Evolution of the U.S. Housing Finance System

A Historical Survey and Lessons for Emerging Mortgage Markets

U.S. Department of Housing and Urban Development

Office of Policy Development and Research

PD&R

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Prepared For:
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Foreword

The housing finance system of the United States is a marvel in its size, scope, and efficiency. A strong American tradition of private ownership in conjunction with America's modern day housing finance system has produced high quality housing for virtually all Americans and has over time increased the homeownership rate to the current 69 percent. The social and economic implications of these statistics are significant, e.g., household wealth in the United States is closely linked to housing assets. Thus, housing finance is of central importance to two critical sectors of the national economy: one obvious, the housing industry, and the other, less obvious, the larger financial system of the United States.

Americans use the system daily and seem to take it for granted, whether taking out a first-time mortgage or re-financing it. It is assumed that the necessary mortgage capital will always be available on reasonably convenient terms. Few realize the complex underpinnings in history, law, and regulation that allow this capital to be so available, or appreciate the key role of the private sector in making the system so responsive to borrowers' needs.

How the housing finance system came into its present state and how it functions are perennial questions of many delegations from other governments that visit HUD each year for briefings on American experience in housing policies and programs. For this reason, the Office of Policy Development and Research, through its Office of International Affairs, has long been interested in a study that would explain the growth of this financial network over time.

Hence, this study, "*Evolution of the U.S. Housing Finance System: A Historical Survey and Lessons for Emerging Mortgage Market,*" was commissioned, primarily for an international audience. It identifies those pivotal events in the development of the housing finance market, such as the creation of the Federal Housing Administration (FHA) in 1934, that helped to structure the current system, and it highlights lessons from the U.S. experience that may assist policy reform efforts in the development of emerging mortgage markets.

I think that all those working on ways to improve housing opportunities, whether here or abroad, will find this study both enlightening and useful.

Darlene F. Williams
Assistant Secretary for
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Section 1. Introduction

In the past 180 years, the U.S. housing finance system (HFS) has evolved from an informal/communal institutional arrangement to one of the most well-functioning and extensive financial intermediation systems in the world. This evolution did not develop in a linear fashion in that policy changes were made in response to economic shocks and that innovations such as mortgage products, mortgage-related securities, specialized institutions, and risk management tools appeared discretely over time in government policies. This study seeks to provide a critical survey of this evolutionary process focusing on milestone events and the shaping of key functions of the U.S. HFS over time. It also aims to infer lessons from the U.S. experience for assisting emerging mortgage market systems. Four particular countries representing diverse market and institutional conditions are selected for contrast with the U.S. HFS: Mexico, Korea, South Africa, and Poland.

The generic term "HFS" refers to a financial service delivery system in which various intermediaries compete in performing three main functions: funding, lending, and servicing. In any country, the system is inherently complex because public policy goals, such as promoting home ownership for target population groups, work with, and often through, the for-profit private-sector participants. The performance of the HFS influences, and is also influenced by, the level of performance of related markets—housing, bond, and derivative markets in particular. Therefore, it should be noted that the efficient HFS in the United States today, which delivers affordable loans, competitive mortgage securities to investors, and sound risk control practices, is the result of a long evolutionary process of the partnership between public and private participants. The U.S. HFS likely will continue to evolve, both in public-sector responses to economic shocks and through innovations that profit-motivated participants develop to gain competitive edges.

In the 1990s, one particular aspect of the U.S. HFS—mortgage securitization—came into fashion worldwide. Since the early 1990s, 24 countries in 6 continents have issued some forms of mortgage-backed securities (MBSs) (Diamond 2000). Despite the spread of the MBS, only a few countries—mostly those in Western Europe—have experienced success and are expanding their MBS markets. The growth of the U.S. MBS market during the past two decades stemmed at least partially from the critical enabling ingredients that were in place, both within the system (e.g., risk-sharing arrangements, deposit insurance, and conforming loan products) and outside the system (stable macroeconomic conditions, depth in the corporate and government bond markets, and a sound banking system). These infrastructures are not in place in many other countries. We discuss some of the key requirements for an efficient HFS in a later section of this paper. One recommendation for improving emerging overseas markets—an "a la carte" approach to system reform—involves identifying specific areas that need to change and choosing from a menu of options observed in the United States to achieve the defined policy goals as they are deemed feasible given the specific country's political, economic, and institutional environments. The three areas that are discussed in the context of the four countries selected for comparison with the U.S. HFS are (1) wholesale funding, (2) risk management and sharing, and (3) affordable lending products.

Section 2. Historical Survey of the U.S. Housing Finance System

The historical survey in this section draws from several excellent studies on the topic, in particular, Hendershott and Villani (1977), Weicher (1988), Diamond and Lea (1993), and Lea (1996). The current analysis attempts to add new information in several fronts. It extends the time period covered, especially during the 1990s when a number of information technology (IT) and product innovations changed the landscape of the U.S. mortgage industry. It uses real data to provide analyses of the outcomes of the U.S. housing finance system (HFS) as it evolved over time. Finally, it links the U.S. experience to several emerging mortgage markets.

Table 1 provides a summary of how the following time segments interacted with three elements that shaped the HFS in the United States—institutions, products, and economic shocks.

- Era of Exploration (Pre-1930s).
- Era of Institutionalization (1930s to 1960s).
- Era of Securitization (1970s and 1980s).
- Era of Automation/Computerization (1990s to Present).

Era of Exploration (Pre-1930s)

The first institutional arrangement to finance housing in the United States was "Terminating" Building Societies (TBSs), which originated in 1775 in England and played a dominant role in the U.S. in the early to mid-19th century. TBSs can be termed a "communal solution" to housing finance. A small number of people from a town pooled savings and provided funds to one another for constructing houses. More often than not, the members controlled credit and funding risks among themselves. A TBS ceased to exist once all members received the loans.[1] Later on, TBSs evolved into more formal lending institutions such as "Permanent" Building Societies, Building and Loans, and, eventually, savings and loans (S&Ls).

In this era, the maturity terms for most loans were 6 to 10 years, payments were semiannual with no or partial amortization of principal, interest rates were variable, and the maximum loan-to-value ratio was about 50 percent. The deposit certificates instituted in the 1890s increased the inflow of savings into lending institutions, which improved the liquidity of the system.

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[1] In fact, the first mortgage loan made by the first building society, the Oxford Provident, went into default. The members negotiated a transfer of the property to another member who eventually repaid the loan (Lea 1994).

Table 1. Evolution of the U.S. Housing Finance System

	Institutions	Products	Risk/Shocks
"Era of Exploration" *Pre-1930s*	• "Terminating" Building Societies (since 1775) • "Permanent" Building Societies (1850s) • Mortgage companies (1870s) • Life insurance companies (active in the early 1900s)	• Nonamortizing; variable rate; semiannual payment • 6- to 11-year loan term and 50 to 60% maximum LTV • MBBs by mortgage companies (1870s to 1890s) • Deposit/investment certificates (1890s)	• Peer enforcement and deposit-based funding • Localized risk management (e.g., 50-mile radius rule) • Recession in 1890s led to demise of mortgage companies; agency problem in pooling • Significant growth in 1920s and stock market crash in 1929
"Era of Institutionalization" *1930s to 1960s*	• Creation of HOLC and RFC to liquidate bad loans/banks (1933) • Creation of FHLBanks (1934) and Fannie Mae (1938) to increase liquidity • Creation of FHA, FDIC, FSLIC, and private mortgage insurance companies (1934) for credit enhancement • Privatization of Fannie Mae and creation of Ginnie Mae (1968)	• Fully amortizing loans with leveled monthly payments • Fixed interest rate and longer than 20-year loan term • Maximum LTV up to 80% • Underwriting guidelines set by Fannie Mae (1954)	• Great Depression (1930s) • National Housing Act (1934) and Housing Act (1949) • Regulation Q (1966) • Rising interest rates and inflation (1960s)
Era of Securitization *1970s to 1980s*	• Creation of Freddie Mac (1970) • New investors into the market: mutual funds, pensions, foreign investors (1980s) • S&L Debacle (1980s) and creation of RTC (1989)	• Introduction of ARMs (1981) • MBS issuance: first PC by Freddie Mac (1971), Ginnie Mae tandem plan (1974-76), first private MBS by Bank of America (1977) • First CMO issuance (1984) and a big increase in MBS issuance (1982–86) • Market for interest rate swaps (1980s)	• First and second oil shocks (1970s) • Interest rate hike and mismatch of asset-liability duration of S&Ls (1980s); removal of interest rate ceilings (1980s) • Oil patch default ramp-up (1980s) • FIRREA (1989) and Basle I (1980s)
Era of Automation/ Computerization *1990s to Current*	• Creation of OFHEO (1992)—Minimum and Risk-Based Capital Rules for GSEs • HUD affordable housing goals for GSEs (1992) • Globalization of MBS markets (ongoing)	• IT revolution—AUS, mortgage score, AVM (since mid-1990s) • Refi booms (mid-1990s to early 2000s) • HELOC, second mortgages, and other affordable products (1990s to current)	• California default ramp-up (early to mid-1990s) • Expansion of credit derivatives markets (since mid-1990s) • House price index-based hedging market (currently under study)

ARM = adjustable rate mortgage; AUS = automated underwriting system; AVM = automated valuation model; CMO = collateralized mortgage obligation; FDIC = Federal Deposit Insurance Corporation; FHA = Federal Housing Administration; FHLBanks = Federal Home Loan Banks; FIRREA = Financial Institutions Reform Recovery and Enforcement Act; FSLIC = Federal Savings and Loan Corporation; GSE = government-sponsored enterprise; HELOC = home equity line of credit; HOLC = Home Owners' Loan Corporation; HUD = U.S. Department of Housing and Urban Development; IT = information technology; LTV = loan-to-value ratio; MBB = mortgage-backed bond; MBS = mortgage-backed security; OFHEO = Office of Federal Housing Enterprise Oversight; PC = participation certificate; RFC = Reconstruction Finance Corporation; RTC =Resolution Trust Corporation; S&Ls = Savings and Loans.

