

Housing in the Macroeconomy

William Poole

I am very pleased to be here today to participate in this symposium sponsored by the Office of Federal Housing Enterprise Oversight. The topics are important, and the list of speakers impressive.

My purpose is to provide an overview of longer-run trends in housing and housing finance. The United States is well housed, and the housing finance system has been working efficiently in recent years. In the first two sections of my remarks, I'll discuss some of the history and report some measures showing how the housing stock has changed over time and how the housing finance system has developed. Our aim must be to sustain and extend this progress.

The third section of my remarks reflects my long-standing interest in issues of financial stability stemming from my study of monetary economics and financial history. Given the enormous importance of housing and housing finance to the U.S. economy, I think we do need to carefully examine the potential for financial instability and consider steps that could reduce the risk. In this context, I especially want to commend OFHEO for its recent report entitled, "Systemic Risk: Fannie Mae, Freddie Mac and the Role of OFHEO." This report displays an impressive depth of scholarship in reviewing a large body of professional literature on the subject. It deserves careful study by every economist interested in issues of financial stability and every policymaker with an interest in housing and housing finance.

Before proceeding, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I thank my colleagues at the Federal Reserve Bank of St. Louis—especially Robert H. Rasche, senior vice president and director of research, and William R. Emmons, economist—for their assistance and comments, but I retain full responsibility for errors.

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SOME FACTS ABOUT HOUSING

Housing, particularly owner-occupied housing, has long been a public policy issue in the United States. Over the years, these discussions developed in two different directions: one focusing on the availability of housing for lower-income families, which I will not address here, and the other on the development of housing in general and the efficiency of mortgage markets.

The discussion of policies toward housing and mortgage markets dates back to at least 1918.¹ During the Great Depression, the National Housing Act of 1934 created the Federal Housing Administration (FHA) with the mandate to insure private residential mortgages. In the aftermath of World War II, the Serviceman's Readjustment Act of 1944 created the Veterans Administration (VA) home-loan guarantee program.² Mortgages insured (or guaranteed) by the government gained considerable market share throughout the 1940s and 1950s, reaching a peak share of 44.3 percent of 1-4 family home mortgages in 1956. Since then, the share of government-insured mortgages has declined steadily; by the end of 2000 the share amounted to only 13.8 percent.³

The original Federal National Mortgage Association—Fannie Mae, as it came to be unofficially and affectionately called—was organized in February 1938 to increase the volume of residential construction and develop a secondary market in government-insured or -guaranteed mortgages.⁴ To achieve the first objective, from its inception Fannie Mae purchased mortgages and issued its own debt. Initially,

¹ Harry S. Schwartz, "The Role of Government-Sponsored Intermediaries," *Housing and Monetary Policy*, Federal Reserve Bank of Boston, Conference Series 4, 1970, p. 68.

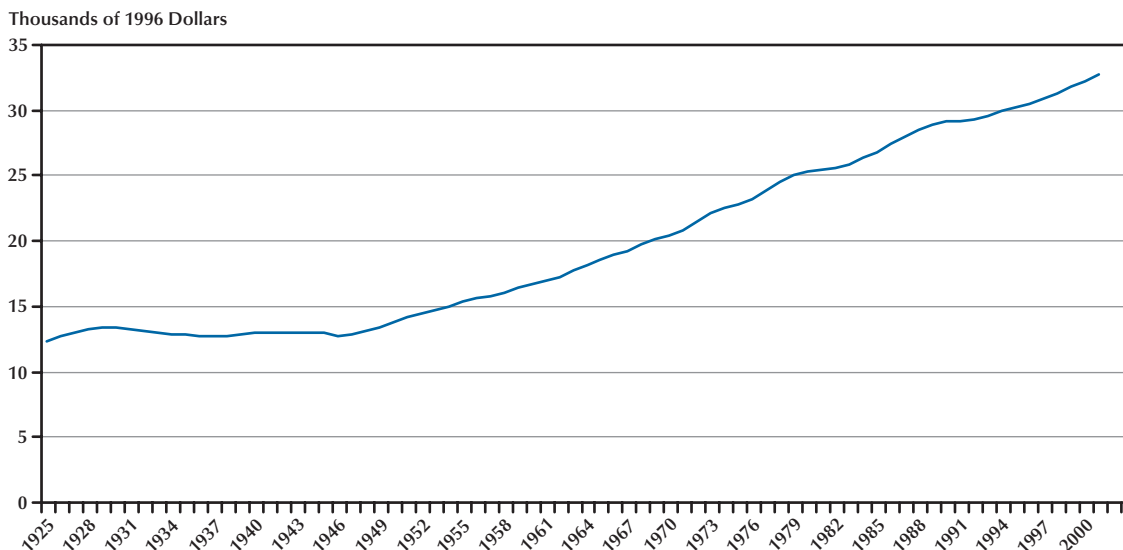
² George F. Break, "Federal Loan Insurance for Housing," *Housing and Monetary Policy, Federal Credit Agencies*, Commission on Money and Credit, Englewood Cliffs, NJ: Prentice-Hall, Inc. 1963, p. 2.

