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The Global Financial Crisis and Housing

A New Policy Paradigm



KDI Series in Economic Policy and Development

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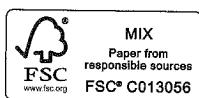
Published by
Edward Elgar Publishing Limited
The Lypiatts
15 Lansdown Road
Cheltenham
Glos GL50 2JA
UK

Edward Elgar Publishing, Inc.
William Pratt House
9 Dewey Court
Northampton
Massachusetts 01060
USA

A catalogue record for this book
is available from the British Library

Library of Congress Control Number: 2013949877

This book is available electronically in the ElgarOnline.com
Economics Subject Collection, E-ISBN 978 1 78347 288 8



ISBN 978 1 78347 287 1

Typeset by Servis Filmsetting Ltd, Stockport, Cheshire
Printed and bound in Great Britain by T.J. International Ltd, Padstow

1. The global financial crisis and housing: a new policy paradigm

**Susan Wachter, Man Cho and
Moon Joong Tcha**

1. MOTIVATION

It is at our peril that we ignore the role played by real estate markets in global financial stability. In the U.S., this should have been clear after such disasters as the commercial real estate crash in the late 1970s and the savings and loan crisis in the early 1990s, for with these downturns came the seizure of financial markets and the hurried response of policymakers to assuage the panic before it triggered a national meltdown. Elsewhere too, national economies were threatened with real estate booms and banking busts, including Norway, the UK, and most prominently Japan, in the early 1990s. But these abbreviated fears were quickly forgotten, exposing the Asian markets to an even more severe real estate crash in 1997. This shockwave really did go global, but only momentarily – and like the others, its passing was treated as cause for renewed faith in the system, rather than much-needed inquiry into the vulnerability that seems to continually plague the housing market. Thus did we invite rampant excess to run roughshod over this vulnerable market. Thus did the Great (global) Financial Crisis (GFC) strike exactly one decade later.¹

This continuity is key, for it underscores an important fact: What we are dealing with here is a repeated cycle, an interdependent yet fragile link between real estate markets and the global economy. In East Asia, the GFC was in many ways a no-show, in part because of the macroprudential policies put in place following the 1997 crisis. There are important lessons to be mined from these repeated blows, and it is for this reason that we have assembled this book: To compare and contrast, and thereby to extract policy lessons from, the interaction of real estate dynamics with macro-stability as this has played out in various countries across the globe, especially on both sides of the Pacific.

Real estate is not like other assets. There is, for example, a much greater

time lag in matching demand and supply in real estate than in, say, the extraction of natural resources or the manufacturing of other commodities. The quantity of housing desired when a construction project begins may differ significantly from the quantity needed by the time the structure has been built. Real estate supply, which depends on land supply and land use controls, is inelastic in the short run and sometimes in the long run. Short run lags in construction can cause price spikes and excess construction. This is how, during an epic over-building episode in the 1980s, the construction industry built over half of the commercial real estate that has been built in the history of the United States. Builders and investors learned the painful truth of Niels Bohr's observation that "Prediction is very difficult, especially about the future."

Another failure in the real estate market is the inability to short sell the underlying asset due to the illiquidity, complexity, and heterogeneity of land and structures. As a result, the market is lacking a critical feedback mechanism to signal overpricing. Instead, the price is set by optimists at the margin. In the U.S., even when credit default swaps were introduced as a proxy for "betting against" price appreciation, they traded in opaque, dealer-centered markets rife with information asymmetry. They served as a signal to no one. In the end, they proved to be worse than useless, as they were backed by insufficient capital, calling into question not only their solvency but also their long-term credibility as a solution for this market failure.