During the 1870s, mortgage banks were formed to lend in the expanding Midwestern and Western states. Banks were formed mostly by former agents of insurance companies and other financial institutions in the Northeast. Those institutions originated and serviced loans with the funds raised by selling mortgage-backed bonds (MBBs), modeled after the practice in France and Germany at that time. Under this intermediation process, investors took on the credit risk of bond issuers and were compensated through a premium in the interest rate. Through MBBs, investors were able to diversify regionally or nationally, which was important to their financial stability.

Initially, the MBB market grew significantly. Both issuers and buyers of the security benefited from scale economies in loan origination, servicing, and funding. During the recession in the 1890s, however, MBBs defaulted in large numbers. The lax risk screening by the agents (mortgage companies) at the time of underwriting (i.e., determining whether and under what conditions a loan should be made) caused high defaults during the economic downturn, imposing significant costs to the principals (investors). The incident, which exemplifies the classic "principal-agent problem," also resulted in the demise of the mortgage companies, and this particular 19th-century experiment of liquidity enhancement ended unsuccessfully.

Era of Institutionalization (1930s to 1960s)

As the name the "Roaring Twenties" implies, the booming economy in the 1920s bolstered both real estate markets and consumer credit markets, and new players such as insurance companies entered the HFS. The Great Depression, however, started by the stock market crash in 1929, caused precipitous declines in economic activities.[2] Two outcomes of this economic shock were particularly adverse to the HFS: (1) the ramping up of the unemployment rate that caused liquidity and solvency problems for a large number of borrowers, leading to nonpayment of loans; and (2) the acute deflation that resulted in an almost 50-percent drop in the price level of homes. This deflation resulted in insufficient collateral values for bank loans, large-scale bank runs, and insolvency for the whole banking system.

Facing this systemic (economywide) risk, the U.S. federal government implemented four main remedies to prop up the HFS. First, the Home Owners' Loan Corporation (HOLC) and the Reconstruction Finance Corporation (RFC) were created to liquidate nonperforming loans in bank portfolios and to bail out those lending institutions that were insolvent. Both the HOLC and the RFC purchased defaulted housing loans and the stock in bankrupt banks and thrifts (S&Ls and mutual savings banks) during the 1930s. Their operation was viewed as a successful response to systemic risk, although some early examples of the moral hazard problem (in which at least some people are better off defaulting even though they otherwise do not need to) were revealed because many borrowers deliberately defaulted on their existing loans to take advantage of the HOLC and RFC bailouts.

Second, the Hoover administration's (1929 through 1933) remedy was to strengthen the existing lending institutions, S&Ls, by creating the Federal Home Loan Banks (FHLBanks) as a special liquidity facility for them. The FHLBanks were empowered to charter and regulate federal S&Ls and to put restrictions on both the asset and liability sides. That is, S&Ls' operations were largely restricted to making 10- to 12-year home mortgage loans, attracting "small savers" (workers and

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[2] On Black Tuesday, October 29, 1929, American common stocks lost almost 13 percent of their value. Later, the Dow Jones Industrial Average lost about 90 percent of its original value at its trough in 1932 and did not regain its original value until 1954.

middle-income families), and lending only in their local markets (within a 50-mile radius from their home offices).

Third, the Roosevelt administration's (1933 through 1945) strategy was quite different from that of the Hoover administration in that the new administration's focus was more national than local. In particular, three main policies were implemented: (1) The Federal Housing Administration (FHA) was created to provide insurance against mortgage defaults for lenders, (2) a new kind of loan—the fixed-rate, self-amortizing mortgage with a low downpayment (as low as 20 percent of home value) and a longer term maturity (20 or more years)—was introduced, and (3) private mortgage associations were authorized as a part of the 1934 National Housing Act, which were empowered to issue bonds and buy mortgages from primary market lenders.

The thrust of these remedies was to broaden the institutional base for mortgage funding by encouraging new entrants into the HFS such as commercial banks. Regarding the private mortgage associations, none were started until the late 1930s and Fannie Mae (the Federal National Mortgage Association) was established as a government-owned agency to provide a secondary market for FHA-insured mortgages. This new institution was expected to borrow in areas where credit was more available (from mutual savings banks in the Northeast) and to lend where capital was in short supply (the Midwest and the West).

Fourth, two deposit insurance companies—the Federal Deposit Insurance Corporation for commercial banks and the Federal Savings and Loan Insurance Corporation (FSLIC) for S&Ls— were established, in large part resulting from a political bargain to win support from S&Ls in creating the FHA. Viewing the FHA as a new competitor, S&Ls initially objected to its creation. The federal deposit insurance was to provide them with a level playing field to compete with the banks for funds. FSLIC was created under the Federal Home Loan Bank Board in 1934, which also regulated the federal S&Ls.

The FHA's operation was successful during the 1940s and 1950s, and it produced two demonstrative effects in the industry. First, S&Ls found it profitable to make long-term, self-amortizing mortgage loans without government insurance, resulting in the expansion of the market for the "conventional" mortgage instrument. Second, private firms saw a value proposition in writing mortgage insurance. Between 1957 and 1973, every state passed an enabling statute for private mortgage insurance, ending the FHA's monopoly in this segment of the HFS and leading to a decline in its market share in the 1960s and 1970s.

Era of Securitization (1970s to 1980s)

By the mid-1960s, the HFS faced new challenges: rising inflation and interest rates. As shown in Figure 1, the inflation cycle hit three peaks between the mid-1960s and the early 1980s, with the third one being the most severe and recording almost a 15-percent annualized growth rate in the Consumer Price Index. Market observers said the rising price level and interest rates resulted from the federal government's large budget deficits in the 1960s during its involvement in the War on Poverty and the Vietnam War; the first and second oil shocks during the 1970s, which resulted in the ramping up of energy prices; and the change in monetary policy in the mid- to late 1970s that adopted money aggregates instead of interest rates as the policy target.

Figure 1: Percent Change in Consumer Price Index (CPI)
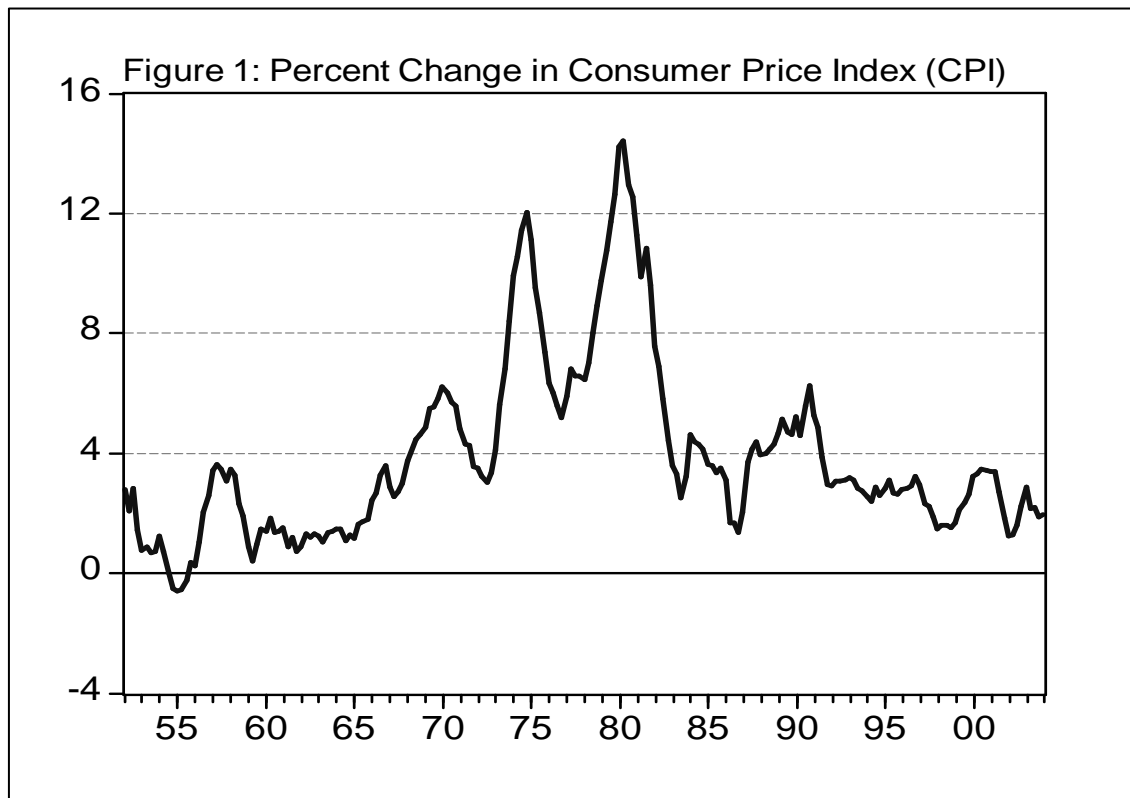
The unanticipated rise in inflation caused several problems for S&Ls. First, they had relied on short-term deposits to fund long-term, fixed-rate mortgages. In the face of rising interest rates, this "borrow-short-lend-long" operational mode created a squeeze on their profit margin. The rapidly rising interest rates drove up the rates paid on their deposits, but they could not earn higher returns on mortgages except on new ones. Second, the high interest rates dampened housing demand, which had an adverse impact on new mortgage origination volume for S&Ls. Third, as investors, S&Ls also experienced a worsening duration mismatch caused by the upward shift in interest rates; that is, the effective maturity of existing loans lengthened because prepayments slowed down in the rising rate environment. Fourth, money market mutual funds (MMMFs) came into existence in the early 1970s, opening up a new investment channel for small savers. Rates paid by the MMMFs were not regulated, while a federal rule known as Regulation Q limited the rates banks and thrifts could pay on time deposits (their primary source of funds). While these new vehicles resulted in a significant drop in deposit inflows to thrifts—called "disintermediation"—MMMF assets increased from $3.5 billion in 1977 to $180 billion in 1981, more than a 50-fold increase in volume within 4 years.

