

**A Comparative Context for U.S. Housing Policy:  
Housing Markets and the Financial Crisis in Europe, Asia, and Beyond**

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**Executive Summary**

This paper compares housing markets and housing finance institutions around the world to better understand how economic, historical, regulatory, and institutional factors influenced national economies and global housing markets during the financial crisis.

The backdrop of a range of country settings and experiences highlights significant characteristics of the U.S. housing market and finance system. The U.S. mortgage system is complex, compared with systems in other countries, offering a wide range of loan choices for borrowers and a variety of capital sources for lenders. About two-thirds of U.S. households are homeowners, similar to rates found in many other parts of the world, but the U.S. government's role in housing production is relatively low. The U.S. housing finance system stands out for having a mortgage interest tax deduction, a relatively high proportion of long-term fixed rate loans, no fees for mortgage pre-payment, and a predominance of nonrecourse loans (mortgages secured only by the house and not the borrower's other assets).

**Examples from Across the Globe**

European countries illustrate the range of housing market experiences in the context of the forces that brought on the US housing and financial crisis. The German housing market—with a homeownership rate of only 43 percent, extensive social housing, limited homeownership subsidies, and weak demographics—showed little growth or price declines over the past decade. In Germany and Denmark, covered bonds provided a steady source of credit for home purchases while limiting leverage and other types of risk.

The housing boom in the United Kingdom had features similar to the boom in the United States (e.g., self-certified loans, buy-to-let lending), but the aftermath was less severe. Government intervention was swift to shore up troubled banks and help struggling borrowers, some through new rental arrangements. Ireland's housing boom and bust—made worse by massive capital inflows, trade exposure, and negative real interest rates—came closer to matching the United States in severity. Spain was severely hurt by economic linkages to other countries, mostly in the form of foreign demand for vacation homes, and by risk-taking by small local savings institutions.

The Asian countries reviewed in the paper avoided the typical full boom-bust cycle. The continuing economic stagnation in Japan caused virtually no significant volatility in the

housing market. The impact of the financial crisis on Japan came instead through the severe contraction of international trade and the negative shocks felt through global credit markets. China and Singapore used government control and land ownership to alternately dampen surging prices or stimulate the market, sometimes with little success. The gap between incomes and home prices appears to be growing in China's many metropolitan areas, and pent-up demand and cash-rich state enterprises have further fueled the boom.

Australia and Canada have had more conservative mortgage systems than the United States, and both responded quickly to the financial crisis. Australia, entering the crisis with a fiscal surplus, was able to quickly guarantee deposits in a banking system with no deposit insurance, while Canada's restrictive banking/financial system kept the country from full participation in the subprime bubble.

### **Findings and Conclusions**

Most of the issues and factors emphasized in this review of 15 global housing markets are country and institution-specific and should be understood in that context. Different country experiences highlight the tradeoffs between tightly regulated markets, which may offer stability, and more dynamic and flexible systems that may be riskier but provide opportunities for efficiency, innovation, and growth. Other findings include:

- Global linkages can amplify effects, either through financial markets or trade.
- Small, early interventions helped some housing markets mitigate the impact of the crisis.
- Conservative lending practices and effective regulation and enforcement dampened boom and bust tendencies in several markets.
- No country is immune from irrational exuberance, but institutional memory of previous housing bubbles and financial crises helped several countries avoid repeating the same mistakes in the recent boom and bust period.
- Household risk-sharing through full recourse mortgages, prepayment penalties, and the absence of mortgage interest deductions dampened upswings but may lower the homeownership rate and household mobility.

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**Introduction**

Housing market turmoil that began in the United States in 2007 shows little sign of abating. The subsequent financial crisis spread to the rest of the world and its continued aftereffects are still being felt today. Combined with long-term budgetary issues at the national, state, and local levels, the weak economic recovery has raised questions about the underlying structure of the U.S. housing market and the basis for U.S. housing policy. What aspects of the U.S. housing market allowed these problems to develop and fester? What role did U.S. housing and financial policy play in the crisis, and what aspects of policy worsened or eased the extent of the crisis? What is the appropriate and optimal government role in housing and housing finance?

The United States was not alone in facing a housing bubble and the ensuing financial meltdown. A comparison across countries during this turbulent period reveals that housing prices escalated in many countries during the first decade of the 21st century. Ireland and Spain, for example, saw dramatic price increases; in contrast, the German housing market remained steady. A few countries experienced housing bubble collapses reminiscent of the United States experience, but several others seemed to have weathered the storm (at least so far) with a slow leveling off of prices. In some national markets, prices continue to soar. Housing markets were not the only vulnerable parts of economies worldwide. As soon as the initial U.S. housing market troubles spread to the

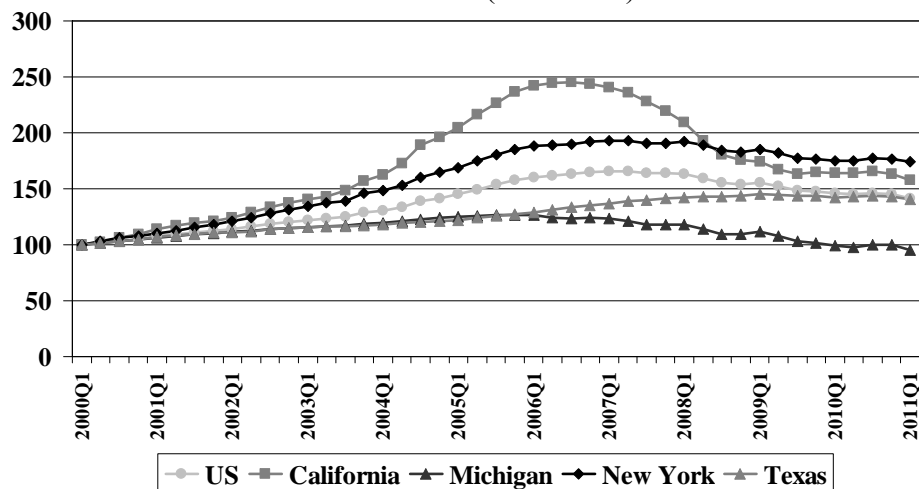
financial sector, the contagion spread rapidly across the world, affecting such far-flung countries as Singapore, New Zealand, Iceland, the United Kingdom, Germany, France, and Ireland, as well as, to a lesser degree, some fast-growing emerging economies.

This paper compares the U.S. experience with that of other countries to better understand how housing markets work, how different types of housing institutions and regulatory structures may have contributed to the housing boom and bust, and if these examples might inform housing policy in the United States. The backdrop of the financial crisis helps bring out the differences and commonalities of markets and institutions across the world. The countries studied are broadly representative, with examples from every major continent and from the most significant housing markets.