³ Source: 1939-59: *Economic Report of the President*, February 1970, Table C-58; 1960-2000: *Economic Report of the President*, February 2002, Table B-75.

⁴ Jack M. Guttentag, "The Federal National Mortgage Association," *Housing and Monetary Policy, Federal Credit Agencies*, Commission on Money and Credit, Englewood Cliffs, NJ: Prentice-Hall, Inc. 1963, p. 69.

Figure 1

U.S. Per Capita Real Net Residential Structures



Fannie Mae was funded through the sale of preferred stock to the Treasury. According to Jack M. Guttentag, writing in 1963, government support was regarded as transitory since it was “hoped that eventually the Treasury’s investment can be retired with the proceeds of common stock along with retained earnings, and the function transferred to private ownership.”⁵ This objective was partially achieved in 1968 when the original Federal National Mortgage Corporation was split into two parts: Government National Mortgage Association, or Ginnie Mae, which remained a government agency, and a successor Fannie Mae (officially, still the Federal National Mortgage Association) that was spun off as a private corporation under a federal government charter. In 1970 Ginnie Mae started guaranteeing mortgage-backed pass-through securities representing shares in pools of FHA/VA guaranteed loans.⁶ At the same time, the Federal Home Loan Mortgage Corporation—Freddie Mac—was created to promote the development of a secondary market in conventional mortgages.

Another important development in the 1930s was the creation in 1932 of the Federal Home Loan Bank System (FHLB), which was chartered to provide liquidity to thrift institutions. In 1934 the Federal Savings and Loan Insurance Corporation (FSLIC) was established to provide insurance on shares of depositors in thrift institutions.⁷

With these institutions in place, though not necessarily because of their creation, the net stock of real residential assets per capita began to grow after World War II. (See Figure 1.) The stock had been trendless between \$12,500 and \$13,000 1996 dollars from the mid-1920s until after World War II.⁸ From 1948 to 1970 the net real per capita stock of residential structures grew at a 1.9 percent annual rate. From 1971 to 2001 the net stock grew at a somewhat lower average annual rate of 1.5 percent. By the end of 2001, the net per capita stock of real residential structures had grown to \$32,700 1996 dollars.

As the stock of residential structures was growing, the quality of the housing stock was improving.

⁵ Jack M. Guttentag, “The Federal National Mortgage Association,” *Housing and Monetary Policy, Federal Credit Agencies*, Commission on Money and Credit. Englewood Cliffs, NJ: Prentice-Hall, Inc. 1963, p. 73.

