed and financial innovations alter the collateral role of housing. In countries with more stable credit standards, any overshooting of construction and house prices owes more to traditional housing supply and demand factors. Muellbauer (2014) discusses the three potential links between housing, credit and the financial accelerator – the consumption channel,

the investment channel and the feedback between bad loans and risk spreads via the financial system.

During a housing bust, construction collapses, consumption slumps and the incidence of negative equity, mortgage delinquency and foreclosure all increase. House prices undershoot their long run fundamental values. Households, firms and financial institutions are forced to de-lever and repair their balance sheets. The resulting balance sheet recessions tend to last longer than other recessions, since deleveraging is inevitably a slow process. The recent U.S. subprime crisis demonstrates the importance of understanding housing markets, financial innovation, changes in regulation, and global financial imbalances. A U.S. housing crisis, involving relatively moderate subprime losses, quickly turned into a financial crisis that spread globally, culminating in the Eurozone sovereign debt crisis. In retrospect, the economic and social consequences of the subprime boom were dire.

As Muellbauer (2015) notes, housing collateral ("wealth") effects vary by country and over time with financial liberalization and financial innovations. Housing collateral effects work through some combination of changes in mortgage debt (e.g., lower down payments, more cash out refinances, more home equity lines of credit) and changes in consumer debt (e.g. more auto loans, higher credit card balances, more student loans). Savvy, unconstrained households are also likely to substitute cheaper debt, such as home equity lines of credits, for more expensive debt, such as credit card balances.

Brown, Stein and Zafir (2015) investigate these effects using individual credit report data for the U.S. They model the relationship between changes in house prices and changes in auto loan, credit card, student loan and home equity line of credit balances. They look at three different time periods – the pre-housing boom period (1999 to 2001), the boom (2002 to 2006) and the bust (2007 to 2012) - since the supply of credit likely differed in these periods. A range of individual and ZIP code level controls are included in their models and the change in house prices is instrumented, since imperfectly observed local demand conditions drive house prices and debt holdings. Ceteris paribus, the marginal propensity to hold home equity lines of credit in response to a change in house price is remarkably stable at about 4 percent (0.04) in the three periods. As Pence (2015) notes, the pre-housing boom period provides support for the Brown et

al. substitution story – home equity line of credit balances increased dollar-for-dollar as credit card balances declined. The boom period provides support for both the collateral and substitution effects, although there is considerable heterogeneity in the results. Pence is particularly interested in the mechanisms underlying the collateral and substitution effects found in this study, and wonders to what degree the authors' findings are robust to their methodological choices, such as classifying home owners and renters based on whether or not they had mortgage debt, and excluding home equity loans and cash out refinances from the analysis.

Few models of the housing boom and bust successfully capture the joint dynamics of house prices and foreclosures in the U.S., especially during the 2006 to 2009 period when the inventory of foreclosed mortgages jumped from 1 to 4.3 percent and the index of real (CoreLogic) house prices fell by about 30 percent. Arslan, Guler and Taskin (2015) try to capture these dynamics by incorporating a housing market, with a realistic tenure choice and mortgage structure, into a standard life-cycle incomplete markets model with idiosyncratic income and moving shocks. After calibrating the model to several long-term features of the U.S. housing market, they identify the types of macro shocks that are required to generate the large swings in house prices and foreclosures observed during the U.S. housing boom and bust. They focus on a combination of three shocks – a rise in the risk free rate from 2 to 3 percent, an increase in the minimum down payment requirement from 0 to 20 percent and an increase in the unemployment rate from 5 to 6 percent. In their model, Arslan et al. also quantify the self-reinforcing feedbacks between falling house prices and rising foreclosures, and show that macroprudential policy – a higher minimum down payment – could significantly reduce the response of house prices and foreclosures to negative shocks. In his discussion, Willen (2015) expresses doubt that any general equilibrium model can really explain the recent U.S. house price bust. In particular, he questions the realism and exogeneity of the three large unanticipated, permanent shocks in this model, especially the rise in the minimum down payment ratio from 0 to 20 percent. He suggests that the actual ratio only fell by about 3½ percent over this period (presumably, because the share of low down payment FHA originations jumped). Willen believes that the housing bust was triggered by a sharp exogenous change in beliefs about future house price expectations – i.e., the collapse of a bubble – when overly optimistic expectations of continuing house price appreciation were replaced by overly pessimistic expectations of house price declines.