We use this approach to analyze how the housing and financial crisis affected countries worldwide, while also taking into account the importance and impact of local characteristics of housing markets. The institutional structure of housing markets and the policy domain in most countries is national, as was the political and economic response to the crisis. Market demand and supply are determined by demographic and socio-cultural factors, economic conditions and level of development, and by the functioning of national institutions, local jurisdictions, and the financial system. A look at the housing experience by state and by metro area underlines the diversity of housing markets within the United States. Housing prices in California (shown in Figure 1), Arizona, Florida, and Nevada doubled or more between 2000 and 2006, and then fell by 35 percent or greater by 2011. Other large markets saw more modest gains and losses (for example, New York) or very little loss at all (Texas). Michigan, which had been struggling with long-term economic problems, had relatively weak gains during the “bubble” period, but steep

losses once the recession began. The differences among these markets can be explained by many factors, including demographics, income levels, economic growth and job creation, financial resources, land use regulations/restrictions, and incentives.<sup>1</sup>

Figure 1  
Housing Price Index Levels, Selected States  
2000 to 2011 (2000=100)



Source: Authors, adjusted to 2000 from FHFA Index.

Local markets, however, were also influenced by global economic and market conditions, as well as policy issues being played out on the national stage. Investment by sovereign funds, especially from China, in U.S. agency securities contributed to low mortgage interest rates during the housing boom (Bardhan and Jaffee 2007). Foreign investment in local markets helped drive housing prices in areas as diverse as Vancouver, Shanghai, and Spain (Moos and Skaburskis 2010, Chen and Sun 2007, Sureda 2011). A country's vulnerability to the global financial crisis was directly related to the level of

<sup>1</sup> See discussion of factors influencing state variations in subprime and foreclosure experience, in Chapter 2 of Bardhan, Edelstein and Kroll 2011.

integration of local banks with the global financial markets,<sup>2</sup> the proportion of mortgage loans originating from foreign institutions or denominated in a foreign currency,<sup>3</sup> and the dependence of the local economy on global trade and investment flows.

Furthermore, the setting in which housing markets evolve are a matter not just of history and economics but also of regulatory policies. Both regular long term and emergency, reactive, short-term policies can determine the pace of construction and home sales, mortgage availability, price trends, affordability (in both ownership and rental housing), and the market's reaction to sharp economic reversals. The wide range of social, economic, political, cultural, and institutional settings and experiences worldwide before, during, and after the recent financial crisis provide a type of proving ground for different institutional structures and policies.

We begin by laying out different elements of the housing market from the supply and demand side. We then broadly describe the variation among countries in housing characteristics, regulatory framework, and financial structure. We next provide detailed examples of specific housing experiences in different countries, describing how this experience was manifested in the recent financial crisis. We synthesize these practices and their fallout into a set of observations on how housing markets operate and the effects of different types of interventions. We conclude with a few words on the relevance of these observations for the U.S. housing system.

## **Basic Elements of the Housing System**

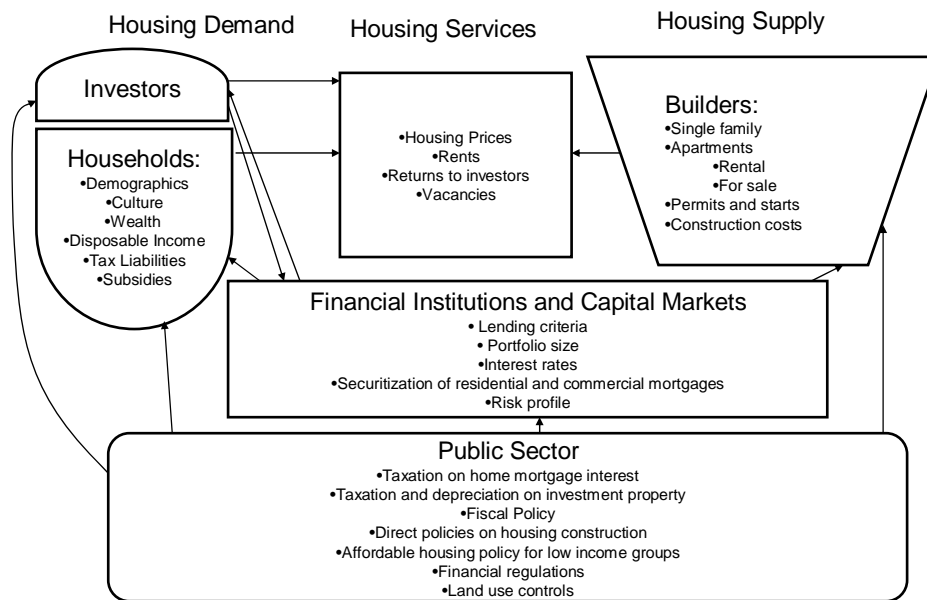
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<sup>2</sup> See for example the cases of Ireland and the United Kingdom in Bardhan, Edelstein and Kroll (2011).

<sup>3</sup> See descriptions of Serbia (Šoškić et. al 2011) and Russia (Sprenger and Urošević 2011) during the economic crisis in Bardhan, Edelstein and Kroll (2011).

Figure 2 gives a simplified diagram of the housing system in a typical country. Demand is primarily based on household formation, wealth and income, demographic mix (age distribution, marital status, family/household size), labor mobility, and lifestyle issues/cultural mores (extended family or primary family unit households, for example). Resources available to homeowners, prospective homeowners, and investors are further affected by the mortgage credit system, capital markets for mortgages, explicit and implicit subsidies, and the taxation system.

Figure 2  
Schematic View of the Housing Market



On the supply side, housing may be provided by the private sector or the public sector. Construction costs (labor and material), land costs, land-use restrictions, and financing costs will all affect the flow of housing constructed. These factors in turn are affected by the broader economy, where costs of materials and labor respond to broader demand for products locally, nationally, and even globally, as well as by financial markets and the regulatory and institutional setting.



The functioning of housing markets relies critically on how efficient the financial system is in channeling national and international savings into mortgages and into construction and development loans. Mortgage markets and secondary capital markets, through their impact on cost of funds, affect the behavior of homeowners, developers and builders, as well as real estate investors, and determine housing supply and demand.

The public sector may play a role at various stages and in different elements of the housing market supply chain. Government may be directly involved in building homes. It may provide subsidies either on the demand side (tax deductions for interest payments or rental subsidies) or on the supply side (tax credits for building affordable housing). National, state, and local governments control the types of housing built (through building codes) and the location and number of units in any geographic area (through land use controls). The public sector also helps determine the type of financing available through bank regulations, regulations of other financial players, regulation of the capital markets, and support of public sector secondary markets or capital market enterprises.