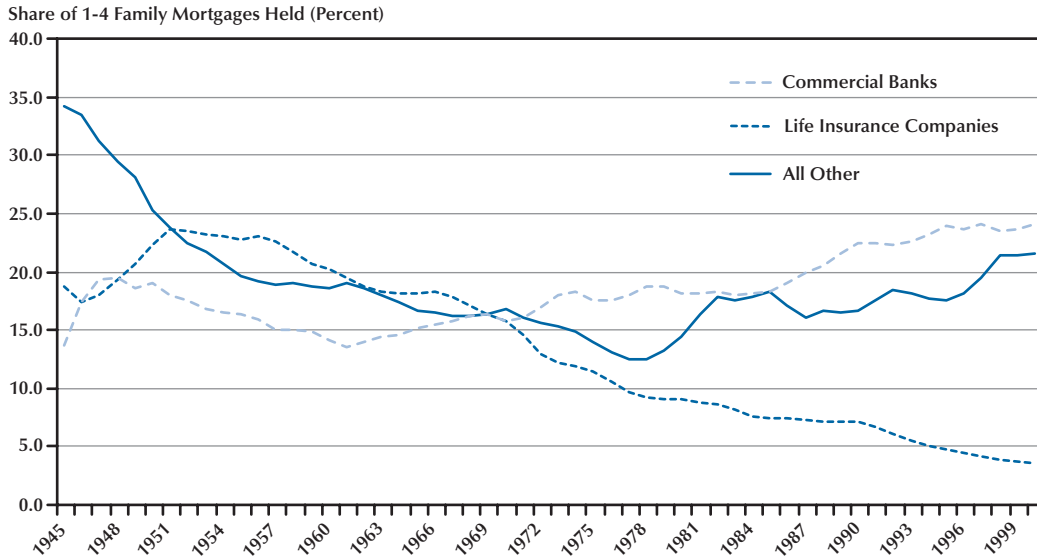
⁶ P.H. Hendershott, “The Market for Home Mortgage Credit”, in R.A. Gilbert, ed., *The Changing Market in Financial Services*, proceedings of the 15th Annual Economic Policy Conference of the Federal Reserve Bank of St. Louis. Norwell MA: Kluwer Academic Publishers, 1992, p. 100.

⁷ Ernest Bloch, “The Federal Home Loan Bank System,” *Housing and Monetary Policy, Federal Credit Agencies*, Commission on Money and Credit. Englewood Cliffs, NJ: Prentice-Hall, Inc. 1963, p. 168-72.

⁸ Bureau of Economic Analysis, U.S. Department of Commerce, Chain-Type Quantity Indexes for Net Stock of Fixed Assets and Consumer Durable Goods. End-of-year quantity indexes are available from 1925-2001. The quantity indexes of net stocks of real residential and non-residential assets are converted into net stocks valued in 1996 dollars.

Figure 2

1-4 Family Mortgage Lending



According to the 1950 Census, 35.5 percent of houses lacked complete plumbing facilities. By 2000 the fraction of houses without complete plumbing had fallen to 0.6 percent. In the 1960 Census—the first census that included a question on telephones—21.5 percent of houses had no telephone. By 2000 only 2.4 percent of houses lacked a telephone. In the 1970 Census 4.4 percent of houses were recorded as lacking complete kitchen facilities. By 2000, only 1.3 percent of houses were recorded as without complete kitchen facilities. During this period the median size of houses also increased—from 4.6 rooms in 1950 to 5.3 rooms in 2000.⁹

As the quantity and quality of the residential housing stock increased, homeownership also became more widespread. In the 1950 Census the homeownership rate was reported at 55 percent—by the 2000 Census it had increased to 67.5 percent.

SOME FACTS ABOUT HOUSING FINANCE

Growth of the housing stock could not have occurred without a robust system of mortgage finance. There are several distinct sources of mortgage finance in the United States.¹⁰ The importance

of these sources has varied considerably over the years since World War II. The share of 1-4 family mortgage loans held by commercial banks increased in the immediate aftermath of World War II to a peak of 19.4 percent in 1948; it then trended down to 13.4 percent in 1961 at which point the trend reversed and the share trended up again, reaching almost 24 percent in 2000. (See Figure 2.) Life insurance companies were a significant player in the residential mortgage market immediately after World War II, but their share of lending peaked in 1951 at 23.5 percent and has trended down ever since. By 2000, the share of life insurance companies was only 3.4 percent, so these institutions have ceased to be a significant factor in the residential mortgage market. The share of “all other,” which includes lending by individuals and private mortgage pools decreased from 34.1 percent at the end of World War II to 12.3 percent in 1977, after which it started trending up and reached 21.4 percent by 2000.