The S&Ls' market share of total nonfarm residential mortgages shrank from 43 percent in 1979 to 30 percent in 1986, and these adverse market conditions in the early to mid-1980s eventually resulted in a large number of bankrupt thrifts, known as the "S&L Debacle," in the late 1980s. The federal government created the Resolution Trust Corporation in 1989 to liquidate the assets of the troubled lending institutions.

The federal government implemented three remedies to bolster the HFS in the event of macroeconomic shocks such as those occurring in this era. First, Regulation Q (mentioned above) was phased out between 1981 and 1986. The rule had been extended to S&Ls in 1966, imposing

interest rate ceilings on their time deposits. Contrary to the original policy intent (enabling S&Ls to control their own cost of funds), the ceilings further accelerated the outflow of deposits.

Second, S&Ls were allowed to issue new products on both the asset side (adjustable rate mortgages, or ARMs) and the liability side (money market deposit accounts) to make S&Ls more competitive with MMMFs. These allowances came too late because the amount of ARMs, which could have alleviated S&Ls' interest margin squeeze, represented an insignificant part of the S&Ls' portfolio during the period of rapidly rising interest rates.

Third, the government realigned and beefed up liquidity-enhancing institutions by privatizing Fannie Mae in 1968 and allowing it to buy conventional (or not government-insured) mortgages. Ginnie Mae was established in lieu of Fannie Mae to securitize government-insured loans (FHA and U.S. Department of Veterans Affairs loans). Freddie Mac was created in 1970 as a part of the FHLBanks to increase the liquidity for S&Ls.

The market for mortgage-backed securities (MBSs) was formed in the early 1970s and took off in the 1980s. Both Ginnie Mae and Freddie Mac instituted their passthrough security programs in the early 1970s: participation certificates by Freddie Mac and the tandem plan by Ginnie Mae. Fannie Mae, on the other hand, worked purely as a portfolio lending institution during the 1970s and did not issue its first MBS until 1981.[3] Private-label MBSs issued by large commercial banks (e.g., Bank of America) also had a meaningful volume starting in the mid-1980s.

The expansion of MBS issuances stimulated the integration of the mortgage market with capital markets and broadened the institutional base for mortgage funding. For example, in 1971, two-thirds of Ginnie Mae passthrough securities were sold to S&Ls. In 1979, about half were sold to pension funds and trusts. The introduction of multiple-class MBSs, known as the collateralized mortgage obligations (CMOs) and real estate mortgage investment conduits (REMICs), further accelerated the integration process. These securities created "tranches" with varying levels of prepayment risk, which made them better matched to the needs of different investors in terms of asset-liability management preferences. The introduction of CMOs and REMICs brought an influx of new investors to the HFS, including mutual funds, pensions, life insurance companies, and foreign investors. The risk-based capital regulation in 1989 (Basle I) also increased the demand for MBSs as it offered banks a capital incentive to invest in them. With lower risk weights of 20 percent for Fannie Mae and Freddie Mac MBSs and 50 percent for individual residential mortgage whole loans, investors were allowed to increase their leverage by two to five fold, which made mortgages a more profitable asset type.

These decades of high volatility in interest rates and high inflation also led to the introduction of a number of hedging instruments (options, futures, etc.) and institutions (futures and options exchanges and clearinghouses) that allowed market participants to better manage cashflow risk. New mortgage products, such as the price level adjusted mortgage, the shared appreciation mortgage, and the graduated payment mortgage, were also introduced to better manage the inflation risk or to increase the affordability in lending. These mortgage types did not become major parts of the U.S. HFS but may appear again during high inflation and interest rate environments.

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[3] Since Fannie Mae was privatized in 1968, its portfolio grew from $15 billion in 1970 to $25 billion in 1975, $50 billion in 1979, and $78 billion in 1983. By 1981, Fannie Mae's market value net worth became negative with minus $11 billion, which turned positive by 1986 with a net worth of about $1 billion.

Era of Automation/Computerization (1990s to Present)

In the 1990s, breakthroughs in IT such as the Internet and dramatically enhanced data transmission bandwidth took place. For the U.S. HFS, the most notable development in IT was automated underwriting systems (AUSs). Both Fannie Mae and Freddie Mac implemented Desktop Underwriter and LoanProspector AUSs, respectively, and large lenders followed suit by developing their own proprietary systems (e.g., CAPES by Countrywide). Since then, the use of AUSs in mortgage origination and point-of-sale decisions has exploded. For example, the share of Fannie Mae acquisitions processed through its AUS increased from less than 10 percent in 1997 to about 60 percent in 2002 (Pafenberg 2004).

AUSs are automated decisionmaking tools that accept or classify loans based on the specific risk characteristics of the loan and the borrower, with automated connectivity among funding, lending, and servicing organizations. At the core of the system is a mortgage scoring model, a statistical technique first used in car loan and credit card markets. It quantifies the level of creditworthiness of borrowers based on historical default/delinquency information particular to the loan specifications. In addition, most AUSs utilize automated property valuation models to streamline or even waive property appraisal requirements in mortgage underwriting, reducing the transaction cost to borrowers and lenders.

AUSs have a large and growing impact on the mortgage industry. The most obvious impact is the dramatic reduction in transaction/intermediation costs in originating mortgage loans, which, in turn, reduces entry barriers for new competitors to participate in the mortgage origination industry. The cost of information on the risk profile of the borrower, the loan, and the collateral becomes much cheaper; underwriting decisions that accept or classify the loan for documentation requirements or interest rate charges are made much faster (reduced from weeks to minutes); and the amount of training required for underwriting and secondary marketing staff in lending/servicing organizations is significantly lower. Regarding training, AUSs essentially replaced the selling and servicing guides published by Fannie Mae and Freddie Mac, documents containing more than a thousand pages of detailed instructions on eligibility and business processes for new and existing loan products. In the AUS world, these lengthy provisions are automatically checked by the computer system.

Second, AUSs make the assessment of credit risk more scientific, largely because of the scoring technique described earlier. In this model-based world, so-called "compensating risk factors" can be assessed and used more easily and accurately in underwriting loans and developing new products. Some key risk drivers (e.g., borrower credit history, level of downpayment, payment-to-income ratios) can be examined in aggregate based on their risk weights that measure each factor's contribution to default/delinquency risk; hence, the overall risk for a given loan product can be examined more soundly during the underwriting and pricing stages. Because AUSs typically approve the highest quality loans and refer weaker quality loans to human underwriting, loans processed through AUSs on average perform better than their counterparts that are processed through manual (i.e., judgmental) underwriting.

Third, AUSs have been contributing to further specialization in mortgage origination and in servicing, as key market participants achieve economies of scale in various intermediation steps. For example, the volume of loans originated by mortgage brokers has increased since the implementation of AUSs because the cost of interfacing with the borrower and making the underwriting decision has been equalized for large and small lenders with the use of the AUSs. Many large lenders now focus more on servicing with specialized AUS and IT solutions both in streamlining its administrative tasks (e.g., disbursing tax and insurance payments, reporting to

investor and borrower, etc.) as well as in managing stressed loans (deciding which loans present the greatest risk of default and then focusing on them first).

The challenge to this automation is the potential increase in fraudulent loan applications, either via identity thefts or incorrect/invalid documentation on employment, wealth, income, or collateral. This issue is getting more attention by industry participants, and online identification and authentification tools are being developed and gradually implemented in the systems.

Section 3. Assessing the Emerged U.S. Model

Recap of New Intermediation Models

Like any financial intermediation, the purpose of mortgage intermediation is to link a large number of borrowers and investors/savers efficiently. From the historical survey in section 2, a simple schematic representation of the mortgage intermediation process is shown in Figure 2.

Figure 2. A Schematic View of the Mortgage Intermediation Process
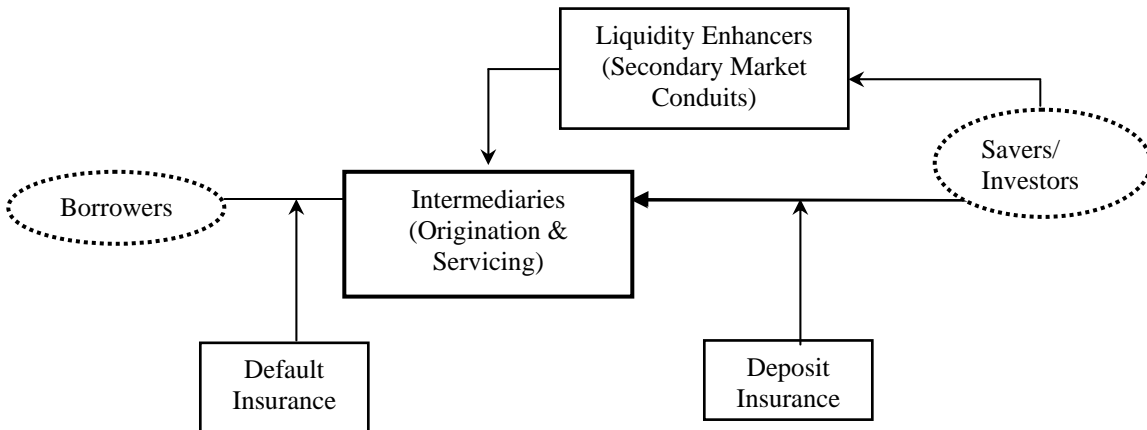
Given this framework, at least five different institutional arrangements (models) have emerged from the U.S. experience:

1. Informal/communal intermediary (e.g., the Terminating Building Society).
2. Local intermediary without special funding (savings and loans [S&Ls] before the 1930s).
3. Local intermediary with special funding/insurance (S&L, Federal Home Loan Bank [FHLBank], Federal Savings and Loan Insurance Corporation [FSLIC], private mortgage insurance [PMI]).
4. Regional/national intermediary with special funding/insurance (commercial/mortgage banks, Federal Housing Administration [FHA], Fannie Mae/Freddie Mac, Ginnie Mae, Federal Deposit Insurance Corporation [FDIC]).
5. The U.S. housing finance system (HFS) today (the consolidated model).