### **Overview of Global Housing Markets**

Table 1 gives an overview of the housing market in the United States and in 15 other countries. The United States is among the largest housing markets in the world, with over 130 million units in 2009. Only China and India have more housing units. In most countries, the majority of units are owner-occupied. The United States is no exception—about two-thirds of occupied housing units were owner-occupied in 2009, similar to levels in the United Kingdom, Australia, and Canada; somewhat higher than in

Germany, Denmark, Korea, and Japan; and lower than homeownership rates in Serbia, Singapore, Spain, and Ireland.

Table 1: Comparative Data on Housing Markets			
	Housing Stock 2009 (millions of units)	Percent Homeowners	Government Role in Housing Production*
Australia	8.3	70%	Low
Canada	12.4	65.9%	Low
China	[11.2B m <sup>2</sup> ]	~80% in urban areas	Moderate/ High
Denmark	2.7	54%	Low
Germany	39.4	43.2%	Moderate (for rental)
India	211.9		Moderate
Ireland	2.0	74.5%	Low since 1990, Moderate prior
Japan	58.0	61.1%	Low/ Moderate
Korea	13.8	60.3%	High
Netherlands	7.1	57.2%	Moderate
Russia	59.0	64% to 82%	High historic
Serbia	2.7	98%	High historic
Singapore	1.1	80%+	High
Spain	25.6	85%	Moderate
United Kingdom	27.1	67.4%	Moderate
United States	130.2	67.2%	Low
Sources: Modified from Exhibit 1 in Bardhan, Edelstein and Kroll, Editors 2011.			
* High: government a major builder of housing; Moderate: significant government intervention in supply; Low: little national government direct role, may have land use control at local level.			

The national government is or has been a large player in the housing supply business in some countries, but not in the United States. Direct housing construction in the U.S. is largely in the hands of the private sector. Some affordable housing is built by the private sector with government subsidies or incentives, but even then the government has a hand in less than 10 percent of total housing stock.<sup>4</sup>

<sup>4</sup> Estimates drawn from a 2001 supplemental report of the U.S. Department of Housing and Urban Development and the U.S. Bureau of the Census indicate that approximately 7 percent of all housing units had some type of subsidy (including both financing and direct rental by federal, state, and local government or by nonprofits). The U.S. Department of Housing and Urban Development reports that in 2008 roughly 5 million out of 132 million housing units were in national ownership or supported by federal government subsidy.

While the private sector is primarily responsible for housing supply in countries like the United Kingdom and the Netherlands, these countries still provide a larger component of publicly built social housing than do the United States, Canada, or Australia. In formerly socialist Eastern European countries (and the formerly socialist eastern part of Germany), the majority of housing stock may have been historically built and owned by the public sector, but it is now largely in private hands. China has also moved away from the provision of housing by the state and state-owned companies to a more market and private sector driven approach. In contrast, Singapore's government continues to be heavily engaged in managing the housing market through its dominant role in housing development, land use and control, housing allocation, and housing finance.

### **Finance and Mortgage Systems**

The U.S. mortgage system is one of the more complex systems in operation around the world, offering a wide range of choices for borrowers and a variety of capital sources for lenders. Some institutional and operational characteristics of the U.S. housing finance system are shared across countries, while some are unique to the United States or to only one or two other countries. In some cases, the United States has been seen as a leader in new product innovation, and its institutions and practices worthy of emulation.

#### *The U.S. Housing Finance System*

Initially, government policy was a major driver of mortgage markets in the United States. The Federal National Mortgage Association (FNMA; Fannie Mae) was established as a public entity in 1938, to provide mortgage lenders with access to capital

markets. It became a publicly held shareholder company chartered by the U.S. government in 1968. The Federal Home Mortgage Corporation (Freddie Mac) was created by Congress in 1970 to provide services similar to those provided by Fannie Mae. The Government National Mortgage Association (GNMA, Ginnie Mae) was established in 1968 as a government-owned corporation to provide mortgage guarantees, enabling the pooling and repackaging of loans into securities (securitization), primarily relating to loans to low- and moderate-income borrowers. Ginnie Mae has remained a government-owned enterprise throughout its history, while Fannie and Freddie came under government conservatorship in 2008 when the financial and housing crisis brought them to the brink of failure. During the housing boom, the private sector role in securitization grew in scope and complexity. Many products were issued that did not conform to standards set by the government-sponsored enterprises.

A typical loan in the United States may have either a fixed- or variable-interest rate. Mortgages are generally secured by the property's value alone. Should the borrower default, the lender does not have the right to claim the borrower's other assets. The loan-to-value (LTV) ratio, though set individually for each mortgage, has been historically influenced in the United States by the level required for government guarantees or securitization by U.S. government-sponsored enterprises (GSEs). For many years, the GSEs required an 80 percent loan-to-value level for securitizing "conforming" mortgages (those that conform to GSE guidelines). Higher loan-to-value ratios were permitted to make homeownership more available to low- to moderate-income borrowers through targeted federal financing and loan guarantee programs. Innovations in securitization and mortgage design that appeared to allocate the risk more effectively (i.e., riskier, higher-

yielding securities to risk-loving investors) allowed the origination of higher interest rate loans at higher loan-to-value ratios. Monetary policy, which kept interest rates extremely low between 2001 and 2007, made it even easier for the housing and financial bubble to build up (Taylor 2009).

The U.S. financial market system therefore operates through a combination of private business practices, public regulations, and public sector support for private sector activities. Although most housing finance comes from the private sector, the institutional framework in which this occurs is heavily influenced by public sector policy. Less direct public sector measures also affect borrowing costs. For example, one borrower-friendly policy allows homeowners to deduct their mortgage interest from their income taxes for loans of up to \$1,000,000, significantly reducing costs, especially to borrowers at higher-income levels.

#### *Comparative Finance Systems*

Many other countries also use means other than direct housing production and supply to manage the housing market. Much of this activity centers on the finance sector, in order to indirectly influence the demand and supply of housing. Table 2 summarizes characteristics of housing finance systems across the same set of countries.