While it is extremely difficult to short the underlying real estate asset, it is possible to transact, buy and sell securities related to real estate, thus potentially completing the real estate market. But in the GFC, securitization, because it was opaque, created an information failure and acted as an accelerant to the problem of limited arbitrage. At the heart of this information failure is the debt vehicle that finances the asset. Unlike many other types of loans, mortgages are non-recourse, meaning the borrower can walk away with zero liability if they default. As a result, mortgages work like a put option in that the borrower can "put" the asset back to the lender. In pricing put options, it is essential to correctly assess the risk of default, which translates into the interest rate that the borrower pays to the lender. When the supply of risky products increases, the mortgage rate should diverge from the "riskless" Treasury rate, signaling a higher "risk premium" for mortgage lending. During credit bubbles, however, the opposite occurs: the mortgage rate tends to decline relative to Treasury bonds, underpricing risk. Cheap credit encourages excessive borrowing, enabling lenders to expand market share by lowering lending standards and attracting borrowers with higher likelihood of defaulting. This is precisely the dynamic that occurred in the U.S. during the housing bubble that preceded the GFC.²

This dynamic also played a critical role in the East Asian Financial Crisis. While the exchange rate crisis was apparent from the start, many observers failed to appreciate the real estate crash that preceded – and probably precipitated – it. In fact, most foreign exchange crises have followed closely on the heels of a sharp decline in domestic asset prices. This pattern is a clue to the transmission mechanism for the GFC: the financial system. Real estate crashes almost always lead to financial crises because banks (and shadow banking) intermediate real estate financing and therefore are vulnerable to credit crunches and asset price spirals. During the boom, they tend to increase leverage and reduce capital cushions. When the bubble pops, it takes only a small price decline to threaten their solvency and endanger lending apparatus on which the rest of the economy depends. If credit seizes up, the “real” economy grinds to a halt.³

After such crises, it is common to blame speculators. What is less commonly understood is the relation between speculation and the inherent failures in the real estate market. Speculation in itself is merely an amplifier. In an informed market, it is the engine of efficiency, arbitraging away mispricing. In an imperfect market such as real estate, information asymmetry profits insiders who are interested in short term fee generation at the expense of long term performance, generating excess volatility. Sophisticated securitizers push down the price of risk to sell riskier products, leaving homeowners and taxpayers to bear the burden of the bust when income growth can no longer keep up with and sustain accelerating asset appreciation.⁴

Magnifying these idiosyncrasies in the real estate market is its unmatched influence on the larger economy. No other consumer purchase comprises such a large percentage of household assets. No other fixed investment requires so much debt – and therefore so much risk of default. No other commodity has been so manipulated by financial institutions to build layers of trades in capital markets on its success or failure. No other financial asset is so complex and so heterogeneous, allowing originators and securitizers to underprice risk so egregiously because investors and insurers have so little information about the underlying asset. Seen through this lens, for the sake of the stability of the overall economy, real estate markets should be at the center of macroprudential policy efforts.

Global policymakers now face the challenge of addressing these market failures and moderating the volatile cycle they generate. Unfortunately, they lack the necessary information and tools to craft the proper solutions. Previous research, for example, did not combine financial and macroeconomic models to explain the dynamic of cyclical fluctuations, particularly with contagion effects and liquidity traps. The preceding literature is also lacking an empirical quantification of the effect of real estate price changes

on different economies with different financial structures and regulatory frameworks.

This book begins to fill those gaps. By treating the housing market as part of a broader dynamic that periodically pushes the economy into extreme states, we can better understand how the housing bubble in the U.S. and the Great Recession that ensued had differing effects on various countries – and therefore what those countries can do to prevent a repeat of such a swift and significant negative shock. It is especially important that we study how these assets were (and are) financed and how this credit buildup motivates the system to abandon the boundaries of behavior that usually exist as a means of self-preservation. One of the great tragedies of modern capitalism is its tendency to sabotage the very operations that make it so productive. The authors in this volume are committed to re-wiring this feedback loop for sustainable growth.

Such an enterprise must begin with a candid acknowledgement of the sanctified role that housing plays in modern (and especially Western) society. In the United States, we refer to homeownership as “the American dream,” but of course this aspiration is not unique to Americans. The United States has merely been one of the leaders in a global movement to promote homeownership through tax deductions, government-sponsored liquidity support, and when necessary, equity infusions to the financial intermediaries that finance the housing market. Whether these are the proper means to such an end, however, remains up for debate, and it is a debate that the chapters in this book do not shy away from. The challenge before us is not only to make housing safe for the global economy but also to make the global economy supportive of an affordable and yet efficient housing market for billions of households. It will not be easy in an environment where interest rates have nowhere to go but up and the “middle class” – traditionally the greatest source of housing demand – is shrinking in the Western world, but the proposals in this book outline several possible ways to revive – and restore faith in – this vision. Thus shall we create a new policy paradigm.