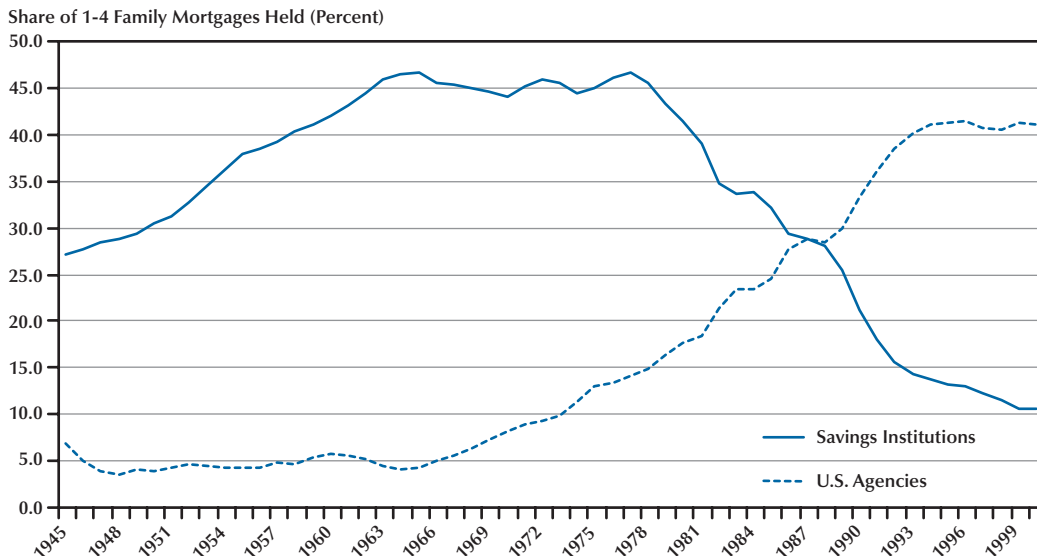
The two remaining types of institutions that at different times have been the most significant players in the residential mortgage lending market are savings institutions (including savings and loan associations and mutual savings banks) and U.S. agencies including Ginnie Mae, Fannie Mae, Freddie Mac, and mortgage pass-through securities guaranteed by federal agencies or government sponsored enterprises (GSEs). The share of savings institutions in

⁹ Rooms exclude bathrooms.

¹⁰ Source: 1939-59: *Economic Report of the President*, February 1970, Table C-59; 1960 to 2000: *Economic Report of the President*, February 2002, Table B-76.

Figure 3

1-4 Family Mortgage Lending



residential mortgage lending grew rapidly after World War II, reaching 46 percent in 1965. (See Figure 3.) These institutions maintained their market share until 1978, but then lost share dramatically.

The decline of the savings institutions was a consequence of rising nominal interest rates combined with duration mismatch, which together generated the savings and loan crisis of the 1980s. By 1990, when the S&L crisis was finally resolved, the share in the residential mortgage market of these institutions had shrunk to 21.1 percent, less than half of the peak market share twenty-five years earlier. In the subsequent decade the market share held by these institutions shrunk by half again, to only 10.4 percent at the end of 2000.

As the presence of savings institutions in the residential mortgage market receded, the financing void was filled by U.S. government agencies. In 1967, immediately before the Housing Act of 1968 and reorganization of the established Fannie Mae into Ginnie Mae and the new Fannie Mae, the share of the residential housing mortgage market for government agencies was 5.5 percent. By 1990, these institutions captured a third of the residential mortgage market, either through mortgages purchased for their own portfolios or through guaranteed mortgage-backed securities. Recent data indicate that their market share is 42.5 percent as of the end of the third quarter of 2002. Clearly, the efficiency and stability

of these government agencies has become a critical factor in the financing of residential construction.