	Loan to Value Ratio	Variable or fixed rate (majority)	Mortgage deductible	Fee-free Prepayment?	Government Guarantee or Mortgage Insurance	Capital Market Role	Recourse or Non-recourse
Australia	70%	Variable	No	Partial; full from mid 2011	For lenders	Moderate	Recourse
Canada	90%	Short-term fixed	No		CMHC	Moderate, gov't presence	Recourse
China	60%	Variable	No	Yes	Insurance required for HPF loans	None	Loans linked to compulsory savings
Denmark	65%	Variable	Yes	Yes	No	Covered Bonds	Recourse
Germany	74%	Variable with fixed limits	No	No	Covered bonds	Bonds	Recourse
India	65%		Yes	No	On the cards	Partial	Recourse
Ireland	90%+	Variable	Yes (5 years)				
Japan	80%	Variable 44%, Hybrid 31%, Fixed 25%	No	For some lenders; most no	JHF (GHLC until 4/2007) 35% of loans	REITS, JHF (GHLC until 4/2007)	Recourse
Korea	50-70%	Variable	No	No	Yes	Yes	Recourse
Netherlands	80%	Fixed	Yes	Limited	Government loan guarantees	Small OTC	Recourse
Russia	60-70%	Mostly fixed	Yes	Limited	Being established	New since 2000	Recourse
Serbia	95%	Variable	No	No	Yes	Under-developed	Mostly recourse
Singapore	80% private, 90% public	Variable	No	Yes, after teaser period	Insurance mandatory for public housing purchase	None	Both; non-R requires co-borrower
Spain	70-80%	Variable	Only for low income as of 2011	No	No	64% Covered Bonds, 36% ARM	Recourse
United Kingdom	74%	Short-term fixed, then turn variable	No*	Yes if rate not discounted	Insurance available for mortgagor	Grew 2000-2007. now negligible	Recourse
United States	80-90%	Both, currently mainly fixed	Yes*	Primarily; details vary by state	Multiple agencies involved	Highly Developed	Non-Recourse

\* Capital gains tax limited. Sources: Modified from Exhibit 1 in Bardhan, Edelstein and Kroll, Editors 2011.

<sup>5</sup> A glossary is provided in Appendix A that further explains the terminology in this table.

The United States has a wider range of financing options than are found in many of the other countries we examined. The long-term fixed-rate mortgage, for example, is rare in most other countries. Only in the Netherlands was it the primary mortgage instrument of choice. The majority of the 15 comparative countries we looked at used variable-rate mortgages. Fixed terms were generally offered for a much shorter time period (one to five years), even where they were available. Mortgage interest is deductible from income taxes in only four of these countries—India, Denmark, the Netherlands, and, for five years, in Ireland.

Loan terms are often stricter in other countries. The United States was the only country of those studied where the majority of loans were nonrecourse (protecting the borrower's other assets in the event of default). Loans are full recourse in the European countries. In China, loans are linked to compulsory savings and retirement fund schemes, giving an added incentive to stay current, while in Singapore, a similar link to provident fund savings exists, and nonrecourse loans require a co-borrower. Many countries allow lenders to charge penalties when loans are prepaid. In the United States, FHA loans and Fannie and Freddie conforming loans are largely set at fee-free prepayment; prepayment fees on other loans tend to be set at the state level, with prepayment restrictions more likely to be found on nonconforming subprime loans.<sup>6</sup>

Many governments support mortgage lending through various types of mortgage insurance programs or by offering covered bonds. Governments participate much less in secondary markets, and in some countries the secondary capital markets for mortgages

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<sup>6</sup> Recent reforms at the state level in the wake of the financial crisis have further reduced the opportunities for lenders to charge prepayment fees, even with subprime loans.

are much smaller relative to the lending pool than in the United States. Thus, lending institutions are more likely to hold the loans they make.

### **Comparative Housing Systems and the Crisis**

Comparing the experience of different countries during the global financial crisis can help illustrate how market, institutional, and regulatory factors in different settings may influence housing market growth and economic outcomes following distress (see for example Duca, Muellbauer, and Murphy 2010). We divide the discussion in this section by geographic region.

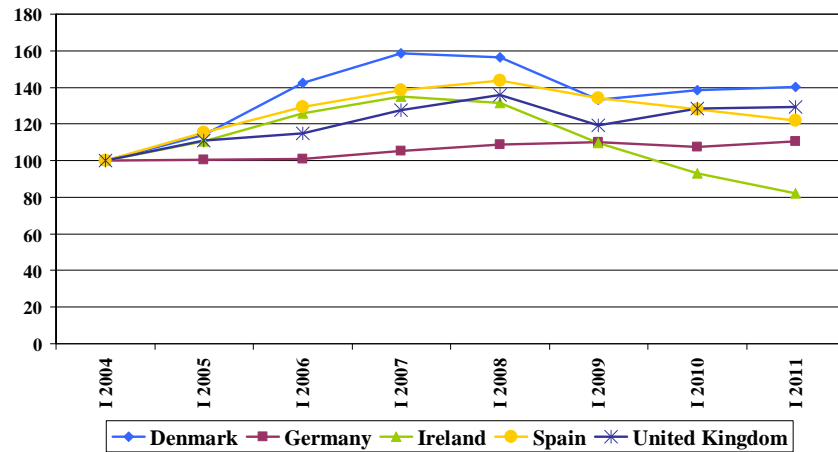
#### *European Systems*

Figure 3 shows indices of house price trends in five European countries between 2004 and 2011. This figure should be used as a general illustration of the differences, rather than as a set of precise numbers. Different data sources on price trends in global markets show variable and inconsistent price levels and trends, even from the same source measured in different years. This figure draws from several years of reports from a single institutional source (the European Mortgage Foundation). Although exact values vary, the broad relative trends over time are consistent. We use the experiences illustrated below as a starting point for discussing how the European housing markets responded during the run-up to the boom, how they experienced the bust, and how local demographic and economic factors and the institutional and policy context contributed. Our discussion of each of the countries shown in Figure 3 begins with Germany, which showed no evidence of a housing bubble, and follows sequentially in roughly increasing



order of severity, concluding with Ireland and Spain, which had the most extreme evidence of housing bubbles.

Figure 3  
Indexed Housing Price Levels, Selected European Markets  
2005-2010 (2004 = 100)



Source: European Mortgage Foundation

### 1. Germany

The German experience is unique in that the country did not display the rapid housing price growth seen in most of Europe during the mid-2000s. Indeed, some sources show price declines even during this period of robust housing markets globally. Two factors appear relevant here. First, Germany underwent an earlier period of home price gains just prior to and immediately after reunification, when subsidies and incentives caused a boom (Weiss 2009). However, once reunification was established and an expected economic surge in Berlin failed to materialize, home prices began a gradual downward slide (Lindenthal and Eichholtz 2011). Thus, buyers likely did not expect large increases in home prices and equity gains. Second, a far smaller share of households in Germany are homeowners than in most other parts of the world, and government

programs designed to stimulate the housing market are largely oriented to rental housing, particularly the social housing component. The reasons for this are many. As Voigtlander (2009) points out, "... the situation in Germany is primarily due to four factors. First, rental housing makes up a larger share of the market because of an extensive social housing sector. [...] Second, homeowners in Germany did not benefit from the same high subsidies as in countries such as Spain or the Netherlands. Third, the German rental housing market was not rendered inoperative by excessive interventions in rents, as was the case in countries such as Spain and the UK. Finally, German house prices remained stable over a long period of time."