2. HOUSING AND MACROECONOMY: KEY LINKAGES

A large and contagious shock in housing price impacts the macroeconomy through various transmission channels, and can eventually pose a system-wide tail-risk event. This shock-wave generally follows a sequence of several steps: first, housing (or other real estate) prices deviate from their fundamental levels for a long and sustained time period, which we con-

ventionally refer to as a housing bubble; second, the deviation is corrected through a multi-year downturn in housing market outcomes, in particular, in price, residential mortgage lending, and new construction; third, the downturn contracts macroeconomic activities through three main transmission channels of private consumption, investment, and the financial service sector; and finally, the contracted aggregate demand in the broad economy inflicts a secondary effect on the housing market through depressed household income and labor markets (Figure 1.1). Capturing all these inter-linked dynamics in one conceptually-sound and analytically-tractable model is close to impossible. For one thing, detecting a housing price bubble, whatever geographical aggregation is adopted, always takes the nature of a joint test for model specification and existence of the bubble. Furthermore, one also has to factor in various micro features of the housing sector, such as the interaction between the housing stock and the flow of new construction, submarket dynamics between owner-occupied vs. renter-occupied segments, and pro-cyclical home mortgage lending.⁵ Hence, our approach in this volume is to examine the linkages, and relevant policy issues by each of four inter-related analytical topics in an international comparative perspective: (1) macroeconomic transmission channels of the housing cycle; (2) the role of the housing finance system; (3) construction financing as a cycle amplifier; and, (4) the rental housing market and public policy.

As to the macroeconomic transmission channels, the wealth effect is the subject of various recent studies. For example, Catte et al. (2004) report that the long-term (short-term) elasticity of private consumption in response to a change in housing prices is 0.06–0.15 (0.04–0.26) for OECD countries, and fairly similar ranges of elasticities are documented by Kim (2010) for Korea. Furthermore, the housing wealth effect is generally shown to be larger than the stock wealth effect (Case, Quigley, and Shiller 2005, 2011), and expansion of the home mortgage lending sector caused by financial liberalization tends to increase the elasticity (Aron and Muellbauer 2006; Lustig, Van Nieuwerberg and Verdelhan 2008). On the investment channel, Leamer (2006) empirically demonstrates that, in eight out of ten post-World War II recessions in the U.S., the housing investment is the most pronounced early indicator. With these and other prior studies as backdrop, the following research questions are examined in Chapters 2 to 4 of Part II:⁶

- What do we know about the housing price-consumption channel in different countries, and what role did the GFC and other major economic shocks (the Asian Financial Crisis, AFC, in particular) play in terms of the wealth and collateral effects in the U.S., Europe, and emerging market countries?