In the United States today, a combined model prevails in that most institutions and products created during the 1930s still exist. These institutions take various forms and exert their influences in market outcomes. Figure 2 also shows that multiple players in each area compete with one another (except for deposit insurance, for which the FSLIC has been merged into the FDIC). The government-sponsored enterprises (GSEs, including Fannie Mae, Freddie Mac, and FHLBanks) and private-label mortgage-backed security (MBS) issuers all compete to provide liquidity enhancement. FHA, PMI, GSEs, and other secondary market conduits compete for

default insurance. Many institutions compete for deposits, mortgage origination, and servicing. This consolidated model delivers a number of beneficial outcomes as discussed below.

Results Delivered From the Consolidated Model

An important result of the consolidated model is the amount of liquidity injected into the HFS during the past two decades. Figure 3 shows that mortgage debt outstanding (MDO) in the United States increased from $1.5 trillion in 1980 to more than $7 trillion in 2001, recording a 480-percent total growth rate and an almost 20-percent average annual growth rate during the period. The level of securitization also increased dramatically: less than 10 percent of MDO was securitized in 1980, whereas more than 45 percent of MDO was securitized in 2001.

Figure 3: Mortgage Debt Outstanding (MDO) and %MBS to MDO
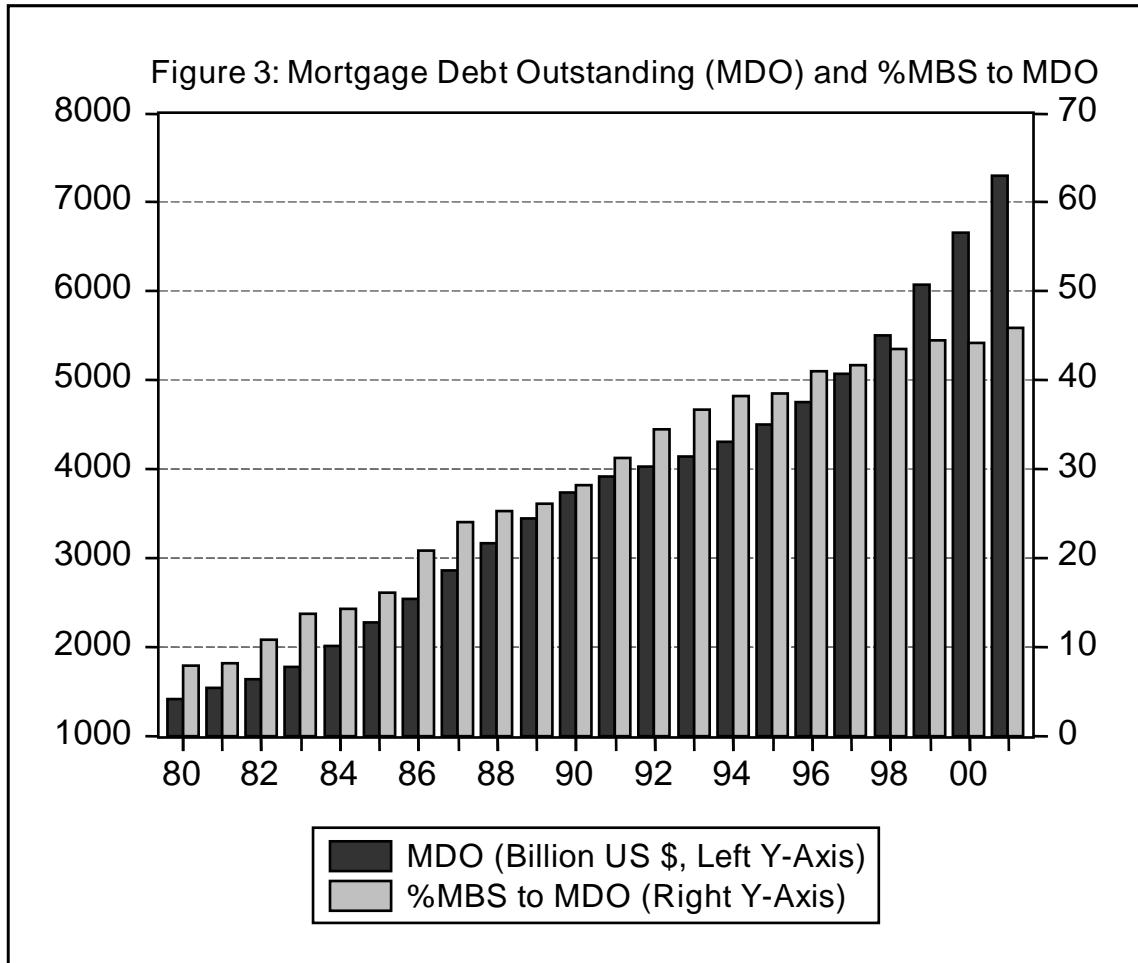
To discuss subsequent effects of this dramatic increase in liquidity, Cho (2002) provides the following analytical framework for mortgage spreads:

(1)   MortgageSpread = ExpectedInflation + RiskPremia(*cf, d, l*) + IntermediationCost

where:

   MortgageSpread represents the difference between the mortgage interest rate (for a representative mortgage loan) and the risk-free rate (or yield on the a government bond with a comparable duration) at a given point in time;

   ExpectedInflation measures the risk of currency devaluation over the life of the loan in the country where the loan is issued;

   RiskPremia are financial charges to compensate for three types of risk—market risk (*f*, the upside and downside interest rate risks), credit risk (*d*), and liquidity risk (*l*); and

   IntermediationCost represents average operational expenses in originating, servicing, and funding mortgage loans.

Figure 4 shows the mortgage spread over corporate bond rates over time. The spread provides an indicator of the efficiency of the HFS, as it shows the relative cost of mortgages to investors compared to corporate bonds. [4]

Before the 1960s, the spread was fairly high consistently. The upheavals of the early 1980s brought the spread to its historically highest levels, but since the mid-1960s the spread otherwise became lower, implying that some of the premiums intrinsic to mortgage lending decreased. The first contributing factor to this change is the reduction in the liquidity risk premium in mortgage lending.[5] Both MBSs and the debentures issued by Fannie Mae and Freddie Mac are now traded among the most liquid securities in fixed income markets around the world. This contrasts with
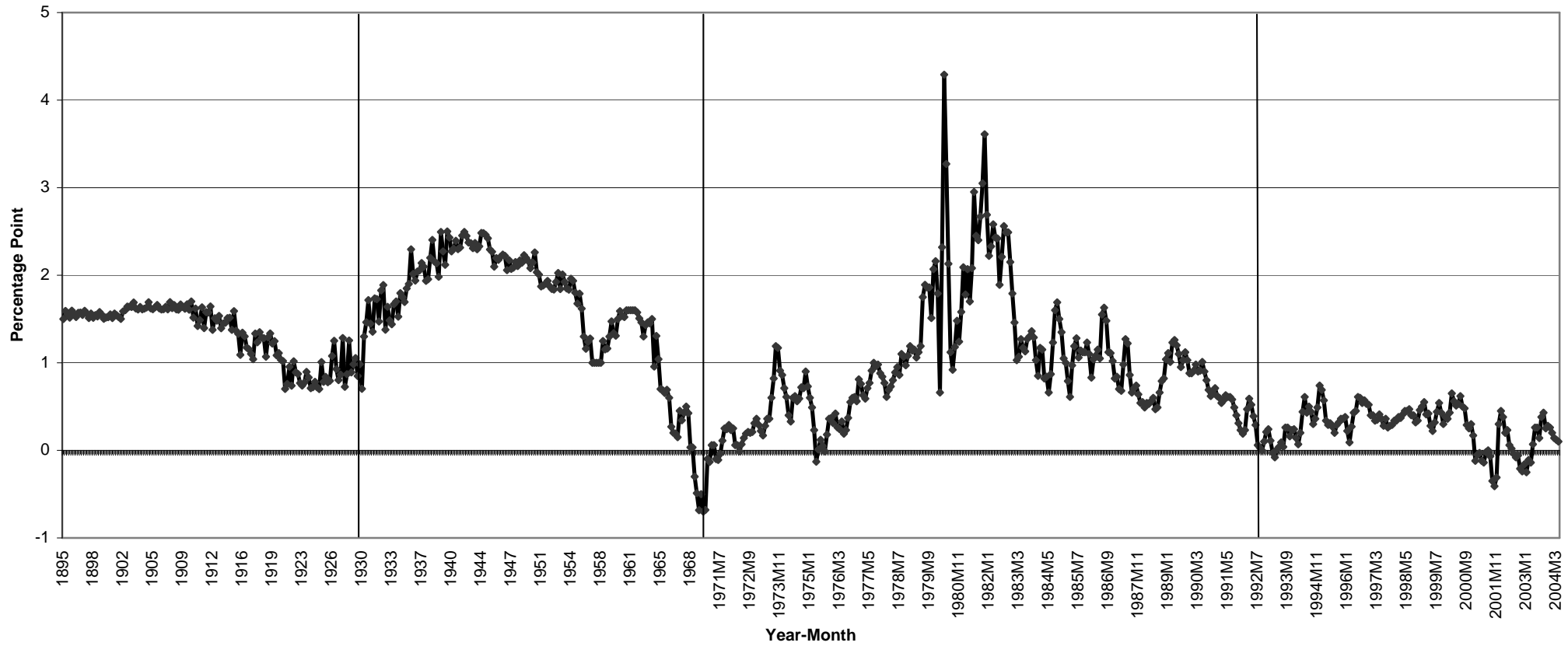
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[4] The series combines three data series: (1) annual data between 1895 and 1952 on the difference between mortgage rates in New York and yields on long-term corporate bonds (from Grebler et al. 1956), (2) monthly data between 1955 and 1971 on the difference between the national average effective mortgage rate and yield on 20-year AA utility bonds (from Hendershott and Villani 1977), and (3) monthly data between 1971 and 2004 on the spread between the rates on 30-year fixed-rate mortgages and AAA corporate bonds.