German demographics have not been conducive to healthy price rises. Furthermore, underlying capital for mortgages is tied to covered bonds that include strict requirements for loan-to-value ratio, interest rates that may vary only within fixed limits, and loans that are full recourse. These factors made borrowers less likely to take out loans they could not afford, and less likely to default on their mortgages, or to face the financial strain affecting many U.S. borrowers at the height of the subprime bubble. Nevertheless, the German economy has not been immune from the financial crisis. German banks that invested in high-risk U.S. mortgage securities suffered significant losses, the dense foreign trade and investment linkages of Germany made it susceptible to external shocks. At the same time, the entire European economy and banking system, including Germany's, have been affected by sovereign debt problems of some of the smaller EU countries.

## 2. Denmark

Housing prices in Denmark increased strongly during the boom but fell much more moderately during the financial crisis and later. Gyntelberg et al. (2011) report a drop of 20 percent from 2006 to 2009, while the European Mortgage Foundation data show a decline closer to 16 percent, with a slow price recovery following 2009.

The Danish mortgage system is based on banking regulations that require the matching of cash flow from mortgages to the bonds used to finance the loans. The term of the loan also matches the bond term. There are no penalty fees for prepayment, and the borrower may either buy back the loan by purchasing the corresponding bond on the secondary market and delivering it to the bank or may assign the loan to a new purchaser. Until about 2005, the great majority of loans were long-term fixed rate. By 2010 almost 90 percent of new and two-thirds of outstanding residential mortgages were long-term adjustable-rate mortgages, with rates adjusted in 1-year intervals at the time of refinancing the underlying bond. From the bank's point of view, the financing involves matching of cash-flow from loans with interest payments on the bonds used to fund the loans. For example, one-year ARMs are funded by issuance of one-year noncallable bonds and there is a one-to-one match of interest period on these bonds with the interest period of one year for the homeowner. This creates a natural interest-rate hedge for the mortgage bank.

During the financial crisis, government guarantees helped stabilize Denmark's bond market, and bonds were issued during a period when most credit was frozen worldwide. Although borrowers faced falling house values, and the number of homes with loan-to-value ratios greater than 100 percent grew during the downturn, the default

rate was quite low. Gyntelberg et al. (2011) offer several reasons in addition to emergency measures for low default rates. Bond requirements and regulations for mortgages put limits on how much lenders could liberalize loan practices (Denmark has no subprime market) and constrained hyper-securitization and derivative proliferation. The full recourse nature of loans discouraged borrowers from taking out loans they could not afford and from defaulting on underwater mortgages. The country's strong welfare programs, which helped replace income for the unemployed and provided social housing for those who could not afford to participate in the private market also helped to shore up the housing market indirectly.

### 3. United Kingdom

The run-up to the housing bubble in the United Kingdom was similar to the experience in the United States, but the aftermath has been less severe. The similarity is brought home by Pryce and Sprigings (2009), who note the expansion of cheap credit, brought about, among other things, by the burgeoning securitized lending sector, and which led to the growth of speculative, buy-to-let mortgages, and the reforms of the welfare system that weakened the safety net for low income borrowers.

In contrast to the United States, the United Kingdom had two earlier periods of booms and busts in housing prices in the 1970s and 1980s. However, other features bear significant similarities with the U.S. experience. Like the high-priced coastal markets in the United States, the United Kingdom has significant supply constraints that result from local land use controls. In addition, financial deregulation allowed the expansion of lending to a broader group of borrowers. Whitehead and Scanlon (2011) argue that price gains were in line with fundamentals until about 2005, but that a price surge in the next

two years reflected a change in the borrowing community. When lending peaked in 2007, 46 percent of loans were “self-certified” (similar to low doc/no doc loans), and buy-to-let lending (i.e., to investors, rather than to homeowners) had also increased rapidly. Prices dropped in the United Kingdom but stabilized quickly. This may reflect the fact that prices had not soared as far from fundamentals as in the United States but also that bank and national strategies minimized foreclosures. A social housing provider-led program of rent backs allowed troubled borrowers to stay in their homes. Monetary policy initiatives, investment in social housing, and tax relief were all strategies put in place to cushion the recession’s effects.

#### 4. Ireland

Ireland has had a more severe experience than the United Kingdom during the financial crisis, with bank failures accompanied by large decreases in home values. The country’s housing boom started long before the more common 2000-to-2007 price rise. Historically a country with a declining population and labor force, the advent of offshoring of technical manufacturing and services operations from the United States and membership in the EU brought new opportunities to the country. In the 1990s, Ireland’s foreign direct investment-led technology and economic boom took off, and housing prices increased together with jobs and incomes. Much of the home price increase during this period was in direct response to economic growth. This “new economy” in Ireland grew more slowly following the dot-com implosion, but home prices continued to rise through 2006.

Stevenson (2011) attributes this later phase of price growth to a credit bubble, which gave Ireland negative real interest rates for much of the period and allowed the

housing sector to drive growth in the economy in the face of slowdown in other sectors. Indeed, up to 20 percent of GDP in this period came from the real estate industry as a whole (Kelly 2010). Lending standards were liberalized and many U.S.-like loan features appeared (e.g., teaser rates, LTV of up to 100 percent). As in the United States, a series of factors fed into each other and built up once the housing market began to slow—declining building activity, lower prices, lower lending, banking losses, and contagion effects. These problems were made worse by Ireland’s position in the Euro zone, which gave the country limited tools in terms of a flexible monetary policy once problems emerged. As Conefrey and Fitz Gerald (2010) point out, the Euro inclusion relaxed financial constraints and, initially, the housing sector responded to the demographic needs in countries such as Ireland and Spain, with their demand backlog for desirable housing stock. The boom soon turned into an unsustainable bubble, however, and the consequences are now reflected not only in home price declines but also in serious unemployment and fiscal problems.

## 5. Spain

International linkages played a significant role in the severity of the housing and economic boom and bust in Spain. EU membership and a growing economy led to housing price increases beginning in the mid-1990s. Housing market expansion after 2000 was largely driven by speculation on the growth of international demand, especially from other Europeans seeking vacation homes. Between 2000 and 2009, 5 million housing units were added to an existing stock of 20 million, while the population grew by only 6.5 million (Sureda 2011). Small savings institutions, which had been the major mortgage lenders for individual borrowers, moved into the business of financing real

estate development and construction of large multifamily projects. These loans became the most problematic ones during the downturn. As in parts of the United States, real estate development itself was an important driver of employment growth, and the effects of the real estate downturn were felt in national employment figures, as well as in real estate asset prices and in the financial sector. Like Ireland, Spain had no monetary policy options, but the government stepped in with loan modification measures, deferred mortgage payments for the unemployed, and temporary fiscal stimulus measures. However, longer-term fiscal concerns may limit further action.