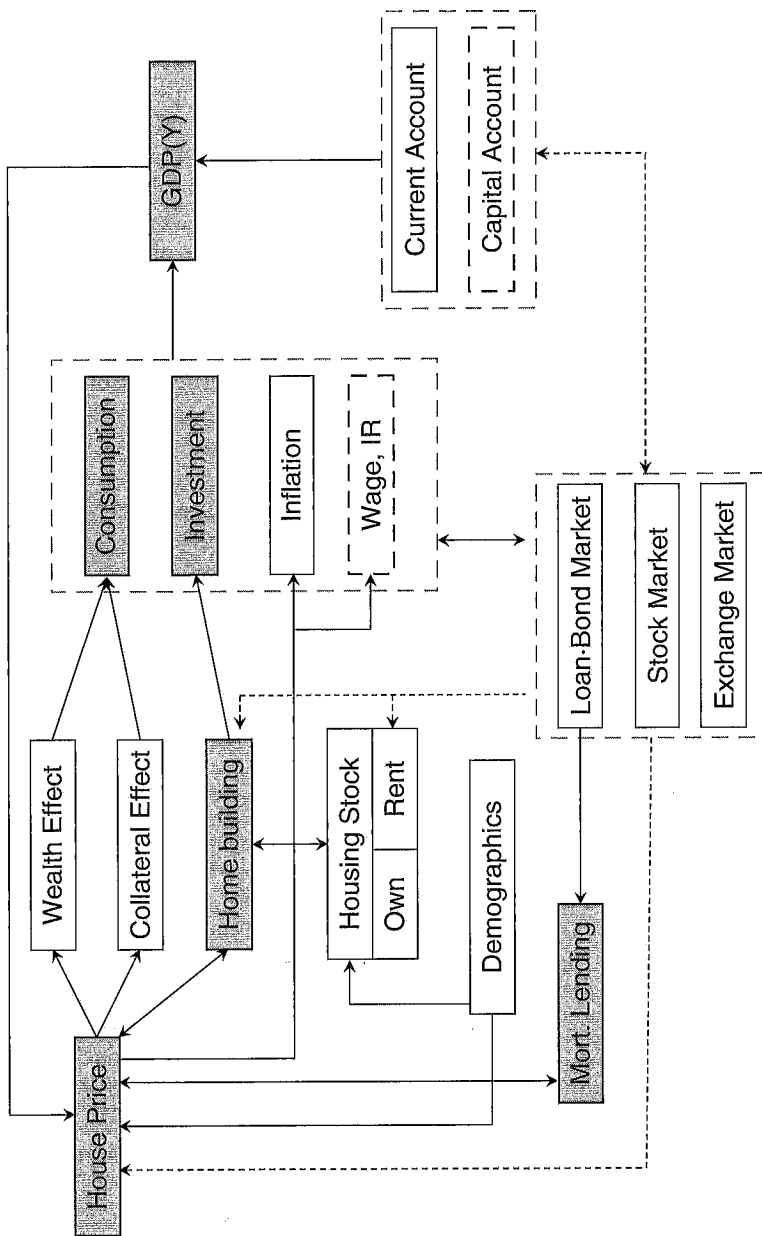


Figure 1.1 Endogenous interactions of housing with the macroeconomy

- Is Leamer's finding consistent in Korea and other emerging market countries? If not, what are the underlying reasons for that?
- Given what we already know, what policy implications can we extract with regard to micro- and macro-prudential regulations, and what are common and idiosyncratic factors to be considered in different countries?
- What are appropriate data and monitoring mechanisms to be used, such as an Early Warning System, to assess long-term and short-term anomalies in the housing market?

Pro-cyclical home mortgage lending and its interaction with speculative housing demand has been the subject of various recent studies. That is, during an upturn, mortgage lenders tend to relax the loan-to-value (LTV) ratio and other non-price terms in lending (e.g., debt-to-income (DTI) ratio, consumer credit ratings, repayment conditions, and so on), which, in turn, raises the proportion of natural (or optimistic) buyers in the real estate market and bids up the marginal price of housing assets. However, when facing bad news in the market-place (e.g., declining housing prices, rising mortgage delinquencies, and ramping-up mortgage interest rates), lenders constrain the lending conditions, which often leads to a credit crunch and deep downturn in the real estate market (Herring and Wachter 1999; Fostel and Geanakoplos 2008; Geanakoplos 2010). In the case of subprime mortgage lending in the U.S., a number of empirical studies document this cyclical lending pattern and its effect on the cycle amplification (Gorton 2009; Mian and Sufi 2009; Pavlov and Wachter 2011; Crowe et al. 2011). The following research questions are examined in Chapters 5 and 6 of Part II:

- What patterns of home mortgage lending do we see before and after the GFC in the U.S. and European countries? What similarities and dissimilarities do we see from them compared to prior lending cycles?
- What post-GFC policy responses do we observe from the advanced economies, and what policy implications do they offer to emerging market countries?
- What role do various institutional factors in mortgage lending, e.g., lending products, underwriting criteria, funding methods, play in terms of market stability and housing affordability?
- What do we know about designing a proper regulatory design (e.g., appropriate LTV and DTI levels, dynamic provision and other prudential controls), and what future research issues do we have to pursue further?