4. APPROPRIATE POLICIES TO ADDRESS THE RISK OF HOUSING BUBBLES

The global financial crisis of 2008-09 led by a collapse in the U.S. housing market gave many informed observers pause to rethink the appropriate policy responses to housing developments and also to reflect on the nature of the involvement of government agencies and banks in mortgage markets. In turn, this induced the advent of new regulatory tools, revised macroeconomic policy approaches, and a flurry of reform proposals. Some of the conference papers and remarks offer a window into the current state of this policy debate.

In his opening remarks, Claessens (2015a) points to several policy challenges. First, should policymakers stop bubbles in the first place? Second, when is the right moment to take action? And how can a boom in process be stopped? He points to fiscal, monetary and macro-prudential tools in this context, though all three have certain side effects and face practical challenges. Specifically, Claessens discusses the trade-off in applying supply- versus demand-side measures to contain a boom. While supply side limits may be easier to implement, they face risks of circumventions and arbitrage. One additional problem in adopting supply-side measures is leakages coming from lending by foreign branches. On the other hand, demand limits may be harder to apply but can have the benefit of being more comprehensive at the individual household level.

The pre-crisis thinking suggesting that monetary policy should not systematically respond to asset price fluctuations is based on the standard New Keynesian model with no explicit financial frictions. Building on the more recent literature, Notarpietro and Siviero (2015) assess the desirability of monetary policy responses to housing price changes in a New Keynesian model with a housing sector and financial frictions on the household side. In their model, the central bank is allowed to respond to housing price fluctuations, as well as to inflation and output growth. The main insight from their framework is that the optimal monetary policy response to housing price changes depends on the extent of financial frictions in the economy. Specifically, monetary policy should only be used to counter rising housing prices if the loan-to-value ratio is sufficiently high. Their results suggest that modelling financial imperfections is crucial for the evaluation of policy rules. Liu (2015) points out, however, that Notarpietro and Siviero's paper abstracts from fiscal policy instruments and that further research should explore the relative

effectiveness of monetary policy relative to fiscal policy for macroeconomic fluctuations driven by housing price shocks. Liu also points to the need for a better understanding of the appropriate design of both fiscal and monetary policies, an issue that other papers and remarks delve into.

An important policy tool re-discovered in the aftermath of the crisis is macro-prudential policy, which has gained appeal with the realization that it is impossible to use one instrument (monetary policy) to target two objectives (price stability and financial risk taking), a point also made by Miles (2015). More targeted policy tools—in particular macro-prudential ones—could for example be used when the level of interest rates that is desirable to stabilize the wider economy is not the same as the rate that would stabilize housing markets. Miles points to several tools that can be used, both on the supply and the demand side. These include capital requirements on mortgage lending as well as limits to loan-to-value and loan-to-income ratios. Nevertheless, monetary policy continues to be the line of last defense, according to Miles.

Hartmann (2015) provides a systematic discussion of challenges associated with the implementation of macro-prudential policy solutions. He shows that real estate price cycles during the recent boom and bust were not strongly correlated across countries, and emphasizes that to be effective, macro-prudential tools must be implemented in a flexible fashion that recognizes this granularity. And holding these country-level differences constant, Hartmann additionally emphasizes the asymmetric politics of implementing macro-prudential tools across the business cycle, namely the headwinds that regulators will face when attempting slow the growth of credit access at a time when large numbers of less wealthy households could otherwise gain access to mortgage credit and home ownership. But he has a generally sanguine view for the future efficacy of macro-prudential regulation, based on the information being generated by a large body of new research—some of which was presented at this conference—that uncovers what worked, and what did not work, across various countries during the boom, bust and crisis years.

Vandenbussche, Vogel and Detragiache (2015) offer empirical evidence on the effectiveness of different macro-prudential tools, examining whether changes in macro-prudential policies across 16 countries in Central, Eastern, and Southeastern Europe over the period 1997-2011 were associated with changes in housing prices. The authors find that some macro-prudential policies,

notably higher regulatory capital ratios and changes in the maximum ratio of household loans to capital, as well as two types of non-standard liquidity measures, had a significant correlation with house prices, while others (such as provisioning rules and reserve requirements) had no significant relationship. Vandenbussche et al. also show that two of these four policies affect household credit growth, while the two others that are related to housing price growth are not related to credit growth.

Vandenbussche et al. also makes significant contribution to this relatively recent literature by compiling a new dataset for a large number of countries and by systematically exploring the relationship between macro-prudential policies with asset price changes. In his discussion of this paper, Beck (2015) points to these important contributions, but also notes several challenges, including the issue of endogeneity and understanding the channels through which macro-prudential policies affect asset prices. He sees the use of loan-level data as a promising way forward in tackling these challenges.