Overall, several observations sum up the European experience:

- Countries with restrictive mortgage finance systems (lower loan-to-value ratios, restrictions on innovative mortgage products) had less severe housing market volatility and disruption.
- Quick action to stabilize the banking system, support borrowers, and maintain mortgage credit systems helped minimize foreclosures and also tended to lead to faster stabilization of prices.
- The recent housing bubble was not a unique experience. Germany's earlier bubble around reunification left it somewhat immune to the tempting "expectation" effects in the most recent boom and bust. Previous bubbles in the United Kingdom left an institutional memory in the public sector that informed response efforts in the most recent crisis.
- The combination of strong unemployment insurance programs and social housing alternatives kept several countries from experiencing the full spillover effects of the housing bust, despite their participation in the bubble.

- Full recourse, prepayment fees, and the absence of mortgage interest tax deductions may have reduced the temptation for households to treat housing as a speculative investment.
- The global nature of the financial system added to vulnerability. Banking systems experienced stress more quickly where they were reliant on global credit markets and in countries where mortgages were taken out in foreign currencies.<sup>7</sup>

### *Asian Housing Systems*

Housing market data for many Asian countries are more sparsely available than data for the United States or European countries. From available information, it appears that while some countries saw significant price fluctuations, countries in Asia have not had the full boom and bust experience that was observed in the United States and several European countries (see figure 4). This in no way implies immunity from such cycles. Many parts of Asia experienced a real estate bubble sometime in the past two decades. Real estate bubbles in Asia were linked to the financial crisis that affected the region in 1997, as well as to the experience of the Japanese economy, starting in the late 1980s, early 1990s (Quigley 2001, Seko, Sumita, and Naoi, 2011). Indeed, given the extremely high price-rent ratios, as well as price-income ratios, some countries may be in the midst of a bubble as we write. The experience across countries is quite diverse, but a few examples highlight some of the underlying characteristics. Our discussion of Asian countries below focuses on their housing market experiences, as well as on their institutional characteristics, which in some countries allow for much closer government

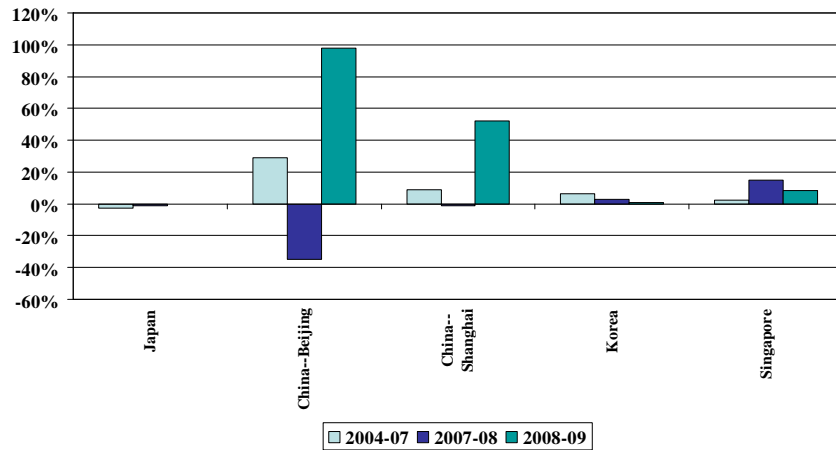
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<sup>7</sup> See for example Soškić et al. (2011).



tinkering with housing market variables than is found in the United States or Western Europe.

Figure 4  
Annual Average Housing Price Changes, China, Japan and Singapore  
2004-07, 2007-08 and 2008-09



Source: Modified from Bardhan, Edelstein and Kroll 2011

## 1. Japan

Japan had a large real estate bubble that peaked in the early 1990s. The collapse of real estate prices contributed to prolonged economic stagnation and to the restructuring of the financial sector. The Government Housing Loan Corporation, which had historically accounted for up to one-third of housing loans in Japan, was affected by government privatization policies after 2000. Contrary to the general trend in Japan, where public sector debt grew relative to private sector debt, housing mortgages have shifted from the public to the private side. Private banks now hold a much larger share of mortgages than the restructured public provider, but their role has not been enhanced by a robust capital market. With tightly restricted real estate capital flows, weak demographics, continual faltering confidence, and a still sputtering economy, the

Japanese housing market seemed immune to the global effects of the housing bubble. One data source shows housing prices dropping for the entire period, while another shows housing prices growing very little from 2000 to 2007 and declining slightly during the world financial crisis bust (Japanese Housing Finance Agency 2010). The economic impact of the financial crisis on Japan came instead through the severe contraction of international trade and the negative shocks felt through global credit markets. The continuing economic stagnation made the economy particularly vulnerable. Seko, Sumita, and Naoi (2011) argue that Japan may need to loosen its financial restrictions to provide greater flexibility in the housing market.

## 2. China

In China, the government owns the land and plays the dominant role in controlling and managing housing finance, housing supply, and ownership. National and municipal governments have used this authority to micromanage housing and financial markets. As housing prices have surged in China (more than quadrupling in Beijing between 2004 and 2009), governments at the national and local levels have adjusted land supply, access to mortgages, and permission to purchase property alternately to cool and stimulate markets (Lu, Zhen, and Xu 2011; Chen 2011). Nevertheless, the gap between incomes and home prices in the most expensive metropolitan areas is growing. The price-to-income ratio in Beijing surged from 9 in 2003 to 18 in 2010 and from 10 to 13 over the same period in Shanghai. Wu, Gyurko, and Deng (2011) have calculated that even small declines in expected appreciation could lead to immediate price decreases on the order of 40 percent—a bursting bubble yet to come. Although access to finance is much more restricted than in the United States and many European countries, much of the purchase

activity is financed privately by personal savings. Given the link between urban development, municipal finance, and state ownership of land, the city governments have played an important role in boosting the land prices that underlie housing cost by parlaying land development fees into major urban infrastructure projects. Wu et al. (2011) point out that the public sector has also had a hand in housing price appreciation in certain cities: some state-owned enterprises controlled by the central government, and flush with funds, have been active in land markets, probably adding to land price increases.