Construction and development (C&D) financing – in particular, its role in the real estate cycle – is the next topic. It has long been argued that the construction lag is an important source of the real estate cycle (Grenadier 1996; Wheaton 1999), and that an “unholy alliance” of developers with C&D lenders works as a volatility-enhancer (Litan 1992). That is, being influenced by a rising price trend, developers initiate more and more new projects during the upturn, which increases volume of newly-constructed unsold housing units and, hence, deepens the downturn. During the GFC, it is documented that such cyclical home building and the resulting excess supply were more severe in the U.S. than in European countries (Ellis 2008). With this backdrop, some of the key research questions posed in Chapters 7–9 of Part III are as follows:

- What cyclical patterns are observed in the C&D lending sector before and after the GFC in the U.S. and other advanced economies?
- In the viewpoint of emerging market countries, Korea and Taiwan in particular, what experience do they have in the C&D lending sector?
- What role do various institutional factors such as the presale of residential property play in raising real estate market volatility?
- What policy responses can we consider for counter-cyclical C&D lending, in terms of product design, underwriting, risk management, and funding?

Last but not least, Chapters 10 to 12 of Part IV discuss recent research findings as to the effectiveness of different policy regimes, including monetary policy, fiscal policy, and macro-prudential policy, to combat a real estate bubble.

3. SUMMARY OF FINDINGS

Housing and Mortgage Markets

As to the first channel, Matteo Iacoviello elaborates on the collateral effects of housing prices on borrowing, which allows credit-constrained households to increase their spending with appreciated collateral values, and vice versa. However, rising home values can force more savings by renters for their future acquisition, reducing their current consumption expenditure. Iacoviello demonstrates empirically that, as in other countries, the collateral effect dominates the forced saving effect in the U.S.: the elasticity of consumption to housing wealth is shown to be 0.14, which is larger than the elasticity of consumption to non-housing wealth (which is 0.06).

The reported elasticity is in line with the estimates documented for other countries. For example, the estimates are 0.06–0.15 in the long-term and 0.04–0.26 in the short-term for OECD countries, and similar ranges are reported for Korea as well.⁷ Quoting his prior research,⁸ he elaborates how wage rigidity in the housing sector plays a crucial role in explaining the large sensitivity of residential investment to changes in short-term interest rates.

Iacoviello also discusses the strength and weakness of the Dynamic, Stochastic, General Equilibrium (DSGE) models, the popularized measurement framework that explicitly deals with the endogenous nature of housing-macro linkages. He emphasizes that the next generation DSGE models should devote increasing attention to modeling important, but omitted, features of the housing market such as mortgage intermediation and the role of non-performing loans. In so doing, he stresses, modelers should improve, rather than extend, existing models: namely, improving means that an unappealing feature of the model should be removed, discarded, or abandoned as an uninteresting special case of a better model, whereas extending means in most cases just adding a layer over another, without questioning the existing framework. In that juncture, taking one country's model to another country would make the model outcome spurious.

As to the investment channel, Young Il Kim investigates the role of housing volume cycles in macroeconomic fluctuations in Korea, by following the analytical framework put forth by Leamer in his famous 2006 paper. His finding is that, as in the U.S., housing volume cycles in Korea exhibited a pronounced co-movement with GDP cycles before the 1997 Asian financial crisis (AFC), serving as an early warning indicator of the incoming recessions. However, after the AFC, housing volume cycles are shown to be neither co-moving with GDP cycles nor having the same predictability for the incoming recessions, while contributing to boosting the economy out of recessions after the crisis. He ascribes the post-AFC results to the opening up of the Korean economy, for both real sector and financial sector, after the crisis, but calls for further research as to why the role of housing volume cycles in the macroeconomy differs across countries and may change over time.

Due to difficulty in forecasting housing prices, Seoung Hwan Suh and Kabsung Kim advocate the use of an Early Warning System (EWS) for perceiving a contagious housing cycle, and demonstrate how an EWS developed in their prior research works in detecting future housing market crisis in Korea. Specifically, characteristics and determinants of Korean housing price movements have been empirically analyzed, by putting special attention on the post-GFC changes in home price dynamics in Korea. They also point out that the effect of the GFC upon the Korean housing market is

smaller than that of the AFC, although an international synchronization of housing prices, which is rather pronounced, is observed after the GFC.