[5] Liquidity risk reflects a perceived marketability risk that is specific to an institution and/or a security. If a security is homogeneous, frequently traded, and large in volume outstanding (e.g., U.S. Treasury debt and top-rated Fannie Mae agency notes), then its liquidity risk is close to zero. Otherwise, issuers can incur a significant cost or delay to sell the securities, especially when securities are new to the market.

the situation in the 1970s when Ginnie Mae had to pay about 60 basis points over Treasury as a liquidity risk premium for their Tandem MBS Program (Black, Garbade, and Silber 1981).

The second factor contributing to the spread reduction in the 1990s is the increased efficiency in mortgage intermediation. This efficiency was promoted by specialization (i.e., companies specializing in funding, origination, or servicing) as well as the automated underwriting system (AUS) technology implemented from the mid-1990s. As shown in Figure 5, the average fees and points charged in originating 30-year fixed-rate mortgages in the United States have been lowered from more than 2 percent in the early 1990s to about 1.3 percent of the loans' amount in the early 2000s.

Figure 4: Spread between Real Estate Lending and Corporate Bond

Figure 5: Average Fees and Points (30-year FRM)

The remaining spread between mortgages and corporate debt in Figure 4 during the 1990s generally reflects the premium for prepayment risk (downside interest rate risk or reinvestment risk), which is unique to mortgage loans and securities and does not exist in the case of corporate bonds.[6] As expected, the peaks of the spread in most recent years roughly coincide with the periods of mortgage refinancing booms (in 1993, in 1999, and again in 2003). The gap in the spread before the 1990s, on the other hand, reflects add-on costs from less liquid funding methods and a less efficient intermediation process.

Other benefits of the consolidated model are also relevant. First, the mortgage market cycle became more independent of the inflation cycle since the early 1980s. As shown in Figure 6, the two mortgage market cycles during the 1970s (shown by the annualized changes in MDO) moved with the changes in inflation (the Consumer Price Index [CPI]) with about a 1-year time lag. In the later years, after the introduction of securitization and other innovations, the MDO changes show virtually no correlation with CPI changes.

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[6] When market interest rates go below a borrower's mortgage interest rate, the borrower has an incentive to repay the existing loan by obtaining a new one at the lower market interest rate. This situation poses a risk to investors because they have to reinvest the principal received from the paid-off loan at the now lower interest rates.

Figure 6: MDO and CPI Growth

MDO Growth (%, Annual) — CPI Growth (%, Annual)

Second, the home ownership rate in the United States increased 4 percentage points between 1995 and 2004 (65 to 69 percent), after the stagnant period from 1986 to 1994 when the rate hovered around 64 percent. This increase in the ownership rate almost perfectly correlates with the rise in MDO during the same time period, which never occurred in prior periods (see Figure 7). Although the interest rate decrease from 1986 to 1994 is more significant in size than the interest rate decrease from 1995 to 2004, an increase in the homeownership rate is only observed during the latter time period. Although a more formal analysis would be beneficial, it is possible that the increased liquidity along with AUS technology and various affordable lending products reduced the financing barriers for consumers and helped push the ownership rate upward. Quercia et al. (2003). offer some evidence based on household level microdata that affordable lending products, particularly low downpayment loans, are likely to increase the propensity to own for underserved populations by 27 percent for young households, 21 percent for African Americans, and 15 percent for central-city residents.

Figure 7: MDO Growth and Home Ownership Rate

Ownership Rate (%, Right Y-Axis)
Annualized Change in MDO (%, Left Y-Axis)
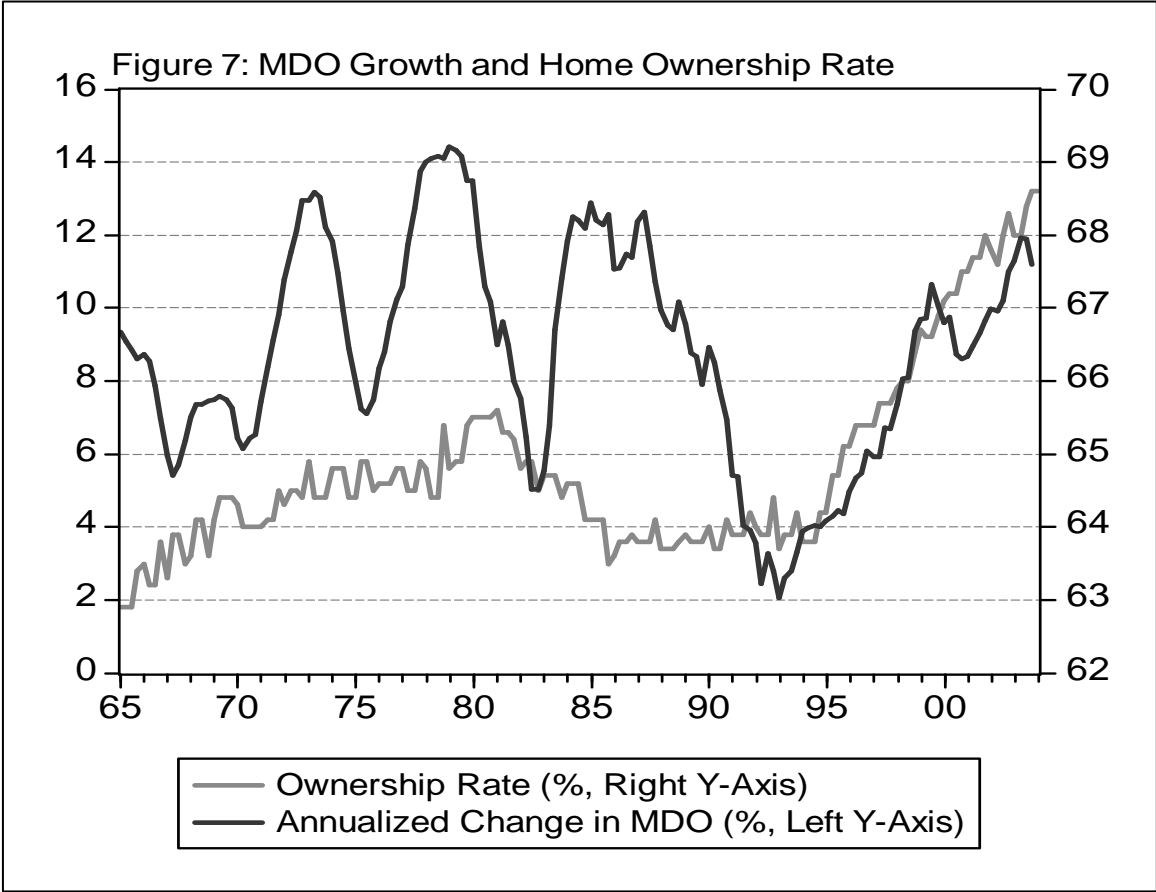
Section 4. Lessons Learned and To Be Leveraged

Lesson 1. The Evolution Entails the Sequence of Shock-Response-Innovation

The U.S. experience shows that government policies responding to economic shocks led to a number of innovations and market expansions. Examples of this sequence include the following:

- Following the Federal Housing Administration (FHA) example, savings and loans (S&Ls) and other market participants accepted long-term fixed-rate mortgages as a standard mortgage product (often termed as "plain vanilla" or conforming loan product), which greatly helped the creation of the mortgage-backed security market in later years.
- Development of private mortgage insurance after observing the government insurance programs of FHA and the Department of Veterans Affairs.[7]
- Establishment of the mortgage passthrough market in the 1970s and 1980s; mortgage default risks were guaranteed and, hence, filtered out, by secondary market conduits.
- Issuance of collateralized mortgage obligations and real estate mortgage investment conduits in the 1980s made the cashflow risks embedded in mortgages more tradable commodities.

The sequence can also be termed a "learning-by-doing process" because private-market participants initially observed whether certain new government-sponsored products could succeed in the marketplace and then embraced them once a value proposition for being in the business became more clear. The outcome, as discussed in section 3, was the expansion of the mortgage market and more extensive services to consumers by the system.