FINANCIAL STABILITY

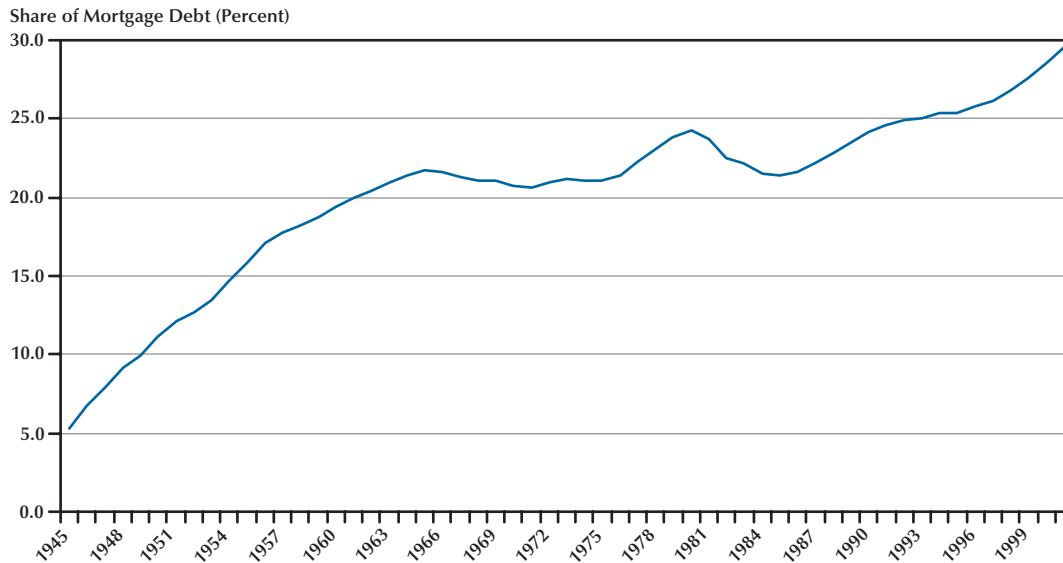
As Figure 4 shows, residential mortgage debt has grown enormously as a fraction of total nonfinancial debt in the United States. Starting at slightly more than 5 percent at the end of World War II, the share grew steadily until it exceeded 20 percent in the early 1960s. From then until the mid-1980s, the share fluctuated in the neighborhood of 20 percent or a bit more. In the past 15 years the share again grew steadily until it reached 30 percent at the end of 2001.¹¹ Given the current magnitude of mortgage debt outstanding relative to total credit market debt, any serious instability in the financing of the residential capital stock has the potential for significant effects not only on the housing industry but also on the entire economy.

The annual reports of Fannie Mae and Freddie Mac, and the recent OFHEO report on Systemic Risk, provide much useful information on risk management. It is insightful to divide this subject into two parts. One concerns management of credit, interest-rate, and operational risks that can be modeled with the assistance of financial theory and evidence from the behavior of financial markets. Risks that can

¹¹ Board of Governors of the Federal Reserve System, *Flow of Funds Accounts*, Table L.2, Credit Market Debt Owed by Nonfinancial Sectors.

Figure 4

Home Mortgage Debt as Share of Total Nonfinancial Debt



be studied and modeled can be termed “quantifiable risks.” Nonquantifiable risks deserve separate attention.

There are certainly cases in which firms, and sometimes regulators, make mistakes in dealing with quantifiable risks. Over the years, many financial institutions have failed because of such mistakes. Savings and loan association failures, which ultimately led to the failure of the Federal Savings and Loan Insurance Corporation (FSLIC), were mostly of this type. Starting in the late 1960s, economists warned for years that the extreme maturity mismatch from S&L balance sheets with long-term, fixed-rate mortgages financed through short-term liabilities put the industry at great risk. As those risks were realized, many firms failed and the S&L industry declined to a shadow of its former self. The cost to taxpayers to make good on the insurance guarantee offered by FSLIC was in the neighborhood of \$150 billion. As a consequence of this experience, managers of firms, regulators, and those active in financial markets are today well aware of the need for careful risk management.