Several contributors make suggestions on adjusting the current structure of mortgage contracts to reduce the fragility risks stemming from house price cycles. Specifically, Jaffee (2015) discusses several possible adjustments to mortgage loan contracts (i) including provisions that automatically adjust loan balance and payments downward with declining house prices and (ii) mortgage loans with the option to convert into rental contracts, with the lender as home owner. Defining a proper house price index and detailing the exact contract terms seem the most important challenges in this context. Similarly, Miles (2015) discusses different contract types that allow for risk sharing between lenders and borrowers, such as equity loans where repayment amounts vary with house prices. He sees different feasible alternatives, with asymmetric adjustments for up- and downward price movements. He presents different models that show combinations of upside and downside participation (how much upside does borrower have to give up to insure against a certain percentage of downward price losses) for the same return on the loan. Obviously, these are static comparisons that do not take into account that house price dynamics might change when different mortgage contracts are offered.

Central to Miles' proposal to fundamentally reduce leverage and housing market volatility is to encourage households to provide more equity and especially outside equity to finance house

purchases and, in turn, to rely less on debt. There are however problems with outside equity. As pointed out by Claessens (2015a) and Crawford (2015) there are tax incentives to take on excessive debt, emanating from the tax deductibility of mortgage interest payments. This is still the case in many countries, including the U.S. and the Netherlands, while others, such as the UK, have moved away from it.

Mortgage securitization is mentioned by several conference contributors. Jaffee (2015) points to the more widespread use of covered mortgage bonds rather than securitization in Europe, which implies keeping mortgages on banks' balance sheets, therefore keeping banks in a first-loss position. This is similar to the remarks made by Wachter (2015) referenced above. Forcing banks to retain a share of mortgages they securitize might yield some of the benefits of lower moral hazard associated with the issuance of covered bonds. Related to this is the optimal role of government sponsored mortgage enterprises, especially in the U.S. where Fannie Mae and Freddie Mac have long played a prominent, and controversial, role as credit suppliers in mortgage markets. Jaffee (2015) advocates restricting their role to backstopping catastrophic risk if political reasons preclude shutting down these institutions.

5. Lessons Learned and Looking Ahead

The recent crisis offers some interesting conclusions when comparing the performance of different countries and relating it to housing policy frameworks in these countries. Crawford (2015) offers a very interesting comparison between the U.S. and Canada, pointing to several factors that have thus far prevented Canada from suffering a housing crisis. First, the non-prime market is a much smaller share of the mortgage market in Canada (5 versus 20 percent of the overall market), with many of the exotic products used in the U.S. simply not being available in Canada. Second, the supervisory process in Canada focuses on banks evaluating the repayment capacity of borrowers rather than the adequacy of collateral. Third, there is obligatory mortgage insurance for high LTV mortgages and, finally, Canada applied macroprudential tools during the run-up of housing prices between 2008 and 2012.

Under the headline "Housing Really Is the Business Cycle", Leamer (2015a) draws four lessons from the recent U.S. crisis. First, housing drives the business cycle, with nine of the eleven U.S. recessions since 1950 preceded by declines in housing. Second, monetary policy influences not only the level of house construction, but also its distribution across time. Third, the only way to stop a housing bubble is to intervene to prevent the stock from becoming excessive, which means raising interest rates when housing starts are above the normal. Finally, while previous cycles have been driven by housing volumes, this cycle has been driven more by a price cycle, which he attributes to financial innovations.

Where does the analysis of the recent crisis leave us? Claessens (2015b) picks up some of the themes in many of the papers in this special issue. How can we interpret the current recovery in house prices in many crisis countries? Is this recovery driven by fundamentals or are we observing a new bubble? More generally, what are the best ways to reduce the boom and bust pattern of housing that has had such adverse consequences for the real economy and financial stability? And what are the appropriate tools to deal with the overhang of a house price bust? To answer these questions, we need better price data and better models. But even with better data, can we detect bubbles and know when to prick them? Also, do the same macroprudential tools work as well in restraining a boom as they can help a housing market come out of a bust? Finally, aside from prudential considerations, there are broader questions about the factors that drive the supply and demand for housing finance. For instance, what should be the relative roles of banks, non-banks and markets in providing housing finance? What is the optimal market structure for the housing finance industry? What is the role of the state beyond prudential regulation: should there be increased regulation of the construction sector and the land market? Is a predominantly owner-occupied housing market really superior to a rental-dominated one?

The topics discussed in this introductory chapter and analyzed in detail throughout this special issue are of critical importance if societies are to enjoy efficient and stable housing finance systems. The papers in this special issue offer new data, new analysis and new insights into this challenge and we hope they will inspire further research.

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