One of the sources of the amplified real estate cycles in the U.S. and Europe was the residential mortgage lending sector. It is well-documented by now that the pro-cyclical mortgage lending, (i.e., excessive liquidity supply during the boom followed by a credit crunch during the bust), was the source of increased volatility in the home price movements in those countries.⁹ Even before the GFC, the long-term cointegrated relationships between private credit and housing prices for OECD countries were documented in the literature.¹⁰ In the seminar, specifics of what happened before and after the GFC in different countries in terms of the correlation, and what policy measures were employed in consequence, are explored.

By comparing the U.S. and Korea, Man Cho reports a regime-shifting nature of causal relationships between housing price and mortgage credit cycles in the U.S.: that is, the mortgage credit and housing price cycles exhibit statistically significant co-movement in the most recent one (1997–2010) but not in the prior two cycles since the 1970s. His result implies that the incidence of the subprime mortgage debacle in the U.S. is unique to the market environments in the U.S. at that time, and has limited policy implications for other countries where mortgage markets and institutions are very different. He also documents the rapid expansion of the residential mortgage market in Korea, due to financial liberalization after the AFC in the late 1990s, and the effects of the mortgage lending restrictions employed in the country. In particular, he simulates the effects of the maximum loan-to-value (LTV) ratios adopted from the early 2000s based on a general equilibrium macroeconomic model, and reports that the control does contribute to stabilizing private consumption and housing price movement.

In comparing mortgage market outcomes in the U.S. and Europe, Hans-Joachim Dübel claims that the GFC was truly a Transatlantic crisis. Quite comparable to the U.S. where funding for mortgage lending surged via securitization during the boom, covered bond issuance activity in Europe also financed huge housing booms in some countries. For example, the Spanish case highlights the pre-GFC wholesale funding pattern: with the deposit base being depleted by high credit growth in the early 2000s, heavy issuance of both covered bonds and securitizations extended the boom until 2007. He estimates that Spain sold some 60% of covered bonds issued in the mid-2000s to foreign investors. Yet, the opposite observation is made for Hungary: here, liquidity for the housing finance boom was created via interbank and customer deposits in foreign currency, predominantly Swiss Franc, and foreign banks were willing to aggressively price cross-border funding. During the downturn after 2007, almost all European covered bond markets were temporarily de-facto nationalized via guar-

antee commitments or ECB intervention. For the European case, he also reports similar micro features of mortgage products and underwriting as observed in the U.S. before the GFC, including maturity extension, negative amortization, cyclical change in leverage ratio, increase in interest-only loans, appraisal bias, among others. He stresses that the central focus of regulatory reform should be to promote the shock absorption capacity of the system against a given liquidity shock, domestic or cross-border, and proposes two versions of the Volcker rule in his conclusion. He also claims that the housing price and credit booms were not as severe in those countries where rental housing markets are large and active, e.g., Germany, France, Netherlands, and Denmark in particular.

Construction and Development Financing

Another source of volatility is the construction financing sector. Long before the GFC, an “unholy alliance” between lenders and real estate developers during the upturn of the real estate market was quoted as a crucial factor in amplifying the real estate cycle, such as the commercial real estate boom-bust in the U.S. in the 1980s. More recently, the real estate project financing (PF) lending in Korea, which rapidly grew from the mid-2000s and served as the predominant source of liquidity for land development and construction, became a sore spot in the financial system of the country after the GFC. In the seminar, the ADC (acquisition, development and construction) lending sectors of three countries are compared, in terms of post-GFC outcomes: the U.S., Korea, and Taiwan.

For the U.S. case, Min Hwang investigates why the ADC loans show substantially worse performance compared to other bank loans after the GFC. After an extensive survey of the ADC sector in the U.S. and some relevant literature, he performs empirical analysis by using the Federal Reserve’s Senior Loan Officer Opinion Survey data. Out of his analysis, he reports that the current magnitude of the deterioration in performance of ADC loans, with delinquency rate of 16% or higher, is reminiscent of their similar performance during the previous financial crisis, the S&L crisis in the 1980s. He claims that the poor performance is mainly due to weakened underwriting standards during the boom period and a collapse in the commercial real estate market. He also claims that these two factors are closely related to inherent risks of real estate development, market risk and idiosyncratic project risk, and the current performance is a combined outcome of these two risks. Given the fact that loan terms and covenants for ADC loans are very diverse and contain various idiosyncratic factors, making it highly costly and impractical to monitor all those terms, he proposes to create an index based on actual loan terms and include it as

a part of macroprudential regulations. If it is carefully created so as to encompass diverse loan terms, as he argues, it can be aggregated by region and by industry to the national level and can be further used for dynamic provisioning or capital requirement for lenders.