The OFHEO report makes an extremely important point about nonquantifiable risks:

A further obstacle to quantifying systemic risk is the inherent difficulty in using quantitative techniques to analyze catastrophic events such as wars and financial crises.

Such events are rare, often involve significant departures from recent historical experience and can develop from a potentially infinite set of conditions. Analysts generally do not model, simulate, or predict the course and consequences of unconditional financial crises, making it difficult to obtain a precise estimate of the likelihood of a specific level of economic losses resulting from potential financial crises. As a result, government officials who seek to plan for such events cannot rely on the usual quantitative techniques to evaluate alternative strategies for addressing them. (p. 87)

In a previous speech I suggested that periods of great market instability arise when three conditions are met. First, something happens that has widespread significance—is large enough to matter to lots of people. Second, the triggering event is a surprise. Ordinarily, events long anticipated are not troublesome because corrective action occurs before problems arise. Third, substantial uncertainty clouds resolution of the problem. It is especially difficult for investors to know what to do when the government’s response to an unfolding situation is highly uncertain.¹²

¹² “Financial Stability” presented before The Council of State Governments Southern Legislative Conference Annual Meeting, New Orleans, Louisiana, Aug. 4, 2002: < www.stlouisfed.org/news/speeches.html > .

Given the extensive discussion of quantifiable risks, I want to concentrate on the nonquantifiable risks. It helps to make this issue concrete by listing some examples. The failure or near failure of Penn-Central, Continental-Illinois, Long-Term Capital Management, Enron, and WorldCom may not have been complete surprises to knowledgeable insiders, but the shocks were certainly “news” to market participants, regulators, and the general public. No one predicted the timing of the stock market crash of 1987 or the peak of the equity markets in the spring of 2000. It is well known that even the great Yale economist Irving Fisher was caught completely off guard by the crash of 1929. Surprise legal decisions brought bankruptcy to 52 firms involved with asbestos, to Dow-Corning, and to Texaco. Finally, while experts in terrorism may have understood the risks of attacks on U.S. soil, their information was not sufficient to prevent the September 11 attacks; certainly no one else had any basis for predicting the attacks. All of these cases, with the possible exception of Continental-Illinois, reflected nonquantifiable risks.

The point here is not to fault the forecasting record of any person or any agency. Rather, it is to illustrate that major unforeseen events that can bring about a collapse in confidence or disruption to the normal function of financial markets without any warning can and do occur with some frequency. The history of the United States, as well as other countries, is replete with such examples.

A little-discussed but critically important dimension of systemic risk is the uncertainty about how the government and regulators will respond to a major unforeseen event.¹⁵ Before the 1987 stock market crash there was considerable overconfidence that a break in equity prices such as occurred in 1929 was not possible given modern institutions. As a result, in the initial hours of the 1987 crash, the public did not know exactly how the Fed would react to a systemic liquidity crisis. The way the Fed handled that situation is, in my judgment, one of the high-water marks in the history of our central bank. Not only was a generalized liquidity crisis averted, but also considerable institutional credibility was created. The repercussions in financial markets on 9/11 might have been much worse had the Fed not demonstrated in 1987 that it could and would react immediately to major market disruptions.