## Lesson 2. Risk Matters and Must Be Managed

The evolution shows that the risk caused by unanticipated economic shocks is a real threat to the health of the whole housing finance system. Several points are worth making in that vein. First, in managing mortgage risks, diversifiable risks must be discerned from systemic (nondiversifiable) risks. Examples of systemic risks include the recession in the 1890s, the Great Depression in the 1930s, and the inflation shock and high interest rates in the 1970s and 1980s. Mortgage investors and insurers need to manage these risks to survive them. Such economic shocks can be used to test the internal policies and supervisory limits imposed on managing such risk.

Examples of diversifiable risk include regional default cycles in different time periods. For example, the collapse of the Florida land boom in the 1920s resulted in 40 percent of the state's S&Ls becoming insolvent, while the industry prospered nationwide. More recent examples include the regional recession in Southern California in the early 1990s caused by cuts in U.S. defense spending and the downturn in Ohio and other Midwestern states caused by recession in the manufacturing sector during the past several years. The observed foreclosure rates from California and Ohio reflect those downturns specific only to the local economies (see Figure 8).[8]

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[7] The Fannie Mae Charter Act of 1954, which required third-party mortgage insurance for high-loan-to-value ratio loans, also caused the private mortgage insurance market to expand.

[8] For both mortgage and nonmortgage debts, the Black-Scholes-Merton family of default models explains borrower nonpayment as the passage of the value of the underlying collateral asset (home price for a mortgage or the value of total assets for a corporate debt) going below the value of the liability. Under this theory, two factors influence the likelihood of that passage—the initial cushion (i.e., the distance of the asset value from the threshold at the bond/loan origination date and the volatility of the asset value thereafter (Duffie and Singleton 2003, Deng et al. 2000, Kau et al. 1995).

Figure 8: Conventional Mortgage Foreclosures (%) - California and Ohio
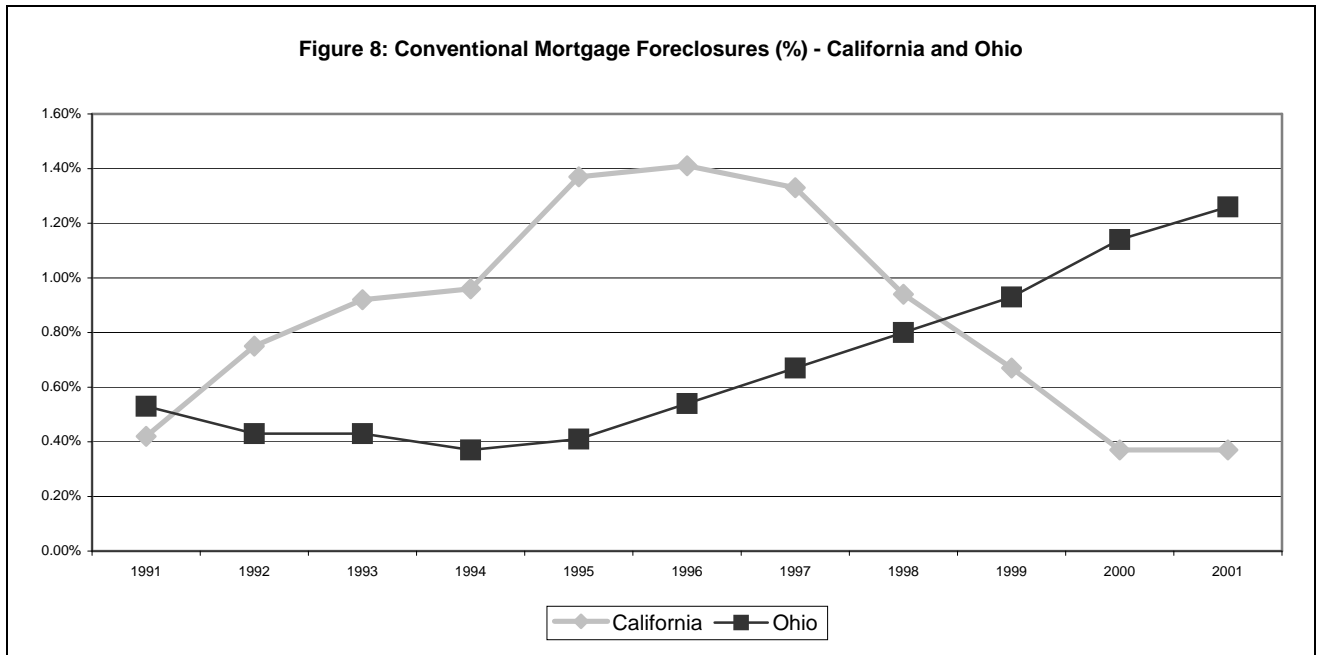
For diversifiable risks, the national lending/funding institutions generally have an advantage. The default cycles driven by the local economy can be diversified by having national or large-geographical area diversified portfolios. For nondiversifiable risks, the market and interest rate risks have been more manageable through various hedging tools introduced since the early 1980s. Credit derivative products (credit swaps, credit-link notes, etc.) have been on the rise in recent years, making it more feasible to control nationwide mortgage credit risk.

Lesson 3. Incentives Matter, Too

In general, private-sector participants will jump into a new venture only if they see a positive value proposition by doing so (that is, in equation (1), the left-hand side should exceed the sum of all the right-hand-side terms). The high uncertainties associated with new products (e.g., the 30-year fixed-rate mortgage or mortgage default insurance) usually discourage private-sector initiation of such ventures. As the U.S. history shows, the government played a significant role in introducing and nurturing such products.

The principal-agent problem in mortgage intermediation generates another incentive issue. Although the unbundling and automation of origination, funding, and servicing processes increases operational efficiency, they can also raise potential principal-agent problems such as moral hazard in data and document verification, adverse selection of good-quality loans (by originators) instead of passing them along to secondary market outlets, and outright fraud. As revealed in the mortgage-backed bond experiment in the late 1800s, this principal-agent risk can be toxic, leading to the demise of a certain type of intermediary, and calls for a proper due diligence by both public and private institutions.

Lesson 4. Multiple Options Are Available To Achieve a Given Policy Objective

The U.S. experience demonstrates that different options can be used to achieve a given public policy objective. In particular, the following list provides alternatives that arose in the U.S. experience and can be considered by other countries.

Wholesale Funding	• Mortgage securitization with explicit government guarantee (Ginnie Mae) • Mortgage securitization with implicit government guarantee (GSEs, with lines of credit with the U.S. Treasury) • Mortgage securitization with no government guarantee (private-label MBS issuers) • Corporate bonds issued by special facilities (GSEs) • Corporate bonds issued by secondary market conduits • Corporate bonds issued by primary market lenders
Affordable Lending	• More affordable but high-risk lending products (e.g., high-loan-to-value-ratio loans, reduced documentation loans, home equity line of credit, and second mortgages) • Products targeting specific population groups (e.g., reverse-annuity mortgages for house-rich/cash-poor senior citizens) • Housing goals and loan-size limits for GSEs • Lending through community organizations • Education and counseling
Risk Sharing and Management	• Private mortgage insurance (PMI) • Government default insurance (FHA and VA) • Deposit insurance (FDIC) • Preclosing commitments • Interest rate derivatives • Credit derivatives, recourse, and make-wholes • Prepayment-tranched CMOs • Credit-tranched REMICs • Post-purchase document reviews
Ensuring Safety and Soundness	• Minimum and risk-based capital requirements • Financial disclosures • Onsite/offsite examinations by regulators and auditors • Ex-post bailouts (Reconstruction Finance Corporation, Home Owners' Loan Corporation, Resolution Trust Corporation)
Technology Solutions	• AUS, automated valuation model, and related IT systems • Online connectivity and data transmission • Data repositories (for borrower credit and loan performance) • Data mining tools

AUS = automated underwriting system; CMO = collateralized mortgage obligation; FDIC = Federal Deposit Insurance Corporation; FHA = Federal Housing Administration; GSEs = government-sponsored enterprises; IT = information technology; MBS = mortgage-backed security; PMI = private mortgage insurance; REMIC = real estate mortgage investment conduit; VA = U.S. Department of Veterans Affairs.

In the context of enhancing the HFS in other countries, this list offers a menu from which possible options could be selected and customized to best achieve the particular policy goals, given various economic and institutional conditions specific to that country.

Section 5. Experience of Emerging Mortgage Markets

Emerging mortgage markets in other countries generally face challenges in three public policy areas: (1) wholesale funding, (2) risk sharing and management, and (3) affordable lending products. The experiences of Mexico, Korea, South Africa, and Poland are useful in discussing these challenges.

Wholesale Funding

South Africa and Korea issued mortgage-backed securities (MBSs) during the 1990s. The MBS markets in both countries are stalled, however, since their first issuance. In South Africa, where the first securitization was done in 1989, virtually no activity in the market was recorded between 1991 and 1999. Then several MBS transactions occurred in the 2000s. In Korea, on the other hand, MBSs were issued nine times with the total amount of $2.8 billion between 1999 and 2003 by Korea Mortgage Corporation (KoMoCo) and seven times more totaling $3.1 billion by the newly created Korea Housing Finance Corporation (KHFC), but the total MBS volume outstanding is very small compared to the asset-backed security (ABS) market, which developed immediately after the financial crisis in 1997 to securitize nonperforming bank loans (the MBSs outstanding are only 2.5 percent of that of ABSs as of 2002).