For the Korean case, Jae-Young Son examines the boom-bust in the real estate PF lending in Korea, based on his recent survey of 300 or so market participants (including developers, lenders, and construction company employees). From his analysis, some specific recommendations to make the sector more efficient and stable include: employing a strong internal project evaluation and risk management procedure by lenders and construction companies; providing government assistance in developing standard evaluation tools and necessary data to participants of development projects; imposing minimum capital requirements for developers along with appropriate supervision of financial institutions; and, exploring new sources of construction financing such as REITs, land trusts, and third party insurance.

For the Taiwan case, Chin-Oh Chang and Ming-Chi Chen report that, over time, large quantities of resources and capital were attracted into the construction industry in Taiwan, and that the sector was developed under a conservative financial system. Project financing and informal measures, such as the pre-sale system, were utilized to acquire sufficient funds to complete development. When housing prices soared, the government rarely took action to control housing prices because most political parties and elected representatives had support from construction companies. After housing prices soared excessively, the government was forced to employ certain measures to suppress prices, resulting in bankruptcies of construction companies with overinvestment.

The most special characteristic for Taiwanese construction financing is the pre-sale system. Although the pre-sale system caused some problems in the early years, Taiwan has developed an escrow scheme and other regulations as preventive measures. There is also similar real estate project financing in Taiwan, as the main financing method for Taiwanese housing development. The authors claim that the PF lending sector has contributed significantly to that development without producing a housing shortage problem for the past forty years. Project financing appears to be more effective for construction development, despite its inherently higher credit risk, in Taiwan.

Policy Reform to Deal with Housing Boom-bust

Tyler T. Yang and Jessie Zhang present four important lessons of the GFC for the mortgage lending sector: (1) responsible underwriting standards

focusing on borrowers' ability to sustain mortgage repayments through an uncertain future economy; (2) the ability to accurately measure mortgage credit risks embedded in various mortgage product types, structured securities, and derivatives; (3) integrated capital rules that can stabilize housing markets; and (4) a clear definition of the government's roles by balancing the goals of affordable housing and the soundness of the national financial system. They also summarize, and assess, various new policies and regulations introduced and implemented by the U.S. government in response to the GFC, in particular, the Qualified Residential Mortgage (QRM) and the alternative capital requirement rules.

Regarding effects of mortgage lending restrictions, Inho Song tests the economy-wide impact of housing loan-to-value (LTV) ratio control in Korea on housing prices and consumption. Using a Dynamic Stochastic General Equilibrium (DSGE) model, the chapter provides results of impulse-response analyses to gauge effects of different levels of LTV restriction on private consumption and housing price change. The results of DSGE simulations present an overview that LTV control does contribute to stabilizing private consumption and housing price movements. In particular, the responsiveness of both housing prices and constrained households' consumption are more sensitive to the higher LTV ratio. The lower LTV ratio, however, sacrifices housing affordability for housing market stability, another dimension that a design of macro-prudential regulation such as LTV control should consider.

A well-functioning private rental housing sector is appreciated more than ever in recent years, given the recognition that pushing home ownership too far in the U.S. was a contributor to the subprime mortgage crisis. Kyung-Hwan Kim, Chang-Moo Lee and Young-Man Lee investigate the role of private rental sector in promoting financial stability by conducting an international comparison of the pattern of the volatility of housing price and rents paying attention to the differences in institutions and policies. They also present the case of Chonsei, an asset-based rental system that has dominated the Korean rental sector for many years. The authors report that private rental housing sector tends to be responsive to the institutional arrangements and government policies on financing, taxation and regulations that affect the profitability of rental housing business. As to the specific policy implication to Korea, there is a strong case for increasing the supply of rental housing, given that the country is experiencing a decrease in demand for home ownership in recent years, partly driven by the negative prospects for capital gains. However, institutional investors are not likely to put their money in the Korean rental market because the private rental housing business does not generate a competitive return, and the asset-based Chonsei system fails to generate a steady cash flow. They

discuss how to overcome this hurdle via real estate taxes and other policy initiatives.