Most recently, the Chinese government has recognized that the substantial rise in housing prices over the past decade has made homeownership less affordable (or out of reach), particularly for the lowest-income groups. In response, the Chinese government in its latest five-year plan (the 12th five-year plan) set a goal to construct 35 million housing units for low-income households. This is an explicit recognition that the housing boom and bust in China have left the lower end of the income spectrum with little hope of homeownership without assistance from the central government.

### 3. Singapore

In Singapore, 80 percent of the housing stock (rent and own) is dependent upon the activities of the government-controlled housing agency (Housing and Development Board [HDB]) and the Social Security system (the Central Provident Fund [CPF]). Indeed, the Singapore government plays a dominant role in its real estate markets, in general, and the housing markets, in particular. The HDB builds, owns, and/or sells houses to a substantial number of first-time homebuyers and others in Singapore. A Singaporean citizen purchasing a home can borrow against his Social Security (CPF)

account for financing. The private ownership-residential market (the 20 percent that is not related to government activities) is the move-up market. In Singapore, the housing market has been sensitive to economic fluctuations, but the results have been moderated by government intervention (Kim 2011). Recently, the country saw high home price appreciation before and after the global financial crisis, with a swift yet temporary downturn during the crisis.

#### 4. India

Of all large Asian countries, India has the financial system most closely modeled after those in the United States and Europe, but it has been tightly regulated, and the country has a much less developed secondary market than in the United States (Verma 2011). Also, as an Asian country at an earlier stage of development, home purchases are more dependent on personal savings and other sources of capital outside the banking system, with mortgages playing a major role only in large urban areas and for a relatively small segment of the population, primarily middle-class professionals. Chandrasekar (2011) shows that the number of housing loans dropped sharply between 2004 and 2008, but prices in 2009 were above 2007 levels in Kolkata (up 85 percent), Mumbai (up 26 percent), and Delhi (up 13 percent—after prices rose 30 percent in 2008 and then dipped in 2009). Relaxed monetary policy and a fiscal stimulus helped the Indian economy and real estate market weather the global financial crisis' effects on trade flows, capital availability, and exchange rates (Kumar and Vashisht 2009; Verma 2011). Pent-up demand may continue to help absorb the higher-priced housing, yet in the longer term the housing market is still vulnerable to price inflation diverging from rental and income fundamentals.

The experience of Asian housing markets, although specific and idiosyncratic, underscores some additional issues while re-emphasizing or de-emphasizing some of the European experiences:

- The effects of a real estate market collapse can be long term and pervasive, particularly where the connections to the larger financial system are diverse, numerous, and intricate. In Japan, the aftereffects had long-term implications for economic growth. Further, the broader lessons of previous downturns and crises seem to have stemmed speculative activity in the countries most affected by the Asian crisis of the late 1990s (see Kyung-Hwan Kim 2011 and Leung and Tang 2011).
- In Asia, the finance systems tend to be fairly restrictive, conservative, and limiting in terms of the amount of speculative finance built on mortgages. Where bubbles appear to be emerging (as in China), housing is often purchased through alternate financing sources—such as personal savings, profitable enterprises looking for diversified investments, or local governments.
- The emerging Asian economies, in particular, share a number of traits regarding housing and its larger role in society and economy. Housing is seen as a hedge, an insurance policy against inflation and the uncertainties of economic life. In the absence of a range of investment alternatives, housing is also viewed as a tangible asset where savings can be parked over the long term. Rental insecurity for contractual reasons and socio-cultural significance of “owned” homes are also behind the inordinate home price levels, relative to incomes, that are seen in these countries.

- National control over land and financial capital, although a powerful tool, is not necessarily effective in managing price fluctuations, and even more importantly, it is a tool that is highly susceptible to short-term manipulation by vested interests.

### *Other Examples*

Canada and Australia offer a different kind of contrast and some similarity to the U.S. housing market experience and structure. The two countries have some similarities with each other—both have large resource-based regions with connections to fast-growing Asian economies and other countries particularly prone to housing price booms. Neither country, however, had the expansive lending activity that occurred in the United States. Both have been able to develop quick responses to temper the impacts of the global financial crisis.

#### 1. Australia

Australia's economy is closely tied to the major Asian and Pacific economies, and these linkages have influenced the degree of impact felt by the Australian economy from the global financial crisis. Housing price trends vary significantly by region within the continent-sized country. The highest level of appreciation occurred in the resource-based region of Perth (close to doubling between 2004 and 2007), which experienced substantial economic growth due to exports to China. In all five major cities, prices fell briefly in response to the crisis but were higher again in 2010 than in 2007. Nationwide, prices grew by about 11 percent between 2004 and 2007 and by 15 percent from 2007 to

2010—far less of a boom than in the United States, but a steady growth that is continuing.

Australia and the United States differ in operation and structure of the housing and housing finance sectors. Murphy (2011) indicates that home building in Australia is generally done on a contract rather than speculative basis (i.e., the construction takes place on a pay-as-you-go basis) through the development of individual sites earmarked for individual consumers. The Australian banking and mortgage system is unusual in leaving most of the risk in the hands of borrowers rather than with banks (Tirtiroglu 2011). The great majority of mortgages have adjustable rates with very short adjustment terms, and loans are full recourse. The mortgage market was liberalized in the 1990s with wholesale brokers taking up about 15 percent of business and borrowers being offered a greater array of products. Nevertheless, subprime products did not become a significant part of the market (Murphy 2011).

Australia had no deposit insurance until September 2008, when the government instituted 100 percent deposit insurance as an immediate response to the financial crisis. Australia used a budget surplus to quickly invest in a fiscal stimulus, keeping unemployment below 6 percent—a strategy that has also supported house prices. However, the continuing, steady rise in home prices and the heavy investment of bank portfolios in mortgage loans raise questions about the country's financial stability going forward (Tirtiroglu 2011; Murphy 2011).

## 2. Canada

Despite its proximity to the United States, Canada had housing market trends that were in some ways more similar to Australia than to its close neighbor. Like Australia,

Canada's housing markets vary widely by region, with some of the highest price gains occurring in natural resource-exporting regions (Carter 2011; Tsounta 2009). The country as a whole saw price gains ranging from 5 percent to just under 10 percent annually from 2004 to 2007. Prices continued to rise in 2008, with a very modest downturn of 2 percent in 2009. However, resource regions, which had seen gains of over 40 percent in some years, began to see annual declines of 10 to 15 percent in 2009. (Tsounta 2009).