There are historical cases where the reactions by government agencies and regulators to unpredicted crises, in my judgment, did not result in such institution building. A good example is the market perception that public policy has established a “too big to fail” doctrine. This perception grew over time and became more entrenched as a result of the Continental-Illinois situation. The net result is that market participants expect that, under ill-defined conditions, regulators and/or government agencies will in fact insure statutorily uninsured positions involving large financial institutions. Is the doctrine really “too big to fail” or “too big to liquidate quickly?” How big does a financial institution have to be, and does it have to be a depository institution, to be “too big to fail?” In this respect, there is tremendous ambiguity about the status of the GSEs. The market prices the GSEs’ debt as if there were a federal guarantee, or a high probability of a guarantee, standing behind their entire outstanding obligations. Yet, there is no explicit guarantee in the law. Actual experience has left the markets with all of these important questions and ambiguities.

No one should underestimate the potential importance of the ambiguity over the financial status of the GSEs. Would “too big to fail” be extended to GSEs in a crisis, and if so how would it be effected in the absence of a federal insurance agency with an unlimited line of credit? How quickly could such a rescue be implemented?

It is not sufficient for any single GSE to argue that its own financial condition is sound. If one GSE comes under a cloud, others may also. That has been our experience with financial firms again and again. It is the process economists call “contagion,” whereby uninformed or innocent firms are affected because the market has difficulty distinguishing solid firms from those at risk.

In the case of the GSEs, the enormous scale of their liabilities could create a massive problem in the credit markets. If the market value of GSE debt were to fall sharply, because of ambiguity about the financial soundness of GSEs and about the willingness of the federal government to backstop the debt, what would happen? I do not know, and neither does anyone else.

Let me throw out for debate two steps the federal government might take to resolve the ambiguity that I see as a fundamental risk to the continuing stability of our financial system. First, various aspects of federal sponsorship that the market reads as providing an implied guarantee of GSE debt should

¹⁵ I discussed this issue at some length in “Expectations,” *Federal Reserve Bank of St. Louis Review*, March/April 2001, 83(2), pp. 1-10.

be withdrawn.¹⁴ The Secretary of the Treasury has the authority to buy GSE obligations; in the case of Fannie Mae and Freddie Mac, the authority is up to a maximum of \$2.25 billion for each firm. The GSEs could easily replace this potential source of emergency financial support with credit lines at commercial banks, following the widespread practice among issuers of commercial paper. In any event, the amount available at the discretion of the Secretary of the Treasury is far too small to deal with a crisis in the GSE debt market. Eliminating the Treasury's authority to lend to the GSEs would provide a signal that the government is serious when it says that there is no government guarantee of GSE debt.

Second, over a transitional period of several years, the GSEs should add to the amount of capital they hold. Capital is critical because when there is a crisis in the securities markets, financially strong firms can stand the pressure without lasting damage. Capital provides a cushion against mistakes and unforeseeable circumstances. With adequate capital, a firm can almost always raise emergency loans to cover its liquidity problems. The importance of adequate capital became clear to policymakers as the S&L problems accumulated in the late 1980s. Tightening of capital standards for insured depository institutions and the administration of those requirements was a key part of the reforms put in place at that time.

Capital is especially important for the GSEs because their short-term obligations are large. Fannie Mae and Freddie Mac have debt obligations due within one year of about 45 percent of their debt liabilities. Any problem in the capital markets affecting these firms could become very large, very quickly. It is important to understand what "very quickly" means. Because of the scale of the short-term obligations of the GSEs, the GSEs are rolling over many billions of dollars of obligations each week. For this reason, a market crisis could become acute in a matter of days, or even hours.

Capital on the books of Fannie Mae and Freddie Mac is well below the levels required of regulated depository institutions. Let me quote a paragraph from the 2001 Annual Report of Fannie Mae, the

largest single GSE. During 2001, Fannie Mae issued \$5 billion of subordinated debt that received a rating of AA from Standard & Poor's and Aa2 from Moody's Investors Service.