As the keynote speaker and the panel session presenters, Giovanni Dell'Ariccia and Deniz Igan summarize their ongoing research on policy responses to deal with the housing boom-bust. They argue that, until the Global Financial Crisis, the widespread consensus was that it was better to wait for the bust and pick up the pieces than to attempt to prevent the boom. The crisis has challenged this view: that is, post-bust policy intervention was of limited effectiveness, and, thus, the costs associated with this particular bust were daunting. While early intervention may engender its own distortions, it may be best to undertake policy action on the basis of a judgment call (as with inflation) if there is a real risk that inaction could result in catastrophe.

The chapter explores various policy options by taking the characteristics of housing cycles and the linkages between housing and mortgage markets and business cycles into consideration. A more proactive policy stance can help reduce the risks associated with real estate booms, but will inevitably entail costs and distortions, and its effectiveness will be limited by loopholes and implementation problems. With this in mind, they reach the following conclusions: Policy efforts should focus on booms that are financed through credit and when leveraged institutions are directly involved, as the following busts tend to be more costly. They argue that monetary policy is too blunt and costly a tool to deal with the vulnerabilities associated with increased leverage, unless the boom occurs as a result of or at the same time as broader economic overheating; fiscal tools may be effective in principle, but, in practice, they would likely create distortions and are difficult to use in a counter-cyclical fashion; and, macroprudential measures seem to be the best option to achieve the objective of curbing real estate prices and leverage because they attack the problem at its source, adapt to specific circumstances in different locations at different times, and give the added benefit of increasing the resilience of the banking system. Nonetheless, the correct policy response to real estate booms is, like many other policymaking decisions, an art more than a science.

Looking ahead, as they argue, should a more proactive use of macroprudential tools become the norm, the question arises of who should be in control of these levers. In particular, the close interaction with monetary policy raises the question of whether the central bank should be charged with both price and financial stability. In that context, a trade-off emerges between policy credibility/accountability and the efficiencies stemming from coordination. When the former is paramount, separate agencies are preferable, while, when the latter prevails, a centralized solution would dominate.

NOTES

1. The very causes of the GFC are now fairly well-documented. Among others, they include: the speculative home buyers, many of whom leveraged 20 times (of their own equity) or higher; the originate-to-distribute mortgage lenders, who maximized business volume without proper due diligence on lending risks; the yield-curve playing investors, who enjoyed steep yield spreads thanks to the historically low interest rate environment in the early to mid 2000s; the oligopolistic rating agencies, who stamped top-quality ratings on the arcane and exotic mortgage securities; the fragmented banking supervisors, who were ill-equipped to assess embedded risks in mortgage and MBS products. See Ashcraft and Schuermann (2008), Levitin and Wachter (2010) among others.
2. This dynamic was first identified by Pavlov and Wachter (2004). It was later applied to the U.S. market by Pavlov and Wachter (2006).
3. Shortly after the East Asian Financial Crisis, this link was identified by Herring and Wachter (1999).
4. Malpezzi and Wachter (2005).
5. Nonetheless, our understanding of these linkages is being advanced with recent path-breaking studies, such as Iacoviello (2005) and Iacoviello and Neri (2010) among others.
6. This volume contains the papers presented at the international conference, entitled "A New Paradigm in Housing Policy After Global Financial Crisis," which was sponsored by Korea Development Institute (KDI) in December 2011. The conference was an inter-sectoral and inter-disciplinary forum in that we invited experts in different fields of economics, including macroeconomists, housing and real estate economists, as well as financial market specialists. The sessions were organized around the four themes: (1) macroeconomic linkages of housing, (2) residential mortgage lending, (3) construction and development financing, and (4) rental housing market and policy.
7. See Catte et al. (2004) for OECD countries and Young Il Kim (2010) for Korea.
8. Iacoviello and Neri (2010).
9. See Pavlov and Wachter (2011), Mian and Sufi (2009), Gorton (2008) among others.
10. Goodhart and Hofmann (2007).

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