These countries' cases exemplify the difficulties faced by many other emerging economies in developing a successful MBS market. Saayman and Styger (2003) make the following key points based on survey data with investors and structured finance specialists in South Africa:

- o The South African government, unlike the U.S. government, was generally not favorable and conducive to MBS issuance and left the market to demand/supply factors.
- o The Securitization Notice of 1992 in South Africa had a bias against MBSs; mortgages carry a 50-percent risk weight in determining the capital holding of banks, while MBSs carry a 100-percent risk weight.
- o Limited trust in rating agencies and the credit ratings they assigned to securities, together with the reliance on each investor's assessment of the credit quality of the securities, contributed to the slow growth in demand.
- o The lack of default and delinquency data as well as systems access to the appropriate data added to the difficulty of rating, structuring, and assessing the transaction.
- o Historically high interest rates were not conducive to the development of a debt market, but they have led to the development of a strong equity market, causing the investment community in South Africa to be an equity-investment community.
- o There is a lack of a corporate bond market and the lack of depth in the secondary bond market.
- o Large banks do not currently face any liquidity constraints.
- o The general public has the perception that an organization will securitize only when it is in trouble.

In short, two important preconditions for flourishing MBS markets need to be met: (1) favorable government policies for securitization such as the implicit and explicit guarantees that the U.S. government provides and (2) a strong demand for and supply of liquid mortgage-backed securities (Saayman and Styger 2003).

In the case of Korea, the government supports securitization, as evidenced by the creation in 2004 of the wholly government-owned secondary market conduit, the Korean Housing Finance Corporation. The problem, however, lies on the demand side. After the Asian financial crisis of 1997, there was an increased supply of capital in the market, which raised the liquidity in consumer lending. In 1997, 22 percent of bank lending was for housing, credit cards, and other consumer loans; this share ramped up to 47 percent in 2002 as lending institutions avoided what they perceived to be high-risk corporate lending. (Yoo 2003) Therefore, the current issue for Korea is the development of standard loan products—both a "Korean conforming loan" to make the wholesale funding more feasible in the future and affordable loan products to include more households in the intermediation system.

MBS financing may be sound and efficient, but it is not the only method of wholesale funding to increase liquidity. As shown in the list above, liquidity enhancement in the United States has been achieved through several different methods, including the issuance of debentures by those institutions that have good market acceptability. This bond financing is likely to be a more feasible, and even a comparable, way to achieve the funding efficiency in many emerging markets. Unlike in the United States, not all critical market infrastructures are currently in place in most emerging markets. These include institutional factors such as foreclosure laws, accounting rules, capital markets that include a deep bond market for long-maturity securities and a complete spectrum of hedging instruments, well-functioning and healthy banking systems, and stable macroeconomic and housing market conditions and policy tools to ensure the stability of the financial markets. In the context of many developing countries, property rights and enforceable liens on residential land and structures are particularly critical in establishing a well-functioning and efficient housing finance system.

Wholesale funding also faces product-related hurdles. For example, both Mexico and Poland rely heavily on dual-indexed mortgages to protect both lenders (from high interest rates, caused by high inflation) and borrowers (from income shock).[9] Because the payment is tied to two separate indexes, the cashflows and effective returns of such a product are exposed to additional uncertainties. Another product-related hurdle is the interest rate subsidies that are prevalent in many countries. These product-driven hurdles, in the forms of added complexity and subsidized rate setting, also make wholesale funding and a more market-based housing finance system (HFS) less feasible.

Risk Sharing and Management

Information technology innovations such as automated underwriting systems, automated valuation models, and fraud detection tools are relatively more transferable to other countries, compared to establishing certain markets or changing legal or accounting systems. The challenge, however, is in the quality and quantity of data. Saayman and Styger (2003) report that robust data on consumer credit and loan performance are simply not available in many countries. This shortage of data creates a critical problem in importing the best-practice risk management tools. Sharing information across lending institutions and establishing data repositories are important prerequisites in building quantitative risk models. Governments can play an important role in mitigating this limitation. The lack of effective default risk assessment tools (because of the lack of consumer credit data, for example) limits the extent to which loan-to-value (LTV) ratios can be

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[9] The dual-indexed mortgage is an adjustable rate mortgage built around two variable indexes: (1) the interest due on the remaining loan balance moves with shifts in market interest rates and (2) the borrower's monthly payment fluctuates with wage changes.

increased. High LTV ratios are an effective solution to affordable lending and the expansion of the HFS to more borrowers.

Affordable Lending Products

U.S. experience demonstrates that increased funding through MBSs and other means combined with sound risk-sharing arrangements among various intermediaries lead to more affordable lending. This is evidenced by the steady increase in the homeownership rate and various lending products targeting low-income and other consumer cohorts. Several challenges caused by peculiarities of market conditions in other countries, however, make it difficult to directly replicate such affordable products.

As mentioned earlier, lack of consumer credit data makes high LTVs impractical from a credit risk standpoint. In addition, the high real estate price relative to household income in many countries means a high mortgage payment burden. For example, the home price-to-income ratio in Poland (the average home value divided by the average annual household income) ranges between 8 and 11, depending on the specific location. This ratio is much higher than the comparable ratio of about 3 in the United States and the ratio of 6.2 in 2003 and 5.5 in 2004 in Korea. See Table 2 for selected market conditions of different countries.

Affordable loan products in the United States are low-downpayment mortgages. When the collateral values are too high, however, the monthly mortgage payment becomes more burdensome to typical households, given other constant lending terms. To remedy this payment affordability problem, Korean lenders have issued various interest-only loan products in large quantity with 3- to 5-year maturities. Unfortunately, such products pose the risk of nonamortization (or lack of equity building). These mortgages are very similar to the typical products developed in the U.S. market during the Era of Exploration.

The coexistence of formal and informal intermediation systems also characterizes many emerging markets. With informal arrangements, funding can come from various sources, such as direct family members, more distant relatives, and friends (similar to Terminating Building Societies in the early U.S. experience), and even landlords (as in the case of Chonsei contracts in Korea).[10] Regardless of the source, the informal arrangement tends to be inefficient and likely has a limited impact in raising affordability. Those who are able to lend may not be able to relate to those who need to borrow. Relying on informal financing arrangements also poses an equity issue in that a key determinant of access to housing is luck of birth, with advantage and disadvantage passing down generationally (Stephens 2000). Therefore, in determining public policy goals in those countries, the design of loan products that can attract the population that currently relies on informal financial arrangements will be an important factor.[11]

Other policies instituted in the United States induce lending and funding institutions to better serve underserved population groups (e.g., the housing goals for government-sponsored enterprises [GSEs], Community Reinvestment Act requirements, and the loan limits for Federal

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[10] The Chonsei market in Korea is extensive. Under the Chonsei contract, the tenant puts a large lump sum deposit (about 50 to 60 percent of property value) in lieu of periodic rent payments and the landlord returns the same amount of money at the expiration of the contract. Under this arrangement, the landlord can invest money for higher returns than bank deposits or in other business ventures, while tenants can keep their savings intact until they accumulate enough money for a home purchase.

[11] In the context of Korea, Cho (2002) suggests parameters of such a "conforming" loan product: 50 to 60 percent maximum loan-to-value ratio, 10- to 15-year loan term, funded by a wholesale intermediary with a loan limit.

Housing Administration insurance and GSE mortgage purchases). In addition, the U.S. experience also shows the importance of public-private partnerships. The collaboration among large intermediaries, community organizations, and state and local housing agencies can extend to the identification of specific local and national target groups, the design of new products suited to their needs, and the availability of counseling and training services.

Some policies outside the owner-occupied housing market can also offer indirect boosts for some target households, such as multifamily (or apartment) financing to promote a sound private rental market, contract savings and other means to equip certain households to become homeowners, and construction loans for affordable housing units. Designing specific loan products to serve target population groups in a particular country and applying some of the experience from the United States warrant further research.

Table 2. Relevant Markets—A Five-Country Comparison

	United States	Mexico	Korea	South Africa	Poland
Housing/ Land Market	• 69% owners in 2001 • HP-to-income ratio: 3 • Freer supply of land for urban development	• 55% owned	• 54% owned* • HP-to-income ratio: 4.2 to 6.2 • Restrictive land conversion and use regulations	• Policy shift being pursued from subsidy-only low-income housing service to more market/finance-oriented service	• 72% owned • HP-to-income ratio: 8 to 11 • Weak private rental market
Mortgage Market— Primary	• 53% MDO to GDP • 15- to 30-year loan term • 79% average LTV • 33% income ratio • Mortgage interest deduction	• 12% MDO to GDP ratio (1996) • DIM and PLAM are very prevalent mortgage instruments • Private mortgage insurance by SHF being pursued	• 11% MDO to GDP in 1997; 13% in 2001; 21.8% in 2004 • 81% for less than 10-year loan term • 60% average LTV; 70% maximum LTV • 40% income ratio • Interest deduction w/ the maximum of $10,000 • 3- to 5-year bullet loans (70%)	• No liquidity constraints for large banks • Lack of default/ delinquency data as a hurdle for market making • CRA and other policy initiatives to serve underserved population groups	• Heavy interest rate subsidy for target population groups • DIM introduced in 1994 • 40–60% average LTV; 70–80% maximum LTC • Following German model: contract savings, Pfandbriefe
Mortgage Market— Secondary	• First MBS issued in 1971 by Freddie Mac • $1.9 trillion total MBS • Growing ABS markets • No serious legal issue in MBS transaction • Credit derivatives increasing	• Private and public pension funds dominating (67% by INFOVIDAT and 7% by FOVISTE) • Public housing fund, FOVI having 20% market share • Inadequate enforcement of liens and titles	• First MBS issued in 1999 by KoMoCo • Nine MBS issuances until 2003 and seven more issuance in 2004 • Large ABS market, & housing bond market • Various legal constraints in MBS transaction	• First ABS issuance in 1989, but no securitization activity between 1991 and 1999 • 100% risk weight for MBSs and 50% for mortgages • Equity (vs. debt) investment community in general	• National Housing Fund–cofinance rental construction

ABS = asset-backed security; CRA = Community Reinvestment Act; DIM = dual-indexed mortgage; GDP = gross domestic product; HP = home price; LTV = loan-to-value ratio; MBS = mortgage-backed security; MDO = mortgage debt outstanding; PLAM = price-level adjusted mortgage; SHF = Sociedad Hipotecaria Federal.