Fannie Mae's subordinated debt serves as a supplement to Fannie Mae's equity capital, although it is not a component of core capital. It provides a risk-absorbing layer to supplement core capital for the benefit of senior debt holders and serves as a consistent and early market signal of credit risk for investors. By the end of 2003, Fannie Mae intends to issue sufficient subordinated debt to bring the sum of total capital and outstanding subordinated debt to at least 4 percent of on-balance sheet assets, after providing adequate capital to support off-balance sheet MBS. Total capital and outstanding subordinated debt represented 3.4 percent of on-balance sheet assets at December 31, 2001. (pp. 44-5)

The capital situation at Freddie Mac is about the same as the one at Fannie Mae. The capital adequacy standards applying to these two GSEs were established by the Federal Housing Enterprises Financial Safety and Soundness Act of 1992. The core capital requirement is 2.5 percent of on-balance sheet assets and 0.45 percent of outstanding mortgage-backed securities and other off-balance sheet obligations. The off-balance sheet obligations have a capital requirement because they are guaranteed by Fannie and Freddie.

In the private sector, government securities dealers carry capital in the neighborhood of 5 percent, and other financial firms considerably more. For example, FDIC-insured commercial banks hold equity capital and subordinated debt of a bit under 11 percent of total assets.

The issue with Fannie Mae and Freddie Mac is not primarily one of disclosure. Their annual reports disclose quite well the high degree of complexity of their operations, and the small amount of capital they carry above what is required by law. My questions are these: Given the complexity of their operations, is the capital standard in the law adequate? Why is the standard so far below that required of federally regulated banks? What will happen to the housing market if Fannie and Freddie become unstable?

Reports issued by Fannie Mae and Freddie Mac, and the recent OFHEO report on Systemic Risk,

¹⁴ Farmer Mac, another GSE, was much in the news in the recent past. An article in the *New York Times* noted that one of the advantages conferred by government sponsorship is "the ability to borrow almost as cheaply as the government does because of a perception of government backing that emanates from a single section in its charter. That provision allows the Treasury, in certain circumstances, to provide up to \$1.5 billion in loans to Farmer Mac to support the guarantees the company extends on farm loans" (9 June 2002, p. 8, column 1).

indicate that the two firms employ state-of-the-art risk management. Nevertheless, my sense is that the firms are vulnerable to nonquantifiable risks, because their capital positions are so low.

In my judgment, the only way for financial institutions to ensure stability in the event of nonquantifiable shocks is for them to maintain a substantial extra capital cushion above that deemed necessary by analysis of quantifiable risks. One way of thinking about the appropriate size of that cushion might be to decide that a firm should be able to meet its maturing obligations without borrowing for a certain period of time. The length of the period would depend on an assessment of how long it would take to resolve whatever problem might arise. Under this criterion, the capital cushion would have to be invested in highly liquid, short-term assets not subject to depreciation due to interest rate changes or credit risks, so that maturing obligations could be met for a time without resort to issuing new obligations.

Dismissing the risks of nonquantifiable events on the grounds that they are too improbable to worry about is not a wise approach to public policy. For one thing, these events are not so rare as they might seem. For another, the costs of a rare event that has major consequences to the economy can easily outweigh a long stream of benefits that are orders of magnitude smaller.

SUMMING UP

The United States has enjoyed many years of a rising stock of residential capital. Moreover, dwellings have increased in average size and quality. The nation's housing finance system has been effective in making this growth possible.

The housing finance system historically has been highly diversified. As a group, the share of savings institutions in residential mortgage lending reached 46 percent in 1965, but hundreds of institutions were involved. The diversification of lending by different types of institutions and numerous firms within a class of institutions has been an important element of stability, because the failure of one or even many firms has not shaken the system. Competing firms have been able to enter the market to fill any voids left by failing firms.

Today, the housing finance system is heavily concentrated. Just three firms—Fannie Mae, Freddie Mac, and Ginnie Mae—account for over 40 percent of the residential mortgage market. Ginnie Mae is backed by the full faith and credit of the U.S. government. Fannie Mae and Freddie Mac are not so backed and hold capital far below that required of regulated banking institutions. Should either firm be rocked by a mistake or by an unforecastable shock, in the absence of robust contingency arrangements, the result could be a crisis in U.S. financial markets that would inflict considerable damage on the housing industry and the U.S. economy.