Canada has had a much more conservatively managed and regulated financial system than the United States. Mandatory mortgage insurance, less reliance on "creative" instruments (including subprime mortgages), and a conservative banking culture that limited leverage all helped prevent many of the problems experienced in the United States (Carter 2011; Brean et al. 2011). The country experienced no free fall in prices and no significant escalation in mortgage defaults or bank foreclosures. No banks failed during the crisis. This stability is partly due to a different institutional framework of state involvement and tolerant acceptance of the state's role. Brean et al. attribute the relatively safe navigation through the crisis to more effective regulation, self-imposed strict limits on bank leverage, much stricter limits on unconventional mortgages, and less reliance on the use of "creative" investment types (e.g. subprime lending) and structured products. Yet, concerns remain over the possibility of economic fallout from the financial crisis on Canada's economy and unemployment.

Canada and Australia are two illustrations of how housing markets have fared under somewhat more restrictive mortgage financing conditions and with quick government intervention at times of crisis. These strategies, of course, do not eliminate the possibility of local housing bubbles. Both countries experienced large home price



increases in boomtown economies—increases clearly subject to reversals should the export demand shrink for minerals and other natural resources. The strategies were effective in keeping these booms from spreading nationally and in allowing modest adjustments in the face of external shocks.

### **What conclusions can be drawn?**

Our international housing market examples illustrate how local economic, national-institutional, and global financial forces shape housing markets. Different institutional structures, regulatory settings, economic conditions, global connections, demographics, and political factors combine to determine the vulnerability of the housing market to domestic and international shocks and the nature, direction, and robustness of the policy response. Most of the issues highlighted and factors emphasized are country- and institution-specific and should be understood in that context. With the wide range of global experiences, it is clear no one optimal and preferred structure exists for housing finance or housing provision. However, these examples suggest which tools have worked well and which are risky, albeit in their respective settings, and illustrate some broader choices in housing policy.

General findings include:

- Global connections can amplify effects. Especially for smaller economies, extensive foreign financial institution participation in the mortgage market, significant foreign capital flows, and even intensive trade links, albeit to a lesser degree, could freeze the financial system or adversely affect employment and GDP growth. Even in the United States, the priming of the housing pump came

partly from foreign investments in U.S. mortgage products. And the exposure of foreign investors led from the U.S. subprime market collapse to global repercussions.

- Small interventions by authorities, early on, kept some housing markets from reaching the crisis stage, preventing more expensive and heavier intrusion later.
- Conservative lending practices, a strong regulatory structure, and enforcement dampened housing booms and busts in several markets.
- Quick, decisive response by authorities was able to avert the worst of the impact in some settings. Timely anticipatory guarantees were effective in diverting panic (Australia) but were less effective when applied reactively to problems that were already emerging (as with the UK banking crisis).
- No country is immune from irrational exuberance, inflamed animal spirits, and runaway contagion regarding asset prices; however, institutional memory can make a difference. Several authors attribute policies put in place following the 1997 Asian financial crisis to the dampening of prospective bubbles from 2005 to 2008.
- The combination of full recourse mortgage loans, prepayment penalties, and the absence of mortgage interest tax deductions is likely to have mitigated the housing upswings and downturn by increasing household risk-sharing.
- Some authors noted that restrictive finance systems and absence of tax benefits for homeownership reduce housing market volatility but at the cost of reducing the ownership rate and household mobility.

This review has focused particularly on aspects of the housing market and finance systems at play in the recent financial crisis. In developing an effective housing policy, other important choices must also be made, which will reflect deeper questions of social policy. One set of choices revolve around the question of what is the optimal housing tenure mix; indeed, is there an optimum at all? Another issue relates to using housing trends as indicators of well-being because housing has a dual role as shelter and as an economic driver and job provider. Because a hot housing market generates jobs and wealth benefits, the temptation may be to ignore house price inflation (unlike inflation of many other goods or services), focusing instead on the positive benefits for the housing and construction sectors, and the economy at large. Finally, different country experiences highlight the tradeoffs between tightly regulated markets, which may offer stability, and more dynamic and flexible systems that may be riskier but provide opportunities for efficiency, innovation, and growth.

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## Appendix A

### Glossary

*Adjustable-rate mortgage (ARM):* A mortgage where interest rates may be adjusted over the course of the loan. Generally, the frequency of adjustments will be specified in the mortgage, as will the index used to determine the adjustment level. The index and period of variability varies widely among countries.

*CMHC:* Canada Mortgage and Housing Corporation offers mortgage insurance on residential mortgage loans.

*Capital Market/Secondary Mortgage Market:* The secondary mortgage market is the market for the sale and purchase of mortgage-backed securities and bonds backed by pools of mortgages. Capital markets, more generally, are markets where businesses and other entities raise long-term funds by trading financial securities.

*Conforming loan:* In the United States, a loan that does not exceed the loan value and other limits set by Fannie Mae and Freddie Mac.

*Fixed-rate mortgage:* A mortgage where the interest rate, and generally the monthly payment, is unchanged for the life of the loan.

*GHLC:* Government Housing Loan Corporation (of Japan) was established in the 1950s to provide long-term capital at a low rate of interest for housing construction and purchase.

*Government Mortgage Guarantee:* A mortgage guarantee backed with the full faith and credit of the government.

*Hybrid loan:* A mortgage that combines features of fixed- and adjustable-rate mortgages. For example, a mortgage may have a fixed interest rate for a specified period (1 year, 5

years) after which the interest rate may become fully variable or may adjust within limits specified in the mortgage document.

*JHF*: Japanese Housing Finance Agency replaced the GHLC in 2007. JHF manages the remaining loans originally issued by GHLC.

*Loan-to-value ratio (LTV)*: Ratio of the outstanding loan amount to the market value of the home. The LTV at the time the loan is made indicates the percentage of downpayment made by the borrower. For example, an LTV of 80 indicates a borrower provided 20 percent equity. As home prices change and the loan gets paid down, the LTV also changes.

*Mortgage Insurance*: Insurance provided by the government or private sector to ensure that mortgage payments will be met, particularly in cases of high LTV, and to compensate lenders and investors in case of default. It is a financial guaranty that reduces the risk borne by lenders.

*Negative equity*: Negative equity refers to the situation when the outstanding loan amount exceeds the value of the home.

*Noncallable Bonds*: Bonds that cannot be redeemed prior to maturity date.

*Nonrecourse loan*: A mortgage loan secured only by the real property, not by other assets owned by the borrower, who is not personally liable beyond the pledged collateral.

*OTC*: Over the Counter; refers to trades that occur directly between two parties rather than through an exchange system.

*Prepayment Penalty*: Fee paid by mortgage holder if the mortgage is paid off prior to the completion of the loan term.



*Recourse loan:* The lender can go after some or all of the borrower's assets, depending on the mortgage contract terms, not just the real property, in the event of default by the borrower.

*Tax-deductible mortgage:* Interest payments on the mortgage loan are deductible from taxable income.

*Variable-rate mortgage:* Another term for adjustable rate mortgage.