Section 6. Summary and Next Steps

The main goal of this paper is to survey the evolution of the U.S. housing finance system (HFS) and to document the best practices observed from the process to provide insight for enhancing other countries' HFSs. We hope the lessons discussed here can help make other countries' intermediation processes more efficient and can help facilitate homeownership for more households in those markets. Some of the lessons examined have already occurred in different parts of the world (e.g., the foreign investors for U.S. mortgage-backed securities and debt that supports housing and the ongoing integration of funding markets across European countries after the advent and spread of the European Union) (European Mortgage Federation 2003).

Table 3 summarizes some major requisites for an efficient HFS, based on the U.S. experience, and points out some indicators or evidence that would signify the particular requisite is in place. Advanced HFS mechanisms are feasible only if certain institutional or process infrastructures are in place. For example, MBSs need standardized mortgage products that generate continuous sufficient cashflows, are originated based on sound underwriting rules, and are collateralized by complete ownership of the houses. The "basics" involve elements necessary for effective underwriting. Capital supply to housing is enhanced if requisites such as sound financial institutions are in place. Automated underwriting systems and economies of scale that result from specialization are among the conditions that help reduce borrowers' transaction costs. In addition, clear and enforceable property rights can be promoted by developing a title insurance market.

The role of government in enhancing the efficiency and stability of the HFS in a particular country is an important and complex policy issue to consider. In the context of the U.S. system, the market for mortgage securitization was created and has been expanding since the early 1970s, with the federal government being a key market maker. The creation of Ginnie Mae and Freddie Mac, the privatization of Fannie Mae, the favorable risk weight for MBSs, and the creation of the Office of Federal Housing Enterprise Oversight all contributed to the very efficient and extensive mortgage funding market in the United States today. Nonetheless, debates still continue regarding the optimal public-sector involvement in the mortgage market (e.g., the further privatization of government-sponsored enterprises [GSEs] and the need for new regulator(s) for the GSEs). In the United States, the Federal Housing Administration program takes on some financial risks to make housing finance accessible by more households. Thorough analyses and extensive operational experiences are necessary to keep such risks manageable. Emerging countries, in their risk management analyses, may find government insurance programs somewhat too risky in the beginning and may wish to consider instead devoting attention to creating a more solid legal and regulatory framework and to improving basic financial practices, such as credit reporting standards, in order to attract greater private sector interest and involvement in mortgage finance and insurance.

Policy goals vary widely among different countries. For example, the prioritization may be very different among reforming the banking system, formalizing informal sectors, compiling consumer credit data, introducing a long-term fixed-rate mortgage, or any combination of these initiatives and other targets. At the same time, the stage of development for the various requisites within and outside the HFS also differs among countries. Thus, policy goals and constraints in achieving those goals will determine what roles the government needs to play in a particular country.

Instead of embracing a certain policy direction (e.g., mortgage securitization) simply because it delivered positive outcomes in other countries, it is advisable to start establishing market makers

and required functionalities. As this paper summarizes, other countries can assess and leverage a menu of options drawn from the evolution of the U.S. HFS to pursue their countries' respective public policy goals. An alternative that may work better in a given country would depend on its specific culture, market, and institutional environments.

**Table 3. Requisites and Indicators of an Efficient Housing Finance System—
Reflections on the U.S. Experience**

The Basics	Indicators/Evidence
• Housing collateral	
o Clear and enforceable property rights	o Land and property title/title insurance
o Active unconstrained market (e.g., elastic supply of serviced land)	o Accessible market sales data/home price-to-income ratio
o Methods to limit frauds (in valuation or condition)	o Appraisal regulation and sanctions
• Borrower willingness and ability to pay	
o Valid credit history	o Consumer credit repositories/credit bureaus/consumer reports
o Valid employment and earnings data	o Verifiable wage statements, tax returns, and employment
o Valid wealth estimates	o Verifiable brokerage, savings statements
• Stable macroeconomic conditions	o Trends of inflation, interest rates, and other macroeconomic factors
Capital Supply	
• Standardized mortgage products	o Market trading in those products
• Supportive legal and regulatory environment	o Specialized government charters and guarantees, supportive capital requirements, active government lending programs
• Competitive lenders	o Financially sound lenders and investors, with trustworthy financial reporting; Different mortgage terms offered by different lenders
• Competitive insurers	o Title, hazard, liability and mortgage insurance available
• Financial instruments	o MBSs, derivatives, hedging vehicles for interest rate and credit risk/rating agencies/benchmark interest rates
• Favorable investor base for fixed income securities	o Pension funds, insurance companies, mutual funds
Low Transaction Costs	
• Reasonable taxation on housing sales and on mortgage transactions	o No extraordinary taxes
• Economies of scale	o Specialized, high-volume originators and servicers
• Automated underwriting	o Large volume processed by AUSs

AUS = automated underwriting system; HFS = housing finance system; MBSs = mortgage-backed securities.

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Glossary

ABS—asset-backed security.

ARM—adjustable rate mortgage.

AUS—automated underwriting system. A computerized method for underwriting mortgages.

automated valuation model—An information technology tool that provides automated estimates of house values.

CMO—collateralized mortgage obligation. A multiple-class mortgage-backed security.

conventional mortgage—A nongovernment, private-sector mortgage.

disintermediation—The outflow of deposits when deposit rates are below market rates.

DU—Desktop Underwriter. Fannie Mae's automated underwriting system.

duration—A measure of the effective maturity of mortgage cashflows.

Fannie Mae—Federal National Mortgage Association. The largest secondary mortgage market company in the United States. Fannie Mae was chartered in 1938 by Congress.

FDIC—Federal Deposit Insurance Corporation. An independent agency of the federal government that insures deposits at banks and Savings and Loan institutions.

FHA—Federal Housing Administration. Part of the Department of Housing and Urban Development's Office of Housing. As the largest insurer of home mortgages in the world, provides government insurance for primarily affordable mortgages.

FHLBanks—Federal Home Loan Banks. Twelve independent but cooperative banks (part of the FHLBank System) that provide liquidity to thrifts.

Freddie Mac—Federal Home Loan Mortgage Corporation. A secondary mortgage market company that was chartered in 1970 by Congress.

FSLIC—Federal Savings and Loan Insurance Corporation. A corporation formed by Congress to insure the deposits of federally chartered savings and loans institutions. It was abolished in 1989 and replaced by the Resolution Trust Corporation.

Ginnie Mae—Government National Mortgage Corporation. An entity established by Congress in 1968 to provide insurance for mortgage-backed securities backed by federally insured or guaranteed loans, mainly those insured by the Federal Housing Administration or guaranteed by the U.S. Department of Veterans Affairs.

GSE—government-sponsored enterprise. A privately held company created by Congress to reduce the cost of capital for certain borrowing sectors of the economy. Examples of GSEs include Fannie Mae, Freddie Mac, and the Federal Home Loan Banks.

HELOC—home equity line of credit. A mortgage loan, usually in a subordinate position, that enables the borrower to obtain cash drawn against the equity of his or her home, up to a predetermined amount.

HFS—housing finance system. A collective term for institutions and the environment for funding, originating, and servicing mortgages.

HOLC—Home Owners' Loan Corporation. A former U.S. government agency established in 1933 to grant long-term mortgage loans to homeowners facing the loss of their property. The HOLC ceased its lending activities in 1936.

IT—information technology. The application of computer hardware, communications, and software technology to the management, processing, and dissemination of information.

LoanProspector—Freddie Mac's automated underwriting system.

LTV—loan-to-value [ratio]. The amount of mortgage loan borrowed divided by the market value of the house used as collateral. LTV is the complement of the percentage of downpayment paid in purchasing a house.

MBB—mortgage-backed bond.

MBS—mortgage-backed security.

MDO—mortgage debt outstanding.

MMMF—money market mutual fund. An open-end mutual fund that invests only in money markets. These funds invest in short-term (1 day to 1 year) debt obligations such as Treasury bills, certificates of deposit, and commercial paper.

PMI—private mortgage insurance. A mortgage insurance policy without government backing.

principal-agent problem—A situation in which agents (e.g., mortgage originators) may have different incentives than the principals (e.g., mortgage investors), resulting in losses for the principals.

Regulation Q—A U.S. government regulation, now phased out, of the Federal Reserve system that established a ceiling on interest rates on time deposits.

REMIC—real estate mortgage investment conduit. A self-contained, multiple-class mortgage-backed security.

reverse-annuity mortgage—An arrangement in which a homeowner borrows against the equity in his or her home and receives regular monthly tax-free payments from the lender.

RFC—Reconstruction Finance Corporation. A former U.S. government agency that made emergency loans to banks and railroads in danger of defaulting during the Great Depression.

S&L—Savings and Loan. Originally, an institution that specialized in home mortgages.

specialization—The propensity of an organization, institution, or company to perform a certain function. In the housing finance system, entities tend to specialize in funding, originating, and/or servicing mortgages.

systemic risk—Risk that affects an entire financial market or system and not just specific participants. It is not possible to avoid systemic risk through diversification.

TBS—Terminating Building Society. A community of people who pooled their savings and made loans to each other for constructing houses.

thrifts—A term referring to lending institutions such as savings and loan associations, credit unions, and mutual savings banks.

underwriting—The process of determining whether and under what conditions a mortgage should be made.